FIVE-YEAR DEVELOPMENT PLAN

1975/76 - 1979/80



Part II

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Approved by the

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INTRODUCTION

The second part of the Plan comprises a series of sector chapters initially prepared by Ministries and Agencies. Although they have been edited and checked by the Ministry of Economic Planning for some degree of internal consistency and discussed and amended by the National Economic Planning Council, they retain their original form and content largely and essentially, in order to preserve some of the freshness and vision of the presentations and to give policy makers set targets at which to aim. Consequently it will appear in some cases that the investment programmes are ambitious in relation to resource availability as presented in Part I.

The sector chapters serve a sobering purpose. The essence of any planning exercise is to reduce infinite aspirations to realisable projects. The juxtaposition of parts one and two of the Plan sets the limits of available resources against the pool of development desires. One approximate measure of the difference between the two is that, at first glance, the public investment component of the sector plan is somewhat larger than the resource availability indication in part one of the plan document. Inevitably this means that some hopes will be unrealised. If however, the resources available are used as planned and a new rate of growth of 5.5 per cent per annum is achieved over the Plan period, then the standard of living in Ghana will be much higher and Ghanaians will be closer to realising their economic and social ambitions.

The Plan places particular emphasis on agriculture, industry, mining and transport. These have been the subjects of pronouncements and action by the Government since 1972. At that time, emergency measures were urgently required to give priority to ensuring the availability of raw materials for our factories and industries and food for our people at reasonable prices. We now feel that the time has come for these measures and programmes to be formalised and expanded into a Five-Year Development Plan. Thus the launching of the 1975-80 Plan marks a transition from emergency operations to long-term efforts to put the economy firmly on the path of development and growth.

The Development Plans which have been launched since 1957 have aimed at the restructuring of the Ghanaian economy. This aim is continued in the present Plan. Attempts are being made to diversify export products and to increase production for domestic

use. Livestock, poultry and fish received scant attention in the past and the production of local food, fruit and vegetables was virtually neglected. Operation Feed Yourself, is, in part, a response to growing food import bills. In forestry the Plan sets out to husband our national resources, including the protection of reserves, and processing of foreign products to increase their market value.

Industry and mining which were, traditionally, extraterritorial enterprises, are expected to have significant Ghanaian participation, both private and public. The Seven-Year Plan (1963) *set the pattern and in the post* 1972 *period, public and private Ghanaian participation in mining, plantations and industrial joint ventures has become an accepted fact. The Investment Policy Decree,* 1975 (*N.R.C.D.* 229) *has set the course which will accelerate this trend under the present plan.*

Since the beginning of the 'lean year' in 1965, *the supporting services of the economy have been starved of funds and forced to run down, particularly the transport industry—roads, railways and rolling stock, Ghana Airways and the Black Star Line. The immediate aim of the plan is to rehabilitate and reactivate these services to speed up the evacuation of exports and the distribution of imports. There has been a noticeable reduction in the number of vehicles available for trucking, and the growth of traffic both inter and intra-town has clearly established the need for improved mass transportation facilities.*

Since independence, Ghana has seen the coming into being of the Volta Lake and the Akosombo Dam, the new port of Tema, massive housing programmes, the growth of factories and the appearance of new crops including cotton, kenaf, rubber, sugarcane and rice. The social services, particularly education, have grown in size and quality. The three Universities are now taken for granted; the medical services now include teaching hospitals and the broadcasting and television systems are becoming nation-wide. The whole of the development effort is supported by a Council of Scientific and Industrial Research (*CSIR*).

In spite of these achievements the next Five-Year Plan, and others to follow will have to cope with the problems of a fragile economy which needs to widen its income-producing base. Part II of the plan sets out the options open to Ghana and suggests actions to be taken to reach sectoral levels for measuring the transformation and growth of the Ghanaian economy.

In adopting this Development Plan, Ghana needs to have a clear idea about how resources are to be mobilized. The calculations in Part I indicate the kinds, volume and value of resources which can be mobilized domestically, but the plan figures presume

an inflow of foreign governmental aid and private capital transfers. An important element in this inflow is private direct investment which is a controversial topic in all developing countries because profitability to a company does not always equate with the benefits to a host country. Two apparently contrary ideas will have to be reconciled or a compromise between them determined as part of the effort to mobilise resources for the implementation of the plan—namely, the acceptance of the significant contribution of private direct investment or its avoidance because it is a form of neo-colonial exploitation. Any investment policy which we adopt should take into consideration such factors as:—

(*a*) *the creation of employment;*

(*b*) *the contribution to the national budget and to a favourable balance of payments;*

(*c*) *the effect on the regional balance of the economy;*

(*d*) *the spread of income and consumption;*

(*e*) *the opportunities offered for acquiring skills; know-how and experience;*

(*f*) *the proportion of profits reinvested;*

(*g*) *the degree of integration into the national economy;*

(*h*) *the needs satisfied by such investment—whether those of a minority group or the mass of the population; and*

(*i*) *prospects for the passage of control and ownership into local hands, environmental effects, etc.*

Already the policy of self-reliance and the Investment Policy Decree and the Ghanaian Enterprises Development Decree provide a clear and significant basis for Ghana to enter into co-operation and partnership with would-be investors. The National Development Plan therefore sets a framework within which an equitable balance of interests can be established. Our attempts to attract resources, especially private direct investment include the provision of tax incentives, agencies such as the Capital Investments Board, the National Investment Bank, the Agricultural Development Bank, the Bank for Housing and Construction, Industrial Estates, vocational training facilities, a transport and communications network and water and power systems. If these facilities are exploited exclusively by foreign private direct investors their benefits for Ghana will be minimal, but on the other hand, if such investors are excluded, the full potential of the facilities will not be achieved.

We are in the midst of a multi-faceted crisis—external deficit, recurrent budget deficits, internal shortages and inflation, which calls for a package of solutions. It is necessary to emphasise that no single measure, taken in isolation, can cope with the problems. The situation is serious but not disarming; what the proposals in Part II seek to do is to prevent the situation from drifting out of control and ultimately to provide a basis for growth in productivity and in real income.

CHAPTER 1

AGRICULTURE

1.1 General Introduction

The role that agriculture plays in the economy of Ghana is significant. In our situation, agriculture has the highest potential of all other sectors for simultaneous achievement of several goals mentioned in the Guidelines of the Five-Year Plan. The pre-eminence that agriculture enjoys in the economy makes it mandatory that its development should receive the highest attention in the planning strategy. Agriculture in 1974 contributed about 35.7 per cent of the gross domestic product and employs about 65 per cent of the labour force. Its contribution to the foreign exchange earnings of the country is about 62 per cent. Agriculture also produces 60 per cent of the industrial raw materials for the country's agrobased industries. The sector is dorminated by small-scale farmers who constitute about 95 per cent of the farming population.

Although agriculture has hitherto produced these impressive statistics, and remains the mainstay of the economy of Ghana, the organisation and development of agriculture is perhaps the more intriguing aspect of the development achieved so far in this sector. Although about 50 per cent or more of the land surface of Ghana is suitable for the production of all types of tropical agricultural produce, in 1970, only 60 per cent of the total area was under cultivation and of this total, only 43 per cent of the cultivated land was under food crops and the remainder under tree crops. As already indicated, the major operators in this sector are small-scale farmers whose holdings, scattered all over any given agricultural area, do not often exceed two hectares per farm family. A small proportion of the operations in the sector is in the hands of medium and large-scale private, commercial firms, public corporations and co-operatives. In 1974, most of the large-scale farms accounted for less than 5 per cent of total production in the sector. Only recently, in rice production, did the large-scale farms account for about 25 per cent of total production. No doubt, with this set up, agriculture has been growing only at a pace approximately equal to the rate of population growth and therefore leaves little or no margin for manoeuverability much less producing a surplus for industrial expansion and export promotion.

The following statistics that are available tell the story further in their own way. The rate of growth in agriculture during the past five years (1970–1974) was 2.6 per cent. Between 1972–75, however, the rate was about 4.1 per cent per annum due mainly to the response to the "Operation Feed Yourself" Policy. From a base figure of ₵444 million in 1968, production has increased to ₵1,663 million by the end of 1974. Food crops have increased at the rate of 4.6 per cent per annum, industrial raw materials by 6 per cent per annum and export crops at 0.8 per annum.

The significance of these developments is that whenever a definite policy is directed towards stimulating agriculture, like the Operation Feed Yourself, then the sector tends to respond favourably. From this lesson, and the fact that a prudent planning strategy requires that attention should be directed to the development of those resources which a nation has in relative abundance, the thrust of government policy under the Five-Year Plan in the agricultural sector is to enable agriculture to realise its potential to the fullest. Specifically, government intends to develop the agricultural sector to fulfil two basic objectives during the plan period, namely:—

(1) Under the government declared Cheap Food Policy and self-reliance, agriculture should produce enough food to feed the people at reasonable prices as well as progressively meet their basic nutritional requirements.

(2) Agricultural productivity should be raised sharply both to release and generate resources for industrial development and as a pre-condition for sustained industrial revolution at which policy is aiming eventually, as well as provide the wherewithal for the management of the rest of the economy generally.

With these objectives in mind, the agricultural sector is treated under the following headings, with the appropriate policy objectives and programmes that go with them:—

(i) Crops, other than cocoa;
(ii) Cocoa;
(iii) Livestock;
(iv) Fisheries;
(v) Mechanization;
(vi) Irrigation.

The current situation, constraints and problems, policy objectives and programmes, together with the financial and manpower requirements in respect of each of the above sectors are described below:—

1.2 Crop Development

Production in the crop development sector can be divided into three broad categories:—

(*a*) Staple food crops to satisfy the demand for domestic consumption.

(*b*) Industrial raw materials for domestic agro-based industries; and

(*c*) Export crops to diversify and increase the sources of earnings of foreign exchange.

1.3 Production of Staple Food Crops

The principal staple food crops produced in Ghana can be classified under the following broad commodity groups:—

(i) *Cereals.*—i.e. maize, rice, millet, guinea corn;
(ii) *Starchy Staples.*—i.e. cassava, yam, cocoyam, plantain;
(iii) *Pulses, nuts and Oil Seeds.*—i.e. groundnuts, coconut, oil palm;
(iv) *Vegetables.*—i.e. tomatoes, pepper, okro, onions, garden eggs;
(v) *Fruits.*—i.e. banana, citrus, pineapples, mangoes, avocado pears.

Except in the case of a few of them, production of most of these crops in the past years especially between 1970–74 has not increased significantly in response to domestic demand for these basic staples. The tables below show the performance of the various crops by the broad commodity groups between 1970–74.

TABLE 1

AREA AND PRODUCTION OF CEREALS, 1970–74

AREA: '000 ACRES — PRODUCTION: '000 LONG TONS

Crop	1970		1971		1972		1973		1974	
	Area	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*
Maize	997	378	997	378	960	396	1,001	431	1,050	478
Rice	136	48	150	54	153	56	164	61	165	72
Millet	615	115	568	120	435	97	474	107	549	152
Guinea Corn ..	600	183	576	170	494	150	454	164	534	174
Total Cereals ..	2,348	724	2,291	722	2,042	699	2,093	763	2,298	876

Source: Ministry of Agriculture.

Although the overall growth in output of cereals has not been encouraging between 1970–74, two crops in particular, i.e. rice and maize, have shown considerable increase in production during the period. The rate of growth in rice production between 1970–74 was 9.8 per cent while that for maize was 6.2 per cent. Acreage under maize cultivation rose from 997,000 acres (398,800 ha) to 1,050,000 acres, (420,000 ha) while land under rice rose from 150,000 acres (60,000 ha) in 1970 to 165,000 acres (66,000 ha) in 1974. Millet production during the period grew only at 3.1 per cent. Guinea corn production actually showed a decline both in output and acreage.

The sharp increases in the production of rice and maize are no doubt a result of the general response of the population of Ghana to the Operation Feed Yourself Programme which entailed expansion in acreage essentially and to some extent the increased application of modern methods

of farming such as the use of fertilizers and improved seeds. In spite of the marked increases in the production of rice and maize, imports of rice between 1970–1974 averaged ₵12 million per annum and those of maize were ₵116,000 per annum to meet the growing demand for these crops both for human consumption and for animal feed.

Table 2 shows the production of starchy staples such as cassava, cocoyam, yam and plantain between 1970–74.

TABLE 2

AREA AND PRODUCTION OF STARCHY STAPLES, 1970–74

AREA: '000 ACRES — PRODUCTION: '000 LONG TONS

	1970		1971*		1972		1973		1974	
Crop	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*
Cassava	866	2,441	866	2,441	940	2,848	883	2,820	960	3,549
Cocoyam ..	718	1,475	718	1,475	636	1,234	645	1,304	701	1,486
Yam	426	895	426	895	331	692	322	765	328	836
Plantain	702	1,434	702	1,342	757	1,645	831	1,882	847	1,992
Total	2,712	6,245	2,712	6,153	2,681	6,419	2,653	6,771	2,836	7,863

Source: Ministry of Agriculture.
* Data not available but assumed as 1970.

Except in the case of cassava, the performance of other root crops and plantain has not been satisfactory. Although the domestic demand for cassava has since 1970 been fully satisfied from domestic output, the production of yams and cocoyams has either stagnated or declined. In the case of yams, the stagnation has been the result of competition from crops such as rice and cotton. Additional factors include the unavailability of enough yam seeds, the high degree of perishability of tubers and difficulties of obtaining transportation for this commodity between centres of production and those of marketing. Factors contributing toward a decline in the production of cocoyams are not exactly clear. However, this crop and plantain seem to be associated with the cultivation of new fields of cocoa. They are employed as cover crops for the young cocoa seedlings and as there have been no appreciable increases in new cocoa plantations, the output of cocoyams and plantain has correspondingly declined. In Table 3 is shown the production of pulses, nuts and oilseeds.

TABLE 3

AREA AND PRODUCTION OF PULSES, NUTS AND OIL SEED, 1970–74

AREA: '000 ACRES — PRODUCTION: '000 LONG TONS

Crop	1970		1971*		1972		1973		1974	
	Area	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*
Groundnuts ..	242	100	242	100	226	89	196	120	274	146
Coconut	90	297	90	297	88	290	91	300	92	304
Oil Palm	274	685	274	685	280	700	308	770	345	863
Total	606	1,082	606	1,082	594	1,079	595	1,190	711	1,313

Source: Ministry of Agriculture.

* Data not available but assumed as 1970.

With the exception of oil palm, growth in the production of pulses, nuts and oil seeds has been very slow. Groundnuts and coconut grew at about 1.5 per cent between 1970–1974. Oil palm production however, grew at a rate of 5.6 per cent during the period. There was an increase in production of oil palm from 685,000 tons in 1971 to 863,000 tons in 1974. As a result of the low rate of production of nuts and oilseeds during the period, there were significant imports of various forms of oils of vegetable origin between 1970–1974 as shown in the talbe below:—

TABLE 4

IMPORTS OF VEGETABLE OILS, 1970–1974

Year	*Imports* ('000 *Cedis*)
1970	3,643,239
1971	5,165,843
1972	5,161,430
1973	5,671,389
1974	4,423,918

The Table below shows the production of the major vegetables cultivated in Ghana:

TABLE 5

AREA AND PRODUCTION OF VEGETABLES, 1970–74

AREA: '000 ACRES — PRODUCTION: '000 LONG TONS

Crop	1970		1971*		1972		1973		1974	
	Area	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*
Tomatoes ..	46	91	46	91	63	109	51	97	56	103
Pepper	69	93	69	93	102	139	109	132	131	146
Okro	69	100	69	100	107	211	87	163	126	248
Garden eggs ..	20	10	20	10	26	21	24	30	34	28
Total	204	294	204	294	298	480	271	422	337	525

Source: Ministry of Agriculture.

* Data not available but assumed as 1970.

The main vegetable crops of Ghana are tomatoes pepper, okro garden eggs, shallots, onions and vegetable leaves of various types. These are grown in all regions of the country. Table 5 presents data on only the major vegetables. Due to their very perishable nature, and because most consumers do not have adequate facilities for preserving and storing these items for more than about a week, there have not been enough incentives for farmers to engage in their production on a large scale. It is estimated that between 20 and 25 per cent of vegetable produced gets lost because of the absence of adequate storage facilities. Most farmers inter-crop vegetables with other crops and produce just about enough mainly to meet the farmers' own domestic food requirements. In the towns and cities, some households have backyard gardens to produce these vegetables for their own subsistence requirements. In the larger urban centres, there are small-scale vegetable growers who produce and sell exotic species of vegetables for use in making fresh vegetable salads.

Since about 1972, vegetables have increasingly been more available throughout the year in the markets of urban centres. These vegetables are produced on lands surrounding multi-purpose dams which have been constructed not too distant from these urban centres. The Ministry of Agriculture has also developed improved varieties of some vegetables, for example, tomatoes, the seeds of which are sold to farmers and individuals interested in their production. The demand for tomatoes, just as with other vegetables, exceeds supply from domestic sources. The production of industrial tomato is still very low. In view of this the Nsawam Cannery of GIHOC operates at about 29 per cent of its installed capacity. The other GIHOC canneries at Wenchi and Pwalugu have never been in operation because of the lack of raw materials.

The Production of various fruits to meet domestic demand is shown in the table below:—

TABLE 6

AREA AND PRODUCTION OF FRUITS, 1970–74

AREA: '000 ACRES — PRODUCTION: '000 LONG TONS

Crop	1970		1971*		1972		1973		1974	
	Area	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*
Banana	19	15	19	15	19	13	13	11	12	8
Citrus (oranges) ..	49	127	49	127	47	122	48	125	57	159
Pineapple ..	23	25	23	25	23	25	22	28	26	34
Total	91	167	91	167	89	162	83	111	91	201

Source: Ministry of Agriculture.

* Data not available but assumed as 1970.

There has been little or no development in the production of several staple fruit crops with the exception of the recent developments in pineapple and citrus production. As a nation, Ghana still depends on the wild and natural growth of bananas, mangoes, pawpaw and avocado pears to meet the domestic demand for these fruits which is supplemented by imports of fruits in the fresh, dried preserved or prepared forms. Between 1970–1974, imports of various fruit items totalled ₵782,000.

1.4 Production of Industrial Raw Materials

The systematic cultivation of industrial crops in Ghana is a recent phenomenon and arose as the country embarked on the establishment of industries to produce substitutes for imports. The principal industrial crops are: Oil palm, rubber, cotton, pineapple, sugar cane, kenaf, citrus fruits, coconut, groundnut, soya bean, and tomatoes. Usually, industrial crops are cultivated on large-scale basis, some of them under plantations systems and, except in a few small-scale holdings, in pure stands. Actual production of the various industrial crops between 1970–1974 is shown in the Table below:—

TABLE 7

AREA AND PRODUCTION OF INDUSTRIAL CROPS, 1970–74

AREA: '000 ACRES — PRODUCTION: '000 LONG TONS

	1970		1971*		1972		1973		1974	
Crop	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*	*Area*	*Production*
Cotton ..	2.0	0.4	2.0	0.4	9.0	1.8	12.0	9.0	10	7.3
Kenaf ..	0.04	0.01	0.07	0.02	1.34	0.25	2.5	0.3	—	—
Oil Palm ..	274	683	274	683	280	700	308	770	345	863
Coconut ..	91	297	91	297	108	290	108	300	92	304
Groundnut	242	100	242	100	226	89	259	120	274	146
Pineapples	23	25	23	23	23	23	22	28	26	34
Tomatoes ..	46	91	46	91	63	109	51	97	56	103
Rubber ..	25	9	25	9	26	9.4	28	10.1	27	9.7
Sugar cane	10	250	10	250	13	325	13	325	19	209
Citrus ..	49	103	45	97	57	112	58	109	83	247
Tobacco ..	—	—	—	—	6	1.7	11	1.7	10	3.3
Lime ..	3	—	3	—	3	—	3	—	5	—
Total ..	765	1,544	765.5	1,550.5	809.3	1,654.5	864.5	1,757	947	1,992

Source: Ministry of Agriclture.

* Data not available but assumed as 1970.

As a relatively new field with growing importance, the investment in these types of crops has been growing especially for crops such as oil palm, rubber and cotton. According to estimates, between 1965 and 1974, public and private investment in oil palm cultivation was about ₵18 million, mainly for the acquisition of machinery and implements and in meeting the costs of wages and salaries. Of this total, the public sector invested ₵13.5 million, undertaken through the State Farms Corporation (₵7.8 million) and the Food Production Corporation (₵5.8 million).

During the mid-1960s, the State Farms Corporation established 5,062 acres (2,024 h.a.) of rubber which now satisfies the requirements of Firestone (Ghana) Limited in the production of tyres for motor vehicles. Investment in rubber production during the period 1964 to 1974 was about ₵17.2 million. Of this amount, the public sector was responsible for ₵16.1 million. Just as in the case of oil palm development, a substantial proportion of the investment in rubber-tree cultivation was in the acquisition of machinery and implements for land development and the payment of wages and salaries. For both the public and private sectors, about 28,300 acres (11,320 h.a.) were planted under rubber. The quantity of rubber latex produced from domestic sources in 1974 was able to meet only 65 per cent of the demand from local industries.

The production of cotton on a commercial scale started in 1969. This has recently been increasing rather rapidly because of the attractive guarantee prices offered for seed-cotton. The current price for seed cotton has been set at ₵0.77 per kilogram. At the end of 1974, about 10,000 acres (4,000 h.a.) were planted under cotton and the total output of cotton met only 8 per cent of the demand by the domestic textile factories. The Cotton Development Board has the responsibility for all aspects of the local production, i.e. purchasing of seed cotton, ginning and marketing the product. It has no plantations of its own but assists farmers with services for land preparation, seeds, fertilizers, pesticides and extension advice. The Table below shows the factory capacity satisfied through local production of industrial crops between 1970–1974.

TABLE 8

FACTORY CAPACITY SATISFIED THROUGH LOCAL PRODUCTION, 1970–1974

(AS PERCENTAGE OF EXISTING FACTORY CAPACITY)

Crop	1970	1971	1972	1973	1974
Cotton	—	—	2.1	6.3	8.2
Kenaf	—	—	0.02	0.6	0.9
Oil Palm	20	35	37	42	42.6
Coconut	11	16	26	24	36
Soya beans	—	—	—	—	—
Pineapples	31	36	43	43	43
Tomatoes	8	12	12	25	29
Rubber	—	—	35	65	65
Sugar cane	20	25	30	38	43
Citrus	n.a.	n.a.	n.a.	n.a.	n.a.
Lime	100	100	100	100	100

The demand for industrial raw materials has been far in excess of the supply from domestic production. The reasons for the great disparity include the ready access by businessmen to licences and until recently facilities for the importation of these raw materials and the corresponding lack of any incentives for these enterprises to assist in the stimulation of the domestic production of these raw materials.

1.5 Production of Non-traditional Export Crops

Traditionally, the principal sources of foreign exchange earnings from the agricultural sector have been cocoa and forest products. Crops like banana, kolanuts, sheanuts, coffee, palm kernels, copra and lime have played only minor roles as sources of foreign exchange earnings. The table below shows the contribution of these crops to foreign exchange earnings of the country between 1970–74.

TABLE 9

EXPORT OF NON-TRADITIONAL CROPS, 1970–74

₵'000

Crop	1970	1971	1972	1973	1974
Yam	804	623	977	675	483
Sheanut	87	576	669	113	59
Banana	4	0.009	0.7	0.7	9
Lime Juice	792	893	885	1,159	1,149
Pineapples	7	8	47	36	76
Coffee	3,430	282	1,556	2,148	1,696
Cotton Seed	6	—	103	683	23
Tobacco Leaf	0.1	54	15	68	300
Kolanut	213	0.1	579	1,563	1,056
Plantain	27	3	2	—	—
Rice	—	—	—	—	166
Ginger	—	—	—	—	74

Source: C.B.S. External Trade Statistics, 1970–74

The above table is a reflection of some of the attempts that have been made during the past years to identify new sources of foreign exchange earnings from other agricultural crops. It is obvious from the table that not sufficient promotional effort has gone into producing those crops in which Ghana naturally has comparative advantage on the export market. The result has been that no single new crop other than cocoa has as yet emerged as an important export crop.

1.6 Major Problems of Crop Development Sector

From the analysis of the current production levels of major food crops such as cereals, starchy staples, pulses, nuts, oilseeds, vegetables, fruits, industrial crops and new non-traditional export crops, it is clear

that growth and development of the agricultural sector of the economy have been relatively slow. The factors which have contributed towards the relatively slow pace of growth and development of the crop sector are many. However, the most important of these relate to problems associated with:—

(i) Land tenure;
(ii) Land preparation and cultivation;
(iii) Infrastructural facilities such as access roads, storage facilities, distribution and marketing;
(iv) Availability of basic agricultural inputs and extension services;
(v) Availability of watering facilities for all year farming;
(vi) Agricultural Manpower;
(vii) Agricultural Credit;
(viii) Agricultural research and dissemination of its results.

1.7 Land Tenure

In most parts of the southern half of Ghana, the acquisition of land especially for large-scale commercial farming poses serious problems. While it is traditionally easy for the members of any small community in the southern part of Ghana to have title to the use of land in the areas they belong, outsiders with ambitions for large-scale farming operations have had difficulty in acquiring title to large tracks of land. This difficulty arises where tribal land is sold or leased to outsiders without the approval of the Chief of the area. A more crucial issue with regard to the problem of land tenure is the prevelance of several different forms of land tenure systems that make it impossible for the application of any set of prescriptions for improving the present small-scale farming systems in the country.

These problems of land tenure are not usually encountered in the northern half of the country although some aspects of them are beginning to be evident. However, under the Lands Administrative Act of 1962 (Act 123) and the State Lands Act (1962), the Government is empowered to acquire any land for development. It is therefore possible under existing laws, to acquire land and lease to individuals and institutions interested in undertaking large-scale farming.

1.8 Land Preparation and Cultivation

There has been a long-standing practice of bush burning during the harmattan or dry season in the savannah areas of the country for the purposes of clearing the land for farming, hunting of game, and exposing or stimulating fresh growth of grass for domesticated animals to graze. In recent years however, extensive acres of rice farms have been destroyed by bush fire. There will therefore be need in the future to enforce the laws against the wild burning of bush especially in the savannah areas.

For a long time to come, the use of simple farming implements such as hoes and cutlases will continue to dominate agricultural operations in the country. For large-scale farming, however, the simple farm tool will have to give way to modern agricultural machinery. However, the high costs involved in importing the modern farm equipment and spare parts will impose serious constraints on the total number of these machinery that can be imported at any one time into the country. In the savanna areas of the country, especially in the north, bullock-drawn ploughs have been in use to supplement the hoe and cutlass. Since these bullock ploughs are manufactured locally every encouragement will be given to the production of ploughs and the training of bullocks in order to increase the extensive use of the bullock ploughs in the savanna areas of the country. In addition, small and cheap motorized cultivators for weeding purposes will be imported.

1.9 Infrastructural Facilities

Although programmes for the development of access roads to reach producing areas have been in operation for some time, there are still many active and potential production areas which are cut off either because no feeder roads have yet reached these communities or because of poor maintenance of existing feeder roads. Measures will be taken during the plan period to maintain all feeder roads and construct new ones to the major crop production zones identified for intensive crop development programmes.

1.10 Agricultural Inputs and Extension Services

Inputs such as improved, high-yielding seeds and seedlings, breeding stock for animals and poultry, animal and poultry feed, fertilizers, pesticides and especially biological control media, fencing material, veterinary drugs and supplies have chronically not only been in short supply, but have also not been available on time in locations requesting them. With the increased enthusiasm of the population for involvement in the agricultural revolution, the supply of these crucial items must keep pace with the demand for them.

In addition to the non-availability of inputs in the right quantities and at the right times, the agricultural extension services are weak. Where extension officers are available, their effectiveness is greatly reduced in the coverage of farmers and in the content of the service they render, because of inadequate transportation, living accommodation and inadequate technical backstopping. Effective measures will be evolved to make extension service more efficient.

1.11 The availability of Water for Agricultural Purposes

Ghana has two distinct seasons; the rainy season and the dry or harmattan season. Most of the farming in the country is undertaken during the rainy season. Rains, however, are very difficult to predict precisely not only in terms of the timing of their onset but also their duration and the quantity of water they supply. These difficulties have meant

that agricultural production has been severely constrained by the pattern of rainfall. The long dry spell between November and May imposes a considerable amount of unemployment and under-employment. The provision of more irrigation dams would, therefore, reduce the nation's total dependence on rains and would guarantee continuous and increasing employment opportunities for farmers. There is also the possibility of providing small hand pumps to farmers living on the banks of the Volta Lake and other rivers in the country for the purpose of pumping water from the lake and rivers during the dry season to their adjacent farms.

1.12 Manpower

For a long time to come, the small-scale farmer will dominate agricultural production in this country. Inspite of this fact, it is now recognised that the farming population has gradually been ageing and reducing in relative size as the youth, especially those with some sort of formal education, leave the rural areas to seek employment in the urban centres. This phenomenon is a direct result of the educational curricula, the urban-rural income differential and the relative drudgery of rural life.

The revived interest in agriculture during the past few years, has, however, created a new kind of resident in the farming communities. This new farmer, with relatively higher levels of formal education, was until recently essentially an urban dweller. This breed of farmer is employing predominantly modern agricultural machinery and improved farm inputs made possible by the financial institutions. It is hoped that the presence in the rural areas of this new educated farmer will make farming attractive to the young school-leaver and possibly stop the flow of the young and active population from the rural farming communities to the urban areas thereby helping to solve the problem of ageing and depleting farming population of the country.

In addition to the emergence of the new class of educated farmers, Government has embarked on a programme of organizing farmers into a number of groups such as the Crop Associations, Nnoboa Groups, Co-operatives farmers, the Group of Twenty-five and the Nucleus-Outgrower farm groups. With the organization of these groups, it should be possible to channel all the modern agricultural inputs and ideas to the farmer.

1.13 Agricultural Credit

Traditionally most farmers and fishermen depend for credit on the village money-lender whose interest charges can range between 50 and 100 per cent. To secure such loans from the money-lenders, most farmers had to mortgate their total produce at very low prices. The net result of these practices is to keep the farmer at very low levels of income. Recent farm groupings, such as the co-operatives, group farmers and neucleus-outgrowers programmes have helped in establishing clusters of farmers who benefit from existing modern financial institutions. More such innova-

tions will be encouraged to extend the services of modern financial institutions to the small-scale farmer in order to balance the distribution of credit the bulk of which at present is enjoyed by the medium and large-scale, educated and articulate farmers who are able to meet most of the conditions imposed by the banking institutions.

1.14 Storage of Agricultural Produce

Traditional forms of storage include the use of simple barns for grains, delayed harvest or underground pits for yams as well as various forms of dehydration and other rudimentary ways of processing and preserving foods to stagger the period during which the crops could be available for consumption. These methods are still in use but are increasingly proving inefficient for solving the problems of food availability throughout the year at reasonably stable prices throughout the country.

In recent years, modern storage facilities have been constructed in the urban centres. These include cold storage facilities at each of the regional capitals and grain silos in the production areas. However, there are as yet no pre-storage facilities for the drying, grading and other forms of handling of grain. In addition, there are no proper cold storage facilities for fresh vegetables and fruits in the rural areas. During the plan period the rehabilitation programme of the regional and district cold stores will be completed. Furthermore, the investigation of traditional forms of storage will continue to discover how these can be improved upon for the storage and preservation of food in the rural areas. Meanwhile, a small, low-cost, grain silo suitable for use by small-scale farmers in the rural areas and designed by the Garu Agricultural Station in the Upper Region is increasingly being adopted in the Upper and Northern Regions.

1.15 Distribution and Marketing of Agricultural Produce

The problems of distribution and marketing include inadequate roads to connect production areas with collecting points on the main trunk roads, inadequate transportation facilities in the form of trucks and tractors for hauling the produce, inadequate wholesale and retailing channels for the rapid distribution of produce; and the existence of collusive practices by the powerful intermediaries whose profits get built into the prices the consumer eventually pays. The feeder roads improvement programme, the construction of storage facilities and the provision of transport facilities will help to improve the situation.

The Food Distribution Corporation will increase its fleet of tractors to assist in the haulage of foodstuffs from the inaccessible areas to collection points on the main trunk roads. Furthermore, market centres to be managed by the Food Distribution Corporation for open wholesale transactions will be constructed at regional capitals. In several places, haulage vehicles will need to be complemented by man or animal drawn vehicles. In this regard, investigations will be undertaken into developing a suitable two-wheel vehicle which can be effectively used to supplement the efforts of the farmer in carting his produce to collection points or markets. These vehicles will also be available for the carting of agricultural inputs to and on the farm.

1.16 Agricultural Statistics

The collection, compilation and collation of agricultural statistics is weak. In this regard, the statistics unit of the Ministry of Agriculture will be strengthened to enable it undertake its responsibilities in planning and monitoring the nation's agricultural development. The Central Bureau of Statistics will maintain and publish adequate statistics on the performance of the agricultural sector of the economy.

1.17 Research and the Dissemination of its results

In general, research in agricultural development has been hardly relevant to the needs of the farmer and consumer. Where some spectacular and relevant results have been obtained from research institutions, these have hardly been properly disseminated or translated into the types of project which would make significant impact on national economic growth and development. There is also no communication between the farmer and the research institutions regarding the exact nature of the problems of the farmer. This is inspite of the fact that the existing research institutes of the Council for Scientific and Industrial Research, the University of Ghana, the University of Science and Technology, the Volta Research and Development Project and the Ministry of Agriculture undertake research programmes which should benefit the farmer.

There are also relatively minor but potentially crucial results of research undertaken at various levels of pre-university educational institutions and also by individuals on their own farms and back-yard gardens which never go beyond the immediate confines of the institutions or individuals concerned with these projects. During the plan period efforts will be made to co-ordinate the research findings of all agencies and individuals so that the farmer can directly benefit from them.

1.18 GENERAL POLICY OBJECTIVES AND MEASURES FOR CROP DEVELOPMENT

The four major policy objectives that will guide crop development during the plan period are:—

(i) production of enough food to feed the population;
(ii) production of enough raw materials for existing and contemplated agro-based industries;
(iii) promotion and production of non-traditional export crops for foreign exchange earnings;
(iv) increase of employment opportunities through agriculture.

In order to achieve these broad policy objectives, the Government's "Operation Feed Yourself" programme will be pursued vigorously throughout the entire period of the plan. The aim of Government will be to involve in the programme all sections of the population including

farmers, industrial establishments, financial institutions, the co-operatives educational institutions, public boards, corporations, joint-ventures with foreign companies and governments, etc. In all these measures, the small-scale farmer will be given all the attention and encouragement to enable him to increase his production and thereby his level of income.

In addition, Government will, during the plan period, initiate the following measures:—

(*a*) Establish at the regional level strong and effective Departments of Agriculture to work with farmers in achieving the objectives of the plan. In the districts, agricultural resource centres will be established to co-ordinate and promote agricultural programmes with the support of crops of specialists in plant breeding, pathology, irrigation agronomy, entomology, soil conservation and agricultural economics. The Department of Agriculture will work on farmers' farms, on resettlements farms and organize farmers into various groups for production and marketing. The officers will be organized into crop Units which will be concerned with the promotion of specific crops. Such units will deal with the large-scale development of crops as well as the establishment of demonstration farms. They will provide scientific back-stopping to extension officers;

(*b*) Establish a number of *Agricultural Resource Centres* in the intensive agricultural zones of each region where will be assembled all the inputs required for increased agricultural production in terms of improved varieties of seed and breeding stock, credit, storage and marketing facilities, extension services, etc.

(*c*) *Establish Crop Associations* for the major food, industrial and export crops at the village, district, regional and national levels. Each crop association will consist of farmers growing specific crops who will all be registered and the acreage of their farms recorded. The representatives of the various crop associations will constitute the main body with which the Ministry will deal in terms of input requirements, distribution of produce and farmer opinion for agricultural policy.

(*d*) *Establish Young Farmers' Groups* through the Group of Twenty-five Scheme on existing settlement farms or on farms near the home villages of the young school leavers. Government will clear and prepare the land and provide inputs for the young farmers who will provide manual labour on a minimum of 5 (five) acre (2 h.a.) plots to be extended to 25 acre (12½ h.a.) plots depending on the crop programme.

(*e*) Encourage the formation of *Nnoboa groups* or farmer organization on the basis of mutual help. These Nnoboa groups will be encouraged to have contiguous farms to facilitate easy access by extension officers and the distribution of inputs They will eventually form the basis of credit;

(*f*) Extend the *Nucleus farm-outgrower* concept already in existence for certain cash crops to basic staple food crops through the establishment of nucleus farms in the form of block farms, the 25 Group Scheme, etc. and encourage the development of Nnoboa Group farms as outgrowers.

(*g*) Establish *large-scale* commercial farms with foreign firms and governments under joint-venture agreements. These projects with a colony of commercial outgrowers, will be supplied with services and inputs by the foreign joint-ventures. The produce from these outgrowers will be purchased by the joint-venture companies in order to guarantee ready markets for the outgrowers.

(*h*) Rehabilitate and maintain all settlement farms especially the existing Volta River Authority resettlement farm lands and all other lands acquired by Government under the resettlement programme for farming purposes. Measures will be taken to ensure that the new farmers who will be involved in the programme will take full advantage of the facilities provided.

(*i*) Allocate a substantial proportion of the Government development budget to agriculture and its supporting services. This will be for real investments in land clearing, development of nurseries, supply of seeds and seedlings to farmers, construction of district demonstration farms, establishment of more settlement farms, state farms, community farms and the provision of more irrigation facilities. Government's agricultural budget will no longer cater predominantly for the payment of wages and salaries to office workers.

(*j*) Provide shelling, milling and storage facilities in the main producing areas.

(*k*) Direct manufacturing enterprises using imported raw materials which can be produced locally, e.g. cotton, rubber, oil palm, coconut, kenaf, etc. into active production of these raw materials. Those who make efforts in this direction will be rewarded with more import licences for spare parts and other equipments.

(*l*) Guarantee minimum prices and market prices for all the selected food crops and agricultural raw materials listed in the Operation Feed Yourself Programme. These prices will be determined by Government in consultation with Farmers and crop associations.

(*m*) Establish a Fund for the development of tree crops.

(*n*) Encourage the commercial banks to provide credit to the small farmer through crop associations and nnoboa groups in the form of agricultural inputs such as tractor services, labour charges, improved planting materials, etc.

(*o*) Development of a reliable feeder road network from the production centres to the village markets and terminal markets.

(*p*) Provide transport in the form of tractor for the transportation of foodstuffs from farm gate to the roads.

(*q*) Provide irrigation schemes across the country and supply small pumps to groups of farmers living near the Volta Lake and other rivers in order to make farming an all-year business.

(*r*) Assign specific production targets to the state production agencies, i.e. the State Farms Corporation, The Ghana Community Farms, the Grains Development Board, the Bast Fibres Development Board and the Cotton Development Board especially for the production of industrial raw materials and export crops.

(*s*) Ensure that results of research from the various research institutes of the Council for Scientific and Industrial Research and the Universities and the Research Stations of the Ministry of Agriculture are widely disseminated and that agricultural research correlated with their actual application to improve agricultural output. In all cases research results will be made to dovetail into production programmes.

1.19 Agricultural Production Targets

The production targets for 1980 are based on the best available data on current production of specific crops in the agricultural sector. It will of course be necessary to review the targets for each crop year by year as more reliable data become available on items such as total acreage and yield per acre. This trend is already true for some crops like rice and maize. The Table below shows the detail targets for each crop between 1974 and 1980.

TABLE 10

PRODUCTION TARGETS FOR MAJOR CROPS—1980

(AREA: '000 ACRES PRODUCTION: '000 LONG TONS)

Crop	1974		1980		INCREASE	
	Area	*Production*	*Area*	*Production*	*Area*	*Production*
Cereals						
Maize	1,050	450	1,239	630	189	180
Rice	165	59	233	106	68	47
Millet	549	120	600	139	51	19
Guinea Corn	549	175	629	210	80	35
Total Cereals	2,313	804	2,701	1,085	388	281
Starchy Staples						
Cocoyam	701	1,815	837	2,300	136	485
Cassava	960	3,288	1,194	4,289	234	1,001
Yam	328	1,215	376	1,426	48	211
Plantain	847	1,956	894	3,276	47	1,320
Total Starchy Staples	2,836	8,274	3,301	11,291	465	3,017
Oilseeds						
Groundnuts	274	146	393	184	119	38
Coconut	92	304	110	312	18	8
Oil Palm	361	870	431	1,811	70	941
Total Oilseeds	711	1,313	934	2,307	207	987
Vegetables						
Tomatoes	56	100	61	127	5	27
Egg Plant	23	59	27	86	4	27
Pepper	131	76	170	106	39	30
Total Vegetables	210	235	258	319	48	84
Fruits						
Banana	118	255	147	331	29	77
Citrus	59	160	71	204	12	44
Pineapples	31	46	37	68	6	22
Total Fruits	208	460	255	603	47	143
Raw Materials						
Sugarcane	19	275	33	549	14	274
Coffee	38	5	38	6	0	1
Tobacco	10	3	11	4	1	1
Rubber	27	10	53	19	26	9
Cotton	110	3	331	18	25	15
Kenaf	3	0.4	7	2	4	1.6

1.20 Production Targets for Staple Food Crops

(i) *Cereals.*—(rice, maize, millet and guinea corn). Total cereal production is expected to increase by 281,000 tons by the end of the plan period. From a total production of 804,000 tons in 1974 production is planned to reach 1,085,000 tons in 1980. Much of this increase is expected to come from expansion in total acreage under cereals (i.e. from 2,313,000 acres 1974 to 2,701,000 acres 1980) rather than any significant increase in yields except in the case of rice and maize where yields are expected to rise from 807 lb. per acre in 1974 to 1,016 lb. per acre in 1980 and from 959 lb. per acre to 1,138 lb. per acre for rice and maize respectively.

(ii) *Starchy Staples.*—(yam, cocoyam, cassava, plantain). Production of starchy staples is planned to increase from 2,836,000 tons in 1974 to 3,301,000 tons in 1980. This increase will require an additional 465,000 acres (186 000 h.a.) to be added to the total acreage currently under starchy staple crops. As in the case of cereals, the increase in output of starchy staple crops will depend entirely on expansion in acreage rather than increase in yields per acre. The acreage under cassava will expand from 960,000 acres (384 000 h.a.) in 1974 to 1,194,000 acres (477 600 h.a.) by the end of the plan period while that under cocoyam from 701,000 acres (280 400 h.a.) to 837,000 acres (334 800 h.a.). Some increases in yield are planned for plantain and yam production. In the case of plantain it is envisaged that more improved and scientific methods of farming will be adopted and yield per acre will rise from 5,174 lb. to 8,211 lb.

(iii) *Oilseeds.*—(groundnuts, coconut, oil palm, soya beans). Under oilseeds and nuts, there will be almost a doubling of production during the pian period. Total production will rise from 1,313,000 tons in 1974 to 2,307,000 tons by 1980. This increase will be accounted for by a substantial expansion in acreage under oil palm and increase in yield per acre. But since oil palm has a long maturity period, the real impact of this crop will only be felt during the years immediately following 1980. In order to make up for the waiting period, some substantial increases have been planned for groundnuts where there will be increase both in acreage and yield per acre. An additional 120,000 acres (48 000 h.a.) will be put under groundnut cultivation by 1980 and yield per acre is expected to rise from 923 lb. to 1 046 lb. Beginnings are to be made to the cultivation of soya-beans and other oil crops. The expansion planned for cotton cultivation should also result in seed oil increases.

(iv) *Vegetables.*—(tomatoes, garden eggs, pepper). By 1980, Ghana should be producing a total of 319,000 tons of vegetables representing an increase of 84,000 tons over the 1974 production. This increase in production will require an additional 48,000 acres (19 200 h.a.) of cultivated land. Acreage under pepper is planned to increase from 131,000 acres (52 400 h.a.) to 170,000 acre (68 000 h.a.) to meet the requirements for local consumption and leave some surplus for export.

(v) *Fruits.*—(banana, citrus, pineapples, mango, avocado). Production of fruits is planned to increase by about a third over current production. Considerable improvement in yields is planned for the production

of pineapples. Yield per acre will increase from 3,301 lb. to 4,081 lb. by the end of the plan period. By this means additional 143,000 tons of pineapples will be produced for direct human consumption, requirements of canneries and the export market.

1.21 Production Targets for Industrial Crops

(i) *Sugarcane.*—Quite a substantial increase in both acreage and yield is planned for sugarcane production by 1980. Acreage will expand from 19,000 acres (7 600 h.a.) to 33,000 acres (13 200 h.a.) producing an additional 274,000 tons of cane by 1980. This should enable the existing two sugar factories to operate at 73 per cent of their installed capacities by 1980 as against the present level of operation of 43 per cent.

(ii) *Cotton.*—Like sugarcane, a substantial expansion in total acreage under cotton production is envisaged. Acreage is to increase from 11,000 acres (4 400 h.a.) in 1974 to 300,000 acres (120 000 h.a.) in 1980. In all, there will be a total production of 96,000 tons of seed cotton by the end of the plan period as compared with 3,000 tons in 1974 which satisfied only 8 per cent of plant capacity. The accelerated programme for cotton production should enable us to satisfy local demand for lint cotton by 1979.

(iii) *Rubber.*—In the case of rubber, production targets for 1980 are based entirely on expansion in acreage which is expected to double during the plan period. There will be an additional 26,000 acres (10 400 h.a.) under rubber cultivation by 1980. Total production of rubber will then reach 19,000 tons which should enable the existing factory to operate at full capacity.

1.22 Production Targets for Export Crops

In determining the demand for the non-traditional export crops, little reliance was placed on the base year volume of exports of the crops concerned. Instead, greater attention has been given to two principal factors; namely, whether or not there is evidence of a growing demand for such new crops in foreign markets and secondly, whether or not the crop can easily be grown in Ghana and marketed at competitive world prices. On the basis of these factors, the Export Promotion Council of Ghana selected a number of new crops for development for the export market. During 1975–1980, the following crops are to be developed for export in addition to the domestic demand for these: cassava, ginger, pineapples, chillis, yams, cocoyams, and kolanuts. For the long maturing crops, however, the government has earmarked the following crops for development: citrus, avocado pears, sheabutter, cashew, mango, coconut. These should be ready for export after 1980. Reasonable allowances have been made in the production targets to take account of the domestic requirements of the crops selected for export. A major feature in the production targets for the new export crops is that cassava takes a prominent position among all the crops. A total of 460,000 tons out of the 4,289,000 tons to be produced by 1980 is to be processed into cassava pellets by the Tema Food Complex for export as compound feed meal.

1.23 Regional Production Targets

Tables 11 to 14 show the regional breakdown of the production targets by the principal crops.

Table 15 gives production targets for 1980 by crops.

TABLE 11

REGIONAL GENERAL CROPS PRODUCTION TARGETS, 1980

(LONG TONS)

Region	*Maize*	*Rice*	*Millet*	*Guinea Corn*
WESTERN REGION	54,180	11,766	—	—
CENTRAL REGION	75,600	5,830	—	—
EASTERN AND GREATER ACCRA REGIONS ..	45,990	8,798	—	—
VOLTA REGION	77,490	14,734	134	4,200
ASHANTI REGIONS ..	147,420	8,798	417	420
BRONG-AHAFO REGION ..	135,450	8,798	139	1,260
NORTHERN REGION ..	49,140	35,298	31,136	53,550
UPPER REGION	44,730	11,766	107,169	150,570
Total	630,000	106,000	139,000	210,000

TABLE 12

REGIONAL STARCHY STAPLES PRODUCTION TARGETS, 1980

(LONG TONS)

Region	*Cassava*	*Cocoyam*	*Yam*	*Plantain*
WESTERN REGION	548,992	446,200	22,816	645,372
CENTRAL REGION	531,836	223,100	25,668	278,460
EASTERN AND GREATER ACCRA REGIONS ..	540,414	266,800	71,300	357,084
VOLTA REGION	797,754	57,500	449,190	65,520
ASHANTI REGION	806,332	660,100	141,174	1,385,748
BRONG-AHAFO REGION ..	754,864	646,300	541,880	537,264
NORTHERN REGION ..	216,629	—	296,608	—
UPPER REGION	47,179	—	128,340	—
Total	4,289,000	2,300,000	1,426,000	3,276,000

TABLE 13

REGIONAL OILSEEDS AND NUTS PRODUCTION TARGETS 1980

(LONG TONS)

Region	*Groundnuts*		
WESTERN REGION	730	—	—
CENTRAL REGION	1,300	—	—
EASTERN AND GREATER ACCRA REGIONS	1,800	—	—
VOLTA REGION	10,500	—	—
ASHANTI REGION	2,800	—	—
BRONG-AHAFO REGION	10,500	—	—
NORTHERN REGION	57,000	—	—
UPPER REGION	99,370	—	—
Total	184,000	—	—

TABLE 14

REGIONAL VEGETABLE PRODUCTION TARGETS, 1980

(LONG TONS)

Region	*Tomato*	*Egg Plant*	*Pepper*
WESTERN REGION	15,367	1,782	19,186
CENTRAL REGION	13,716	12,384	13,886
EASTERN AND GREATER ACCRA REGIONS	31,496	12,384	6,148
VOLTA REGION	16,002	3,182	8,162
ASHANTI REGION	20,828	30,702	14,734
BRONG-AHAFO REGION	27,051	15,566	25,546
NORTHERN REGION	2,159	—	28,408
UPPER REGION	—	—	530
Total	127,000	86,000	106,000

TABLE 15

AGRICULTURAL PRODUCTION TARGETS BY CROPS, 1980

AREA (A) '000 ACRES YIELD (Y) LBS. PER ACRE PRODUCTION (P) '000 LONG TONS

Crop	1974			1975			1976			1977			1978			1979			1980		
	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.
Cereals																					
Maize ..	1,050	959	450	1,079	987	476	1,110	1,015	503	1,145	1,045	532	1,173	1,075	563	1,205	1,106	595	1,239	1,138	630
Rice ..	165	807	59	175	840	65	185	872	72	195	906	79	208	941	87	220	976	96	233	1,015	160
Millet ..	549	491	120	557	495	123	566	500	126	574	504	129	583	509	132	591	513	135	600	518	139
Guinea Corn	549	714	175	562	719	180	575	725	186	588	731	192	601	737	198	615	743	204	629	749	210
Starchy Stapples																					
Cocoyam	701	5,799	1,815	722	5,857	1,888	744	5,915	1,964	766	5,974	2,043	789	6,034	2,125	813	6,094	2,211	837	6,155	2,300
Cassava ..	960	7,672	3,288	996	7,733	3,437	1,032	7,795	3,592	1,071	7,858	3,755	1,110	7,921	3,925	1,151	7,984	4,103	1,194	8,048	4,289
Yam ..	328	8,296	1,215	336	8,330	1,248	343	8,363	1,282	351	8,396	1,316	359	8,430	1,352	367	8,464	1,389	376	8,498	1,426
Plantain ..	847	5,174	1,956	855	5,588	2,132	862	6,035	2,323	870	6,518	2,532	878	7,039	2,759	886	7,603	3,006	894	8,211	3,276
Oilseeds and Nuts																					
Groundnut	274	923	113	291	943	122	309	963	133	328	983	144	349	1,003	356	370	1,024	169	393	1,046	184
Coconut ..	92	6,245	256	94	6,263	265	98	6,283	274	101	6,301	283	104	6,320	292	107	6,339	302	110	6,358	312
Oil Palm ..	361	5,399	870	372	5,923	983	383	6,498	1,111	394	7,129	1,255	406	7,821	1,419	418	8,581	1,603	431	9,414	1,812

TABLE 16

AGRICULTURAL PRODUCTION TARGETS BY CROPS 1980

(AREA (A) '000 ACRES YIELDS (Y) LBS. PER ACRE PRODUCTION (P) LONG TONS

VEGETABLES

Crop	1974			1975			1976			1977			1978			1979			1980		
	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.	A.	Y.	P.
Vegetables																					
Tomatoes	56	4,014	100	57	4,119	104	56	4,226	108	58	4,336	113	56	4,449	117	59	4,564	121	61	4,683	127
Egg Plant	23	5,709	59	23	5,915	63	24	6,128	67	25	6,349	71	26	6,577	75	27	6,814	81	27	7,059	86
Pepper ..	131	1,302	76	137	1,318	80	143	1,334	85	149	1,350	90	156	1,366	95	162	1,383	100	170	1,399	106
Fruits																					
Banana	118	4,817	254	122	4,856	265	127	4,850	277	132	4,934	290	136	4,973	303	142	5,013	317	147	5,053	331
Citrus ..	59	6,089	160	61	6,143	167	63	6,199	174	65	6,254	181	67	6,311	189	69	6,368	196	71	6,425	204
Pineapple	31	3,301	46	32	3,420	49	33	3,542	52	34	3,670	56	35	3,802	60	36	3,939	64	37	4,081	68
Industrial Raw Materials																					
Sugar Cane	19	32,383	275	21	33,225	308	23	34,089	346	24	34,975	27		35,885	436	30	36,818	489	33	37,775	549
Coffee ..	38	277	5	38	287	5	38	297	5	38	308	388	38	319	5	38	332	6	38	344	6
Tobacco ..	10	651	3	10	678	3	10	706	3	10	735	3	10	765	4	11	796	4	11	829	4
Rubber ..	27	802	10	30	802	11	34	802	12	38	802	14	42	802	15	48	802	17	53	802	19
Cotton ..	11	570	3	32	638	9	100	715	32	134	801	48	182	897	73	245	1,005	110	331	1,125	166
Kenaf ..		2713	1	3	719	1	3	724	1	4	729	1	5	734	2	6	739	2	7	744	2

TABLE 17

ANNUAL GROWTH RATES OF AGRICULTURAL PRODUCTION BY CROPS, 1974–1980

PERCENTAGES

Crop	*Area*	*Yield*	*Production*
CEREALS			
Maize	2.8	2.9	6.2
Rice	5.9	3.9	9.9
Millet	1.5	0.9	2.4
Guinea Corn	2.3	0.8	3.1
STARCHY STAPLES			
Cocoyam	1.3	1.0	2.3
Cassava	3.7	0.8	4.6
Yam	2.3	0.4	2.7
Plantain	0.9	1.8	2.7
OILSEEDS AND NUTS			
Groundnuts	6.2	2.1	8.5
Coconut	3.0	0.7	3.8
Oil Palm	3.0	9.7	13.7
VEGETABLES			
Egg Plant	2.9	3.6	6.6
Tomato	1.3	2.6	4.0
Pepper	4.4	0.4	4.7
FRUITS			
Banana	3.7	0.8	4.5
Citrus	3.2	0.9	4.1
Pineapples	3.3	3.6	6.9
Sugarcane	9.4	2.6	12.1
Coffee	0.0	3.7	3.9
Tobacco	1.3	4.1	5.5
Rubber	12.0	0.0	11.8
Cotton	22.0	1.2	23.0
Kenaf	17.4	0.7	18.1
Ginger	15.7	0.7	16.3

1.24 Agricultural Investments Programme—1980

During the plan period, it is proposed to invest a total of ₵270 million for direct crop production throughout the country. The principal agencies of Government to which allocation of funds will be made for crop production are:—

(i) Ghana Community Farms (formerly Food Production Corporation)
(ii) Ghana State Farms Corporation
(iii) Grains Development Board
(iv) Cotton Development Board
(v) Bast Fibre Board
(vi) Rice Mills Unit
(vii) Kwae Oil Palm Project
(viii) IBRD/Ghana Upper Region Agricultural Project
(ix) Settlement and Resettlement Projects
(x) Special Projects—Asutsuare, Komenda, Vea, Bolgatanga, Afife, Tono, Akumadan, Weija, Ayensu basin, etc.
(xi) Joint-venture Projects.

In addition to the direct investments for crops production, the Ministry of Agriculture will offer to the various farming organizations—Group of Twenty-five, Nnoboa groups, Co-operative Societies, etc.—improved seeds and seedlings, fertilizers, mechanization services, extension advice, etc.

1.25 Cereals Development

Maize Programme

An additional 200,000 acres (80 000 h.a.) are to be put under cultivation by 1980 to produce maize for both human and livestock consumption. A greater proportion of the out-put is to come from the small farmer sector organised into crop associations, nnoboa groups and co-operatives under the direction and advice of the Department of Agriculture. In addition the proposed joint-venture projects with foreign firms and governments will cultivate about 100,000 acres (40 000 h.a.) of maize.

Apart from the activities of the Ministry of Agriculture with regard to the Maize Growers Associations, the Grains Development Board has already embarked on a programme of introducing improved technology such as improved seed, fertilizer, insecticides and improved cultural practices to a number of farmers in the existing maize growing areas.

The major maize growing areas are:—

(i) Mampong-Ejura-Bekwai Districts
(ii) Swedru-Foso-Dunkwa Districts
(iii) Wenchi-Kintampo-Atebubu-Techiman-Nkoranza Districts
(iv) Asesewa-Frankadua Districts
(v) Sogakope-Ho-Denu-Peki-Hohoe-Districts
(vi) Damongo-Tamale-Bimbila Zone.
(vii) Tumu-Kundugu-Wa Districts.

The main objective of the programme will be to increase productivity in these areas by raising yields per acre from 900 lb. per acre to 1,100 lb. per acre by 1980.

Under the programme of the Grains Development Board, a number of demonstrations under the supervision of technical officers have been mounted on the farms of about 400 farmers in the major producing areas. The number of farmers is to increase to 1,860 by 1980. The programme imposes an obligation on the Technical Officer in-charge of each demonstration farm to get a number of farmers to adopt improved practices during each planting season. A total of ₵1.9 million will be allocated to the Grains Development Board for the maize programme during the plan period.

In addition to the above programme of the Grains Development Board, a number of new large-scale joint-venture projects involving foreign governments and enterprises will be initiated for grain production in the following areas:—

(i) Kete-Krachi-Nkwanta Zone
(ii) Bimbila Zone
(iii) North Afram Plains, i.e. Atebubu, Kwamang, Agogo, Mampong Districts
(iv) South Afram Plains, i.e. Mpraeso District
(v) Juapong-Adidome Zone, i.e. Tongu District
(vi) Danyi Basin
(vii) Nkoranza-Kintampo-Wenchi District
(viii) Tumu-Kundugu District.

Maize farmers not covered by the programmes of the Grains Development Board or the joint-venture projects will receive services from the Ministry of Agriculture. The Ministry will lay emphasis on production during the plan period through the appointment of production officers who will be in-charge of the crop associations and the nnoboa farms. They will be supported by field assistants who will help farmers in production and harvesting. The Ministry of Agriculture will also concern itself with the provision of inputs such as fertilizers, chemicals, improved seeds mechanized services and extension advice. To this end foundation seed farms will be established in all the maize growing districts of the country. Multiplication of improved seeds will be done by Registered Seed Growers who are to supply by 1980 about 25 per cent of the demand for improved seeds to farmers. Demonstrations will be done on the farmer's farms by extension officers. In the case of testing new research findings, trial plots will be established at the resource centres to test validity of these findings prior to introducing them to farmers.

In addition to these programmes, the Ghana Community Farms (Food Production Corporation) will put a total of 25,000 acres (10 000 h.a.) of land under maize cultivation by 1977. An allocation of ₵3.8 million is to be made initially to the Community Farms in order to put them on their own feet by the end of 1977. Thereafter no further allocations will be made to them. It is, however, expected that by 1980 they will cultivate a total of 48,000 acres (19 200 h.a.) on their Community Farms.

A total of 233,000 acres (93 200 h.a.) is to be put under rice cultivation by 1980. More than one-half of the total production is to come from the Northern and Upper Regions. As in the case of the programme for maize, the Ministry of Agriculture and the Grains and Legumes Development Board will intensify their efforts in assisting the small farmer by providing him with extension advice and other farm inputs, teaching him better soil management and mounting demonstration programmes for the benefit of the small farmer. The aim of these programmes is to realize increased yields from the present level of 800 lb. to 1,000 lb. per acre.

The programmes of the Grains Development Board during the plan period envisage the grouping of farmers to cultivate contiguous tracks of land in the northern and sourthern parts of the country. A farming group will consist of about 15-20 farmers cultivating about 150-200 acres of land. The group farm is to be serviced by one tractor and ten such groups will be supervised by a Technical Officer. A demonstration plot will be established in each major rice production zone. An allocation of ₵1.8 million will be made to the Grains Development Board for its rice programmes during the period.

In order to ensure that there are sufficient seeds for planting during the plan period, foundation seed farms will be established by the seed multiplication unit of the Department of Agriculture. The seeds will be distributed to farmers by registered seed growers. It is estimated that about 33 per cent of the demand for improved seeds will be met by the end of the plan period. The Department of Agriculture will also establish seed multiplication plots and demonstration trials on irrigation plots from where individual farmers can procure improved seeds for planting.

The Ghana Community Farms is expected to cultivate 5,500 acres (2 200 h.a.) of rice by 1977 and an amount of ₵743,000 will be allocated once and for all to the Community Farms for the purpose. Under the IBRD/Ghana Upper Region Agricultural Project, 48,000 acres (19 200 h.a.) of land is to be put under rice by 1980 at the cost of ₵10.7 million. A total of 50,000 acres (20 000 h.a.) of irrigated rice farms are to be cultivated at Asutsuare, Afife, Adidome, Aveyime, Tono, Dawhenya, Okyereko, Vea, Weija, and on the Accra plains. Total cost is estimated at ₵11.2 million. There are also proposals for rice cultivation in connection with Angaw Basin projects, the Avu-Keta project and Kpong Power project.

There has been persistent reduction in acreage under guinea corn and millet since rice cultivation was given a special push in the Northern and Upper Regions. During the plan period, the Grains Development Board will check the decrease in acreage planted especially to guinea corn. The strategy will be to increase yields per acre through the mounting of demonstration plots on farmers' farms in the Northern and Upper Regions where the bulk of the crop is produced. High yielding varieties

such as "Naga white" will be introduced with the use of fertilizer and optimum planting distances. The Board will also co-operate with the Ghanaian /German Agricultural Development Programme to propagate the use of closed bins for storing grain to prevent weevil infestation. A total of 200 demonstration plots will be established by 1980.

Normal extension services will be extended to farmers by the Ministry of Agriculture for the production of millet. High yielding varieties with acceptable eating qualities have yet to be released by the Crop Research Institute. Under the IBRD/Ghana Upper Region Agricultural Project, a total of 65,000 acres (26 000 h.a.) is to be cultivated for millet production. Estimated cost by 1980 is ₵6.2 million.

1.26 Starchy Staples Development

Cassava Programme

Additional 234,000 (93 600 h.a.) of land is to be put under cassava cultivation by the end of the plan period. The increase which will come mostly from the small-scale farmer, will depend more on expansion in acreage with gradual increases in yield per acre as new varieties are introduced to the farmer through the crop associations and nnoboa groups. In addition to the efforts of the small farmer, the Ghana Community Farms is expected to cultivate 4,000 acres (1 600 h.a.) by 1977. Total acreage will double by 1980. Also, the State Farms Corporation will cultivate during the plan period 2,000 acres (800 h.a.) per year at a total cost of ₵1.4 million. The Ghana Community Farms will be allocated an amount of ₵500,000 by the end of 1977 for its programme. Each of the farms of the two state agencies will have processing plants for producing garri, tapioca and cassava chips.

1.27 Yams Development Programme

Yams production has been on the decline since 1965. This has been due to competition from other cash crops, particularly rice and cotton. The programme for yam cultivation during the plan period aims at the provision of yam seeds to farmers. The Department of Agriculture will establish yam seed farms in eighteen yam growing districts such as Ejura, Atebubu, and Nkoranza districts of Brong-Ahafo Region, Nkwanta and Kete-Krachi districts of Volta Region, Bimbila, Kpandai, Yendi and Bole districts of Northern Region and the Wa, Tumu and Sandema districts of the Upper Region. Each seed farm will be of 50 acres (20 h.a.). In other words, there will be 900 acres (360 h.a.) under seed yam by the end of the plan period at a total cost of ₵493,000. This will satisfy about 40 per cent of the demand for seed yams. To reduce the loss of seed yam as a result of attack from yam weevils, seed yam will be treated with Aldrex–T before distribution to farmers. The State Farms Corporation will under the yam programme, cultivate 200 acres (80 h.a.) at Ojobi. The Ghana Community Farms will cultivate large-scale yam farms at Kete-Krachi (500 acres), Bole (500 acres), Bimbilla (500 acres), Zuo (200 acres), Kintampo (500 acres), Atebubu (500 acres), Kwame Danso (500 acres), Tumu (200 acres), Yendi (500 acres), Wa (500 acres), the cost of these projects of the corporations will be ₵2,300,000. Government will also offer land clearing services to the crop associations for yam production.

Plantain Programme

Special attention will be paid to sucker production during the plan period in order to increase acreage under plantain cultivation by 47,000 acres (18 800 h.a.) in 1980. Accordingly, a total of 20 nurseries will be developed. Each nursery will be 20 acres (8 h.a.) in size. There will be one nursery per yam district. The cost of establishing the nurseries will be ₵98,000. The programme also aims at encouraging the crop associations to establish large-scale plantations under plantain and cocoyams in the most important producing areas of North-Western Brong-Ahafo Region, Sefwi-Wiawso district of the Western Region, Konongo, Offinso, Jamasi, Mampong and Kumawu, Tepa and Bekwai districts of Ashanti Region and in the Central and Eastern Regions.

The Ghana Community Farms will develop 8,000 acres (3 200 h.a.) of plantain by 1977 at a total cost ₵1.7 million. The State Farms Corporation is expected to cultivate 2,000 acres (800 h.a.) of plantain yearly during the plan period. Government intends to go into commercial cultivation of this crop. Groups of farmers will be sponsored to produce plantain in pure stand in Central, Western, Brong-Ahafo and Eastern Regions.

1.28 Oil Seeds Development

Oil Palm Programme

In 1974 total acreage under oil palm was estimated at 361,000 acres. Domestic production of palm oil satisfied about 43 per cent of existing factory capacity. In order to keep our existing factories operating at full capacity, it has been estimated that 7,300 tons of palm oil will have to be produced annually. This in turn will mean keeping at least 146,000 acres (172, 400 h.a.) of land permanently under oil palm cultivation. The targets for oil palm production by 1980 have been set at 431,000 acres (172 400 h.a.) which should leave large enough surplus for household consumption. An additional 70,000 acres of land will have to be put under oil palm cultivation by 1980. Since oil palm has a long gestation period, the direct results of this new plantings will only be felt after the plan period. The necessary provisions have been made in the targets for the production of other oil seeds such as groundnuts, soyabeans, etc., to satisfy the demand for vegetable oils while the oil palm plantations mature.

The major projects during the plan period for oil palm production are:—

(i) The State Farm Corporation Projects
(ii) Lever Brother Oil Palm Project at Bunso
(iii) Kwae Oil Palm Project of the World Bank and Ghana Government
(iv) Ghana Community Farms Projects
(v) Samreboi Oil Palm Project (EEC)
(vi) Fosu Project (Commonwealth)
(vii) Ind. Projects by various Ghanaian companies
(viii) Private Individual Projects
(ix) Settlement Farms Projects.

During the plan period and beyond, the State Farms Corporation will establish a number of oil palm nucleus estates with private holdings around each estate under an outgrowers' scheme. Under the nucleus-outgrower scheme, the Corporation will undertake field operations on individual outgrower farms on behalf of the financial institutions who will provide the necessary funds for the payment of wages and the procurement of inputs for the development of the outgrower holdings.

In addition to the above programme, the Corporation will develop during the next five years a 20,000-acre oil palm project at Jukwa, Okumaning, Foso and Akwansrem. The total cost of the project is ₵24 million and is to be implemented with a loan from the Bank of Ghana.

The State Farms Corporation, will also establish a 25,000-acre oil palm project at Nkwanta, Prestea and Samreboi. The cost of the project is estimated at ₵21.5 million. An 8,000-acre nucleus plantation is to be established within two years; outgrowers will be assisted to develop 17,000 acres 6 800 h.a. over a further period of two years. The entire programme should take seven years to complete. There is a possibility of funding the project from external sources.

The Corporation is to execute other oil palm projects in Pretsea, (Western Region), Kwamoso, Huhunya, Okrakwadwo, Morikrom (Eastern Region) and Juaso (Ashanti). A total of 18,000 acres (7 200 h.a.) is to be cultivated under oil palm in these areas at a total cost of ₵13 million. This will be financed from bank loans and the Corporation's own resources.

In order to implement these projects, the Corporation will establish 8,000 acres (3 200 h.a.) of oil palm nurseries at Nkwanta, Pretsea and Samreboi. An allocation of ₵9.5 million is made in the plan for the purpose. The Corporation will also be allocated a further sum of ₵5.4 million for the maintenance of twelve existing farms with a total acreage of 18,600 acres (7 440 h.a.)

In addition to the oil palm projects of the State Farms Corporation, the Ghana Community Farms will also cultivate 42,000 acres (16 800 hectares) of oil palm by the end of the plan period. An amount of ₵5.8 million will be made available to the Ghana Community Farms by end of 1977 to commence the first phase of 25,000 acres (10 000 h.a.). The cultivation of the additional 17,000 acres (6 800 h.a.) will be financed from the Corporation's resources.

The Ghana Government/World Bank Oil Palm Project at Kwae will establish in the Eastern Region a 10,000-acre nucleus plantation with 3,000 acre outgrower farms as the first phase. Total cost of the project is estimated at ₵22.5 million. A further 12,000 acres (4 800 h.a.) is to be developed later. Lever Brothers Oil Palm Project at Bunso is to put under oil palm cultivation a total of 20,000 acres (8 000 h.a.) at a total cost of ₵26 million. In addition private farmers through the crop associations will be encouraged to produce oil palm.

In order to provide for part of the seed nuts requirements during the plan period, the Kusi Oil Palm Research Centre will produce 5.8 million seednuts for distribution to the oil palm plantations. The total cost of the production of seednuts during the plan period is estimated at ₵6.4 million.

Groundnut Programme

Statistics on groundnuts production reveal that acreage under this crop has not been increasing. In 1970, 242,000 acres (96 800 h.a.) were cultivated under the crop and production has not increased significantly since then. In 1973-74, only 274,000 acres (109 600 hect.) were cultivated. In some years, acreage under the crop has actually declined. This is due to the fact that in the Northern and Upper Regions where most of the crop is grown, the incentives given to rice cultivation have made rice more profitable than most other crops with the result that most farmers substitute rice cultivation for groundnut.

During the plan period therefore the Grains Development Board will make special efforts to encourage farmers to use improved seeds; adopt closer spacing of plants; dress the seeds with chemicals before planting; use fertilizer and weed timely and adequately. These measures will help increase yield per acre from present low levels to the 1980 projected yield levels of 1,050 lb. per acre and over. The Grains Board will establish demonstration plots on the farms of a number of farmers in the following major production zones:—

(i) *Eastern Region.*—Afram Plains;

(ii) *Volta Region.*—Ho, Denu, Kpandu, Sogakofe, Juapong, Kete Krachi/Nkwanta Districts;

(iii) *Brong-Ahafo.*—Atebubu, Nkoranza, Wenchi, Kintampo Districts;

(iv) *Northern Region.*—Tamale/Savelugu, Bole, Damongo, Yendi and Bimbila Districts;

(v) *Upper Region.*—Bawku, Navrongo, Wa, Tumu, Lawra;

(vi) *Ashanti.*—Mampong, Nsuta, Ejura, Kwamang, Kumawu, Jaduako;

(vii) *Central.*—Jaduako Bodwase, Kasua, Senya Breku, Ojobi;

(viii) *Greater Accra.*—Ashalaja.

The special programme by the Board should make it possible to put under groundnut cultivation a total of 65,000 acres (26 000 h.a.). An allocation of ₵2.7 million will be made to the Board between 1976 and 1980.

In addition to the programmes of the Board, the Ministry of Agriculture through the crop associations will encourage increased production of groundnuts. The World Bank/Ghana Government Upper Region Agricultural Project will develop 63,000 acres (25 200 h.a.) by

1980, the State Farms Corporation will cultivate some 2,000 acres (800 h.a.) by 1980. An allocation of ₵400,000 will be made to the Community Farms from now up to the end of 1977. The Department of Agriculture will also concentrate its attention on the promotion of the higher oil producing instead of the confectionery types of groundnuts. The Department will establish seed farms from which planting materials will be distributed to farmers. Extension services will include teaching the farmer the proper method of planting and harvesting. The Department of Agriculture has already introduced bullock ploughs in some of the growing areas and more bullock ploughs will be available to farmers in order to increase their holdings under groundnut cultivation. Groundnut diggers which can be drawn by bullocks will be introduced to make harvesting, a major bottleneck to groundnut production, easier and more efficient.

Mechanical planters and harvesters will be imported into the country for large-scale production of groundnuts. The programme will be executed mainly in the savannah areas of the country. The normal extension advice will be given to the small-scale producers who wish to cultivate the confectionery types of groundnuts.

Coconut Programme

Coconut oil which is manufactured from copra is an important ingredient for soap manufacture. Apart from factory demand, coconut fruit is consumed locally. In 1974, only 36 per cent of the demand from the local factories for coconut oil was met from local production. Making reasonable allowance for fresh fruits consumption, it has been estimated that additional 17,000 acres (6 800 h.a.) have to be put under coconut curlivation in order to satisfy both factory and household demand. The target set for 1980 envisages that 110,000 acres (44 000 h.a.) of land will be under coconut.

The programe for coconut development aims at establishing nurseries in the Western, Central, Greater Accra and Volta Regions. The seeds of the hybrid variety with a life expectation of at least fifteen years, will be distributed to farmers. Meanwhile research is in progress to determine which crosses are tolerant to the Cape St. Paul disease. There will be an intensive coconut plantation programme in the West Ankobra area of Western Region and a rehabilitation programme in the Central, Greater Accra and Volta Regions involving a total of 2.5 million coconut seedlings.

The State Farms Corporation will also, during the plan period, establish nurseries to provide seedlings to outgrowers and cultivate a 2,000-acre nucleus estate under coconut. The development of the nucleus plantation which should take seven years will cost ₵1.5 million. The Corporation will also maintain an existing estate of 1,835 acres (734 h.a.) at Essarkyir and Gomoa Ajumako at the cost of ₵711,000 over the next five years. The Ghana Community Farms have a target for the development of 14,000 acres (5 600 h.a.) of coconut plantation on some of its farms. By 1977, 8,000 acres (3 200 h.a.) would have been planted at an estimated cost of ₵1.7 million.

Soyabeans Programme

During the plan period, the Grains Development Board will mount 21-acre demonstration plots in all the regions. The purpose of these demonstrations will be to introduce the crop to farmers. Already some seeds have been distributed to selected farmers to plant. A special attempt is being made to introduce large-scale cultivation under the Romanian project at Atebubu and at Kpetoe in the Volta Region and the Russian project in the Afram plains, Zongo Macheri, Adidome in the Volta Region and Braman in the Brong-Ahafo Region.

Meanwhile, the State Farms Corporation has started large-scale cultivation of the crop at Ojobi after a successful pilot project there. The Corporation proposes to cultivate a minimum of 2,000 acres (800 h.a.) at Ojobi by 1978 at a total cost of ₵300,000.

1.29 Vegetable Development

Tomato Programme

Tomatoes are usually scarce on the local markets in the dry season of November to mid-March. Although no substantial expansion is envisaged by 1980 in the total acreage under tomato cultivation, it is proposed to increase production of tomato and other vegetables under irrigation conditions to supplement cultivation under rainfed conditions. It is proposed to initiate projects under irrigation conditions during the plan period for tomato production on the following dam sites: Vea 1,200 acres (480 h.a.), Mankessim 250 acres (100 h.a.) Tono 250 acres (100 h.a.), Okyereko 200 acres (80 h.a.) and a number of small dams in the Northern, Upper, Eastern, Volta and Greater Accra Regions. There are also proposals for introducing pump irrigation projects at Angaw Basin (5,000 acres), Mpam (500 acres) for tomato production.

A major tomato cultivation project under irrigation conditions will be implemented during the plan period from the 3,000 acre tomato project under sprinkler irrigation near Subinja and Tanoso in Brong-Ahafo and Akumadan and Aframcho in Ashanti Regions. About ₵1.5 million will be allocated yearly to the project between now and 1980. These irrigation projects will yield two crops a year.

Pepper Programme

There are several varieties of pepper. However the hot types are in greater demand on the domestic market than the sweet varieties. The programme aims at multiplying pepper seeds for distribution to farmers. Improved varieties of pepper have been developed by the University of Ghana. The Seed Multiplication Unit of the Ministry of Agriculture will multiply these seeds. In addition, the Home Extension Unit will teach housewives simple methods of preserving pepper and other vegetables. The Department of Agriculture will also encourage farmers to form themselves into crop associations for the production of pepper. These groups will be assisted to own pepper milling machines which could produce powdered pepper for the local markets. They will also produce fresh chillis for export.

Onions and Shallots Programme

Seed is a major problem to onions production in Ghana. Imports of seed will be necessary during the early part of the plan period. The production of varieties of onions which seed under our local conditions will be encouraged. The Ministry of Agriculture will establish two nurseries in Bawku and Anloga districts for multiplication of seeds for distribution to farmers. Farmers in the onion producing districts will also be taught nursing and transplanting of seedlings. The programme for onions and shallots aims at cultivating about 4,000 acres (1 600 h.a.) in addition to the existing acreage under these crops.

Other Vegetables Programme

Okro, garden eggs and other leafy vegetables will receive the regular attention given to them by extension officers. The Home Extension Unit of the Ministry of Agriculture will teach housewives how to preserve and prepare these and other vegetables. In towns and cities housewives will be encouraged to take to backyard gardening. In this connection, seed and other inputs will be made available to the housewives.

1.30 Fruits Development

Citrus Programme

Lime production is undertaken on a large-scale in the Central Region. Ghana produces about 1.8 million gallons of lime juice a year. During the plan period efforts will be directed towards increased production of oranges and tangerines for domestic consumption and export. The programme for these crops is to establish nurseries where buddings will be undertaken. The budded seedlings will be distributed to farmers. The target is to cultivate about 71,000 acres (28 400 h.a.) of citrus by 1980. To achieve this target, the Department of Agriculture will produce 1.2 million seedlings per annum (at the cost of ₵960,000) for distribution to farmers in Ashanti, Central, Eastern, Greater Accra, Brong-Ahafo, Volta and Western Regions. The production of tangerines for export will be encouraged in the Central and Eastern Regions where the soils have been found to be most suitable for this crop. Surveys and trials will be conducted in the Tsito, Kpedze, Kpandu and Jasikan districts of the Volta Region. The programme for exports will lay the basis for the production of exportable citrus, i.e. late valentia, sweet mediterranean, etc. Local varieties like Obuasi sweet will be processed locally.

The State Farms Corporation will carry out maintenance operations on its 100 acre citrus plantation at Nyamedom and Kruwa near Asuansi. During the plan period, the Corporation will develop a further 2,500 acres (1 000 h.a.) at Agona Junction. The total cost of the two projects is estimated at ₵1.1 million. The Ghana Community Farms would put under citrus cultivation about 3,290 acres (1 316 h.a.), by 1980. An amount of ₵576,000 will be allocated by the end of 1977 for the first phase involving 2,000 acres (800 h.a.)

Pineapple Programme

The programme for pineapple development has as its target the development of about 37 000 acres (14 800 h.a.) during the plan period. A pineapple project will be established at Okubeyeyie near Nsawam by the Department of Agriculture. The nucleus plantation when developed will be allocated to farmers and will be supervised by the Department of Agriculture. An amount of ₵1.8 million will be made available for the project. Suckers will be provided from the nucleus plantation to the out-growers. In addition nurseries are to be established in the pineapple growing areas of the Central, Greater Accra, Ashanti and Volta Regions to provide suckers for distribution to farmers. About 10 nurseries each of about 10 acres and costing about ₵92,000 will be established in the four regions mentioned above. The Ghana Industrial Holding Corporation is also establishing a pineapple plantation of 4,000 acres (1 600 h.a.) to feed its canneries. The Ghana Community Farms will cultivate 1,000 acres (400 h.a.) at Ashalza by 1980. An initial allocation of ₵400,000 will be made for the project. At Achiase, 100 acres will initially be developed for the crop associations at a cost of ₵92,000.

Mango Programme

Nurseries have been established for the production of improved varieties of mangoes at Ejura and Somanya. Where museum plantations exist the Department of Agriculture intends to promote the cultivation of improved varieties for export and processing. Fifteen improved varieties have been introduced into the country. Three of these varieties have been selected for their quality and will be promoted on commercial scale: Keith, Haldon and Palmer.

The Department of Agriculture will establish 400 acres (160 h.a.) each in the Ejura and Somanya districts at a total cost of ₵165,000. The seedlings produced on these nucleus plantations will be sent to the Wenchi, Mampong Ashanti, Kintampo, Dodowa, Techiman, Nkoranza, Greater Accra, Ho, Ejura, Tsito, Adidome and Dzodze areas and the Northern and Upper Regions for cultivation by farmers. Mango Research Stations will be established at Somanya and Ejura. The Ghana Community Farms is expected to cultivate 3,000 acres (1 200 h.a.) of mango by 1980. An initial amount of ₵300,000 will be allocated to the farms by the end of 1977.

Avocado Pear Programme

There are several varieties of Avocado pears which are inter-planted with other three crops in the high forest belt of Ghana. The Department of Agriculture will promote the cultivation of selected local varieties and continue research into foreign varieties such as Anahiem, Fuarte, Pollock and Phillips. These are of higher quality than the other varieties. Five nurseries and seed farms will be established in the Central, Volta, Ashanti, and Brong-Ahafo Regions to provide planting materials for farmers. About 80 acres will be developed under this programme between 1976 and 1980. Cost of the project is estimated at ₵20,000.

About 810 acres (16 h.a.) is to be put under avocado cultivation by the Ghana Community Farms by 1980 at a cost of ₵120,000. Hohoe in the Volta Region, Bunso, Tarkwa, Bekwai and Sunyani will serve as a national seed multiplication centres for avocado pears.

1.31 Industrial Crops Development

Cotton Programme

The production of cotton is the responsibility of the Cotton Development Board. The demand in 1974 from the textile industries was only 8 per cent satisfied from domestic production. Before the end of the plan period it is envisaged that domestic output of ginned cotton should almost entirely satisfy the total demand of the textile industries. The Cotton Development Board will distribute planting materials, chemicals and sprayers to farmers, purchase from them the seed cotton, gin it and sell the lint to the textile companies. The target is to have 300,000 acres (120 000 h.a.) under cotton by 1980; this means an additional 100,000 acres over the 1975 production. Total cost of the programme is ₵20 million.

With the implementation of the IBRD/Ghana Government agricultural project in the Upper Region, the Cotton Development Board will organise farmers into co-operatives and crop associations to cultivate about 50,000 acres (20 000 h.a.) of cotton. Four such organisations will be established at Bawku, Navrongo, Tumu and Wa. The inputs required by these organisations are to be financed through the World Bank loan. Each organisation will cultivate a minimum 2,000 acres (800 h.a.). Land clearing services will be offered by the Department of Mechanization. The State Farms Corporation plans to cultivate 2,000 acres (800 h.a.). of cotton at a total cost of ₵560,000 by 1980 at Zongo Macherri and Ojobi. The Ghana Community Farms will also have by the end of the plan period 14,000 acres (5 600 h.a.) under cotton. About ₵3 million will be allocated to them foı the project.

In response to the Government appeal that local factories should produce their own raw materials, a number of private commercial firms will have established cotton farms by 1980. The Loyalty Company Industries Cotton Farm at Agotime Kpetoe in the Volta Region have already started cultivation of cotton on a 1,000 acre (400 h.a.) farm; the Cotton Production Company is developing 3,200 acre (1 280 h.a.) at Amateng and Atebubu in the Brong-Ahafo Region. Ghana Farms Limited is cultivating 2,000 acres (800 h.a.) at Juapong. They would develop a total of 8,000 acres (3 200 h.a.) by 1980. The targets for the other textile companies are Taexen Textiles—915 acres (366 h.a.) Ameen Sangari—600 acres (240 hect.), Akosombo Textile Farm—10,000 acres (4 000 h.a.), Millet Factory Farm—5,000 acres (2 000 h.a.), West Coast Dye Farm—2,000 acres (800 h.a.) About 60,000 acres (24 000 h.a.) will be under cotton cultivation by the private companies by the end of the plan period.

Bast Fibre Programme

The development of kenaf fibre is the responsibility of the Bast Fibres Development Board. The programme for production of kenaf fibre aims at the establishment of nucleus plantations of about 500 acre (200 h.a.) each with outgrowers in areas that are suitable for kenaf production. The cost of establishing these nucleus farms is estimated at ₵1.5 million. The following sites have been selected for kenaf production:

Ashanti Region:	Ejura, Mampong, Nkawie and Agogo districts—7,000 acres. (2 800 h.a.)
Brong-Ahafo Region:	Atebubu, Yeji, Techiman, Nkoranza and Kintampo—10,000 acres. (4 000 h.a.)
Northern Region:	Damongo, Nyankpala, Savelugu, Yendi and Salaga—9,000 acres. (3 600 h.a.)
Upper Region:	Afram Plains—4,000 acres (1 600 h.a.)
Volta Region:	Hohoe, Ho and Kpandu—4,000 acres. (1 600 h.a.)

The Bast Fibre Development Board aims at satisfying about 40 per cent of the requirements of the Jute Factory by 1980. The Ghana Industrial Holding Corporation, in line with Government's policy, is to establish plantations to produce part of its factory's requirements. Extension officers of the Bast Fibres Board will organise farmers into crop associations for the production of kenaf. The Ghana Community Farms will also cultivate about 500 acres (200 h.a.) by 1980. Cost of production will be ₵70,000.

Rubber Programme

Additional 45,000 acres (18 000 h.a.) are to be planted to rubber during the plan period and mainly in the Western Region. The State Farms Corporation and the Ghana Rubber Estates are expected to cultivate about 80 per cent of the 45,000 acres and individual farmers about 20 per cent. The Department of Agriculture will provide extension advice to the private farmers involved in rubber production. The State Farms Corporation is to establish a 25,000 acre/nucleus outgrower rubber plantation at Enchi. In this connection, the Corporation is developing 2,000 acre (800 h.a.) nursery to provide seedlings for planting in 1977 and 1978. Total cost of the project is ₵2.1 million. The project is being supported by EEC. Other rubber plantations are Offin Rubber Estate, Holand Estate near Bunso, Ghana Community Farms Estate and the Rubber Growers' Association.

Sugarcane Programme

The programme for sugarcane production deals only with the requirements of the two existing sugar factories at Komenda and Asutsuare. In 1974, only 43 per cent of the plant capacities of the two factories was satisfied from local production. During the plan period, the aim of Government policy is to produce enough sugarcane to feed the existing factories

and to speed up present arrangements for the establishment of additional sugar factories. The main policy for the cultivation of sugarcane is to encourage sugarcane growing under irrigation conditions thereby increase yield per acre which in 1975 at Asutsuare was 22 to 23 tons per acre. Some experiments at Asutsuare have produced yields of 35 to 40 tons per acre. Indeed yields from some outgrowers have recorded 45 tons per acre in the Asutsuare area. With the 1973 new management contract with H.V.A., Ghasel has embarked on a rehabilitation programme for the plantations and the factories. The second phase of the irrigation works at Asutsuare will also be put under sugarcane cultivation for a further 2,400 acres (960 h.a.). At Komenda, some 3,000 acres (1 200 h.a.) will be brought under sprinkler irrigation system. The total cost of the two projects is ₵5 million. Another irrigation project is planned for Akuse/Kpong where 30,000 acres (12 000 h.a.) have been identified. Out of this 16,000 acres (6 400 h.a.) is to be developed for sugarcane to support the Asutsuare factory to operate at full capacity. Feasibility studies are also being carried out into the following projects:

(i) Aveyime Sugarcane Project
(ii) Havi Sugar Project
(iii) Agogo Sugar Project
(iv) Juapong Sugar Project.

In addition to these projects, a number of small cottage sugar factories will be established during the plan period through the initiative of the Regional Development Corporations and private individuals: Projects so far identified are:—

(i) Mankesim Cottage Sugar Project
(ii) Tsito Cottage Sugar Project
(iii) Avenorpeme/Torve Cottage Sugar Project
(iv) Pokoase/Media Cottage Sugar Project.

Cashew Programme

Cashew production has not been of much interest to Ghanaian farmers because of their ignorance of the economic importance of this crop. There is a good export market for cashew. The programme for cashew development aims at planting 10,300 acres (4 120 h.a.) to cashew during the plan period. The cashew plantations will be located at Navrongo, Wiaga, Tumu and other parts of the Upper Region to check the creeping of the Sahara further south. Cashew plants will also be grown around medium and large-scale dams and at water-sheds to check excessive evaporation and erosion. The Department of Agriculture will itself develop 2,000 acres (800 h.a.) in the Tumu, Wiaga and Navrongo districts. During the plan period, serious efforts will be made to teach Ghanaians the processing of cashew for the export market. The State Farms Corporation has plans to develop 2,000 acres (800 h.a.) at Zongo Macheri by 1980 at a total cost of ₵889.00.

Ginger Programme

Certain varieties of ginger are in demand in the world market. Ginger is usually needed in the confectionery and pharmaceutical industries. Many areas in Ghana are suitable for ginger production. Two types of programmes will be pursued. The production of the local variety will be increased by offering attractive producer prices to farmers. The Department of Agriculture will establish 12 nurseries throughout the country to multiply the improved variety of ginger for distribution to farmers. The Department will also continue to teach farmers improved cultural practices in the cultivation of both the local and exotic varieties of ginger, provide planting materials, fertilizers and other chemicals that the farmers might require. Crop associations for ginger production have been formed in all the growing centres to boost the output of the crop. The target is to cultivate 5,000 acres (2 000 h.a.) by 1980. To interest farmers in the production of ginger, the Export Promotion Company will purchase the farmers' output promptly.

It is intended that future production programmes will be geared to local processing facilities for both domestic and industrial uses.

1.32 *Seed Development Programme*

The Seed Multiplication Unit will continue to operate four foundation seed farms at Okyereko, Asikuma, Kumasi and Nyankpala for maize and groundnuts to feed the Registered Grower Programme. Presently there are about 500 acres (200 h.a.) altogether under foundation seed

There are plans to carve out 50 acre farms on four major irrigation projects and designate them solely for foundation rice production. A start has been made at Auxilliary Farms I and II in the Asutsuare area. Apart from this development there does not seem to be any need to expand the foundation seed production capacity of the Unit since enough capacity exists to cater for the demands of the Registered Seed Grower programme throughout the plan period.

The bulk of the certified seed, which is the seed that is distributed to farmers for planting, will continue to be produced by Registered Seed Growers. Presently the seed growers are producing beyond the Unit's capacity to procure the seeds due to constraints posed by lack of adequate processing, storage and distribution facilities. Under the five-year plan it is intended that adequate facilities will be acquired under the MIDAS project, a joint USAID/GOG project. Under the project seed processing and storage facilities are to be erected at Winneba, Kumasi and Tamale with a National Seed Laboratory being built in Accra.

Whenever there is the need to increase production above the present grower output, more growers will be contracted. This should pose no problem as most progressive farmers are always applying to be registered as seed growers. If, for example, for a particular year the projection is to produce 40,000 bags of maize, then about 5,000 acres of maize, will

TABLE 18

SEED PRODUCTION TARGETS, 1976-80

Seed	1976	1977	1978	1979	1980
1. Maize (acres)	14,000	18,000	20,000	27,700	30,900
% of requirement	12.6	15.7	17.0	23.0	25.0
2. Rice (acres)	25,000	26,000	27,700	29,300	31,000
% of requirement	33.8	33.3	33.3	33.3	33.3
3. Millet (bags)	NS	575	1,458	2,070	2,100
% of requirement	—	2	5	7	7
4. Guinea Corn (acres)	NS	590	1,506	2,156	2,202
% of requirement	—	2	5	7	7
5. Cassava (acres)	NS	NS	NS	NS	4,975
% of requirement	—	—	—	—	5
6. Yam (acres)	NS	NS	NS	NS	850
% of requirement	—	—	—	—	0.6
7. Cocoyam (acres)	NS	NS	NS	NS	0.3
% of requirement	—	—	—	—	0.2
8. Groundnuts (acres)	4,000	12,000	20,000	30,000	40,000
% of requirement	1.3	3.7	5.7	8.1	10.1
9. Coconut (seedlings)	300	300	300	300	300
% of requirement	100	100	100	100	100
10. Oil Palm (seedlings)	1,166	1,166	1,166	1,166	1,166
% of requirement	100	100	100	100	100
11. Tomato (acres)	100	500	1,000	2,000	3,000
% of requirement	0.7	3.4	6.7	13.3	19.6
12. Pepper (acres)	450	800	1,200	1,300	1,400
% of requirement	4.9	8.5	12.5	13.1	13.7
13. Garden eggs	150	300	400	450	500
% of requirement	2.5	4.8	6.2	6.8	7.3
14. Onions (acres)	53	117	193	283	647
% of requirement	18	36	44	62	80
15. Citrus (seedlings)	240,000	240,000	240,000	240,000	240,000
% of requirement	100	100	100	100	100
16. Pineapples (acres)	100	100	100	100	100
% of requirement	1.5	1.2	1.4	1.3	1.3
17. Mango (seedlings)	25,200	25,200	25,200	25,000	25,200
% of requirement	100	100	100	100	100
18. Avocado (seedlings)	45,000	45,000	45,000	45,000	45,000
% of requirement	100	100	100	100	100
19. Rubber	1,300,000	1,300,000	1,300,000	1.300,000	1,300,000
% of requirement	100	100	100	100	100

Source: Ministry of Agriculture.
Note.—NS = Not Significant.

REVIEW OF PERFORMANCE AND PROBLEMS IN THE COCOA INDUSTRY

1.33 The role of Cocoa in the Ghanaian Economy

Cocoa plays a key role in the Ghanaian economy. About one-quarter of the total population or 2.5 million people are directly involved in cocoa farming. The cocoa industry has made substantial contributions to Ghana's foreign exchange earnings and to Government's tax revenues over the past decade. It accounted for about 60 per cent of foreign exchange earnings, on average, between 1971–1973 and provided about 33 per cent of Government current revenues. This reliance on cocoa to fund such a high proportion of the Government's budget appears to be increasing, since in 1966–67 cocoa accounted for only 16 per cent of Government revenues. Cocoa's contribution in terms of foreign exchange earnings and Government revenues are presented in Tables 1 and 2.

1.34 Trends in Cocoa Production

At the end of the 1950's, Ghana's production began to rise. From a low average of 230,000 tons, production rose to about 330,000 tons in 1961 and continued to average about 420,000 tons per annum till it reached an all-time high of 557,000 (representing 38 per cent of total world production) in 1964–65.

Since that peak season, however, production has more or less declined at the rate of three per cent per season until the average seasonal production for the past ten seasons (1965–66 to 1974–75) now stands at about 390,000 tons. Simultaneously, Ghana's share of world production has fallen from 38 per cent in 1964–65 to an average of 28.4 per cent (Trends in cocoa production for the past sixteen years in relation to estimated total world crop are presented in Table 3).

1.35 Major Problems Affecting Production

The fundamental problems which have tended to cause the decline in cocoa production may be summarised as follows:—

(i) low producer price policies adopted throughout the 1960s;
(ii) widespread destruction of cocoa farms by diseases such as virus, swollen shoot and capsid;
(iii) increasing age of trees and farmers with little or no replanting in the recent past and unwillingness of our youth to take up cocoa farming;
(iv) inadequate standard of farm husbandry due largely to the relatively unattractive producer price, the high cost of labour and ineffective extension services.
(v) increase in smuggling.

1.36 Plan Objectives and strategy for the Cocoa Industry

The uncertainties which so strongly mark the world cocoa market make the formulation of a long-term policy for the cocoa industry extremely difficult. The overall objective for the plan period and there-

after will, however, be to maximise Ghana's net foreign exchange earnings from cocoa. Available evidence indicates three situations which would *Not* satisfy this objective:—

(*a*) continued stagnation of output and future reductions in Ghana's share in total world output;

(*b*) consistently large increases in output; the likelihood is that this would depress world prices to such an extent as to prevent Ghana from benefitting from her greater production;

(*c*) sudden increases in the quantity marketed; resulting perhaps from especially favourable weather conditions in a particular year.

In spite of the uncertainties which have been constantly a part of the world cocoa market, Ghana's output of cocoa is expected to grow at a rate at least, as high as the long term rate of growth of world demand, estimated at about three per cent per annum through 1978. However, the feasible rate of growth in cocoa production has been estimated at between four and five per cent. It is this higher rate of growth that would be pursued during the plan period. The Objective is thus to achieve a production target of 500,000 tons by 1979–80 and 600,000 tons by 1984–85.

1.37 Programmes and Measures

The recent changes in the administration of the cocoa industry, with the creation of a Ministry of Cocoa Affairs, are designed to put the industry on a sound footing. The cocoa industry embraces various aspects from the cultivation of the crop, the processing of the beans, to the sale of the whole bean and in its processed derivatives of butter and cake. Each of the agencies under the Ministry of Cocoa Affairs is to play a more co-ordinated and effective role in the implementation of programmes to resuscitate the cocoa industry.

1.38 A. Extension

In order to achieve the production targets, the Cocoa Production Division which assists farmers to increase the productivity of their cocoa farms by providing them with services and advice with regard to improved cocoa husbandry and control of disease and pests, shall intensify its activities in the following areas during the plan period:—

(i) country wide survey;
(ii) control of disease and pests;
(iii) production of high yielding hybrid cocoa pods and seedlings for new plantings;
(iv) supply of farm inputs mainly, insecticides and spraying machines;
(v) encouragement of farmers to adopt co-operative activities to increase their efficiency in use of farm inputs;
(vi) teaching farmers improved techniques and farm practices.

In this connection, the Cocoa Production Division shall be re-organized on functional basis to comprise the following departments:—

(1) Administration, Training, Manpower and Information Unit,
(2) Replanting and Rehabilitation Unit,
(3) Survey and Disease and Pest Control Unit,
(4) Cocoa Plantations Unit,
(5) Coffee Plantations Unit.

1.39 Country-wide Survey

A country-wide survey programme was initiated in 1969–70 by the Cocoa Production Unit the aim of which was to:—

(i) survey all cocoa areas in the cocoa growing belt to locate and record the whereabouts and extent of the swollen shoot disease for proper control measures to be taken;
(ii) record the location and hectarage of all cocoa areas;
(iii) classify the cocoa in the country into various age classes;
(iv) assess the condition of cocoa in the country;
(v) determine the location and acreage of major crops other than cocoa; and
(vi) determine the hectarage of country farms, forest and secondary bush.

The survey which covers about 19.5 million acres (7.8 million h.a.) is expected to be completed by the end of 1976, and will be reconducted from the fiscal year 1979–80.

1.40 Disease and Pest Control

Effective disease control is vital to the achievement of production targets. Extension work will be geared to assist the farmers get the best result from disease control measures, and of ensuring adequate supplies at reasonable prices of such items such as spraying machines, spare parts and insecticides. The main pest of cocoa in Ghana is the capsid which now occurs everywhere cocoa is grown. The activities of capsids can be checked by the use of insecticides. About 500,000 gallons capsidicides mainly "Gammalin 20" are currently made available at heavily subsidised prices through licensed buying agents. It is proposed to increase the supply of capsidicides to 800,000 gallons during the plan period as well as widen the distribution channel. The problem of shortages shall be completely eliminated through increased domestic production of the capsidicides. Provision is also made for the use of alternative capsidicides in areas where the capsid has developed resistance to any particular brand of these chemicals.

It has been estimated that a total of 56,000 single units of spraying machines should be adequate for farmers to spray their cocoa farms effectively. About 16,000 units are estimated to be in serviceable condition in the country now. For the additional 40,000 units required, it is proposed to phase supply over four years (1975–76 to 1978–79). In order

to ensure the successful implementation of the capsid control programme, the Cocoa Production Division will continue to maintain its six main depots at Bechem, Kumasi, Bunso, Swedru, Jasikan and Tarkwa where major repairs of spraying machines are carried out. Farmers will be encouraged to undertake the spraying of their farms on a co-operative basis. The Cocoa Production Division will however, continue to be responsible for supervising overall spraying activities while continuing with its own spraying operations.

1.41 Swollen Shoot Disease Control

The greatly increased disease control activity which is a sound basis for the introduction of other policies aimed at improving yields still require further and more thorough measures to check swollen shoot. The swollen shoot virus is one of the major causes of the decline in cocoa production. The control of this disease will therefore be one of the major tasks of the Cocoa Production Division. The only known cure of the swollen shoot virus disease is the systematic cutting out of all visibly infested cocoa trees together with their contacts. The Cocoa Production Division will intensify the "Plant as you Cut" campaign through its rehabilitation programme which consists of assistance to farmers in replanting trees which have been cut out because of infection or contact with the swollen shoot. The assistance includes supply of seedlings, pegging of farms and farmer training. Areas denuded of cocoa farms will continue to be replanted with high yielding hybrids. It is planned to replant 10,000 acres (4000 h.a.) per annum in the next five years.

1.42 Special Cocoa Projects

In addition to the country-wide rehabilitation programme being undertaken by the Cocoa Production Division, a special project in the devastated area around Suhum in the Eastern Region estimated to cost about ₵15 million commenced in 1970 with the World Bank assistance is being implemented. Under this project, a total of 36,000 acres (14 400 h.a.) will be replanted with high yielding varieties and 51,000 acres (20 400 h.a.) of standing cocoa will be rehabilitated. The project, whose implementation has lagged behind schedule would be completed by the end of 1977.

As part of the long-term programme to resuscitate the cocoa industry, a similar project has been initiated in the major cocoa growing areas of Ashanti at an estimated cost of ₵31.3 million. The first phase of the programme which is to be implemented over a three-year period, will involve among other responsibilities:—

(i) replanting of 30,000 acres (12 000 h.a.) with high yielding hybrid varieties through the provision of credit to cocoa farmers in the form of cash for the hire of labour, and farm inputs in kind;

(ii) training of farmers and project staff in modern cocoa production techniques and practices:

The second phase of the project will commence possibly in 1978–79. Investigations will be undertaken with the view to initiating similar projects in other cocoa growing areas of the country. Research has proved that non-hybrid cocoa trees reach their production peak and start declining steeply in yield when they are 25 to 30 years old. Government will, therefore, evolve a policy during the plan period whereby trees of over 30 years will be systematically replaced with new hybrid through appropriate incentives to farmers; these would include among other programmes, instituting a new credit scheme for cocoa farmers which would cover both short-term seasonal loans to enable farmers to maintain their farms properly, and long-term loans for planting of new farms and replanting and major rehabilitation of old farms.

1.43 Production and Supply of Hybrid Cocoa Pods and Seedlings

It has been estimated that the current supply of pods and seedlings falls below the national requirements. The Cocoa Production Division will, therefore, expand its seed gardens programme to achieve targets as indicated in Table 6. Free seedlings will be supplied for rehabilitation work that falls outside areas covered by the special cocoa projects. In such areas the Cocoa Production Division plans to help farmers as indicated earlier.

1.44 Training

The training of farmers and extension staff will be given particular attention. This will be the responsibility of the Department of Farmers' Education and Field Personnel Training of the Cocoa Production Division.

A reasonable investment in training of farmers in proper modern agronomic practices would be vital to the achievement of production targets because such an investment would encourage farmers to plant more high yielding seedlings of the hybrid type; to spray their farms with insecticides more regularly; and on the whole, to maintain healthier and more productive farms. Already it has been established that, an additional minimum production of 100,000 tons of cocoa is possible through proper maintenance of farms. The Cocoa Production Division will, therefore design practical procedures which will carry research results to farmers. In this connection, the Division will collaborate with the Cocoa Research Institute to find out how best weeding, spraying, shade reduction, thinning and removal of mistletoes can be carried out.

Training of farmers in disease control, general farm maintenance, harvesting, fermentation and drying will be given through short residential courses at the cocoa stations. The Cocoa Production Division will continue to invite farmers for residential courses at the 17 farmers' hostels built on experimental stations. Each hostel is capable of handling 432 farmers annually. For the five-year period about 35,000 farmers will be trained. The success of the farmers' education programme will, in the main, depend upon the availability of an efficient staff in extension services.

To this end, the Department of Field Personnel Training shall intensify the staff training programme which already comprises refresher courses in special subjects and promotion courses in addition to the initial courses.

Emphasis will be laid on specialization in particular operations in order to encourage closer supervision, and improve management efficiency and finally, productivity.

1.45 Research

At present a number of organizations and institutions undertake studies in connection with cocoa. The Cocoa Research Institute at Tafo conducts research into agronomic problems of cocoa and the Cocoa Production Division undertakes surveys of the cocoa growing areas to investigate the incidence of diseases and the relative effectiveness of pesticides employed in fighting these diseases. In addition, the University of Ghana has a Unit devoted to the socio-economic problems related to cocoa growing. The Ghana Cocoa Marketing Board has a research department engaged at present in the study of local and external marketing systems. Although research activities have resulted in improving yields, there are, however, a number of problems whose solution is not yet in sight:—

(*a*) *Cocoa Swollen Shoot Virus.*—Screening of seedlings for virus resistance and tolerance has been in progress for about ten years using a mechanical innoculation technique;

(*b*) *Capsid.*—An intensive study of the ecology of capsids began ten years ago has not yielded information likely to supplant spraying as a control measure of reducing spraying frequency and/or the area sprayed;

(*c*) *Fertilizer.*—Studies relating to fertilizer-use have not yielded any firm results.

1.46 Research Programmes of the Cocoa Research Institute

The research programmes of the Cocoa Research Institute of Ghana (G.R.I.C.) will therefore be intensified into such issues as:

(i) The diseases and pests which affect cocoa trees and the most effective measures for their control, eradication and prevention;

(ii) The development of more vigorous early-bearing, high-yielding and disease-resistant varieties of cocoa relatively easy to establish under local conditions;

(iii) By-products of cocoa beans husks, and other derivatives of cocoa pods.

(*a*) *Swollen Shoot.*—As indicated earlier, this is the most deadly virus disease that plagues Ghana's cocoa. It is transmitted to healthy trees by mealybugs, the main vector species of which are *Pseudococcides nialonsis, Pseudodoccus citri and Ferrisia.* The mealybug neither flies nor walks, it is a slow crawler and is carried about from tree to tree by attend-

ant ants and by wind. The swollen shoot virus has many strains of varying virulence. The New Juaben strain (IA), for instance, may kill the tree within 24 months whereas the Bisa (IB) strain will reduce yields gradually over a period of many years before finally killing the tree. The swollen shoot virus complex is widely distributed in all the six cocoa growing regions of Ghana.

Another virus of more recent discovery which produces no swellings but which is also capable of killing the tree is the Cocoa Necrosis Virus. This virus was first discovered in the Brong-Ahafo Region but intensive surveys would probably prove a much wider regional distribution.

The recommended method of swollen shoot disease control requires the complete cutting out of visibly infected trees and their contacts. This method of control continues to be carried out by the Cocoa Production Division, but the pace of work has been too slow to prove effective. Understaffing and farmers' resistance have been largely responsible for this state of affairs.

The present policy with regard to the swollen shoot disease is to breed and select varieties that can offer resistance to it. This has necessitated the importation of new germplasm into the country for breeding purposes. As a result of a number of crosses, screening in green houses, and seedling trials and tests, vigorous types of cocoa which are more tolerant to the disease are being developed. It is recommended that under good farm management, all cocoa trees between 30 and 40 years old should be systematically replanted with the new Series 11 hybrids already developed and available for distribution to farmers.

(*b*) *Black Pod.*—This disease is so named because of the blackish brown appearance of affected pods. It is favoured by high humidity and high altitudes which encourage the rapid growth of the causative fungus *Phytophthora palmivora.* It occurs throughout the three and half million acres of cocoa in Ghana and was probably endemic in the country prior to the introduction of the crop. In addition to the pod all other parts of the plant are susceptible to attack; and total crop losses due to this disease in Ghana are estimated at about 20 per cent.

The disease can be controlled chemically, but cultural methods such as frequent and regular harvesting of all ripe pods at two or three weekly intervals are considered more economic at present. This is so because prevailing yields and disease incidence are relatively too low to justify the expense of chemical control methods.

Research will be intensified during the plan period to discover more economic means of controlling both the swollen shoot and black pod diseases, the two major diseases of cocoa in Ghana.

1.47 (ii) Pests

(*a*) *Capsids.*—Capsids (or mirids) are the major pests of cocoa in Ghana and a large number of species have been described. However, the following four species are most commonly found associated with cocoa:

Distantiella theobroma, Sahlbergella singularis, Helopeltis bergrothi and *Bryccoropsis laticollis.* Of these, *D. theobroma* and *S. singularis* do the most damage to *cocoa.*

Capsids produce lesions on the tissues on which they feed, mainly shoots and pods eventually causing the death of those tissues. Fresh lesions may be invaded by the fungus *Calonectria rigidiuscula* thus further affecting tree vigour. Persistent capsid attack leads to the "blasting" of the tree, with dead brown leaves left hanging. Capsid "pockets" are established when large groups of trees are attacked. Eventually, the leaves drop, leaving bare, dead twigs. Both mature cocoa and young seedlings are susceptible to attack, and capsid attack have been known in some areas to prevent the establishment of new farms.

The capsid control programme in Ghana is entirely dependent on the use of insecticides. For many years the approved insecticide has been Gammalin "20". However, there is at present a build-up of capsid resistance to Gammalin in many areas. After extensive studies, Aprocarb in the form of "baygon" has been recommended as effective to overcome this resistance. Studies are continuing in the search for other alternative insecticides.

It has been of utmost importance in the assessment of insecticides for capsid control to aim for the following properties:

(*a*) high efficiency combined with low mammalian toxicity;
(*b*) good residual effect;
(*c*) the absence of taint and residues following treatment in cocoa and cocoa products.

(*b*) *Bathycoclia thalangina.*—This is the sucking insect, the stink bug. It is increasingly causing damage to cocoa in parts of the Central Region, Brong-Ahafo, Western Region, Ashanti and Eastern Regions. It is mainly a pod feeder and causes premature ripening of the developing pod.

Studies are in progress to determine the most effective form of control. In this regard, both chemical and biological control measures are being investigated.

(*iii*) *Seed production for Replanting and Rehabilitation Programmes*

Research on cocoa breeding and selection aims at the following:—

(1) The production of *vigorous, early-bearing and high yielding varieties* easy to establish under local farming conditions and producing commercially acceptable beans.
(2) The production in combination with (1) above of types resistant to the swollen shoot viruses and of low susceptibility to black pod disease.
(3) Cytogenetic studies and interspecific hybridization with the aim of incorporating such desirable characters as can be found in commercially grown cocoa.
(4) Pollination studies aimed at elucidating the factors responsible for low fruit setting in some varieties, and to assist in the production of seed pods at periods of the year when they are most needed.

The new well-documented hybrid vigour resulting from crosses between certain Upper Amazon and local types including Amelonado formed the basis of the establishment of seed gardens. Hybrid varieties have been produced by crossing either two self-incompatible parents or one self-compatible and a self-incompatible parent. Improved seed produced from seed gardens on Cocoa Stations have been available since 1964 for supply to farmers. Known as the Series II or "New Tafo" hybrids, these hybrids establish more easily than Amelonado, are high-yielding and commercially acceptable.

Although the Series II hybrids satisfy the necessary criteria for yield and quality, they have not been shown conclusively to be resistant to the swollen shoot and black pod diseases. The breeding programme therefore continues to aim at a high degree of disease resistance in addition to high yield and quality.

Meanwhile, extensive seed gardens have been established at 12 sites in the cocoa growing areas for the multiplication of existing improved seed. There is sufficient productive capacity at present to supply hybrid seed to farmers and Government replanting projects if seed distribution were properly planned and co-ordinated.

More seed gardens will be established as even better varieties are developed by research.

(*iv*) *Agronomy—Management, Ecophysiology and Fertilizers*

Although cocoa grows on many types of soil, it is always advisable to select the most suitable fertile soils for its cultivation. The cultivation of cocoa in Ghana is, however, limited by the amount and distribution of rainfall. Other factors of the physical environment such as temperature, light intensity and daylength are normally adequate and exert little limiting influences.

Most of the early cocoa in Ghana was grown under suitable conditions of soil and climate for the crop. The selection of these suitable areas was achieved by farmers through a process of trial and error, and without guidance from agronomic or soil research. However, because of the growing shortage of undeveloped forest land, many of the areas in which cocoa has been established in the last 20 years or so are generally conceded to be more marginal for the crop than the areas where earlier plantings were made. Soil and agronomic research has been going on at Tafo since 1938, and of particular importance now is the need to obtain reliable data to guide replanting and rehabilitation schemes.

There is no reason to assume that the new hybrids being developed and made available to farmers will do best under the same conditions of management as Amelonado. On the contrary, there is evidence that they require a higher standard of care and maintenance than Amelonado. Thus, research will be intensified on ascertaining the agronomic and management procedures most suited to the hybrids. Research on harvesting and primary processing of the crop (fermentation and drying) will also continue to receive attention.

Shea Nuts.—Studies on shea-nut production will be intensified. Eventually, plantings will be made in systematically laid out experiments to ascertain the shea tree's potential as a plantation crop, and to select for higher yielding varieties.

1.48 By-products research with cocoa pod husk

Preliminary studies in collaboration with a Swiss firm indicate that the cocoa pod husk may be a valuable source of ruminant feed and furfural. Furfural constitutes 3–5 per cent of the dry weight of cocoa pod husks.

Samples of dried pelletized feed containing from 50–75 cocoa pod husk have been prepared on a small scale. Other components of this feed are maize (4–10), cassava peel (8–15) groundnut meal (4–10), bran (4–10) and five per cent mineral-vitamin additive. Other vegetable matter like grass and cassava or cocoyam leaves can be used as substitute components in place of cassava peel and bran, etc.

It is proposed to set up a pilot plant capable of producing 100 kg. of food/hr. to be used in feeding tests.

Research programmes of the cocoa industry will continue to be carried out in close collaboration with the Cocoa Production Division. It is the policy of Government to encourage the accumulation and dissemination of knowledge and information on all aspects of the cocoa industry as an aid to intelligent management and conduct of the industry. But Government will seek to avoid undesirable duplication of resources and dispersion of effort in this as in other areas of national activity. Accordingly, research activities will be streamlined to promote specialization and complementarity in pursuit of the overall objective of an efficient and profitable industry.

1.49 Marketing

Marketing policy falls into two parts, namely, local purchasing of cocoa and the external sales of cocoa.

(*a*) *Local Purchasing.*—Arrangements for the local purchases of the crop will continue to be the responsibility of the Ghana Cocoa Marketing Board.

The most important instrument in the regulation of production is the price paid to the farmer. Given the present high cost of living and high prices of inputs, it is necessary that a producer price is set at a level which covers the real costs of production and a reasonable return to farmers.

Between 1972 and 1976, the Government has increased the producer price for cocoa from a ruling price of ₵12 per load of 60 lb. for the 1972–73 main crop season to the current price of ₵20 per load. The producer price policy will be periodically reviewed, taking into account such factors as costs of production and the competitiveness of other crops. Such a measure would, to a greater extent, stimulate production through improved husbandry, and higher yields. The Board will also undertake a study of the local purchasing system to establish the optimum number of buying agents required for the most economical collection and evacuation of the crop from the growing areas.

The operations of the licensed buying agents will continue to be regularly scrutinised to maintain a high level of efficiency in their operations. The system whereby "advances" were paid for cocoa on declarations of purchases or graded stocks has already been abolished. Buying agents are now required to finance their operations from their own resources.

They are to be paid the full value of cocoa purchased on delivery. The Cocoa Marketing Board has established centres at strategic points in the cocoa growing areas to take over cocoa delivered to it by buying agents. As part of the strategy to reduce the incidence of smuggling and also to ease transportation difficulties, more buying centres will be sited near to the borders in districts where Ghanaian cocoa farms adjoin the borders of neighbouring countries. This measure will be supplemented with a programme of feeder road construction from the hinterland to the main trunk roads and railheads.

Cocoa storage facilities both in the hinterland and at the two ports are woefully inadequate. With the expansion of the cocoa industry as envisaged, the need for additional storage is quite obvious. It is therefore planned to build an additional number of sheds at the ports and in the main producing centres, with an estimated capacity of 100,000 tons to ease congestion at these places.

(*b*) *External Marketing of Beans and Cocoa Products.*—The method of selling cocoa abroad is crucial in maximising revenue from cocoa. The dominant feature of the Government's external marketing policy is to ensure, at least, relative stability in the prices of cocoa products, as an aid to reliable forecast of earnings and therefore, realistic planning of the country's finances. Until quite recently, the objective of stable world prices had been sought by Ghana acting alone through the operations of the Cocoa Marketing Board. This approach was found to be inadequate, and for the past few years, a new instrument of marketing policy has been developed, namely, concerted management of sales by members of the Cocoa Producers' Alliance. It is the policy of Government to actively support and promote this development. Accordingly, Government approves the steps being taken by the Alliance to strengthen the co-operation among the individual members as a basis for a wider international cocoa agreement between producing countries on the one hand and consuming countries on the other. Accordingly, the Government will work relentlessly in ensuring the successful implementation of the recently concluded international cocoa agreement.

Meanwhile, at home, the Cocoa Marketing Board is currently being re-organised in both structure and personnel so that it can cope with the problems of an increasingly complex external market.

Appropriate measures will be taken to further strengthen the economic and statistical units of the Cocoa Marketing Board and the Cocoa Marketing Company through a systematic staff training programme.

Already Government has found it necessary to terminate agreements with foreign marketing organizations whilst channels of communications between Accra and London have been greatly improved. These measures are intended to make it possible for many small buyers to enter the market which they had been unable to do hitherto owing to relatively high costs of communication. Government considers that the expected increase in competition will be beneficial to the cocoa market and to producers in particular.

To provide incentives to the Cocoa Marketing Board to function more effectively, the duty schedules on sales on cocoa shall be modified as and when necessary.

1.50 Local Processing

The country now possesses three factories which process raw cocoa beans into cocoa products. Their total installed capacity is 96,500 tons. In recent years, exports of cocoa products have increased remarkably. The existence of these processing plants has increased the flexibility in cocoa sales policy especially as storage facilities are lacking.

The operating efficiency will continue to be increased so that by the end of the Plan period at least 60 per cent of the installed capacity could be utilised. Accordingly, the processing factories have been placed under the supervision of the Cocoa Marketing Board. This action would also facilitate the development and execution of a uniform sales policy and strategy to cover both beans and processed products.

1.51 Coffee

Coffee has received very little attention for many years, and much less in the past five years. The result is a steady decline in production as indicated here.

Year	*Yield in tons*
1970	5,779
1971	4,923
1972	4,332
1973	3,272
1974	2,934

2. Coffee is grown on almost the same soils as cocoa and practically by cocoa farmers too. Coffee growers have problems similar to those of cocoa, notably inadequate standard of farm husbandry due to low producer price, high cost of labour, low supplies of other farm inputs, increasing age of trees and very little new plantings.

Many farmers have tended to use their scarce farm inputs for more rewarding crops like cocoa and oil palm.

To arrest the situation and raise production, the Ministry of Cocoa Affairs has drawn up a programme (*a*) to have all existing farms rejuvinated (*b*) to distribute seedlings free to farmers for new plantings and (*c*) to use the cocoa extension staff to educate coffee growers in the adoption of better agronomic practices with the aim of raising their efficiency in coffee cultivation.

It is intended that more acres will be cultivated so that Ghana may be able to produce about 10,000 tons by the end of the plan period. The following acreage will be planted by the sectors indicated.

YEAR AND ACREAGE

	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
Ministry of Cocoa Affairs ..	—	100	350	300	250	1,000
Farmers	500	500	1,000	1,300	1,700	5,000
Total ..	500	600	1,350	1,600	1,950	6,000

Meanwhile the Cocoa Research Institute will conduct investigation into problems of diseases and pests, agronomy and plant breeding of coffee.

1.52 Financial and Manpower Requirements

The implementation of programmes relating to extension, research and marketing during the five-year plan, as outlined earlier on, would require, substantial resources in terms of finance and manpower.

With regard to extension, it has been recognised that there is an appreciable acreage of cocoa that needs to be rehabilitated in order to put the crop to full production. The Cocoa Production Division's extension activities will involve among other things, the replanting and rehabilitation of 50,000 acres (20 000 h.a.) during the five-year plan. In this regard, a total amount of ₵32,310 million will be required over the plan period. The total investment phased out over the plan period is as follows:—

Year	1975–76	1976–77	1977–78	1978–79	1979–80
Amount ₵m.	49.8	52.3	65.0	72.0	79.0

Attention will also be focussed on the special projects being currently implemented in the Eastern and Ashanti Regions with financial assistance from the World Bank in order to ensure their successful execution. The total cost of these projects is estimated at about ₵43 million. Furthermore, the Ministry plans to conduct feasibility studies with a view to

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initiating similar projects in other cocoa growing areas of the country. For example, in the Western Region, a programme for plantation would be commenced on an experimental basis. Brong-Ahafo, Volta and parts of Central Region, will also benefit from these studies. It is estimated that these programmes/projects would cost a total of ₵20 million.

1.53 Manpower Requirements

In order to carry out its extension programmes effectively the Cocoa Production Division will require a total staff of about 38,000 comprising cocoa officers, technical officers, field assistants, etc., *vis-a-vis* the present staff strength of about 34,000. The breakdown of the staff requirement for some of the various professional categories is as follows:—

	Number at Post	*Number Required*
Cocoa Officers	26	37
Principal/Senior/Technical Officers	203	604
Field Assistants	5,800	6,000
Tractor and Engine Drivers	195	667
Mistblower Mechanics	180	195
Disease Spotters	3,403	3,500
General Labourers	19,269	20,200
Machine Operators	1,200	1,500

The rest comprise mainly administrative, secretarial and accounting personnel needed to provide vital services to the field personnel.

TABLE 1

COCOA'S CONTRIBUTION TO EXPORT EARNINGS
(MILLIONS OF CEDIS)

Item	1966	1967	1968	1969	1970	1972	1973	1974
Cocoa and cocoa products	116.4	156.3	215.1	185.7	331.7	222.9	328.2	397.3
Total exports of all items ..	191.0	245.1	338.8	333.3	467.4	357.5	564.4	739.4
Cocoa and cocoa products as a percentage of total exports of all items ..	60.8%	63.8%	63.5%	55.7%	71.0%	62.4%	58.2%	54.4%

TABLE 2

COCOA'S CONTRIBUTION TO GOVERNMENT TAX REVENUE (IN MILLION CEDIS)

	Actual FY 1967	*Actual* FY 1968	*Actual* FY 1969	*Actual* FY 1970	*Actual* FY 1971	*Actual* FY 1972	*Actual* FY 1973	*Actual* FY 1974	*Revised Estimate* FY 1975
Export duties on cocoa	31.2	69.0	72.9	113.6	117.5	109.6	91.5	164.0	195.0
Excise duties and Local duties on cocoa	25.1	30.6	32.1	38.3	48.5	45.3	57.9	78.1	100.2
Grand Total Tax Revenue	26.9	255.3	260.1	384.1	466.9	372.3	354.2	524.9	608.4
Export and Local duties on cocoa as a % total ..	—	—	—	—	—	—	—	—	—
Tax Revenue	16.0%	30.4%	30.7%	37.4%	42.1%	32.9%	25.8%	32.3%	32.1%

TABLE 3

PRODUCTION OF RAW COCOA—GHANA AND THE WORLD 1959–60—1974–75

Year	*Ghana*	*World*	*Ghana's output as % Total World Production*
1959–60	317	1,039	31
1960–61	433	1,173	37
1961–62	410	1,124	36
1962–63	422	1,158	36
1963–64	436	1,216	36
1964–65	557	1,482	38
1965–66	410	1,205	34
1966–67	376	1,333	28
1967–68	415	1,333	31
1968–69	334	1,221	27
1969–70	409	1,418	29
1970–71	386	1,480	26
1971–72	457	1,557	29
1972–73	411	1,376	30
1973–74 (Estimate)	344	1,419	24
1974–75 (Estimate)	370	1,477	26

Source.—Gill and Duffus Cocoa Market Report No. 263.

TABLE 4 (*a*)

PRODUCTION TARGETS 1979–80 AND 1984–85

(000 TONS)

Average Production	1979–80	1984–85
	Proposed Target	*Proposed Target*
412	500	600

TABLE 4 (b)

Season	*State of Farms*	*Current*	*Feasible*	*Ideal*
		2.4	3	5.2
1979–80. ..	Existing Farms	486	507	588
	Existing Farms	—	—	—
1979–80 ..	Plus Suhum Project ..	489	519	600
1984–85 ..	Existing Farms	549	588	758
	Existing Farms	—	—	—
	Plus Suhum Project ..	555	594	764

TABLE 5

EASTERN REGION COCOA PROJECT

Phasing of Replanting and Rehabilitation (Acres)

	Activity					
	1970–71	**1971–72**	**1972–73**	**1973–74**	**1974–75**	**1975–76**
Rehabilitation ..	4,080	20,400	20,400	6,120	—	—
Replanting ..	3,600	10,800	13,500	8,100	—	—
		₵000				
Expenditure ..	2,059.8	2,536.6	3,976.9	4,152.6	3,172.1	—

ASHANTI COCOA PROJECT

Replanting Schedule

Year	*Acres*
1976	4,000
1977	10,000
1978	16,000

LIVESTOCK PRODUCTION

Introduction

Meat in Ghana, is obtained from the following livestock and poultry:—

(i) Cattle
(ii) Sheep
(iii) Goats
(iv) Pigs
(v) Rabbits
(vi) Chicken
(vii) Turkeys
(viii) Guinea fowl
(ix) Ducks

In addition, there is the field of wild game hunting which produces meat from the grass-cutter, antelope, duiker, buffalo, monkeys and a host of animals which are not eaten by all Ghanaians.

The main sources of meat are from the domesticated livestock and poultry mostly cattle, sheep, goats, chicken and to some extent from the pig.

Unfortunately, Ghana has not been able to supply most of her red meat requirements. Traditionally, she has depended on the countries in the Sahelian belt for the supply of cattle, sheep and goats. The very recent sahelian drought has had very serious repercussions on the supply of those animals. Yet Ghana has a better rainfall pattern and therefore, better vegetative growth than most of her neighbouring countries which she depends on for her meat supplies. Ghana does not, however, have enough of cattle, sheep and goats and the presence of the tsetsefly has been a hindrance to the increased production of ruminants. The areas of great potential for cattle, sheep and goats production have perennial water shortages and poor infrastructural support.

Nevertheless, until recently great strides have been made in the production of poultry. Ghana is quite self-sufficient in the production of eggs and broiler meat. However, recent increases in the price of maize and the other ingredients used in compounding rations have led to substantial increases in the selling prices of eggs and broiler meat. The field of turkey, ducks and guinea fowls are yet to be fully developed to make significant contributions to the poultry programme.

The domestic livestock population has gradually increased over the years though pig population decreased. Cattle heads rose up from 599,000 in 1970 to about 745,000 in 1974, while sheep and goats population went up from 676,000 to 905,000 and 605,000 to 744,000 respectively between 1970 and 1974. The poultry population also went up from 3,139,000 to 4,225,000 while the pig population declined from 128,000 to 124,000 though there were some slight increases between 1971 and 1973 (Table 1).

Value of imports of livestock and livestock products showed a decrease from 1970 through to 1973. However, they went up sharply in 1974. The total value of live animals imported dropped from ₵7.5 million in 1970 to ₵5.4 million in 1973 but it went up to ₵9.2 million in 1974. During the period 1970–74, a total of ₵33.3 million worth of live animals were imported. Of this amount cattle imports alone totalled ₵30.3 million while imports of sheep and goats were about ₵2.2 million (Table 2). The number of heads however, did not rise correspondingly. In fact cattle imported dropped from 61,882 in 1970 to 47,326 in 1974. Meat imports over the period was ₵21.3 million. It decreased from ₵5.0 million in 1970 to ₵2.3 million in 1973 but shot up again to ₵7.4 million in 1974.

Taking into consideration the rising demand for meat and the slow growth rate of domestic livestock production, imports of livestock and its products will continue during the initial plan period to supplement

what is produced locally and this can only be effected at an increasing cost. At present both annual imports of livestock and livestock products constituting ₵17 million together with locally produced livestock satisfy only about 50 per cent of the meat requirements of the population of the country.

1.54 Constraints and Problems

As a tropical country Ghana is faced with considerable problems in her attempts to develop a viable livestock industry. In the forest areas where water is plentiful pests like the tsetsefly cause considerable damage to the industry while in the more suitable savanna zones, the constant threat of drought together with the seasonal lack of water particularly between December and April have hindered efforts at large scale development. To these must be added the general inadequacy of extension and other supporting services and the absence of a well co-ordinated programme for livestock development. Other problems include worm infestation, foot and mouth diseases, external parasites infestation (e.g. tick infestation) pleuroneumonia and diseases due to nutritional deficiency. Local breeds of animal have relatively low genetic potential in growth rates and ultimate size because of the close in-breeding which is prevalent under the existing open conditions, poor livestock management, and inadequate capital and credit facilities.

Apart from these general problems, there are others which are associated with particular classes of livestock. For example, the development of pig breeding is retarded by the insufficiency of the supply and high cost of feed. As a non-ruminant, pigs cannot use large quantities of grass and other roughages. Pigs therefore require grain and other crops that are consumed by humans and poultry. Pigs also compete with poultry for fish meal. These factors are responsible for the high input cost in feed preparation for both pigs and poultry. The development of pig breeding is also hampered by certain cultural and religious practices and beliefs which make unprocessed pork not readily accepted in certain communities. Processed pork is, however, more readily acceptable to the market.

The poultry industry shares with pig breeding the problem of high cost of feed. The industry is, in addition, faced with the problem of inadequate supply of day-old chicks.

Sheep and goats have the singular problem of being raised in small numbers by the farmer and this prevents improvement of the management system and the provision of other services which lead to increased production. There is a further problem of in-breeding among the herds consequently retarding growth, fertility and health.

1.55 Proposals for Livestock Development during the Five-Year Plan period

The development of livestock and poultry in Ghana to meet the protein needs of the people during the plan period will involve the Animal Husbandry Department of the Ministry of Agriculture, the Veterinary Services Department and other private and public institutions and corporations as well as individual farmers.

The Animal Husbandry Department has responsibility for the provision of extension services to farmers and for the evolution of appropriate programmes to produce better breeds to replace the low yielding local stock. Over the plan period the Department will be strengthened and provided with resources to enable it provide more effective extension services. In addition the multiplication of improved breeding stock will be accelerated in order to ensure adequate supplies at reasonable prices to farmers engaged in livestock production.

Intensive Units of production will be part of the total programme. This will enable an appreciable amount of livestock and poultry products to be contributed to the entire national requirement of beef, mutton, chevon, poultry meat, pork and eggs. In this sense the intensive units imply the setting up of cattle, sheep and goats fattening units, poultry and pigs colonies in selected areas of the country.

A National Livestock Production Company will also be established to serve as the main vehicle for commercial production of livestock in the country.

Livestock Development

The livestock production sector can be divided into two categories:—

(*a*) Ruminant production

(*b*) Non-ruminant production.

Ruminant production.—includes cattle, sheep and goats. To expand cattle, sheep and goats production, attention will be focussed on making more effective use of:—

(*a*) the existing stock of these animals in Ghana;

(*b*) expertise in disease and pest prevention and control;

(*c*) suitable large tracks of land and water resources will be improved for grazing and pastures development.

To enable local herds of cattle to be given a greater attention and thus increase production, it has become necessary to establish communal projects in the following places:

UPPER REGION	Lawra, Tumu, Navrongo, Bawku
NORTHERN REGION	Damongo, Bole
BRONG-AHAFO REGION ..	Prang
ASHANTI REGION	Affram Plains
VOLTA REGION	Kete-Krachi, Adakpo, Tevikpo, Nkwanta
GREATER-ACCRA REGION ..	Appolonia
CENTRAL REGION	Kasoa.

These communal paddock projects are to support individual and group livestock farmers. Facilities will include pasture development, dug-out, fencing, use of artificial insemination, veterinary support, supply of breeder stocks, use of conserved feed and fodder and training in livestock management. Five of these communal paddocks are already in operation in Volta, Greater-Accra and Central Regions.

Intensive beef rearing programmes are to be set up in the main production areas of the Upper, Northern, Brong-Ahafo, Volta and Greater-Accra Regions. These intensive units for beef production are designed to produce beef faster from young animals which are to utilise rations made up of roughages and other waste or by-products of the milling industry and other agro-based industries. Such products will include rice-bran, wet spent malt, maize, wheat-bran, ground-nut cake and cotton seed. The improved techniques of nutrition associated with this fattening system will serve to demonstrate advantages of these innovations for adoption by present and prospective farmers.

In order to support the supply of breeding stocks to individuals, group farmers and the intensive units, the following stock breeding centres will be improved upon or established:

Beef Cattle

UPPER REGION	Babile/Lawra, Basue
NORTHERN	Damongo, Bole, Bimbilla, Pong-Tamale
BRONG-AHAFO	Wenchi, Atebubu
ASHANTI	Afram Plans (Drabonso)
VOLTA	Amelorkope, Kete-Krachi
GREATER-ACCRA	Nungua
CENTRAL	Winneba
WESTERN	Aiyinasie

Dairy Cattle

GREATER-ACCRA	Amrahia
EASTERN	Kwahu Hills

Sheep and Goats

UPPER	Busah
NORTHERN	Daboya, Pong-Tamale
BRONG-AHAFO	Kintampo
ASHANTI	Ejura—UNDP/Ghana Project
VOLTA	Nkwanta, Vakpo
GREATER-ACCRA	Nungua
CENTRAL	Pershie
WESTERN	Samanhu, Tumentum
EASTERN	Forifori

These centres will in addition serve as extension bases where individual and group farmers will be given in-service training in the techniques of good livestock management. They would be taught paddock construction, pasture and general livestock management. Ranches and farms owned by individuals and institutions would be encouraged.

Under the action programme drawn up to support the Five-Year Development Plan, the following targets have been set for the ruminants.

	Present Position	*Target*
Cattle	800,000	3,000,000
Sheep	1,500,000	4,000,000
Goats	1,500,000	4,000,000

For the ruminant sector, the total cost envisaged is ₵82 million broken down as follows:

Cattle Breeding Centres ..	31,000,000
Sheep and Goats Breeding Centre	6,000,000
Breeding Stocks	20,000,000
Communal Projects	20,000.000
	77,000,000
Intensive Units	5,000.000
Total	₵82,000.000

1.56 Non-ruminants Production

The non-ruminants include poultry, pigs and rabbits. The poultry sector has been the major animal protein contributor in Ghana for many years. As mentioned earlier, Ghana has been producing all her eggs and broiler requirements. It is only of late that the industry has been plagued by problems of inadequate feed, day-old chicks and drug supplies. This has resulted in substantial increases in the price of poultry and poultry-products. Poultry, like pigs, are very early maturing and it is very prudent that attention should be given to these animals to produce a substantial portion of the animal protein requirements. In fact, the two animals are on the short-term phase of the five-year development plan. To remove most of the constraints that plague the industry and set the industry on the right path, the following projects are proposed for the poultry industry during the plan period:—

(*a*) *A Grand-parent Poultry Project*—₵2,230,000.—Under the action programme of the five-year development plan, it is proposed to raise 36 million chicks per annum. Hitherto, the major hatcheries in the country have had to import parent birds twice a year to keep the production in operation. Importation has depended on allocation of import licences. Where it became impossible to meet all the requirements of hatcheries, their production had been below full capacities. The inability of the hatcheries to produce a steady supply of commercial chicks has led to:

(*a*) high cost of broiler meat and eggs;

(*b*) high losses on investment by poultry farmers.

The Grand Parent Poultry Project is aimed at filling a gap. The Grand parent stock which will be controlled by the Department of Animal Husbandry will produce parental chicks which will be supplied at cost to all hatcheries. The hatcheries will then supply commercial chicks to all poultry farmers. This project will, therefore, contribute a steady supply of day-old chicks. It is expected to site the project in the Krobo District near the Krobo Hills on the Akuse road.

(*b*) *Poultry Colonies.*—Poultry colonies for the production of commercial eggs and broiler meat are to be established in the Greater Accra, Eastern, Volta, Brong-Ahafo and Northern Regions. Initially, three colonies will be established in Greater Accra, Volta and Brong-Ahafo Regions. The bird populations are as follows:—

	GREATER ACCRA	
	Initial	*Final*
Layers	200,000	500,000
Broilers	250,000	500,000
	VOLTA	
Layers	200,000	300,000
Broilers	250,000	500,000
	BRONG-AHAFO	
Layers	200,000	300,000
Broilers	250,000	500,000

The poultry colony project is expected to cost about ₵4 million.

(*c*) *Hatcheries.*—The hatchery at Nkwakubew is to be repaired and expan ded. A hatchery at Adidome farm is to be bought, repaired and put into operation. It is expected that the hatcheries renovation and repairs would cost about ₵4 million.

(*d*) *Poultry Slaughter-houses and Cold Stores.*—Each poultry colony will have a slaughter-house and a cold store with deep freezing. This is estimated to cost about ₵6 million.

(*e*) *Feed Mills.*—For the poultry programme to succeed, there must be adequate supplies of feed. Feed supply to poultry and pigs has been rather erratic. The main constraint being inadequate supply of feed ingredients. To ameliorate the situation, it is proposed to establish the following feed mills in addition to those that are already in the country:

(i) A central feed mill with a capacity of 10 metric tons per hour will be installed. It will have a 10,000 metric ton grain silo with facilities for soyabeans silo space, and a vitamins and minerals pre-mixing plant. The premixes

plant will prepare pre-mixes for distribution to all local feed manufacturers. The central feed mill will in addition supply concentrates and prepared feed. It is estimated that the central feed mill will cost ₵6 million. This will be located in the Greater Accra Region.

(ii) *Regional Feed Mills*—₵7 million.—Seven regional feed mixing plants are to be established in Greater Accra, Volta, Brong-Ahafo, Northern, Upper and Western Regions. These mills are intended to support all poultry and pig projects in these regions as most of the producers in these areas have had to travel long distances to either Accra or Kumasi for feed supplies. The capacity of each plant is expected to be 5 metric tons an hour. Each plant will have a 5,000 metric ton silo with loading and unloading devices.

The production and development programme for poultry is estimated to cost ₵25.2 million cedis over the plan period.

The targets set for the five-year plan period for poultry are as follows:—

	Present	*Target*
Chicken		
(*a*) Layers	3,000,000	30,000,000 per annum
(*b*) Broilers	2,000,000	6,000,000 per annum
Turkeys ..	*not available*	1,000,000 per annum
Ducks ..	*not available*	1,000,000 per annum
Guinea fowls	*not available*	1,500,000 per annum

Pig Production in Ghana rests largely with small-scale private farmers and operators. The local black pig is the most common but it has not proved suitable for commercial production. The main source of breeding stock in Ghana is the Department of Animal Husbandry which has responsibility for multiplication and distribution of improved stock. Since commercial production depends on an adequate and regular supply of breeding stock, a grand-parent pig project is to be established in the Greater Accra Region. Like the poultry grand-parent project, this project is expected to supply all the parentals for multiplication for commercial production. It will also make available a steady supply of breeding stock. The pig breeding centres at Adidome, Nungua, Nkwakubew, Wa Doba, Pong-Tamale will be expanded and improved upon.

It is expected that the grand-parent project which will be a complex of breeding units, slaughter-house and processing unit for the production of ham, sausages, salami and bacon will be established during the plan period. The Grand-parent pigs project, improvements and renovation to the six breeding centres, the slaughter-house and processing units are estimated to cost ₵6 million.

The pig production programme will also depend on the Feed Mills to be established under the poultry programme for feed.

The target for the pig sector is 3,000,000 pigs per annum. This target will be met from both native and exotic pigs. The native pigs will have to be improved through extension education and management. With the introduction of processing, it is expected to increase the consumption of pork religious grounds being an exception.

Infrastructure.—For the purpose of promoting the development of livestock generally, and also for achieving the targets set under the action programme, the following infrastruture and conditions must be established:—

(*a*) Provision of water in all livestock production areas for human and livestock.
(*b*) Pasture development and improvement.
(*c*) Fencing.
(*d*) Equipment, machinery and transport.
(*e*) Housing.
(*f*) Farm roads.
(*g*) Electricity.
(*h*) Communication by telephone or motorola.
(*i*) Land.

Conditions.—It is very vital to have the following conditions met after infrastructural development if the programme should make a headway:

1. Breeding stocks for cattle, sheep and goats and grand-parent stocks for poultry and pigs.
2. Adequate feed supply.
3. Veterinary support.

Strategy.—The strategy to pursue to accelerate development is to adopt the project concept in the specific areas of production. The projects will be made to produce, support the private sector, act as demonstrations to the benefit of farmers and partially to stablise prices and consumer costs. If the various facets of the livestock production programme are to make any impact, it becomes obligatory for the crop sector to step up its production of the energy and vegetable protein portions namely maize, sorghum, groundnuts and soyabean. Efforts should be made to produce more Yellow maize specifically for feeding livestock and poultry. Feeding involves the use of premixes in combination with the afore-mentioned ingredients in order to maximize production.

TABLE 1

G. DOMESTIC LIVESTOCK PRODUCTION (IN '000s)

Year	*Cattle*	*Sheep*	*Goats*	*Pig*	*Poultry*	
1970	599	676	605	128	3,139	
1971	614	715	603	137	3,943	
1972	661	804	668	141	3,981	
1973	708	873	742	140	3,647	
1974	745	1,500	1,500	200	7,000	of which 4,000
		(905)	(744)	(124)	(4,225)	are improved.
Total ..	3,328	3,973	3,362	670	18,935	

TABLE 2

IMPORTS OF LIVESTOCK (LIVE ANIMALS—HERDS)

Year	*Bovine Cattle*	*Value in ₡*	*Sheep and Lambs*	*Value in ₡*	*Goats and Kids*	*Value in ₡*	*Poultry*	*Value in ₡*
1970	61,881	(6,943,344)	10,904	(154,936)	29,398	(421,707)	61,320	(61,331)
1971	55,713	(5,342,108)	15,621	(213,191)	30,440	(415,251)	119,705	(161,428)
1972	37,014	(4,571,980)	6,371	(78,409)	8,103	(115,570)	87,866	(206,612)
1973	33,721	(4,339,017)	8,118	(148,540)	13,628	(232,020)	136,060	196,127
1974	47,326	(3,677,416)	10,784	(208,967)	15,981	(236,806)	158,395	(154,286)
Total	235,656	30,373,865	51,798	804,043	97,549	1,421,354	563,346	779,784

	Swine		*Value in ₡*	
1971	6		(1,311)	33,380,357
1970		7,581,318		
1971		6,133,289		
1972	-	4,972,571		
1973	—	5,415,704		
1974		9,277,475		
Total	—	33,330,357		**33,380,357**

TABLE 3

LIVESTOCK IMPORTS (MEAT IN CWT.)

Year	*Beef*	*₡*	*Meat of sheep and Goats*	*₡*	*Pork*	*₡*	*Poultry*	*₡*	*Yearly Total ₡*
1970	67,648	**3,077,824**	53,646	**1,131,052**	36,603	**647,183**	9,387	**239,133**	5,094,192
1971	56,187	**2,202,770**	34,588	**818,785**	24,782	**508,409**	5,952	**176,240**	3,706,204
1972	24,820	**1,922,739**	11,515	**411,930**	8,482	**262,411**	1,583	**77,070**	2,674,150
1973	13,808	**1,173,369**	8,138	**400,456**	23,717	**786,137**	376	**19,974**	1,379,936
1974	48,068	1,623,826	14,420	923,459	36,593	1,558,283	4,875	250,619	7,466,187
Total	210,481	**11,300,528**	122,307	3,685.682	130,187	3,872,423	22,173	762,036	—

Total — ₡21,320,669

TABLE 4

IMPORTS OF LIVESTOCK PRODUCTS FOR THE PERIOD 1970–74 (IN CWT.)

Year	*Meat of Bovine animals e.g., Beef, (Veal)*	*Meat of Swine (Pork)*	*Poultry killed or (dressed)*	*Meat of Sheep and Goats, (mutton, Lamb)*
1970 ..	4,847	848	9,387	53,649
1971 ..	2,092	35	5,952	34,588
1972 ..	1,314	194	1,583	11,515
1973 ..	197	499	376	8,138
1974 ..	89	—	590	2,957

TABLE 5

PROJECTED LIVESTOCK PRODUCTION FOR THE FIVE-YEAR PLAN PERIOD (1975/76–1979/80)

BEEF PRODUCTION, DEMAND AND SHORTFALL

Year	*Herd population in '000*	*Number take-off in '000*	*Projected carcass yield in '000 metric tons*	*Projected beef carcass demand in '000 metric tons*	*Projected shortfall in '000 metric tons*	*Number of additional slaughters required in '000*
1975 ..	—	79.8	10.2	20.5	10.4	81.6
1976 ..	743	82.5	10.5	21.n	11.0	86.4
1977 ..	768	85.2	10.9	22.4	11.5	90.4
1978 ..	794	88.1	11.2	23.4	12.2	96.0
1979 ..	821	91.1	11.6	24.4	12.8	100.8
1980 ..	849	94.2	12.0	25.5	13.5	106.4

TABLE 6

SHEEP AND GOAT PRODUCTION, DEMAND AND SHORTFALL

Year	*Herd population in '000*	*Number take-off in '000*	*Projected carcass yield in '000 metric tons*	*Projected beef carcass demand in '000 metric tons*	*Projected shortfall in '000 metric tons*	*Number additional slaughters required in '000*
SHEEP						
1975 ..	2,209	397.6	4.4	6.8	2.4	224.0
1976 ..	2,562	461.2	5.0	7.1	2.1	196.0
1977 ..	2,971	534.8	5.8	7.4	1.6	149 3
1978 ..	3,446	620.3	6.7	7.8	1.1	102.6
1979 ..	3,997	719.5	7.8	8.1	0.3	28.0
1980 ..	4,636	834.5	9.0	8.5	0.5	—
GOATS						
1975 ..	2,884	793.5	5.4	5.7	0.3	44.8
1976 ..	3,262	913.4	6.2	6.6	0.4	59.7
1977 ..	3,755	1,051.4	7.1	7.5	0.4	59.7
1978 ..	4,322	1,210.2	8.2	8.7	0.5	74.6
1979 ..	4,975	1,292.0	9.5	10.0	0.5	74 6
1980 ..	5,726	1,603.3	10.9	11.5	0.6	89.6

TABLE 7

PIG MEAT PRODUCTION, DEMAND AND SHORTFALL

Year	*Herd population in '000*	*Number take-off animals in '000*	*Projected carcass yield in '000 metric tons*	*Projected pig meat demand in '000 metric tons*	*Projected shortfall in '000 metric tons (local)*	*Number additional slaughters required in '000*	*Large white*
1975 ..	431.6	226.9	4.8	5.8	1.0	48.6	18.9
1976 ..	474.8	249.6	5.2	6.1	0.9	43.7	16.8
1977 ..	522.3	274.6	5.7	6.4	0.7	34.0	12.1
1978 ..	578.5	302.0	6.3	6.6	0.3	14.6	5.6
1979 ..	631 9	332.2	6.9	6.9	0.0	—	—
1980 ..	655.1	365.4	7.6	7.2	0.4	—	—

TABLE 8

POULTRY PRODUCTION, DEMAND AND SHORTFALL

Year	*Nat/Flock population in '000*	*Number take-off in '000*	*Projected carcass yield in '000 metric tons*	*Projected beef carcass demand in '000 metric tons*	*Projected shortfall in '000 metric tons*	*Number additional slaughters required in '000*
1975 ..	14,292	17,579	12.8	14.6	1.8	3,864
1976 ..	15,721	19,337	14.0	15.3	1.3	2,791
1977 ..	17,293	21,270	15.4	16.0	0.6	1,288
1978 ..	19,022	23,397	17.0	16.8	0.2	—
1979 ..	20,924	25,737	18.7	17.5	1.2	—
1980 ..	23,017	28,311	20.5	18.3	2.2	—

TABLE 9

PROJECTED DAY OLD CHICK PRODUCTION (IN MILLIONS)

Year	*Ghanachix*	*Pomadze*	*State*	*Total*
1975–76	1.2	5.6	2.0	8.8
1976–77	1.2	7.4	2.4	11.0
1977–78	1.2	8.9	2.4	12.5
1978–79	1.2	10.0	2.4	13.6
1979–80	1.2	11.0	2.4	14.6

The hatcheries will be operating at almost full capacity by the end of the plan period. Mortality of chicks is assumed at 10 per cent.

TABLE 10

PROJECTED PRODUCTION OF MEAT IN '000 METRIC TONS

Year	*Beef*	*Pork*	*Mutton*	*Goat*	*Poultry*	*Rabbit*	*Bush Meat*	*Total*
1975–76 ..	10.5	5.2	5.0	6.2	14.0	8.3	0.90	50.10
1976–77 ..	10.9	5.7	5.8	7.1	15.4	27.3	0.90	73.15
1977–78 ..	11.2	6.3	6.7	8.2	17.0	62.6	1.00	113.00
1978–79 ..	11.6	6.9	7.8	9.5	18.7	144.0	1.05	199.55
1979–80 ..	12.0	7.6	9.0	10.9	20.5	145.0	1.10	206.10

TABLE 11

MEAT REQUIREMENTS AND SHORTFALL FOR THE POPULATION OF GHANA FOR FIVE-YEAR PERIOD IN '000 METRIC TONS

Year	*Total meat* requirements*	*Total production*	*Shortfall*
1975–76 ..	113	50.10	–62.90
1976–77 ..	124	73.15	–50.85
1977–78 ..	136	113.00	–23.00
1978–79 ..	148	199.55	+51.55
1979–80 ..	162	206.10	+44.10

*Based on projected nutritional requirements.
The shortfall in the first three years will be made up by other sources of protein such as fish and legumes.

TABLE 12

FARM COMMUNAL PADDOCKS

Region	*Location*	*Potential Acreage*		*Acreage Developed*	*Present Stock*	*Optimum Stock*	*Type of Stock*
UPPER	Lawra/Tumu	44,800	(18,144)	—	—	4,480	Beef Cattle
	Navrongo*	12,800	(5,184)	—	—	1,280	Beef Cattle
	Bawku	900	(364.5)	—	—	100	Beef Cattle
NORTHERN	Damongo	19,200	(7,776)	—	—	2,000	Beef Cattle
	Bole	19,200	(7,776)	—	—	2,000	Beef Cattle
BRONG-AHAFO	Techiman	19,200	(7,776)	—	—	2,000	Beef Cattle
	Prang	19,200	(7,776)	—	—	2,000	Beef Cattle
ASHANTI	Afram Plains	19,200	(7,776)	—	—	2,000	Beef Cattle
	Ejura	12,800	(5,184)	—	—	1,300	Beef Cattle
VOLTA	Kete Krachi	19,200	(7,776)	—	—	2,000	Beef Cattle
	Adakpo*	520	(210.60)	520 (210.60)	120	200	Beef Cattle
	Tovikpo*	640	(259.20)	—	—	80	Beef Cattle
	Nkwanta	6,400	(2,592.0)	—	—	640	Beef Cattle
GREATER-ACCRA	Appolonia*	1,280	(518.4)	—	—	140	Beef Cattle
CENTRAL	Kasua	16,000	(6,480)	—	—	1,600	Beef Cattle

*Existing communal paddock which will be expanded to their optimum during the plan period are marked by asterisks. ( ) Hectares.

TABLE 13

CATTLE STATIONS OPERATED BY ANIMAL HUSBANDRY SERVICE

Region	*Location*	*Number of acres*	*Hectares*	*Present stock*	*Imported heifers*	*Imported bulls*	*Optimum Number of cows*
UPPER	Babile	5,365	(2,173)	322	25	5	185
	Bazua	640	(259)	147	25	5	75
NORTHERN	Pong Tamale	12,800	(5,184)	977	500	40	900
	Bimbilla	3,400	(1,377)	137	300	40	350
	Bole	10,000	(4,050)	0	600	24	600
	Damongo District ..	11,520	(4,666)	0	625	25	625
BRONG-AHAFO	Wenchi	3,500	(1,418)	100	200	10	225
	Atebubu	3,450	(1,397)	0	200	10	200
ASHANTI	Affram Plains	10,600	(4,293)	0	500	20	500
EASTERN	Okwenya	1,280	(518)	0	500	20	500
	Kwahu Hills (Dairy) ..	3,000	(1,215)	620	500	20	500
GREATER ACCRA	Nungua (Brdg.)	2,570	(1,048)	35	30	10	150
	Amrahia (Dairy)	1,395	(365)	0	198	2	800
VOLTA	Amelorkope	2,000	(810)	501	150	15	350
	Kete Krachi	10,000	(4,050)	—	—	—	—
CENTRAL	Winneba	1,280	(518)	378	50	10	200
WESTERN	Aiyinasi	4,000	(1,620)	0	300	12	300

TABLE 14

MINISTRY OF AGRICULTURE—SHEEP AND GOATS PRODUCTION SCHEME—SIZE OF OPERATIONS

Region	*Location*	*Hectares*	*Acreage*	*No. of Ewes*	*No. of Rams*
UPPER	Busa	(518.4)	1,280	3,000	150
NORTHERN	Daboya	(518.4)	1,280	3,000	150
BRONG-AHAFO ..	Kintampo	(518.4)	1,280	2,500	125
ASHANTI	Ejura	(518.4)	1,280	3,000	150
VOLTA	Nkwanta	(1,620)	4,000	—	—
	Vakpo	(518.4)	1,280	1,000	50
GREATER ACCRA ..	Maledjor	(518.4)	1,280	1,000	50
	Nungua	(162)	400	500	50
	Total	(4,892.0)	12,080	14,000	725

TABLE 15

PIG MEAT PRODUCTION AND REQUIREMENTS FOR THE COUNTRY

Year	*Herd population*	*Projected carcass yield ('000 Metric tons)*	*Total requirements for Ghana ('000)*
1975	431.6	4.8	479.1
1976	474.8	5.2	535.3
1977	522.3	5.7	569.4
1978	573.5	6.3	594.7
1979	631.9	6.9	631.9
1980	655.1	7.6	655.1

TABLE 16

PIG MULTIPLICATION CENTRE AT ADIDOME—SCOPE OF OPERATION AND IMPACT ON NATIONAL PRODUCTION

Importation Programme	1975	1976	1977	1978	1979	1980
20 Boars/year	20	20	20	20	20	20
75 Female/year	75	75	75	75	75	75
Number of sows farrowing	75	150	225	225	225	225
F1 Weaners (12/sow/year)	900	1,800	1,700	2,700	2,700	2,700
F1 Females available for breeding	335	670	1,000	1,000	1,000	1,000
F1 Boars available for breeding	90	180	270	270	270	270
F1 Weaners for sales	475	950	1,430	1,430	1,430	1,430
Cull sows for sale	—	—	75	75	75	75
Impact on National Production						
F1 Sows farrowing (12/weaners/year 5 litters of 8 over life time	—	335	1,005	2,005	2,750	3,165
F2 generation produced	—	4,020	12,060	24,060	33,000	37,980
F2 Cull sows	—	—	—	—	255	505
Total sales stock available for:						
Breeding (F1)	425	850	1,270	1,270	1,270	1,270
Slaughter (F1 + F2)	475	4,970	13,565	25,565	34,760	39,990

TABLE 17

DAY-OLD CHICK PRODUCTION INCLUDING PROJECTIONS DURING THE PLAN PERIOD (IN MILLIONS)

	1973–74	1974–75	1975–76	1976–77	1977–78	1978–79	1979–80
Ghanachix	1.0	1.1	1.2	1.2	1.2	1.2	1.2
Pomadze	3.2	4.5	4.6	7.4	8.9	10.0	10.6
State Farms	1.0	1.7	2.0	2.4	2.4	2.4	2.4
Total	5.2	7.3	8.8	11.0	12.5	13.6	14.2

TABLE 18

PROJECTED POULTRY FEED REQUIREMENTS L/T (IN METRIC TONS)

	1975–76		1976–77		1977–78		1978–79		1979–80	
Maize	22,068	(22,428)	26,602	(27,037)	32,253	(32,780)	38,788	(39,428)	41,113	(41,785)
Soya bean or groundnut cake ..	4,347	(4,418)	5,240	(5,326)	6,550	(6,657)	7,443	(7,565)	8,098	(8,230)
Wheat bran	3,009	(3,058)	3,628	(3,687)	4,535	(4,609)	5,153	(5,237)	5,606	(5,698)
Fish meal	3,009	(3,058)	3,628	(3,687)	4,535	(4,609)	5,153	(5,237)	5,606	(5,698)
Total	32,433	(32,962)	39,098	(39,737)	47,873	(48,655)	56,537	(57,461)	60,423	(61,411)

1.57 VETERINARY SERVICES

The Department of Veterinary Services is charged with the responsibility for providing health services for the nation's livestock, poultry, pets and game animals in captivity. The main aims of the Department are:—

(1) to help in the development of a viable and vigorous livestock industry so as to increase the supply of meat and other livestock products;

(2) to protect public health by the control of animal diseases communicable to man;

(3) to alleviate pain and suffering in animals.

To achieve these aims the department provides the following services to farmers, state institutions and the general public:—

(*a*) the control and eradication of endemic, epizootic and other diseases through vaccinations, treatment and quarantine;

(*b*) the control of imported livestock through quarantine stations, thereby preventing the introduction of contagious and infectious diseases into the country;

(*c*) the education of farmers as to the importance of livestock sanitation and disease prevention;

(*d*) the inspection of meat and slaughter-houses so as to control the quality of meat available to the public.

Of the many factors which militate against successful livestock production, disease is one of the most important. Apart from its direct effect on the animals, reducing their rate of multiplication as well as the quality and quantity of their produce, diseases may so damage by-products like hides and skins as to make them unsuitable for use in the leather industry. The effective control of livestock diseases is therefore of great importance in any livestock development programme.

The following factors have been indentified as the most important constraints to a successful livestock disease control programme:

(1) Restricted veterinary coverage due to inadequancy of staff and mobility.

(2) Inadequate logistic support especially aggravated by shortages of drugs and vaccines.

(3) Inadequate laboratory diagnostic facilities in several parts of the country.

(4) Lack of basic epidemiological data in many areas.

The five-year development plan is designed to remove these constraints so as to make veterinary services to the farming community more effective. The objectives of the plan may be summarised as follows:—

(1) To greatly improve contact between veterinary staff and livestock owners so as to improve the surveillance and treatment of animal diseases and reassure farmers of the feasibility and profitability of livestock farming. To do this it is planned to train more staff and to provide them with the necessary transportation and logistic support. Every effort will be made to procure adequate quantities of essential drugs and vaccines.

(2) In addition to routine preventive control measures on a herd basis, more and more attention will be paid to individual clinical and surgical cases. Although most of the treatment will continue to be done on the farms, it will be necessary to provide some office and clinic accommodation in the regions and districts to facilitate the work in these areas.

(3) To improve on laboratory diagnostic support in the field. To do this, simple laboratories will be built in all regions and where livestock activity demands, mobile laboratory teams will be set up in addition.

(4) Recognising the importance of sheep and goats in the medium-term solution of the nation's meat problem, the department plans to give the control of sheep and goat diseases some urgent attention. To this end diseases of sheep and goats will be treated as a special project. A sheep and goat disease control unit will be set up in the regions to undertake investigation, diagnosis and treatment of sheep and goat diseases and offer extension service to farmers especially on problems of management and sanitation.

(5) Every effort will be made to improve on existing methods of diagnosis and control of poultry diseases.

(6) To improve on livestock supplies to the livestock and poultry industries the department will import for sale to farmers essential drugs and vitamin premixes. This will serve to reduce the cost of such essential inputs.

(7) The programme for the control of ticks and other ectoparasites will be intensified not only to improve on livestock production but also with a view to producing good quality hides and skins for tannery and for export.

(8) An artificial insemination programme which was started in the Tongu district of the Volta Region two years ago, has got off to a good start. During the plan period this programme will be extended to cover all the important cattle rearing areas of the country.

(9) The public health activities of the department will be intensified. The control of rabies and other animal disease communicable to man will be tackled with added vigour. The meat inspection service will be extended to cover more slaughter-houses and a new service, hides and skins quality control service, will be provided at the slaughter-houses.

VETERINARY SERVICES DIVISION

1.58 Special Projects

Regional Office and Clinic.—The growth of the livestock industry in recent times has involved areas which hitherto were concerned only with food crops. In these areas veterinary activity was until now, very limited. With the expansion of livestock activity in these areas, however, it has become necessary to greatly improve veterinary services in these places. Such expansion of veterinary services necessitates the provision of veterinary clinics, laboratories and offices. As a first step it has been decided to provide these facilities at all the regional headquarters.

Quarantine Stations.—This project consists of the construction of inspection kraals, transit quarters, isolation kraals and office block all at the Mongonori Quarantine Station at Bawku. Provision is also made for the fencing of the entire station. Over the years this very important quarantine station where large amounts of revenue are collected daily, has been allowed to deteriorate to such an extent that it becomes almost impossible to effectively isolate newly arrived animals from those which have served their quarantine period. This lack of proper isolation is reflected in the rapidity with which outbreaks of Foot and Mouth Disease spread through the entire station when they occur, often necessitating the closure of the station for weeks. The project is designed to correct this anomally and to ensure that there is a more effective barrier against the introduction of disease from the quarantine station to our national herds.

Central Veterinary Laboratory.—This project is designed primarily to provide facilities for the manufacture of vaccines and other biologicals needed for livestock work. The facilities will include those for quality control and safety tests. The laboratory is intended also to provide facilities for epidemiological studies and post-graduate research programmes on current veterinary problems.

Rural Veterinary Health Centres.—Information reaching the department suggests that in many districts livestock owners find it difficult to get clinical attention for their livestock and pets, although there are officers stationed in such places. The difficulty appears to be caused by the fact that these officers can only operate from their own one-roomed residences.

Central Veterinary Stores.—The growth of veterinary services in the country has reached a stage where large volumes of stores including drugs and equipment, are purchased every year. These are presently stored in Accra in several scattered rooms, for redistribution to the field

on requisition. Because of the inadequacy of store accommodation it is very difficult to keep the Central Stores properly. The need for a Central Veterinary Store in Accra has therefore become paramount as considerable savings will be made in time and money through the keeping of proper stores if such a building is provided.

Regional Veterinary Laboratories.—Up till now the whole of the veterinary services has depended for laboratory support on the veterinary laboratory at Pong-Tamale and lately on the one at Accra. Owing to difficulties of transportation a considerable number of specimens reaching the laboratories from the field get rotten and useless en route. With the tremendous increase in poultry production in the country, especially in Ashanti, it has become imperative to offer the farmers in these regions some local laboratory service. This will offer prompt diagnosis and therefore quicker and more efficient treatment which can save the farmers a lot of trouble and expense. These laboratories are intended to be fairly modest and will have only the basic equipment necessary for the efficient performance of the diagnostic work. Other more complicated investigations will have to be referred to the Pong-Tamale or the Accra Laboratory.

Animal Hospital Accra.—The volume of clinical and surgical work in Accra is such that a fully equipped animal hospital has now become necessary. At the moment small animal clinic is done in office accommodation, converted for the purpose with no facilities for recovery room, changing room, etc. Large animal surgery is done on the lawns with the unavoidable contamination from flies, dust, enthusiastic spectators and inclement weather. People who bring their animals for treatment have nowhere to sit. These conditions are not only bad for the client and his animal but also it does not produce the atmosphere necessary for the clinician to perform his duty. The animal hospital will correct all these.

Bungalows for Veterinary Officers.—The number of veterinary officers in the Department is growing very fast. In 1970 there were only 16 veterinary surgeons at post. By 1975 this figure had risen to 42 and by the end of the plan period it is estimated that there will be 75 veterinary surgeons in the service. To give effective veterinary coverage to the livestock industry these officers have to be deployed in the rural areas where most of the veterinary activities are concentrated. In most of these areas, however, it is difficult to find accommodation for the officers. It has become necessary therefore to provide bungalow accommodation in those districts where these officers are deployed.

9. *Vehicles.*—Mobility is of the utmost importance to the Veterinary Services Department. Almost all veterinary work is done on individual farms and this demands considerable mobility. The present fleet of official vehicles is grossly inadequate and if the increase in the staff position should mean anything it will be imperative to provide many more vehicles. Water for livestock is a real problem in many parts of the country, especially in the dry season. As is well known, even human beings suffer from

this problem from time to time. The Water and Sewerage Corporation naturally supplies water primarily for human use. Thus the Department has had to help with the supply of water to some livestock farms in desperate need of water in the dry season. To provide this essential service the Division plans to have one water tanker in each region. Besides suplying water to farms, the tankers will be used all the year round to fill the cattle dips with water so that the control of ectoparasites could go on without interruption.

Tsetse and Trypanosomiasis Control.—Animal trypanosomiasis is endemic in all parts of Ghana. This disease has held back, and is still holding back, the economic development of large areas of Africa, including Ghana. Trypanosomiasis has caused, among other things:

(*a*) Unbalanced distribution of population and livestock in relation to land and water resources.

(*b*) Reduced agricultural productivity and output:

(i) it has reduced human productivity by the disease in man and caused shortage of animal proteins by the disease in animals.

(ii) it has drastically reduced animal production with particular reference to meat quality and trade.

(iii) the disease is directly responsible for the absence of crop-livestock balance and the absence of the impact of mixed farming on productivity and incomes.

(iv) animal trypanosomiasis prevents livestock improvement programmes, especially in relation to the introduction of exotic breeds.

(v) the disease has caused shortage of draught animals in present and potential farming areas.

Animal trypanosomiasis is controlled by two methods namely:—

(*a*) treatment of clinical cases and prophylatic treatment of animals in High Risk Areas.

(*b*) eradication of tsetse-flies. This is the most effective way of dealing with the problem. However, it requires a specialized set up and trained staff. It is generally very expensive and time consuming. Although it has been used extensively in other parts of Africa, notably South Africa, Rhodesia, East Africa and Nigeria, it has not been applied yet in Ghana as a means of controlling animal trypanosomiasis.

It is proposed therefore, to establish a unit within the Ghana Veterinary Services charged with the control of tsetse and animal trypanosomiasis. The unit will confirm distribution of tsetse-flies and evaluate the degree of risk to livestock. It will control and eradicate tsetse-flies in areas where it is feasible to do so. It will undertake treatment of animals and co-ordinate with national and international bodies in the control of trypanosomiasis.

Artificial Insemination Scheme.—There is considerable demand for meat in Ghana. Fresh and processed beef form the greatest portion of the meat supplies and a very large part of this is imported either as live cattle from neighbouring West African countries or as chilled or frozen beef from elsewhere. The pastures in Ghana are, in many respects, superior to those of the countries which are our main sources of supply of cattle. In the light of this, the need to increase cattle production in Ghana, cannot be over-emphasized. One very important way of improving the numbers and the quality of the stock is through the use of artificial insemination. The benefits of an artificial insemination scheme include the following:—

(*a*) local cattle farmers can secure the service of top quality overseas bulls at a moderate cost;.

(*b*) the importation of frozen semen is far cheaper than the importation of bulls;

(*c*) the difficulty of maintaining a bull on the farm is eliminated;

(*d*) the dangers of importang exotic cattle diseases is almost negligible with frozen semen;

(*e*) livestock advisers will have regular contact with cattle farmers;

(*f*) as farmers have to watch out for females on heat the heard is under frequent examination and any diseases will be noticed promptly.

A beginning has already been made in the Tongu District of the Volta Region. In the plan period the programme will be extended to cover all the important cattle raising areas of the country.

Sheep and Goat disease control and Extension.—Although nutritional deficiencies and management problems contribute to losses of sheep and goats, by far the most important cause of death of these animals is disease. Ghana has throughout the years concentrated her efforts on the control of the epizootic diseases of cattle and poultry with the result that very little attention has been paid to the smaller ruminants.

Sheep and goats are traditionally reared in most parts of the country and they do contribute to quite an extent to the protein requirements of the nation. By virture of their ability to produce two crops a year and the inherent ability of some of them to produce twins, well-organized sheep and goat farms may in the long run produce the bulk of the meat requirements in this country.

As an adjunct to Operation Feed Yourself this Department has started a programme for the control of sheep diseases. To give the programme the importance it deserves, it is placed under capital development so that in the period of the Five-Year Development Plan it may be built up to a high level.

The project will lead to a more effective control of diseases and other problems of sheep and goat production and consequently to a more rapid increase in the population of these animals.

Conttrol of Ticks and other Ectoparasites.—One of the major disease problems affecting cattle production, and to some extent sheep and goat production, is tick infestation and other parasitic skin conditions. Ticks cause their damage in two major ways namely:

(i) their direct effect on the animal as a result of the tremendous amounts of blood they suck and the damage they cause to the hide of the animal; and

(ii) their indirect effect through the transmission of toxins and disease especially protozoal and nickettsial diseases. The hides of animals which constitute an important foreign exchange earner in many countries is rendered useless for the manufacture of leather goods.

The control of ticks and other skin conditions of ruminants constitutes a major challenge to the Veterinary Services and requires special attention and considerable amounts of money. The Department has started, in a modest way, to build dips and spraying units in the major cattle rearing areas of the country. However the efforts made so far are on such a small scale, compared to the magnitude of the problem, that the necessary impact is not being achieved. The aim is to provide dips and spraying units in such numbers that no farmer would have to go more than five miles to get his animal dipped. The more dips can be provided, the greater the frequency of dipping and the better the results.

1.59 Training

A. LOCAL

(i) *Pong Tamale Veterinary College.*—The intake of students to the Pong Tamale Veterinary College will be increased by 50 per cent during plan period. To provide accommodation for the increased student population one more dormitory block will be put up.

(ii) *University of Ghana Diploma Course.*—The Department will continue to sponsor deserving technical officers for the National Diploma Course in Animal Health at the University of Ghana. The annual intake will be increased to ten.

B. OVERSEAS

(iii) *F.A.O./W.H.O. Training Course for Meat Inspectors.*—More technical officers will be sponsored for this training programme.

(v) *Professional Veterinary Studies.*—The Department will continue its programme of training veterinary doctors for the service. Candidates will be sent for both undergraduate and post-graduate programmes.

SUMMARY OF THE FIVE-YEAR DEVELOPMENT PLAN

VETERINARY SERVICES

	1st Year ¢	*2nd Year* ¢	*3rd Year* ¢	*4th Year* ¢	*5th Year* ¢	*Total* ¢
Constructional Works	1,118,000	1,414,000	871,000	1,528,500	751,700	5,683,200
Plant, Equipment and Vehicles	441,960	665,600	377,020	435,000	457,000	4,680,180
Drugs, Vaccines and Supplies	2,301,500	2,549,000	2,500,000	3,000,000	3,000,000	13,350,500
Training	85,000	188,000	250,000	250,000	400,000	1,173,000
Research	50,000	55,000	6,000	65,000	8,000	1,570,000
Other Capital Expenditure	635,000	769,300	1,090,000	1,180,000	860,000	4,534,300
Grand Total ..	4,631,460	5,640,900	5,153,000	5,854,870	5,548,000	30,991,180

Details of Expenditure	Number	Administration	Accra	Volta	Eastern	Central	Western	Ashanti	Ahafo	Northern	Upper	Total
		¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
CONSTRUCTIONAL WORKS												
1. Regional Laboratories	—	—	—	—	—	—	—	—	40,000	—	40,000	80,000
2. Central Stores	—	35,000	—	—	—	—	—	—	—	—	—	35,000
3. Slaughter-house	—	—	—	—	—	—	—	—	20,000	—	—	20,000
4. Regional Office and Clinics	—	—	50,000	30,000	50,000	30,000	15,000	10,000	—	60,000	25,000	270,000
5. Junior Staff Quarters	—	—	25,000	16,000	30,000	—	—	30,000	30,000	—	—	131,000
6. Veterinary Laboratory (Central)		40,000		—	—			—	—	—	—	40,000
7. Quarantine Stations	—	—		—	—			—	—	—	20,000	20,000
8. Boys' Dormitory	—	48,000	—	—	—	—	—	—	—	—	—	48,000
9. Sheep Pens and Dips	—	—	—	—	2,000	—	—	10,000	2,000	—	—	14,000
10. Rural Veterinary Health Centres	—	—	—	9,000	8,000	—	—	—	44,000	—	100,000	161,000
11. Quarantine Station—Kennels	—	—	—	5,000	—	—	—	—	—	—	—	5,0000
12. Bungalows	—	—	75,000	24,000	24,000	50,000	50,000	24,000	47,000	—	—	294,000
Total Constructional Works	—	123,000	150,000	79,000	119,000	80,000	65,000	74,000	183,000	60,000	185,000	1,111,000
PLANT AND EQUIPMENT—FARM VEHICLES												
1. Plant and Machinery	—	20,000	—	1,000	—	6,000	2,000	2,000	6,000	2,000	1,880	40,880
2. Equipment (Office)	—	5,000	5,000	1,000	2,000	—	—	6,000	40,000	1,000	26,250	86,750
3. Furniture	—	36,000	1,500	1,200	2,000	1,500	—	3,000	2,000	—	8,130	55,330
4. Vehicles	—	234,000	—	—	—	—	—	—	—	—	—	234,000
5. Laboratory Equipment	—	25,000	—	—	—	—	—	—	—	—	—	25,000
Total Plant and Equipment—Farm Vehicles	—	320,000	6,500	3,700	4,000	7,500	2,000	11,000	48,000	3,000	36,260	441,960
DRUGS AND VACCINES	—	224,000	10,000	5,000	5,000	5,000	5,000	7,000	7,000	11,000	10,500	2,301,500
TRAINING	—	85,000	—	—	—	—	—	—	—	—	—	85,000
RESEARCH	—	50,000	—	—	—	—	—	—	—	—	—	50,000
OTHER CAPITAL EXPENDITURE												
1. Fencing, Posts and Wires	—	70,000	—	—	—	—	—	—	—	—	—	70,000
2. Purchase of Animals	—	50,000	—	—	—	—	20,000	—	—	—	—	70,000
3. Sheep and Goats Disease Control		90,000					60.000		—			150,000
4. Telephone, Electricity and Water connections		—										—
5. Tsetse and Trypanosomiasis Control		100,000			—	—		—	—		—	100,000
6. Sheep and Goats Experimental Farm	—	—	—	—	—	—		10,000	—	—	—	10,000
7. Ticks and other Ectoparasite Control	—	150,000	—	—	—	—	—	—	—	—	—	150,000
8. Artificial Insemination	—	35,000	—	—	—	—	—	—	—	—	—	—
Total Capital Expenditure	—	545,000	—	—	—	—	80,000	10,000	—	—	—	635,000
Total Veterinary Services	—	3,333,000	162,500	87,000	128,000	92,500	152,000	102,000	238,000	74,000	231,760	4,631,460

Details of Expenditure	Account Number	Central Administration	Greater Accra	Volta	Eastern	Central	Western	Ashanti	Brong-Ahafo	Northern	Upper	Total
		¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
CONSTRUCTIONAL WORKS												
1. Bungalow	—	45,000	—	—	—	10,000	30,000	—	75,000	—	—	160,000
2. Junior Staff Quarters	—	18,000	—	35,000	15,000	15,000	—	7,000	—	90,000	15,000	195,000
3. Boys' Dormitory, Pong-Tamale	—	280,000	—	—	—	—	—	—	—	—	—	280,000
4. Classroom and Library	—	10,000	—	—	—	—	—	—	—	—	—	10,000
5. Central Stores	—	70,000	—	—	—	—	—	—	—	—	—	70,000
6. Sheep Pens and Dips	—	15,000	—	—	—	5,000	—	—	—	—	—	20,000
7. Ambulatory Centre	—	—	70,000	—	—	—	—	—	—	—	—	70,000
8. Regional Offices and Clinics	—	—	—	70,000	100,000	100,000	—	—	25,000	—	—	295,000
9. District Offices	—	—	30,000	—	—	—	—	—	—	—	—	30,000
10. Quarters (Animal Attendants)	—	—	—	—	—	5,000	—	—	—	—	—	5,000
11. Regional Laboratory	—	—	—	—	—	20,000	—	15,000	—	—	—	35,000
12. Quarantine Stations	—	—	—	—	—	—	—	—	—	—	20,000	20,000
13. Rural Veterinary Health Centres	—	—	—	30,000	25,000	20,000	15,000	15,000	35,000	20,000	25,000	185,000
14. Departmental Rest-house	—	—	—	—	—	—	—	—	—	—	—	—
15. Extension to Wa Office	—	—	—	—	—	—	—	—	—	—	—	—
16. Water Reservoir Tank	—	—	—	—	—	—	—	—	—	—	6,000	6,000
17. Assembly Hall	—	—	—	—	—	—	—	—	—	—	—	—
18. Dining Hall and Kitchen	—	25,000	—	—	—	—	—	—	—	—	—	25,000
19. Clinics, Kennels and Stables		8,000	—	—	—	—	—	—	—	—	—	8,000
Total Constructional Works		471,000	100,000	135,000	140,000	175,000	45,000	37,000	135,000	110,000	66,000	1,414,000
PLANT, EQUIPMENT, FURNITURE AND VEHICLES												
1. Plant and Machinery	—	40,550	4,500	1,500	8,000	8,000	5,000	3,000	6,000	15,500	5,000	97,050
2. Vehicles	—	220,000	—	—	—	—	—	—	—	—	—	220,000
3. Offices Equipment	—	9,350	8,200	8,600	3,000	6,000	2,400	3,000	10,500	13,000	6,000	70,250
4. Furniture	—	18,000	1,500	10,000	4,000	13,500	4,500	—	15,000	—	4,000	70,500
5. Laboratory Equipment	—	150,000	—	—	—	5,000	—	—	4,000	—	5,000	164,000
6. Kitchen Equipment	—	42,000	—	—	—	—	—	—	—	—	—	42,000
7. College Farm Equipment	—	2,000	—	—	—	—	—	—	—	—	—	2,000
Total Plant, Equipment, Furniture and Vehicles	—	481,900	14,200	20,100	15,000	32,900	11,900	6,000	35,500	28,500	20,000	665,600
DRUGS AND VACCINES	—	2,500,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	7,000	7,000	2,549,000
TRAINING	—	188,000	—	—	—	—	—	—	—	—	—	188,000
RESEARCH	—	55,000	—	—	—	—	—	—	—	—	—	55,000
OTHER CAPITAL EXPENDITURE												
1. Fencing Post and Wire	—	80,000	—	—	—	—	—	—	—	—	—	80,000
2. Purchase of Animals	—	75,000	—	—	—	—	—	—	—	—	—	75,000
3. Sheep and Goats Disease Control	—	40,000	—	—	—	—	—	—	—	—	—	40,000
4. Telephone, Electricity and Water connections	—	2,000	—	—	—	6,000	—	2,000	10,000	40,000	2,000	62,000
5. Tsetse and Trypanosomiasis Control		85,000	—	—	—	—	—	—	—	—	—	85,000
6. Artificial Insemination		75,000										75,000
7. Tick and other Ectoparasites Control		40,000										40,000
8. Bore-hole Water (Techiman Farm)		—							20,000			20,000
9. Canteen services		45,000			—	—	—		—	—	—	45,000
10. Sheep and Goats Disease Investigation Farm		—	—	—	62,000	15,000	100,000	—	—	60,000	—	237,000
11. Paddock Construction (Techiman Farm)	—	—	—	—	—	—	—	—	10,000	—	—	10,300
12. Cattle Disease Investigation Farm	—	—	—	—	—	—	—	—	—	—	—	—
13. Rabies Control	—	—	—	—	—	—	—	—	—	—	—	—
Total Other Capital Expenditure	—	442,000	—	—	62,000	21,000	100,000	2,000	40,000	100,300	2,000	769,300
Total Items 7, 8 and 9	—	4,137,900	144,200	155,100	217,000	228,500	157,200	45,000	210,500	238,500	88,000	5,640,900

Details of Expenditure	Nairobi	Central	Coast	Eastern	Nyanza	Rift Valley	Western	North Eastern	Lower	Upper	Total
	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
II. CAPITAL											
CONSTRUCTIONAL WORKS											
1. Regional Offices and Clinics	—	50,000	—	50,000	—	10,000	10,000	—	—	—	120,000
2. Junior Staff Quarters	—	—	27,000	30,000	—	—	30,000	10,000	10,000	10,000	117,000
3. Veterinary Laboratory (Central)	120,000	—	—	20,000	—	—	20,000	—	—	30,000	190,000
4. Quarantine Stations	—	—	—	—	—	—	—	—	—	—	—
5. Regional Laboratories	—	—	45,000	40,000	—	—	—	—	100,000	—	185,000
6. Sheep Pens and Dips	—	—	2,000	2,000	—	—		4,000	6,000	—	14,000
7. Rural Veterinary Health Centres		12,000	24,000	8,000				36,000	60,000	100,000	240,000
8. Quarantine Station—Kennels	—	—	—	5,000				—	—	—	5,000
Total Constructional Works	120,000	62,000	98,000	155,000	—	10,000	60,000	50,000	176,000	140,000	871,000
PLANT, EQUIPMENT, FURNITURE AND VEHICLES											
1. Plant and Machinery	20,000	—	1,200	—	6,000	2,500	2,500	7,000	3,000	2,350	44,550
2. Equipment (Office)	5,000	6,000	2,000	2,000	—	—	6,000	4,000	2,000	32,810	59,810
3. Furniture	—	1,500	1,500	2,000	1,500	—	3,000	4,000	8,000	10,160	31,660
4. Vehicles	241,000	—	—	—	—	—	—	—	—	—	241,000
5. Laboratory Equipment	—	—	—	—	—	—	—	—	—	—	—
Total Plant, Equipment, Furniture and Vehicles	266,000	7,500	4,700	4,000	7,500	2,500	11,500	15,000	13,000	45,320	377,020
DRUGS AND VACCINES	2,426,000	5,000	5,000	5,000	5,000	5,000	7,000	7,000	13,000	12,000	2,500,000
TRAINING	250,000	—	—	—	—	—	—	—	—	—	250,000
RESEARCH	60,000	—	—	—	—	—	—	—	—	—	60,000
OTHER CAPITAL EXPENDITURE											
1. Fencing Posts and Wires	70,000	—	—	—	—	—	—	—	—	—	70,000
2. Purchase of Animals	80,000	—	12,000	—	—	30,000	—	—	—	—	102,000
3. Sheep and Goats Disease Control	100,000	—	—	—	—	70,000	—	—	—	—	170,000
4. Telephone, Electricity and Water connections	—	—	—	—	—	—	—	—	—	—	—
5. Sheep and Goats Experimental Farms	—	—	—	—	—	—	6,000	—	—	—	6,000
6. Tsetse and Trypanosomiasis Contro	362,200	—	—	—	—	—	—	—	—	—	362,200
7. Ticks and other Ectoparasite Control	180,000	—	—	—	—	—	—	—	—	—	180,000
8. Artificial Insemination	200,000	—	—	—	—	—	—	—	—	—	200,000
Total Other Capital Expenditure	972,200	—	12,000	—	—	100,000	6,000	—	—	—	1,100,200
Total Veterinary Services	3,858,200	74,500	119,700	164,000	12,500	117,500	84,500	72,000	102,000	197,320	4,802,220
CONSTRUCTIONAL WORKS											
1. Regional Offices and Clinics	—	—	—	50,000	—	8,000	—	—	80,000	20,000	138,000
2. Junior Staff Quarters				40,000		—	15,000	30,000	20,000	—	525,000
3. Veterinary Laboratory (Central)	420,000			10,000			20,000				450,000
4. Quarantine Stations	—			—							—
5. Regional Laboratories	—	—	—	—	45,000	—	—	—	200,000	—	245,000
6. Sheep Pens and Dips	—	—	4,500	2,000	—	—	—	3,000	—	—	9,500
7. Rural Veterinary Health Centres	—	12,000	12,000	8,000	—	—	—	24,000	50,000	100,000	206,000
8. Quarantine Station—Kennels	—	—	—	5,000	—	—	—	—	—	—	5,000
9. Bungalows	—	—	—	—	—	—	—	30,000	60,000	60,000	150,000
10. Dormitory Block	200,000	—	—	—	—	—	—	—	—	—	200,000
Total Constructional Works	620,000	12,000	16,500	115,000	45,000	8,000	35,000	87,000	410,000	180,000	1,528,500

Details of Expenditure	Account Number	Central Administration	Greater Accra	Volta	Eastern	Central	Western	Ashanti	Brong-Ahafo	Northern	Upper	Total
		¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
PLANT, EQUIPMENT, FURNITURE AND VEHICLES												
1. Plant and Machinery	—	30,000	—	1,500	—	8,000	3,000	3,500	7,000	—	2,940	55,940
2. Equipment (Office)	—	15,000	6,000	2,500	—	—	—	7,000	4,000	—	41,020	76,120
3. Furniture	—	—	2,000	1,310	—	1,500	—	3,500	2,000	—	12,700	23,010
4. Vehicle	—	280,000	—	—	—	—	—	—	—	—	—	280,000
Total Plant, Equipment, Furnitureand Vehicles		325,000	8,000	5,310	—	9,500	3,000	14,000	13,000	—	56,660	435,070
DRUGS AND VACCINES	—	2,910,000	8,000	8,000	8,000	8,000	8,000	10,000	10,000	15,000	15,000	3,000,000
TRAINING	—	250,000	—	—	—	—	—	—	—	—	—	250,000
RESEARCH	—	65,000	—	—	—	—	—	—	—	—	—	65,000
OTHER CAPITAL EXPENDITURE												
1. Fencing Posts and Wires	—	70,000	—	—	—	—	—	—	—	—	—	70,000
2. Purchase of Animals	—	40,000	—	—	—	—	40,000	—	—	—	—	80,000
3. Sheep and Goats Disease Control	—	110,000	—	—	—	—	—	—	—	—	—	110,000
4. Telephone, Electricity and Water connections	—	—	—	—	—	—	—	—	—	—	—	—
5. Tsetse and Trypanosomiasis Control	—	470,000	—	—	—	—	—	—	—	—	—	470,300
6. Sheep and Goats Experimental Farm	—	—	—	—	—	—	—	—	—	—	—	—
7. Ticks and other Ectoparasites Control	—	200,000	—	—	—	—	—	—	—	—	—	200,000
8. Artificial Insemination	—	250,000	—	—	—	—	—	—	—	—	—	250,000
Total Capital Expenditure	—	1,140,300	—	—	—	—	40,000	—	—	—	—	1,180,000
Total Veterinary Services	—	5,310,300	28,600	29,810	123,000	62,500	59,000	59,000	110,000	425,000	251,660	5,854,870

FISHERIES

1.60—State of the Fishing Industry, 1970–74

Ghana's fishing industry has made tremendous strides during the past decade, developing from a predominantly traditional canoe fleet to a mixed traditional/modern fleet with fishing crafts ranging from the canoe to the factory trawler. The canoe fisheries are, however, still of great importance and normally account for over half of the marine catches, which in turn, represent about two-thirds of total landings. The great majority of the 8,700 canoes operating in the inshore water are equipped with outboard motors and vary in size from 8 m, 5-man units mainly for deep sea fishing for tuna and breams, to larger 13 m, 15-man inshore fishing crafts for catching sardines and mackerel. There are also about 18 refrigerated trawlers and 350 small to medium size trawlers and seiners exploiting grounds 15 to 28 km from the coast.

Total domestic production of fish is presented in Table 1 and this, though fluctuating, show an average of around 185,000 metric tons per annum from 1970–74. This represents about 33 per cent of the domestic capacity for frozen and chilled fish. The fishing industry is estimated to possess the capacity to produce about 560,000 metric tons of fish annually but even half of this is not realised at the moment. With an estimated total consumption currently running at 250,000 metric tons, there is a shortfall of 65,000 metric tons.

The port of Tema is the only good one available to the industry. This is grossly inadequate for the industry of over 350 vessels, so that congestion is a common feature at the port. This causes an over-concentration of activity in an area of close proximity to Tema, whilst the more distant fishing grounds are untouched.

Apart from marine fisheries, inland fisheries also play an important role in the industry, and this is particularly the result of the creation of the Volta Lake. At present there are 920 fishing villages with some 24,000 fishermen and their families living along the shores of the Lake. Fish production from the Volta Lake is about 40,000 metric tons per annum. Fish farms have also been established, particularly in the Northern and Upper Regions where difficulties in transporting fish from the coastal areas make it imperative to have such farms. A growing number of commercial and experimental ponds have, however, been established.

There are three methods used in processing fish in Ghana. There are the traditional methods of smoking, salting and drying, and there is the industrial method of canning. The Tema Food Complex Corporation at the moment cans about 3,000 metric tons of fish annually. Mankoadze fisheries also can some of their catch. The existing processing capacity based on traditional technology is inadequate from both the point of view of the consumer and that of the producer. Most consumers prefer smoked fish to fresh fish primarily because it stores better and longer. The average Ghanaian family does not own a refrigerator and cannot keep fresh fish for any length of time in that state.

Until quite recently the traditional system of fish marketing led to the existence of numerous agents or middlemen who absorbed a substantial percentage of profits from the industry, thereby leaving the producers very little from their operations. The State Fishing Corporation which has many outlets now has designated shops where fish is sold in order to eliminate the speculators and profiteers. Some amount of fish caught in Ghanaian waters is exported to other countries. This consists mainly of tuna which has a very good export market. Set against the demand for fish of 250,000 metric tons the full utilisation of the capacity generated within the industry would yield a surplus of about 310,000 metric tons for export.

Ghana imports a substantial amount of fish and this is presented in Table 2. These imports consist mainly of canned sardines and mackerels.

1.61 Major Problems of the Industry

The relatively low productivity in the fishing industry is due *inter alia* to the following factors:—

Shortage of skilled manpower.—There are not enough Ghanaians with the required training as captains, ship engineers and mates to man the fishing vessels, and until quite recently the industry had to depend, to a large extent, upon expatriate crews to man its vessels. The existing training facilities at the Nautical College, Nungua, needs to be expanded to take care of the increasing number of cadets seeking admission. There is, however, the tuition fees which sponsors of cadets from private industry find difficult to meet. A few Ghanaians sponsored by some of the established fishing companies have left the industry to work elsewhere because of the disparities in existing conditions of service. The public sector also shares the same experience of considerable difficulties in recruiting skilled personnel to man its vessels although this has considerably reduced since the return of few Ghanaians trained in the Soviet Union and Norway.

Inadequate procurement of spare parts and other necessary supplies, partly as a result of poor credit facilities and the inadequacy of import licence allocations, has also affected the productivity of the industry.

There is also an inadequacy in port and landing facilities which lead to extreme congestion and loss in production, particularly during the peak season. The fishing port in Tema is the only good one but this is inadequate and as such fishing vessels, have to queue for long periods before unloading their catch.

The lack of adequate cold storage facilities has an adverse effect on landings and creates bottle-necks for marketing and distribution.

There is inadequate research effort coupled with an ineffective extension service. The bulk of small artisanal fishermen depend mainly on the weather and activity of sea-gulls to detect the presence of fish shoals. Lack of research devices make it difficult for the very few extension officers to introduce and disseminate these innovations to the fishermen.

Lack of adequate capital to enable operators to meet the costs of repairs and maintenance, spare parts and replacement for fishing gear and equipment.

1.62 Policies

Fish is one of the cheapest sources of protein and with Ghana's present installed capacity, policy over the plan period will be to increase production at a rate that will make the nation a net exporter of fish and fish products by the end of the decade.

To attain these objectives it is intended that by direct Government involvement and incentives to the private sector, increasing efforts will be made to:—

(i) improve the operations of the existing large fleet of fishing vessels by making the required spares and equipment more readily available;

(ii) encourage private as well as public repair and maintenance workshops to expand their operations and ensure adequate facilities in the existing establishments;

(iii) improve and expand harbour facilities by constructing additional fishing ports and landing stages at strategic points along the coast and the Volta;

(iv) improve and expand existing cold storage facilities and commission new ones as well as other fish depository centres;

(v) provide adequate credit facilities to enable the small operators to meet the cost of repair, spare parts, fishing gear and equipment;

(vi) strengthen the extension services to the industry by the provision of improved training and research facilities. The annual intake of students embarking on navigation and engineering courses at the Nautical College will be steadily increased;

(vii) fashion an appropriate fisheries management policy through the establishment of a National Fisheries Advisory Board.

1.63 Production Targets

Ghana has adequate fisheries resources. The existing capacity as indicated earlier on, is enough to satisfy local demand and produce surplus for export. There is no need for the nation's scarce foreign exchange resources to be employed to import fish. Therefore, production policy within the industry will aim at achieving self-sufficiency through increasing the productivity of all vessels from the present estimated average annual production of 185,000 metric tons to over 250,000 metric tons by the end of the plan period.

During the Plan period, it is expected that fish landings will exceed annual increase of five per cent. The targets set for the industry take into account the present potential of the industry and the possibility of removing, as far as possible, the major bottlenecks to give the industry the push which it requires to meet local demand as well as production of surplus for export.

To achieve the desired objectives will require continued improvement in productivity through the provision of essential services and facilities mentioned above. A number of programmes will therefore, be implemented. These will include construction of additional harbours and fish depository centres along the coast and at strategic points along the Volta Lake together with the provision of the necessary facilities such as repairs and maintenance workshops to cater for fishing communities. Output targets for the Plan period are presented in Tables 3 and 4.

1.64 Programmes: Marine Fishing Extension, Manpower and Training

The fishing industry is in desperate need of qualified personnel in all aspects of the industry-extension, research and production. Without adequate supply of such personnel, our large investments in fishing will remain under-employed for a long time. It is therefore proposed, in the Plan period, to find a solution to this problem as a necessary ingredient to the overall policy of improved capacity utilization and of increased production.

The Fisheries Department is charged with the responsibility for developing the fishing industry by providing the necessary scientific and technical information and advice required for such development, through its training, maintenance and extension services. The Department has, however been rendered less efficient in the performance of its functions by such factors as lack of equipment, machinery, laboratories, buildings and skilled personnel. In addition, the rather high taxes on fishing gear and complements constitute a constraint on the effectiveness of extension work since fishermen have difficulties in purchasing these items which could help make their operations more efficient.

Seasonal fluctuations in catches of fish result largely from the use of inefficient traditional methods. For example, as already noted, the bulk of small artisanal fishermen depend mainly on the weather and the activity of seabirds to detect the presence of fish shoals. This is because they are either unfamiliar with the technology or cannot purchase echo-Sounders to detect the presence of shoals. Lack of these devices makes it difficult for the very few extension officers to introduce and disseminate these innovations to the fishermen.

Apart from the inadequacy of trained extension personnel, the fishing industry has, until quite recently, had to depend, to a large extent, upon expatriate crews because there were not enough Ghanaians who had the required training as captains, ship engineers and mates to man the fishing vessels.

To overcome the problems mentioned above, it is planned to institute a crash training programme for training the requisite personnel. The Department of Fisheries will improve upon and expand its training, extension, repair and maintenance service. The strength of the personnel will be increased and their skills and effectiveness will be enhanced through regular in-service training of technical personnel. New training centres will be established at Gambigu (Bolga District), Kussanaba (Bawku District) and Tizza (Lawra District) to cater for inland fishermen in the Upper Region. Simultaneously, the training schools at Tema, Takoradi and Elmina will be expanded and adequately equipped. In addition new training centres will be established at Anloga, Apam/Mumford.

For the effective implementation of the extension programmes, the country will be divided into 50 fisheries administrative units with the requisite technical and other supporting staff. Marine and inland fisheries administrative units will be established in the various regions. To improve upon the efficiency of the inshore fleet of fishing vessels and canoes, as has been outlined earlier, it is proposed to expand the maintenance and repair facilities along the coast for the repair of marine engines and outboard motors. Each of the fisheries administrative units will have maintenance and repair outfits attached to it. The estimated cost of providing such services is ₵35,000 per unit. Five of such units will be developed every year.

The training facilities at the Ghana Nautical College for turning out navigation officers and engineers for the nation's distant fleet has helped in accelerating the process of replacing expatriate officers on these vessels. With the increasing tonnage and complexity of distant water trawlers however, there is an urgent need to intensify the training of various categories of officers than ever before. The training of navigational officers will be supplemented with intensive training for some officers in fishing techniques so that they can carry out all duties normally assigned to master fishermen/skippers.

Programmes will be implemented to generate more interest among the youth to pursue careers in the fishing industry. Within this programme, appropriate policies will be adopted in regard to tuition fees and the curricula of the Nautical College as well as the service conditions of its graduates. A comprehensive training programme for the fisheries sector will include systematic training in extension methods and in other fisheries techniques for the waters in which Ghanaian vessels operate. The programme will include appropriate periods out at sea, as well as regular refresher courses for master fishermen and other ranks.

1.65 Fisheries Research

The successful implementation of the extension programme, apart from the availability of requisite skilled personnel, will also depend on the existence of a strong research machinery and the effective implementation of its findings. At present two institutions, the Institute of Aquatic Biology of the Council for Scientific and Industrial Research

and the Fisheries Research Unit of the Department of Fisheries are engaged in research activities in fisheries. In addition, there is a small outfit attached to the Volta Lake Research and Development Project with responsibility for fisheries research on the Volta Lake.

The Fisheries Research Unit is directly involved in marine studies whilst the Institute of Aquatic Biology is primarily responsible for fresh water research. These research agencies were established primarily to assist the fishing industry in general by conducting studies which would lead to improved catches. The activities of these agencies have contributed to an understanding of Ghana's fisheries potential.

Nevertheless, research has lagged behind the requirements of the industry. The research programmes of the Institute of Aquatic Biology are more geared to the needs of the medical profession than to those of the fisheries sector. Even though the Fisheries Research Unit has been able to assist the industry by advising on the use of modern equipment such as echosounders and other devices for the locating of shoals, its field of operation is seriously limited by a lack of appropriate equipment.

Not much research has been conducted on fish behaviour, breeding habits and seasonality of the various species of fish found in Ghanaian waters.

It is recognized that more resources are needed:—

(1) to strengthen fisheries research especially in the area of extension activities among fishermen;

(2) to develop better sources of statistical information and analysis;

(3) to undertake more exploratory fishing in search for new fishing grounds and to develop new techniques for fishing;

(4) to collect data which would lead to fishing the stocks in such a manner as to prevent depletion.

These are areas in which research efforts will be concentrated during the plan period. In order to cope with these activities, the Fisheries Research Unit will improve its staff position considerably as well as expand its facilities. A permanent building at Tema will be provided at an estimated cost of ₵2 million.

It is also proposed to acquire a number of all-purpose research vessels. One of such vessels will be purchased in 1976 at a cost of ₵2.5 million. The Fisheries Research Unit will also be expanded to cater for inland fisheries research, in addition to marine fisheries research.

1.66 Inland Fishing

The development of inland/fresh water fishing on a systematic basis may be said to have started with the development of the Volta Lake. Its potential as a source of fish is as yet undetermined though expected to be vast. At present there are 920 fishing villages with some 24,000 fishermen and their families living along the shores of the lake.

It is envisaged that work on the development and introduction to fishermen of improved, sturdier and and faster boats suitable to match the prevailing conditions on the lake will be accelerated. Appropriate fishing nets suitable for fishing on the lake will continue to be made available.

In addition, five fishing complexes consisting of facilities for landing, processing, marketing, cold storage, boat building and repairs, engine maintenance and training will be established at Kpandu-Torkor, Yeji, Kwamekrom, Ampem, Yapei and Afram Plains.

Mobile landing facilities in the form of floating jetties to serve the major villages involved in the production of fresh and processed fish will also be constructed during the plan period.

At present, most of the fish is produced in the southern part of the country and very little gets to the northern reaches of the nation, due to problems of preservation and transportation. The Department of Fisheries will therefore pursue a comprehensive fish culture programme in the Northern and Upper Regions.

This programme will intensify the establishment of fish hatcheries, fish farms and stocking of existing dams with fish. It will also involve efforts to improve the effectiveness of the existing programme. In order to increase the efficiency of the local population in fish culture practice, it is proposed to establish centres for teaching techniques of fish farming at Yapei, Tizza, Vea, Golinga and Nasia. It is estimated that when developed these fish farms will produce about 164 tons of fish annually.

Lagoons along the Ghanaian coast are important sources of fish and potential breeding grounds for crustacea such as shrimps, crabs and oysters. The Fisheries Research Unit will be charged with the responsibility for the investigation of the production potential of these lagoons. A programme for the introduction of oysters in the Keta Lagoon and the creeks associated with the Lower Volta will be mounted.

In implementing the inland fish culture programme, the Department of Fisheries will work in close collaboration with the Department of Irrigation. These programmes will be at Vea, Tono, Zongo-Macheri, Atebubu, Ejura and Accra Plains. Commercial fish farming projects will be developed on the Kasu Lagoon at Asutsuare, Keta Lagoon, and in the Afram Plains.

During the plan period, all the estimated 13,000 fishing boats currently used on the lake will have to be replaced at an estimated cost of ₵120 each. This alone will put private investment at ₵1.56 million. Expenditure on fishing gear, transport boats and engines may increase the figure to over ₵3 million. At least 25 per cent of this investment will have to be provided in the form of loans to the fishermen and the transport boat owners. In this connection, the Volta River Authority will actively initiate negotiations with the Development Banks so as to evolve the most feasible strategy for implementing this financial scheme.

1.67 Fishing Ports Development

The port of Tema is the only good fishing harbour available to the industry. For a fleet of over 500 vessels, this is grossly inadequate. A lot of congestion is experienced at the Tema Fishing Harbour, resulting in waste of fishing time. In addition to the inadequacy of docking facilities, room for cold storage becomes scarce during the peak of the fishing season. Thus, vessels are forced to wait for long periods of time before they unload their catches. Moreover, because Tema Fishing Harbour is the only good spot for landing fish, much time is wasted when vessels have to travel long distance from fishing grounds to the port. Consequently, the smaller vessels cannot afford to go too far to fish. The result is that the immediate vicinity of the harbour is over-fished, leaving shoals of more distant grounds relatively untouched.

In order to ease the congestion at the Tema port and also to ensure that fishing activity along the coast is evenly spread, plans are being investigated to construct a fishing harbour at Elmina in the Central Region at an estimated cost of ₵15.3 million. Plans are underway for the construction of a tuna harbour at Mumford. Detailed engineering studies of possible sites in connection with these ports have already been completed.

Furthermore, a number of detailed studies will be commissioned with a view to identifying suitable locations for the construction of two additional harbours, particularly between Ada and Keta in the East, and Miemia in the West.

It is proposed to improve the facilities at the Tema Fishing Harbour in anticipation of the increased fishing activity in the area. This programme will involve:—

(i) the completion of the North-south quay, and the provision of a second slipway;

(ii) the construction of a modern well-equipped maintenance and repair workshop;

(iii) the development of small anchorages for the inshore fleet;

The total cost of these projects is estimated at about ₵2 million.

It is also proposed to establish fish depository centres comprising landing stages with all the necessary facilities for small fishermen in areas where fishing activity is concentrated. These landing stages will be established at Kpandu-Torkor, Yeji, Ampem, Kwamekrom and at Yapei.

1.68 Processing, Storage and Marketing

The current traditional modes of preservation by smoking, salting and drying cannot cope with the expected output of fish over the plan period. In addition to improving upon these methods and the equipment currently in use, modern methods of cold storage and canning will be increasingly used. Through intensive extension work and education, fishmongers will be encouraged to adopt the more efficient type of kiln

designed by the Department of Fisheries. It is also proposed to institute a pilot programme for providing the new kilns on rental or hire purchase basis. This is based on the existing evidence that it is the relatively high initial investment required for the purchase of the new kilns more than resistance to change which is responsible for the low acceptance rate hitherto recorded.

With the expected increase in fish landing, there is the obvious need to increase the cold storage capacity side by side with improvements in other modes of fish preservation. The cold storage facilities of the State Fishing Corporation will be expanded from the present 15,000 metric tons to over 20,000 metric tons by the end of the plan period. In addition to the existing network of regional and district cold storage depots, it is expected that two 250 metric ton depots will be commissioned at Ho and Koforidua. Comprehensive studies will continue to identify strategic sites for further expansion of storage space.

In the absence of adequate storage facilities the high cost of transportation tends to push up the cost of fish in the country. As a result the consumption of fish declines very rapidly with distance from the coast or the Volta Lake except in areas with a lagoon or stream or pond. The present fleet of refrigerated trucks used in fish distribution will have to be increased if the aim of supplying fish at reasonable cost throughout the country is to be attained. It is proposed that the State Fishing Corporation should acquire thirty 20-ton articulators and an equal number of 10-ton insulated vans over the plan period. Various incentives will also be given to the private sector to supplement the efforts of government. The Tema Food Complex Corporation and Mankoadze Fisheries are the main establishments engaged in the canning of fish. The current output of the Tema Food Complex of 3,000 tons annually is far below its installed capacity. Appropriate steps will be taken to get the establishment to make more effective use of its facilities during the plan period.

The fisheries programme envisages production for both home consumption and for export. To date, fish exports from Ghana have consisted mainly of frozen tuna caught by foreign boats and transhipped from Tema. It has been established that tuna abound in Ghanaian waters and within reach from Ghana. In order to tap fully this potential source of foreign exchange, appropriate vessels and equipment will be acquired for the State Fishing Corporation and encouragement will be given to the private sector for joint ventures with government and foreign capital for tuna fishing for export. So far shrimp fishing has been undertaken on a rather limited scale in the country. Though shrimp beds are known to exist in Ghana's coastal waters only one company is engaged in this activity for export. Since shrimps have good markets all over the world appropriate policies will be devised to enable the state and private organisations in the fishing industry to exploit more fully the nation's potential for home consumption and export.

1.69—Financing the Fishing Industry

The major financial problem of the fishing industry consists of a lack of adequate credit facilities particularly for the small artisanal opera-

tors. Some fishermen, especially the artisanal operators have to borrow from money-lenders and fishmongers on terms that are very unfavourable. They are usually charged very high interest rates ranging between 50 and 100 per cent by money-lenders while, simultaneously, being compelled to mortgage, in advance the season's catch to fishmongers at predetermined low prices.

The artisanal operators need consumption loans to tide them over the off-seasons. Institutional credits are difficult to obtain because the banks insist on various forms of guarantees (collateral securities) and detailed analyses which the fishermen, most of whom are illiterate, are almost invariably unable to provide.

Moreover, fishing vessel owners face a multiplicity of taxes and duties which act as disincentive to further investment in the industry. Currently, fishing gear, spare parts, engines and other equipment required for fish production attract relatively high taxes compared with those pertaining to agricultural machinery and equipment. It is thus necessary to take appropriate measures with a view to reducing input costs in order to provide incentives to increase production. These measures will include the following:—

(i) A Special Credit Scheme.
(ii) Tax concessions and subsidies.

1.70 *Credit Scheme.*—It has been estimated that the fisheries sector requires a sizeable injection of capital to meet the cost of spare parts, replacements of fishing gear and equipment. In order to boost the production of the artisanal fishermen, and as part of the strategy to increase production, it is proposed, through effective extension service, to assist the small artisanal fishermen to come together to form viable co-operatives, which shall serve as the most preferable channels for the implementation of the scheme. Fishing gear, spare parts, and other required inputs shall be made readily available to these co-operative organisations through the proposed fisheries administrative centres. The provision of these items should increase substantially their productivity and therefore, their capacity to handle additional credit facilities. In this connection, a special credit scheme is to be operated by the Agricultural Development Bank in conjunction with the Fisheries Department and the State Fishing Corporation during the plan period. The scheme will take into consideration the peculiarities of fishing operations. As far as this is appropriate, loans shall be made in kind. The problem of the acquisition of spare parts and also of fishing gear will be partly solved with the implementation of this scheme.

Large-scale, commercial operators in the industry will continue to obtain credit facilities directly from the financial institutions but on the same terms as are applicable to loans granted to operators in the agricultural sector.

Tax concessions and subsidies.—In view of the vital role the fisheries sector is expected to play in the plan period, primarily as a producer of protein, the saving and earning of foreign exchange and

finally, as a provider of employment, it is proposed to accord similar tax concessions and subsidies as are applicable to general agriculture. This will, no doubt, assist operators to procure the necessary fishing gear, spare parts and other inputs very necessary for the efficient operations in the fishing industry.

1.71—Co-ordination of Fisheries Development Programmes

The need for well co-ordinated development policies becomes more crucial in view of the priority to be accorded the industry. Government will establish a National Fisheries Advisory Board, charged with the responsibility of formulating and implementing policies related to the production, marketing and distribution, research and extension, education and training, provision and administration of ports and other ancilliary facilities and all matters connected with the fisheries sector.

The Department of Fisheries of the Ministry of Agriculture will, in addition to the provision of extension services and the development and management of all public fish farming projects. co-ordinate the overall fisheries development programmes.

It shall monitor more effectively, the operations of the State Fishing Corporations from time to time to ensure that targets are achieved. It shall also assist the small-scale fishermen to form co-operatives in each fisheries administrative unit. Its activities shall be extended to cover large-scale private operators through intensified training programmes for the personnel of these companies as well as providing them with its research findings.

The Department shall vigorously enforce the existing fisheries regulations with the objective of optimising the utilisation of the country's fisheries resources. On the international front, strenuous efforts shall continue to be made in negotiating reciprocal fishing rights with friendly countries.

TABLE 1

OUTPUT OF GHANAIAN FISHERIES 1966-74

In 1,000's Metric Tons

Item	1966	1967	1968	1969	1970	1971	1972	1973	1974
1. Canoe Catch	25.2	39.9	33.9	60.2	89.9	113.2	153.1	73.0	108.9
2. Motor Vessels	49.3	63.4	60.8	56.4	67.6	67.8	95.4	81.5	73.2
3. Total Marine Catch ..	74.5	103.3	94.1	116.6	157.5	181.2	249.1	154.5	182.1
4. Volta Lake Catch ..	—	—	—	—	39.9	39.2	32.3	40.7	39.0

Sources.—Fisheries Department, Volta River Authority.

TABLE 2

IMPORTS OF FISH AND FISH PREPARATION 1970–74

	1970	1971	1972	1973	1974
Quantity (Metric Tons)	30,180	31,531	76,115	111,013	86,815
Value	13,859,042	11,676,542	23,391,114	29,735,200	33,542,062

TABLE 3

PROJECTED MARINE FISH PRODUCTION BASED ON CURRENT DEMAND AND SUPPLY SITUATION (*a*)

Year	*Production ('000s Metric Tons)*
1972–74	195.2 (*b*)
1975	205.0
1976	216.3
1977	276.1
1978	237.4
1979	249.3
1980	261.8

(*a*) Rate of growth is assumed to be five per cent per annum. This compares with 4.5 per cent rate of growth of demand (based on population growth of three per cent per annum, *per capita* expenditure growth rate of 1.5 per cent and expenditure elasticity of demand of 1.0).

(*b*) Computed from Table 1.

TABLE 4

PRODUCTION TARGETS FOR MARINE FISH 1974–80 ('000 METRIC TONS)

Year	*Output*
1974	182.1
1975	200.3
1976	220.3
1977	242.3
1978	266.5
1979	293.2
1980	322.5

Rate of growth is assumed to be 10 per cent

TABLE 5

VOLTA LAKE FISHERY COMPLEX PROGRAMME 1972–73—1979–80 ₵,000

Location	1972–73	1973–74	1974–75	1975–76	1976–77	1977–78	1978–79	1979–80
Kpandu-Torkor ..	200	201	50	1	—	—	—	—
Yeji	—	25	205	92	—	—	—	—
Ampem	—	—	20	165	—	—	—	—
Kwamekrom ..	—	—	—	—	148	—	216	—
Yapei	—	—	—	—	20	—	150	—
Sub-Total	200	226	275	258	168	—	366	—
Floating Jetties ..	4	16	32	24	20	—	24	24
Total Expenditure	204	242	307	282	188	—	390	24

TABLE 6

MAJOR FISH FARM PROJECTS AND THE ASSOCIATION HECTARES TO BE DEVELOPED FOR THE PERIOD 1975–76—1979–80

Farm	1975–76	1976–77	1977–78	1978–79	1979–80
Nasia Fish Farm and Yapei Fish Farm	4	8	12	16	20
Culture Centre	8	16	16	34	32
Tono Fish Farm	4	10	18	24	24

TABLE 7

COLD STORAGE AND ICE PLANTS EXPANSION PROGRAMME 1975–1980

Year	*Capacity (Tons)*	*Investment (₵'000)*
1975	4,500	2,000
1976	3,000	1,300
1977	1,500	650
1978	1,000	330
1979	1,000	330
1980	1,000	330
Total	12,000	4,940

TABLE 8

FISHING PORTS AND HARBOURS

	PROGRAMME		APPROXIMATE COST IN MILLION CEDIS		
Year	*Investigation*	*Construction*	*Consultancy fees*	*Construction and charges for construction supervision*	*Total*
1975–76 ..	Accra, Mumford	—	1.1	—	1.10
	Elmina		1.1	—	1.10
1976–77 ..	Ada, Miemia ..	Elmina Accra ..	0.65	4.20	10.10
1977–78 ..	Winneba Sekondi	Accra	0.90	5.25	6.15
1978–79 ..		Ada Miemia ..	—	9.45	9.45
1979–80 ..		Miemia	—	4.20	4.20
1980–81 ..		Mumford	—	4.20	4.20
1981–82 ..		Mumford	—	4.20	4.20
1982–83 ..		Winneba	—	4.20	4.20
1983–84 ..		Winneba	—	4.20	4.20
1985–86 ..		Sekondi	—	5.25	5.25
	Total	.. .. ..			58.30

TABLE 9

(*i*) *Marine Fisheries Administrative Units*

(*a*) WESTERN REGION .. .. .. Half-Assini, Axim, Bonwere, Miemia, Prince Town, Dixcove, Sekondi/Takoradi and Shame

(*b*) CENTRAL REGION .. .. .. Komenda, Elmina, Cape Coast, Moree, Biriwa, Anomabu, Saltpond, Akumpuano, Sarafa/Tantum/Legu, Mumford, Apam, Winneba, Senya-Breku/Fete.

(*c*) GREATER ACCRA REGION .. Nyenyena/Kokrobite/Botiano, Oshie, Chorkor, James Town, Osu, Labadi, Teshie, Tema, Kpone, Prampram, Ningo and Ada.

(*d*) VOLTA REGION .. .. .. Anloga, Anyanui, Dzelukope, Adina/Kedzi, Denu/Aflao.

(ii) *Inland Administrative Units*

Sogakope, Akosombo, Kpandu-Torkor, Abotoase, Kete-Krachi, Amankwakrom, Adawso, Yeji, Tamale, Navrongo, Bawku, Lawra, Wa and Aveyime.

1.72 *Irrigation.*—The availability of water is very vital to the successful implementation of any agricultural development programme, particularly as regards crop and livestock development. The only natural way to having this water available, i.e. through rainfall, has been found to be inadequate and unreliable, especially in the Savannah areas on which the country relies for the realization of its policy of self-sufficiency in the production of grains and livestock.

If the country is to ensure adequate supply of water for agricultural development, it is necessary to implement a vigorous and viable programme for the development of irrigation facilities throughout the country.

The recent drought in the Sahelian countries of West and East Africa have demonstrated the importance of the development of the water resources of the country for agriculture, livestock and human uses, as well as for industry.

The Government has not only expressed the importance of developing irrigated agriculture as a cornerstone of its agricultural policy, but has already taken concrete steps to increase the tempo of implementing irrigation projects.

1.73 *Review of Recent Development.*—The Irrigation Department of the Ministry of Agriculture has been charged with broad responsibilities relating to large-medium and small-scale irrigation projects. The main effort of the Department to date has been directed to small and medium-sized projects in the Upper, Northern, Central, Volta, Brong-Ahafo and, Eastern Regions. In addition to the construction and maintenance of dams the Department has conducted irrigation-agronomic surveys analysed the results of pilot irrigation works in newly irrigated areas and has provided technical services and advice to farmers.

Modern irrigated farming is still in its infancy in Ghana. During the past decade, the construction of a number of dams has been undertaken in the country to serve crops and livestock. However, the lands below most of these dams have yet to be fully developed for irrigated farming because of certain constraints and problems discussed later.

Small-scale projects undertaken comprise small dams below which the land has been developed for farmers who live near them in the Upper, Northern, and Volta Regions. The medium-scale projects involved the building of comparatively bigger dams and the use of water-pumping schemes to irrigate the land. However, none of these projects have been fully implemented. In the case of Ashiaman and Vea Projects, the construction of the earthern dams has been completed but the lands below them have only been partially developed for irrigated agriculture. For example, while Ashiaman has about 70 per cent of the land developed. Vea has only 20 per cent.

With regard to the Komenda project, work has been completed on a pumping station located on the Pra River. The project which was scheduled for completion in 1973, to irrigate 1,400 hectares of land for sugarcane production has been delayed. It is now expected to be completed in 1978–79.

The first phase of the Asutsuare project, for the cultivation of 1,053 hectares of sugarcane was completed in 1972. The second phase for the development of an additional 960 hectares is scheduled to be completed in 1978–79.

A number of other projects have been started in recent years to be completed in the plan period. In 1973–74, five projects were started. They are Dawhenya, Okyereko, Mankesim, Akumadan and Afife Irrigation Projects. All of them are scheduled to be completed before 1980. Two projects, Weija and Afram Plains were started in 1974–75. The Adidome Irrigation Project which was initiated in 1964 is to be reactivated and completed in 1978–79. Further information on the projects discussed above are given in Appendix II.

1.74 *Constraints and Problems.*—The delay in the implementation of the schemes can be attributed to inadequate financial resources, lack of professional, technical and extension staff, lack of machinery and improper determination of the profile of costs and benefits. Another constraint is lack of suitable constructing agencies to take up irrigation works.

Irrigation projects are capital intensive and therefore require large initial investments. However, the benefits are not immediately realised. For this reason, they appear less profitable as compared to others which pay in the short run, such as hydro-electric projects. Apart from insufficient financial resources, the present number of engineers, foremen, technical and extension personnel in the Irrigation Department is inadequate to support the present programmes for irrigation development.

The Irrigation Department is not equipped to undertake all the constructional works involved in the programme. This situation is made even worse by lack of suitable contracting agencies who could undertake the construction of these projects in lieu of the Department. The local contractors are not familiar with dam construction and do not often have such expert personnel to interpret detailed irrigation designs for implementation.

1.75 *Policy Objectives.*—In the plan period, the following objectives will be pursued:—

1. The completion of all existing irrigation projects.
2. The construction of the new multi-purpose projects of various sizes for irrigation, livestock and human consumption.
3. The development and efficient utilisation of the completed projects for crop production and livestock development.

Policy Measures.—The main criteria for the selection and implementation of new projects, will be for the production of food crops such as rice, vegetables and commercial crops such as sugarcane, cotton, tobacco, groundnuts and soyabeans.

During the construction of any new irrigation project, land development will go hand in hand with the construction of the storage dam. This will ensure the early and full utilisation of these projects within the shortest possible time.

Drinking water has become a major problem in most of the Savannah areas especially in the Northern and Upper Regions. Apart from the health hazards it entails, farmers spend most of their time which should have been used in working on their farms in search of drinking water. For this reason, the Irrigation Department will collaborate with the Water and Sewerage Corporation to undertake small and medium-sized projects mostly in the rural areas. These projects will be multi-purpose in nature, in that they will supply water for both irrigation and other uses. The field experts of the Irrigation Department will design and construct the dams and the department will absorb a proportion of the cost. The balance will be paid for by the Ghana Water and Sewerage Corporation.

Funds will be made available for topographical surveys, and foundation investigation for various small irrigation projects. These will help determine the project sites and estimated costs of an average of ten such projects to be undertaken during the plan period for the development of about 1,000 hectares annually for growing rice and vegetables.

The medium-sized dams will provide assured water supply required for the commercial production of crops, such as rice, sugarcane, soyabeans, cotton and vegetables for both domestic use and for export. Some of these dams will also provide adequate water for processing kenaf. The medium-sized projects will involve land preparation of between 200 and 3 400 hectares. As in the case of other irrigation programmes, the provision of extension services to the farmers will be part of each project.

1.76 *Master Plan for Irrigation Development.*—The master plan for irrigation development in Ghana is guided by some basic considerations, some of which are mentioned below:—

(i) Irrigation projects require long-term planning, and heavy initial capital expenditure for infrastructural developments.

(ii) Efforts to develop sources of water will include dam construction and pumping from rivers and lakes. The irrigation systems to be employed are sprinkler, for rice and surface furrows for root crops.

(iii) Due to the peculiar nature of the topography and climatological conditions, river basin-wise development would be ideal for some parts of the Central, Upper, Northern, Volta, Brong-Ahafo and Ashanti Regions. Non-availability of adequate power in the Northern and Upper Regions make river basin-wise development ideal, till large canals could be constructed from the hydro-electric projects on the Black Volta at Bui and White Volta at Pwalugu and thereby make power available for pumping water into canals at higher levels.

(v) Some of the tributaries joining the Volta Lake will be trained, i.e. deepened and widened to draw back the lake water into these rivers. This would permit installation of pumps to extend irrigation activities far away from the Volta Lake.

(vi) The Northern and Upper Regions abound in numerous valleys and basins which carry heavy flash floods during the rainy season. Simple flood retention structures will be provided to increase the existing flood plains for irrigation. This will be implemented by way of weir/check structures.

The various projects identified in the master plan are presented in Appendix I. The completion of these projects will bring under irrigation 500,000 hectares (1,250,000 acres) for crops development. Emphasis will be on the production of rice and vegetables and commercial crops such as cotton, tobacco, groundnuts, and sugar-cane. The large-scale projects have their preliminary feasibility studies undertaken already. These projects are Accra Plains:—Kpong/Akuse, Lower White Volta:—Avu-Keta and Bui. They cover soil surveys, economic and marketing studies and engineering aspects. The Accra Plains project alone involves a total area of 178,200 hectares. A UNDP/FAO project survey in the Northern and Upper Regions also identified various projects of varying sizes, totalling about 101,250 hectares.

1.77 Programme

Bearing in mind the various considerations of the National Policy on irrigation a workable modest programme has been drawn up. The programme will be well balanced between small, medium and large projects. Large-size projects will predominate, but actual construction of such projects will not be proposed until 1980. For the immediate future, small and medium-sized projects will be undertaken.

The development of irrigated agriculture will be spread over a number of years through various five-year development plans. The development of irrigation up to year 2,000 A.D. is indicated below:—

Five-year Development Plan	*Hectares*
(1) 1975–76—1979–80	21,000
(2) 1980–81—1984–85	30,000
(3) 1985–86—1989–90	40,500
(4) 1990–91—1991–95	81,000
(5) 1995–96—1999–2000	121,500

7. *Irrigation Development and Investment Programme.*—For this five-year period, emphasis will be on the construction of small and medium-sized projects which are expected to yield results in the short run. A total of 24 such projects have been included in the plan. In addition to these, there are four long-term projects. All these irrigation projects have been categorized into Existing Projects. New Projects, and Long-term Projects (Appendices II, III and IV). These are the special projects as mentioned in the Crops Development Programme.

1.78 Existing Projects

The existing projects include both the irrigation projects initiated between 1960 and 1970, as well as those recently launched by the present government. Those initiated between 1960 and 1970 are: Ashiaman, Vea,

Asutsuare, Komenda, Afife and Adidome projects. These will bring about 5040 hectares of land under irrigation by the end of the plan period. The Asutsuare project will involve both the cultivation of rice and sugar-cane while Komenda will be entirely devoted to sugar-cane cultivation. The rest are mainly for the cultivation of rice and vegetables. The recently launched projects are Dawhenya, Okyereko, Mankesim, Akumadan, Afram Plains and Tono Irrigation Projects. These are medium-sized projects involving a total of about 5,000 hectares. The small-scale projects also add up to 500 hectares, bringing the total land to be developed to some 5,500 hectares, mainly for cultivation of rice and vegetables. The total investment of these existing projects (for the construction of the dam as well as land development) will be ₵52 million with a foreign exchange component of ₵17.8 million.

1.79 New Projects

The following new projects are to be initiated and substantially completed within the plan period. They are Weija, Aveyime, Ayensu, Bontanga, Pasam, Kpong-Akuse (Phase I) Avu-Keta (Pilot farm) Tamne, Yapei/Mpaha, Lake-shore Irrigation, Zongo-Macheri and Demon projects. Their completion will enable 10,560 hectares to be put under irrigated agriculture. Rice and vegetables will be grown at Ayensu, Tamne, Aveyime, Pasam. Demon. The Kpong/Akuse projects will involve the cultivation of rice, sugar-cane and cotton. Soyabeans and cotton will be grown at Yapei-Mpaha while the Zongo-Macheri project will be devoted mainly to cotton production. Cotton will also be grown at Lake-shore irrigation projects along with groundnuts and tobacco. Sugar-cane will be cultivated on the Avu-Keta pilot farm. The two projects at Weija and Bontanga are multi-purpose in nature in that, they will supply water both for the cultivation of crops as well as for human consumption. The crops to be grown are rice and vegetables. The total investment in the new projects (for the construction of the dams and land development) will be ₵69 million with a foreign exchange component of ₵21 million. These projects involve a spill-over of ₵33 million into the next five-year plan.

1.80 Long-term Projects

In order to maintain the momentum that would be initiated by the above-listed irrigation projects, additional large-scale and long-term projects, some of which are basically for the provision of electricity will be studied to enable the development of larger irrigated lands. These long-term projects comprise the following:—

(i) Avu/Keta Project
(ii) The Accra Plains/Kpong-Akuse Projects
(iii) White Volta Project, and
(iv) Bui Project

These projects will be spaced out over smaller sub-components in order to reduce the burden of investment cost in any particular year. Preliminary studies have already been carried out on them. The required detailed studies will be undertaken as early as possible so as to determine the

order of their implementation. Studies which have already been undertaken on the various projects will be constantly updated in readiness for implementation as soon as the necessary financing can be obtained. For the plan period, an amount of ₵4 million with a foreign exchange component of ₵2.25 million will be invested on these projects. This will enable two pilot projects at Havi (40 hectares) and Angaw Basin (40 hectares) to be undertaken for the cultivation of sugarcane and rice/vegetables respectively. The completion of these feasibility studies will enable their implementation in subsequent five-year plans.

1.81 Total Target

It is estimated that by the end of the plan period, a total of 21,190 hectares of land would have been developed for cultivation of crops under irrigation. This will involve a total investment of about ₵125 million with a foreign exchange component of ₵41 million (Tables 1 and 2). Irrigated agriculture, will involve about seven selected crops. They are cotton (3 400 hectares) rice (6 300 hectares) vegetables (6 500 hectares) sugarcane (3 000 hectares) tobacco (500 hectares) groundnuts (790 hectares) and soyabeans (700 hectares).

Strategies for Policy Implementation.—The task of water application and irrigation management training for participating farmers will be undertaken vigorously. Participating farmers will be taught siphoning techniques, erosion prevention, modern cultural practices and sanitation as well as health measures to reduce the incidence of water-borne diseases. Training courses currently being conducted at the experimental planting area on the Vea Project will be given enough support, and will eventually be extended to all other projects in the country.

The Irrigation Department will be organised into two main sectors, viz. northern sector and southern sector. Each sector will be provided with adequate machinery to undertake construction works especially small irrigation projects. Each sector will also have a special division to take up the construction of medium and large-scale projects.

There are a number of irrigation projects currently undertaken within the Lower Volta Basin. Some of these projects are under construction while others have just their feasibility studies completed. They are, however, scattered over the various regions and do not have any coordinated management. The various agencies involved in identifying the irrigable areas and selecting crops have been overlapping each others' work. It has, therefore, been decided to create a separate unit to be known as Lower Volta Irrigation and Land Development Unit. This unit will bring all the irrigation projects under one umbrella for effective coordination and monitoring.

An increased number of technicians will be trained to give professional assistance to farmers. In this connection, the facilities of the institute established at Kpong for training irrigation technicians will be used to the fullest. These technicians will be sponsored through funds made available for the various irrigation projects and the beneficiaries will return to serve on the funding projects after graduating from the institute.

Both off and on-the-job training programmes will be launched for the Irrigation Department. Fresh graduates in engineering and agriculture will be recruited and assisted to specialize in irrigation engineering and agronomy for work in the national irrigation programme.

During the long vacations, students of engineering will be employed on irrigation projects to help augment the amount of technical expertise available. Among the most important agents for implementing the projects are the middle-level technicians. Steps will be taken to recruit enough technical staff into the department and upgrade their expertise.

A detailed record of all machinery belonging to the Irrigation Department will be kept. Cost effectiveness and management of the resources of the department will be vastly improved upon to reduce problems arising from the under-utilization of equipment, delays in taking on projects and the escalation of costs.

The Irrigation Department will undertake measures to improve upon its procedures of cost accounting and supervision and management of projects.

From experience gathered in other parts of the world chronic debilitating diseases develop in areas with extensively irrigated fields. The Irrigation Department will collaborate with the Ministry of Health, the Community Health Department of the University of Ghana Medical School, the Institute of Aquatic Biology of the Council for Scientific and Industrial Research, and other relevant institutions, in the implementation of appropriate measures for the prevention and control of diseases.

Funding of the Projects.—As mentioned earlier, the provision of infrastructure for irrigation development is capital intensive and this has been a major constraint to the rapid development of irrigated agriculture. For the purposes of this plan, the government will bear a greater part of the cost of the projects. In addition, the practice of seeking assistance from International Financial Institutions for some major projects will be continued.

The breakdown of total funds required to implement the plan is contained in the Appendices. A summary is presented in Tables 2 and 3. The summary of Recurrent Expenditure, manpower requirement and equipment are given in Tables 4, 5, and 6. The financial requirement for equipment is reflected in the total cost of the projects. (Table 2).

1.82 Irrigation Authority

The problem of funding will be substantially overcome with the setting up of an Irrigation Development Authority by the end of the plan period. The authority will be charged with the full responsibility for planning, constructing, managing and monitoring all irrigation projects in the country. This autonomous body will be in the position to get long-term loans at low interest rates for the development of irrigation projects. It will also take short-term loans with commercial interest rates for the purchase of inputs and day-to-day activities on the projects. In order to make the projects self-supporting, a firm policy will be laid for revenue collection in the form of water rates, land improvement taxes and land development charges.

TABLE 1

LAND DEVELOPMENT FROM THE PROJECTS (HECTARES)

Year	*On-going Projects*	*New Projects*	*Large-scale Projects*	*Total*
1975–76	1,345	—	40	1,385
1976–77	1,835	—	—	1,835
1977–78	3,500	400	40	3,950
1978–79	3,480	3,806	—	7,340
1979–80	380	6,300	—	6,680
Total	10,540	10,560	80	21,190

TABLE 2

SUMMARY OF THE COST OF IRRIGATION PROJECTS (₵'000s)

Year	*On-going Projects*	*New Projects*	*Long-term Projects*	*Total*
1975–76	16,725	1,000	300	18,025
1976–77	15,275	2,730	850	18,855
1977–78	11,350	8,850	1,000	21,200
1978–79	2,510	24,870	1,400	33,780
1979–80	1,350	31,500	400	33,250
Total	52,210	68,950	3,950	125,110

TABLE 3

BREAKDOWN OF CAPITAL EXPENDITURE AND PROGRAMME FOR CONSTRUCTION AND LAND DEVELOPMENT UNIT (₵'000s)

Type of Project	*Estimated Cost* ₵	1975–76 ₵	1976–77 ₵	1977–78 ₵	1978–79 ₵	1979–80 ₵	*Spill Over in* ₵
1. On-going Projects							
Construction	33,215	15,160	12,150	3,695	1,760	450	—
Land Development ..	18,995	1,565	3,125	7,655	6,750	900	—
2. New Projects							
Feasibility Studies ..	3,180	350	830	1,500	500	—	—
Construction	43,070	750	1,800	6,050	14,470	14,500	5,500
Land Development ..	56,350	—	—	1,300	9,900	17,000	28,100
3. Long-term Projects ..							
Feasibility Studies ..	3,550	—	850	900	1,400	400	—
Construction	—	—	—	—	—	—	—
Land Development ..	400	1,300	—	100	—	—	—
Total	158,760	18,025	18,855	21,200	33,780	33,250	33,650

SUMMARY

F — Feasibility Studies	F— 6,730
C — Construction	C—70,785
L — Land Development	L—47,595
Total	125,110

Note.—The total estimated cost includes a spill-over of ₵33,650 over the plan period.

TABLE 4

RECURRENT EXPENDITURE—FIVE-YEAR DEVELOPMENT PLAN

Description	*1st Year* 1975–76	*2nd Year* 1976–77	*3rd Year* 1977–78	*4th Year* 1978–79	*5th Year* 1979–80
	₵	₵	₵	₵	₵
1. Personal Emolument	714,450	890,900	1,091,365	1,441,380	1,783,295
2. Travelling and Transport ..	244,300	322,150	386,580	451,010	515,440
3. General Expenditure	29,620	40,540	44,600	48,650	52,700
4. Maintenance, Repairs and Renewals	1,241,510	1,373,380	1,510,718	1,648,056	1,785,400
5. Other General Expenditure ..	34,120	44,460	53,472	62,384	71,300
Total	2,265,000	2,671,550	3,086,735	3,851,735	4,208,135

TABLE 5

MANPOWER EQUIPMENT

Description	1975–76	1976–77	1977–78	1978–79	1979–80
1. Professional	21	30	47	64	81
2. Technical and Supervisory ..	182	200	250	300	378
3. Skilled and Intermediate ..	600	633	750	870	950
4. Daily-rated and Labour ..	1,000	1,125	1,350	1,570	1,800

TABLE 6

EQUIPMENT, ETC.

Description	1975–76	1976–77	1977–78	1978–79	1979–80
1. Irrigation Equipment	500,000	(1,096,000	1,500,000	1,750,000	2,000,000
2. Transport	52,400	76,000	90,000	100,000	120,000
3. Materials for Construction, etc.	1,900,000	3,350,000	400,000	4,500,000	300,000
4. Supporting Services	1,000,000	1,675,000	1,775,000	1,827,000	1,511,000

APPENDIX 1

Existing Projects—Initiated between 1960–1970

1. Ashiaman	200 ha. (500 acres)	In construction stage
2. Vea	1,420 ha. (3,500 acres)	In construction stage
3. Asutsuare	4,050 ha. (10,000 acres)	In construction stage
4. Komenda	1,420 ha. (3,500 acres)	In construction stage
5. Afife	1,000 ha. (2,500 acres)	Abandoned but reactivated
6. Adidome	200 ha. (500 acres)	Abandoned but reactivated
7. Dawhenya	480 ha. (1,200 acres)	In construction stage
8. Okyereko	120 ha. (300 acres)	In construction stage
9. Mankesim	320 ha. (800 acres)	In construction stage
10. Akumadan	1,420 ha. (3,500 acres)	In construction stage
11. Afram Plains/Ampem ..	200 ha. (500 acres)	In construction stage
12. Tano	2,450 ha. (,6050 acres)	In construction stage
13. Small Irrigation scheme ..	55 ha. (1,250 acres)	In construction stage

New Projects

1 Weija	2,260 ha. (5,600 acres)	Feasibility on land
2 Aveyime	650 ha. (1,600 acres)	Feasibility study completed
3. Ayensu	3,500 ha. (8,600 acres)	Preliminary data available
4. Bontanga	500 ha. (1,200 acres)	Design completed
5. Pasam	1,250 ha. (3,000 acres)	
6. Kpong-Akuse (phase 1) ..	2,000 ha. (5,000 acres)	Feasibility study completed
7. Keta-Avu (pilot farm) ..	40 ha. (100 acres)	In construction stage
8. Tamne (phase 1)	500 ha. (1,200 acres)	Preliminary data available
9. Yapei/Mpala	5,200 ha. (13,200 acres)	Feasibility stage
10. Lake shore Irrigation (North and South Kete-Krachi and Kpandu)	400 ha. (1,000 acres)	Feasibility stage
11. Zongo-Macheri	4,000 ha. (10,000 acres)	Feasibility stage
12. Demon	400 ha (1,000 acres)	Feasibility stage
Total	20,650 ha. 57,300 acres)	

Long-Term Projects

1. Accra Plains Irrigation Scheme	178,200 ha. (440,000 acres)	Kaiser Engineer
2. Lower White Volta Basin Pwalugu	95,175 ha. (235,000 acres)	Nippon Koei (Japan 1967)
3. Bui Multi-purpose ..	32,400 ha. (80,000 acres)	Kaiser Engineer
4. Avu-Keta Multi-purpose scheme	30,375 ha. (75,000 acres)	Wakuti (1968)
5. Lake shore Irrigation ..	32,400 ha. (80,000 acres)	Kaiser Engineer (1966)
6. Medium-size Irrigation scheme in the North and Upper Regions	101,250 ha. (250,000 acres)	UNSF/FAO (1967)
Total	469,800 ha. 1,160,000 acres)	

APPENDIX 2

FIVE-YEAR DEVELOPMENT PLAN, 1975/76–1979/80

EXISTING PROJECTS

Item	*Name of Project*	*Project Purpose*	*Estimates of Investment*	*Foreign Exchange Component*	*Expected year of Commencement*	*Expected year of Completion*
			₵	₵		
1.	Ashiaman Irrigation Project ..	To develop about 200 ha. (500 acres) of land for rice and vegetables	400,000	—	Started in 1965–66	1977–78
2.	Vea Irrigation Project	To develop about 1,400 ha. (3,500 acres) of land for rice and vegetable cultivation	4,167,000	2,361,300	Started in 1965–66	1977–78
3.	Asutsuare	In the plan period about 960 ha. (2,400 acres) of sugar-cane and 200 ha. (500 acres) of land would be brought under irrigation	2,500,000	1,000,000	Started in 1963–64	1978–79
4.	Komenda Irrigation Project ..	About 240 ha. (600 acres) would be brought under sugar-cane irrigation	1,500,000	—	1976–77 (Started in 1965)	1978–79
5.	Afife Irrigation Project	To develop 200 ha. (2,500 acres) of land for rice irrigation	500,000	—	Started in 1964	1978–79
6.	Adidome Irrigation Project ..	About 200 ha. (500 acres) of land for rice cultivation	500,000	—	1976–77 Work started in 1964	1977–78
7.	Small Irrigation Scheme	To develop 500 ha. (1,250 acres) of land for vegetable crops	1,750,000	—	1975–76	1979–80
8.	Dawhenya Irrigation Project ..	To develop 400 ha. (1,200 acres) of land for irrigation of rice and vegetables	2,000,000	500,000	Reactivated in 1973–74	1977–78
9.	Okyereko Irrigation Project ..	To develop 120 ha. (300 acres) of land for cultivation of rice and vegetables	750,000	—	Started in 1973–74	1977–78

APPENDIX 2

FIVE-YEAR DEVELOPMENT, 1975/76-1979/80

EXISTING PROJECTS

Item	*Name of Project*	*Project Purpose*	*Estimates of Investment*	*Foreign Exchange Component*	*Expected year of Commencement*	*Expected year of Completion*
			¢	¢		
10.	Mankesim Irrigation Project ..	To develop 320 ha. (800 acres) of land for vegetable crops and to supply 4.5m (1 mgd.) of water to neighbouring communities	1,500,000	—	Started in 1974–75	1976-79
11.	Akumadan Tomato Irrigation Project	To develop about 1,250 ha. (3,000 acres) of land for tomato cultivation by sprinkler irrigation ..	5,000,000	3,500,000	Started in 1973–74	1978–80
12.	Afram Plains Irrigation Project ..	To develop lake shore irrigation to cultivate 360 ha. (500 acres) of land for vegetables and cotton	750,000	500,000	Started in 1973–74	1976–77
13.	Tono Irrigation Project	To develop 540 ha. (1,350 acres) of rice and 2,060 ha. (5,150 acres) of upland crops	30,000,000	10,000,000	1974–75	1978–79
	Total		51,317,000	17,861,000		

APPENDIX 3

FIVE-YEAR DEVELOPMENT PLAN, 1975/76–1979/80

NEW PROJECTS

Item	*Name of Project*	*Project Purpose*	*Estimates of Investment*	*Foreign Exchange component*	*Expected year of commencement*	*Expected year of completion*
			₵	₵		
1.	Weija Irrigation Project	To develop 1,500 ha. (3,700 acres) of land for rice and vegetables	17,500,000	7,000,000	1974–75	1979–80
2.	Aveyime Irrigation Project ..	To develop 400 ha. (1,000 acres) of land for rice irrigation	1,500,000 (1,500,000)	500,000	1975–76	1979–80
3.	Ayensu Irrigation Project ..	To develop 3,400 ha. (8,700 acres) of land for vegetables and rice	(10,150,000) 15,000,000	(3,334,000) 5,000,000	1974–75	1981–82
4.	Bontanga Irrigation Project ..	To develop 500 ha. (1,200 acres) of land for irrigation of various crops and supplement water for Tamale and surrounding	3,000,000 (3,000,000)	(500,000) 750,000	1974–75	1978–79
5.	Pasam Irrigation Project	To irrigate 1,200 ha. (3,000 acres) of land for rice and vegetable crops	(5,000,000) 7,000,000	1,500,000 (1,000,000)	1976–77	1980–81
6	Yapei/Mpaha Irrigation Project ..	The project envisages development of 5,200 ha. of land for rice, cotton, soya beans, etc.	(8,000,000) 20,000,000	5,000,000 (3,334,000)	1976–77	1981–82
7	Lake Shore Irrigation Project (Lamassa)	To develop about 400 ha. of land under centre pivot irrigation system for cotton, groundnuts, tobacco, etc.	2,000,000 (2,000,000)	1,000,000 (1,500,000)	1976–77	1981–82
8	Zongo Macheri Cotton Irrigation Project	To develop 4,000 ha. of land for cotton cultivation	20,000,000 (12,000,000)	5,000,000 (3,334,000)	1976–77	1979–80
9	Demon Irrigation Project ..	To develop 400 ha. for the cultivation of rice ..	2,500,000 (2,500,000)	(334,000) 500,000	1976–77	1979–80
10	Kpong/Akuse Irrigation Project ..	To irrigate 6,600 ha. of land for sugar-cane cultivation by private farmers between Kpong and Akuse	(9,000,000) 12,000,000	(2,667,000) 4,000,000	1975–76	1979–80
11	Tamne Irrigation Project ..	To irrigate 1,400 ha. (3,600 acres) of land for rice, onions, vegetables and other crops	2,000,000 (2,000,000)	— —	1975–76	1979–80

APPENDIX 4

FIVE-YEAR DEVELOPMENT PLAN, 1975/76–1979/80

LONG-TERM PROJECTS

Item	*Name of Project*	*Project Purpose*	*Estimates of Investment*	*Foreign Exchange Component*	*Expected year of Commencement*	*Expected year of Completion*
			¢	¢		
1.	Keta-Avu Multi-purpose Project	To irrigate 6,000 ha. (15,000 acres) of land for sugar-cane irrigation and establishing sugar mill with a gross capacity of 4,500 tons	1,000,000	750,000	1975–76	1977–78
2.	Lower Volta Irrigation Project ..	To develop 1,000,000 ha. of land for rice, cotton, soya beans and livestock development	1,200,000	500,000	1977–78	1979–80
3.	Angaw Basin Development ..	The project envisages development of about 10,000 ha. of land for rice and vegetable & crops ..	750,000	500,000	1976–77	1979–80
4.	Feasibility Study	To identify irrigation project and prepare detailed designs for execution in next five-year plan 1980–85	1,000,000	500,000	1975–76	1979–80
		Total	3,950,000	2,250,000		

1.83 AGRICULTURAL MECHANISATION

The use of mechanisation as a means of increasing agricultural output is not new in Ghana. During the first Republic, large sums of foreign exchange were spent on importing stocks of agricultural machinery and implements into the country. For the period 1960 to 1966 it has been estimated that a total of about ₵27 million worth of machinery was imported by Ghana. However, the results were rather disappointing because *inter alia:*

(i) the programme was not well planned and some of the implements were ill-suited to the agricultural needs of the country;

(ii) the country at that time, did not have enough qualified personnel to utilize and maintain the imported technology; and

(iii) most of the spare parts which were brought along with the equipment were not readily needed;

The Mechanisation Services Division was established in 1966 and took over farm mechanisation machinery of the defunct United Ghana Farmers' Council Co-operatives. About 75 per cent of these machines were in a very deplorable state and were beyond repair. Since 1969 some of these have been either sold to interested private farmers or sent as scrap to the Tema Steel Works Division of GIHOC. The few serviceable machines have been used in providing mechanized services to private farmers at highly subsidized rates—about 80 per cent on the average. (*See* Table 1 for the operational centres.)

Even though the increased production attributed to these equipment has not been as substantial as would be expected, their presence in the country has introduced farmers to their use and maintenance. This will appreciably facilitate present efforts to increase their contribution to total agricultural production. There have been encouraging results from commercial operators in this area. The equipment hired out by the Ministry has usually been employed to operate on rather small fields scattered over a large expanse of land in any given district or region.

1.84 Constraints and Problems

The most serious constraint to the effective operation of the Mechanisation Department is inadequate financial resources to purchase the essential machines. The acquisition of machinery and equipment is also often delayed by procedures which do not make for efficient and timely purchases. In addition, the high rate of subsidy in the past has made charges for farm services very low. As a result demand for these services has been far in excess of the capacity of the Department to deliver. In the event, less articulate farmers who should benefit from these services are often neglected.

1.85 Policy Objectives

Consistent with the need to contribute to rural employment and increase the relative attractiveness of agriculture to ensure balanced urban-rural development, mechanisation, as envisaged, includes the use of hand and animal operated tools and implements, as well as motorised equipment, to reduce direct human effort, improve the timeliness and quality of products and the overall efficiency in production. Though emphasis will be on the use of tractor power in some aspects, under the direction and supervision of the Mechanization Department, use of animal-operated implements would be part of the programme. In order to ensure the profitability of the mechanized operations, other aspects of improved cultural practices for rapid agricultural development will be taken into account. These will include effective modern agronomic practices, control of weeds, insects and diseases, processing and storage of the products.

1.86 Policy Measures

During the plan period, the policy of using manual labour, employing matchets, hoes *vis-a-vis* the use of modern farm machinery will continue to be vigorously pursued. As regards farm machinery, the objective is to standardize them by type and use through selective importation of only those which are suitable for land cultivation in Ghana. The standardization exercise will also involve the stocking and maintenance of all agricultural equipment funded by the Government and their efficient deployment to facilitate agricultural development. The Mechanization Department will be strengthened with additional staff. The Mechanization Department will be assisted financially and otherwise to recruit additional staff, acquire more farm machinery, tools and sufficient quantities of spare parts to perform its functions efficiently.

Land clearing and harvesting machinery are very expensive and sophisticated and, therefore, require strong technical support facilities for their maintenance and proper deployment and usage. To encourage farmers to take to relatively large-scale farming and produce higher yelds, the Mechanization Department will rehabilitate its pool of machinery to be hired out to farmers.

Equipment tools maintained by private companies, corporations and banks will be continously monitored, over the plan period, in order to incorporate their operations into the present development programme. These institutions include the Agricultural Development Bank, the Commercial Banks, the National Investment Bank and the Co-operative Bank. The same exercise will be undertaken for private, foreign and joint foreign-Ghanaian companies involved in programmes for the hiring out of agricultural equipment.

An efficient network system of both stationary and mobile workshops for the maintenance and repair of agricultural machinery will be established to ensure their maximum efficiency and long life. In appropriate circumstances, low cost or even free repair services will be offered to the

farmers on their farm machinery at the repair centres, maintained by the Mechanization Department. Farmers will however, be required to provide their own spare parts. The present mechanization service charges will be reviewed in the direction of encouraging relatively better endowed individual farmers and other groups to acquire their own machinery.

Technical training will continue to be provided to up-date technical skills of farmers and all those connected with mechanised farming. This type of training will be spread out to involve the owners and personnel of "way-side mechanics" workshops in order to improve upon their competence to handle agricultural machinery especially in the rural areas, where they are the nearest points of contact for farmers seeking help in the repair of their farm equipment. All these measures are designed, in the long run, to help the farmers acquire and efficiently use their own machines.

Farmers will be guided in the selection of farm machinery suitable for their farm operations. In this connection, the Mechanization Department will supervise the importation of farm machinery to ensure that only the required machinery, suitable for local conditions, are brought into the country.

The current exercise of selling all idle and obsolete equipment to interested private farmers and carting the remaining obsolete pieces of equipment to Tema Steel Works as scrap will be continued.

A new reorganization is being considered which will convert the major part of the operations of the Mechanization Department into a commercial body. It is hoped that this measure will ensure adequate provision of machines to satisfy the growing demand for mechanized services in farming.

Strategies for plan implementation.—The various ways in which farm machinery may be economically used on more than one farm, to be encouraged in the plan period, fall under:—

(1) *Contract work.*—This is a situation where individual groups or companies provide farm mechanization services to farmers and apply charges to make profits. The Government also provides these services to the farmers and the only charges imposed are the costs of operations but no profits are earned in the provision of the services.

(2) *Mutual Assistance.*—Here, two or more farmers purchase different kinds of machinery and operate them on their own farms or lease them to their neighbours. This method tends to promote the formation of co-operatives.

In view of the inadequacy of the stock of farm machinery, the Mechanization Department will, at the initial stages of the plan period, concentrate on land clearing in all the regions and rice harvesting in the Northern and Upper Regions. Individuals and other groups will also be encouraged to form farm machinery pools to offer mechanization services to farmers at reasonable charges.

Mobile mechanized services owned by Government will be provided to support the groups and other co-operative crop projects. These mobile units will draw their stock of machinery and tools from the base repair or maintenance workshops set up at strategic locations all over the country.

Equipped with land clearing and land preparation machinery and tools, national and regional mechanization detachments will support the group, co-operative and communal projects as well as settlement farms. Subject to the availability of machinery, three national detachments are to be established in the Southern, Central and Northern Sectors of the country. There will also be regional detachments to provide mechanized services needed in regional projects. Individual farmers can benefit from these detachments, where financial institutions negotiate on their behalf. Their holdings should, however, not be less than 40 hectares because the detachments will be concerned, mainly, with large-scale projects.

District units will be given a second line role of land preparation for cropping and other ancillary services on holdings less than 40 hectares. They will also assist, mainly, the group, co-operative and settlement farms in preparing land for cultivation.

Special projects which require mechanization support will be the responsibility of project units. The scale of machinery and equipment will depend on the size of the project. Their requirements for machinery will be similar to those of the mechanization detachment.

In order to ensure effective work and adequate coverage of the farming districts of the country, a number of additional mechanization stations have been proposed to augment existing facilities. They are Sege/Ada in the Greater-Accra Region, Afram Plains West and Afram Plains East in the Eastern Region, Adidome and Zongo-Macheri in the Volta Region, Darso/Offinso and Agogo in the Ashanti Region, Kintampo Sampa and Techiman in the Brong-Ahafo Region, Bimbila in the Northern Region and Tamne in the Upper Region.

1.86 *The Plan Target.*—The Mechanization Department is responsible for the deployment of all agricultural machinery funded by Government to facilitate agricultural development. The target is to have enough machinery and equipment to be able to support the cultivation of about 3,050 hectares of land annually in each region, over the plan period.

In order to achieve the above target, adequate stocks of machinery and equipment will be acquired. The cost of these machinery, equipment and workshops (*Tables* 2 and 3) will be phased over the plan period in order to reduce the associated financial burdens in any particular year. *Tables* 4 to 8 give details of the cost of the various workshops to be built as well as the machines and the equipment to be acquired. *Tables* 9 and 10 also give details of the manpower requirement in numbers as well as their cost.

TABLE 1

1. GREATER ACCRA
   Amasaman, Dodowa, Dawhenya *Sege Ada
2. CENTRAL/WESTERN
   Swedru/Winneba, Elmina, Kasua
3. EASTERN
   Somanya, Asutsuare, *Afram Plains (South), Afram Plains (North)
4. VOLTA
   Ho, Abor, Tsito, Vakpo, Sogakope, Chinderi/Kete-Krachi, Jasikan, Adidome
5. ASHANTI
   Ejura, Mampong, *Agogo, *Darso/Offinso
6. BRONG-AHAFO
   Sunyani, Wenchi, Atebubu, Nkoranza, *Kintampo, Sampa, *Techiman
7. NORTHERN
   Nyankpala, Yendi, Bole, Walewale, Savelugu, Damongo, *Bimbilla
8. UPPER
   Zuarungu, Navrogo, Wa, Bawku, Tumu, Lawra/Babile, *Sandema.

BASE WORKSHOPS

Amasaman, Nsawam, Kumasi, Ho, Nyankpala Zuarungu

* New stations to be opened up.

TABLE 2

FARM MACHINERY AND WORKSHOPS REQUIREMENT

Regions	*1st Year* 1975–76	*2nd Year* 1976–77	*3rd Year* 1977–78	*4th Year* 1978–79	*5th Year* 1979–80	*Total*
	¢	¢	¢	¢	¢	¢
*Head Office ..	371,000	6,776,980	205,000	150,000	200,000	7,702,980
Greater Accra ..	125,000	285,000	195,000	130,000	170,000	905,000
Northern ..	256,400	415,000	305,000	300,000	300,000	2,076,400
Upper	242,000	210,980	300,000	305,000	300,000	1,357,980
Ashanti	500,000	212,000	280,000	280,000	285,000	1,557,000
Brong-Ahafo ..	342,000	301,600	290,000	300,000	300,000	1,420,000
Volta	200,000	300,000	280,000	360,000	280,000	1,420,000
Eastern ..	115,000	255,000	300,000	330,000	300,000	1,300,000
Central ..	110,000	250,000	300,000	300,000	310,000	1,270,000
Western ..	—	—	431,530	431,533	441,535	1,304,603
Total	2,261,400	9,006,560	2,886,530	2,886,538	2,886,535	19,927,563

*Amount shown against Head Office are for Farm Machinery spare parts and vehicles.

TABLE 3

WORKSHOPS AND TOOLS REQUIREMENTS, 1975-80

Region	*1st Year*	*2nd Year*	*3rd Year*	*4th Year*	*5th Year*	*Total*
	¢	¢	¢	¢	¢	¢
Greater Accra ..	534,460 (Amasaman)	—	—	83,510 (Sege)	—	617,970
Northern	—	534,460 (Tamale)	—	—	83,510 (Yendi)	617,970
Upper	—	—	142,280 (Zuarungu)	—	83,510 (Bawku)	225,790
Ashanti	—	534,460 (Kumasi)	—	83,510 (Ejura)	—	617,970
Brong-Ahafo	142,280 (Wenchi)	—	—	83,510 (Atebubu)	—	225,790
Volta	—	142,280 (Ho)	83,510 (Kete-Krachi)	—	83,510 (Sogakope)	309,300
Eastern	—	142,280 (Somanya)	—	—	83,510 (Afram Plains)	225,790
Central	142,280 (Elmina)	—	—	83,510 (Winneba)	—	225,790
Western	—	—	83,510	—	83,510 (Anyinase)	176,020
Total	819,020	1,353,480	309,300	334,040	417,550	3,234,390

TABLE 4

BASE WORKSHOP

X

Steel structure: 4 Bays 75′ Span X 205′ long with 2 leantos.

X

Estimated cost of building ₵400,000

MACHINE AND HAND TOOLS

	₵
1 Complete 30/40 ton Gantry Crane	30,000
1 Heavy Duty Lathe	8,000
1 Heavy Duty Milling Machine	3,500
1 Heavy Duty Shaping Machine	3,500
1 Pillar Drill 380 r.p.m.	3,000
1 Heavy Duty Crankshaft Grinder	17,000
1 Hydraulic Power Press	2,000
1 Track Repair Outfit	15,000
1 Heavy Duty Tyre Remover	800
1 Vulcanising Set	200
1 Armature Tester	100
2 Fork Lifts (3tons) at ₵8,000 each	16,000
4 High Lift Service Jacks at ₵300 each	1,200
6 Mechanically Operated Jacks at ₵60 each	360
2 Engine Analysers at ₵250 each	500
1 Multi-purpose Battery Charger	1,500
1 Power Saw (Metal)	800
1 Electric Arc Welding Set	800
1 Multi-Stage Compressor	900
1 Acetylene Welding Set	500
Assortment of Hand Tools	5,000
Blacksmith Forge, etc.	800
Other Workshop Tool	2,000
Total	134,460

Total—Building and Tools 534,460

TABLE 5

REPAIR WORKSHOP—(TYPE II)

Steel Structure—2 Bays—75′ Span—12½′ caves x 205′

Estimated cost .. .. .. ₵120,000

MACHINE TOOLS

	₵
1 Heavy Duty Lathe 12	3,000
1 Milling Machine	2,500
1 Pillar Drill	4,000
1 Power Saw	500
1 Blacksmith's Forge, Anvil, etc.	5,000
3 Mechanically Operated Jacks at ₵60 each	180
1 Hydraulic Press	400
1 Commercial Tyre Remover	500
1 Battery Charging Plant	500
1 Welding Electric Acetylene	500
1 Vulcanising set	100
Workshop Accessories, Engine Stand, Cradles, etc. ..	1,000
Assortment of workshop Hand Tools	3,000
Total	22,280
Total—Building and Tool	142,280

TABLE 6

MAINTENANCE WORKSHOP (TYPE III)

Steel Structure—1 Bay 75′ Span 205′ long x 12½ with 1 Leanto on one side.

Estimated cost .. .. ₵80,000

MACHINE TOOLS

	₵
1 Acetylene Welding Plant	400
1 Battery Charging Set..	500
2 Bench Vices	60
2 Portable Hand Electric Drill	150
1 Blacksmith's Forge, Anvil, etc.	400
1 Heavy Duty Tyre Remover	400
1 Vulcanising Set	100
Assortment of Hand Tools, Drills, etc.	1,500
Total	3,510
Total—Building and Tools	83,510

TABLE 7

LAND CLEARING EQUIPMENT

REGIONS:—ASHANTI, BRONG-AHAFO, VOLTA, CENTRAL, EASTERN AND WESTERN

Item Description	Qty.	Unit Price	Total Cost
		¢	¢
Only Caterpillar D.8 with K.G. Blade	4	114,000	456,000
Rome Ploughing Harrow for D.8 ..	4	15,000	60,000
Only D.7 Caterpillar with Heavy Duty Multi-purpose rake	4	89,420	357,680
Only D.6 Caterpillar with Blade and Ripper	4	65,500	262,000
Tree Pusher	2	7,500	15,000
Tandem Roller Chopper	2	15,000	30,000
Total ..		—	1,180,680
			7.084,080

REGIONS.—NORTHERN, UPPER AND GREATER ACCRA

Item Description	Qty.	Unit Cost	Total Cost
		¢	¢
Only Caterpillar D.7 with Heavy Duty Multi-purpose Rake, K.G. Blade and Rome Ploughing Harrow	6	104,000	624,000
Only D.5. Caterpillar with Bull-dozer and Rome Ploughing Harrow ..	6	58,220	349,320
Total ..		—	973,320
Total—3 Regions ..		973,320	2.919,960

CHAPTER 2

TRANSPORT AND COMMUNICATIONS

2.1 Transport—General

As the demand for transport services is a derived demand the major role of the sector during the five-year plan period will be determined and influenced to a great extent by developments within the agricultural, industrial and mining sectors of the economy. In Ghana, the principal modes of transportation are roads, railways, aviation, shipping and inland waterways. The sector's impact on prices of goods and services has up to now hindered an efficient and effective distributive system essential to a growing economy. Price distortions caused by a poor distributive system have led to misallocation of scarce resources. The contribution of transport and communications to gross domestic product has remained about 4 per cent during the past five years.

Of the existing different modes of transportation, road transportation is by far the largest contributor to G.D.P. Out of the total value added of about 108 million cedis in 1972 which originated from the transport sector, road transport alone contributed about 65 per cent. The relative shares of the other modes in the same year were 4 per cent for railways, about 5 per cent for air transport and 25 per cent for water transport.

In recent years the existing modes of transportation have experienced different growth rates in economic activity. At current prices, the value added by the road transport sector increased at an annual rate of 15 per cent between 1968 and 1972; water transport experienced even a higher growth rate of about 20 per cent; air transport increased at about 8 per cent; the railway sector is the only sector which experienced a decline in activity. From a level of 5.5. million cedis value added by the railway transport sector in 1968, total value added from the same sector declined to 4.5 million cedis in 1972.

There is one major problem that faces all the existing modes of transportation and that is the lack of adequate periodic maintenance to keep the basic infrastructure in the sector intact. Due to lack of maintenance and repair there is a real danger that investment in the sector may seriously corrode in the very near future if proper attention is not paid to this sector. The other major problem facing the sector is the lack of proper administrative machinery to co-ordinate policy within the sector generally. At the moment there tends to be multiplicity of agencies involved in transport policy and there is no effective co-ordination among these various agencies and institutions involved in transport policy and as a result, there is a great deal of duplication of efforts. In addition to these general problems facing the sector as a whole, there are particular problems facing the individual modes of transportation.

During the plan period, government's policy will aim at consolidating and modernizing the existing transport infrastructure and promoting co-ordination and co-operation among existing modes. This will lead to an optimum utilization of all available facilities in the various modes of transport and also ensure that transport *per se* does not constitute a drag on the growth and development of the economy. The modernization and rehabilitation exercise will further bring into focus the real costs of transport services to its users. Effective demand for these services can only be met when the costs of these services, and the necessary investment to meet them are known.

2.2 Road Transport

Until the establishment of the Ghana Highway Authority, the responsibility for the development of roads was diffused. The P.W.D. was responsible for the trunk roads while the Technical Division of the Department of Social Welfare had responsibility for feeder roads. This diffusion of responsibility hindered the development of the different classes of roads into an integrated system. However, the N.R.C.D. 298 establishing the Ghana Highway Authority has put the overall responsibility for the planning, development, maintenance and administration of all public highways and related ferries under one umbrella. Thus it is envisaged that the system will promote efficient use of scarce resources for the development of roads in the country.

The capacity of the existing road network can be described as fairly adequate for the immediate future, however, owing to lack of maintenance some portions of the network need to be rehabilitated to meet present day traffic requirements. Presently, the heaviest traffic volumes occur in the Accra metropolitan area where over 7,000 vehicles per day have been recorded on some of the routes. The next heavily trafficked routes are the Accra-Kumasi and Accra-Takoradi routes where about 2,500 vehicles per day have been recorded. Traffic levels on all other routes rarely exceed 800 vehicles per day.

The present practice of constructing roads without adequate provision and programme for maintenance of existing roads is wasteful of our financial resources. Thus the objective for the effective development of our road network during the plan period will therefore be the judicious expansion of the network based among other factors on our ability to keep the existing road network adequately maintained. Unless, this is done, heavy investment that has been made in the development of roads will be wasted and future rehabilitation costs will be prohibitive. The total estimated road network in the country is about 32,000 km (20,000 miles) composed of 10,400 km (7,500 miles) of primary and secondary roads and 21,600 km (13,500 miles) of feeder roads. The total mileage for paved roads is about 4,000 km (2,500 miles). The road transport system accounts for the movement of about 4 million tons of goods and 3,800 million passenger miles per annum. The relative road densities in *Table* 1 show that there are far more roads in the Greater Accra region than the rest of the country.

TABLE I

LENGTH OF TRUNK AND FEEDER ROADS, ROAD DENSITY, POPULATION DENSITY AND AREA BY REGION

Region	Area *sq. km*	*Trunk Roads km*	*Feeder Roads km*	*Total Mileage*	*Population Density (persons/ sq.km)**	*Road Density = Total Mileage / Total Area*
G. Accra	2,550	495	1,360	1,856	2,300	0.73
Volta	19,600	1,210	2,460	3,770	320	0.19
Eastern	19,560	1,600	1,600	3,200	435	0.16
Central	9,700	1,340	1,300	2,640	625	0.27
Western	23,500	1,140	1,830	2,970	220	0.12
Ashanti	24,000	700	2,800	3,500	420	0.16
Brong-Ahafo	39,000	1,020	2,150	3,170	132	0.08
Northern	70,000	1,600	3,500	5,100	72	0.07
Upper	25,680	1,295	4,500	5,795	215	0.22
Total	233,680	10,400	21,600	32,000	—	—

* 1970 Population Census.

Source—Compiled from Statistics obtained from G.H.A., B.R.R.I., Central Bureau of Statistics and Social Welfare.

2.3 The Road Transport Industry

The operations within the road transport industry are predominantly dominated by the private sector. The two main public agencies involved in road transportation are the State Transport Corporation (STC) and the Omnibus Services Authority (OSA). Together, the two account for about five per cent of the operations in the sector. The STC operates long-distance freight and passenger services, car-hire and other minor transport services. It operates a fleet of about 240 buses, 150 trucks and 80 hire-service cars. The major problem currently facing the Corporation is the inadequacy of its fleet and lack of spare parts for effective maintenance of its vehicles. OSA on the other hand, provides intra-urban and rural transport services. OSA operates an inadequate fleet of about 400 buses. It is estimated that currently, OSA needs about 800 buses to provide an adequate level of service in the whole country. The Accra-Tema metropolitan area alone will require about 450 of the 800 buses as against the present 130 buses serving in the area.

The private sector of the road transport industry which is relatively well managed consists of several medium-sized companies and a large number of individual owner-operators. One of the major problems facing the sector is the inadequacy of foreign exchange to purchase sufficient spare parts for effective maintenance and replacement of plant. The maintenance problem is accentuated by the fact that the over 90,000 vehicles currently registered in the country are made of as many as about 300 brands. A significant percentage of the stock of vehicles of the country is also very old and therefore uneconomic to operate.

2.4 Constraints

One major constraint in this vital sector is the lack of maintenance of the existing highway infrastructure. Other problems are as follows:—

(*a*) lack of basic data related to mileages, annual expenditure, traffic growth, and the structure of the road transport industry for effective planning;

(*b*) inadequate contractor capacity for the construction and maintenance of roads as a result of factors such as lack of skilled personnel, sporadic shortages of essential construction materials, inadequacy of road building equipment and the general lack of spare parts for effective maintenance and repair;

(*c*) the indiscriminate use of our roads by heavy-axled vehicles for which the roads have not been designed;

(*d*) lack of standardization of the vehicular fleet and an acute shortage of mass transportation vehicles, partially culminating in high transport costs;

(*e*) high accident rates on our roads as a result of factors such as carelessness on the part of drivers, badly engineered roads and the poor maintenance of our roads and vehicles;

(*f*) the inadequacy of funds for highway projects which are also spread over so many projects some of which have not been planned;

(*g*) lack of co-ordination and the conflicts in the administration and management of road transport which constitute a drag on the effective development of the sector.

2.5 Policy Objectives

The policy objectives for the road transport sector are:—

(1) in order to provide a strong road infrastructure base for the economy, the main emphasis will be on the rehabilitation and effective maintenance of the existing road network. However, to cope with the expected increase in road transport services in the plan period, Government will undertake the construction of selected feeder and trunk roads which will lead to the achievement of the objectives of agricultural and industrial policies;

(2) an effective system of collection of data over the entire highway system will be established by the Ghana Highway Authority and the Building and Roads Research Institute;

(3) Special attention will be paid to increasing the contracting capacity by encouraging professional personnel to enter the construction industry while efforts will be made to improve the managerial and technical competence of existing contractors. Outside

capital investors will be encouraged to team up with Ghanaians to ensure adequate supply of essential materials and equipment necessary for road construction. The Bank for Housing and Construction will also be encouraged to expand its plant pool facilities in all the regions;

(4) rules governing the limitation of axle loads and other traffic laws will be stringently applied by the Police and the Ghana Highway Authority;

(5) the standardization policy will identify the types of vehicles necessary to meet the country's intra-urban, inter-urban and rural needs. Generally Government policy will favour the provision of mass transportation vehicles;

(6) to ensure a proper co-ordination in the sector a committee comprising of all the agencies involved in road transport will be set up under the Ministry of Transport and Communications to plan, develop and administer the sector.

2.6 Programmes

The following programme has been identified for implementation:—

(1) about 224 km (140 miles) of viable trunk roads will be rehabilitated at the cost of ₵27.5 millions;

(2) reconstruction of 560 km of trunk roads. Details can be found in Appendix A;

(3) during the plan period about 560 km of feeder roads will be constructed annually at the cost of ₵15 million. This programme is aimed at opening up the food growing areas;

(4) construction of a number of bridges including:

Asukawkaw Bridge
Bamboi Bridge
Oti River Bridge
Damuro Bridge
Yakasi Bridge
Akoro Bridge
Subinso Bridge
Tano River Bridge
Ankobra River Bridge.

(5) to remove pedestrians from the roads, pedestrain side-walks will be built while congestion will be eased by the construction of parking lots and lay-bys;

(6) about 80 km of key roads in the Accra Metropolitan Area will be rehabilitated at the cost of about ₵50 million;

(7) the Ghana Highway Authority will undertake a routine and periodic road maintenance programme at the cost of ₵28 million. In addition ₵40 million will be invested in rehabilitation/replacement and expansion of Ghana Highway Authority road plant;

(8) to cater effectively for the intra and inter urban road transport needs, the State Transport Corporation and the Ominibus Services Authority will be provided with more buses. To this end ₵61.5 million will be invested in buses. *See* Appendices B and C.

2.7 Lake Transport

Lake transport is expected to play an increasing role in the transportation of bulk commodities such as rice, maize, petroleum products, etc., between the north and the south. This role will be more pronounced when the mineral deposits in the vicinity of the lake are exploited.

Since the establishment of the Volta Lake Transport Company, movement of cargo on the lake has increased tremendously. Between 1970 and 1973 carriage of cargo increased by about 700 per cent while passenger traffic increased by 160 per cent. It is expected that with the acquisition of more vessels to supplement the existing fleet the lake transport will effectively perform its complimentary role to road transport.

TABLE II

Year	1970	1971	1972	1973	1974
Cargo (tons)..	3,085	4,898	17,923	28,200	23,900
Passengers (nos.)	6,556	5,887	13,911	17,147	24,160

One of the major constraints inhibiting the development of the lake is the inadequacy of the fleet of vessels and ferry crafts operated by V.L.T.C. and Ghana Highway Authority respectively. Other problems are the general lack of shoreline facilities as well as navigational aids.

The availability of stumps in the lake poses a serious problem to navigation. This problem will in the plan period be given a very serious attention. Efforts have been made to engage the services of consultants to combat this situation.

For the lake to play its rightful role in the country's development effort a policy aimed at achieving the following objectives will be pursued:-

(1) the provision of adequate fleet of craft on the lake:
(2) increase in shore facilities and navigational aids;
(3) expansion of maintenance and repair capacity;
(4) reasonable standardization and proper supervision of transverse operators on the lake;
(5) linkage of the lake to the overall transportation development, especially, in the area.

To achieve the objectives the following programme will be implemented:—

(1) about ₵8.7 million will be spent in the acquisition of 2—30 seater vessels and 3 ferry crafts for V.L.T.C., and the Ghana Highway Authority respectively;

(2) to facilitate the operation of ferry service on the lake about ₵3.7 million will be invested in the provision of shore landing facilities;

(3) to ensure safety in navigation, navigational aids will be provided;

(4) for effective maintenance and repair of ferry craft about ₵850,000 will be spent in the provision of spare parts and the relevant workshop equipment.

Details of the programme are given in Appendix D.

2.8 Railway and Ports

The Ghana Railway and Ports Authority operates a rail network of about 960 km. The main lines link Kumasi with the two ports of Takoradi and Tema; while branch lines link the principal mining and agricultural centres.

The railway which is expected to provide a cheap and efficient means of transportation especially in the carriage of the nation's exports has faced a number of problems. The major problem has been the deterioration of existing facilities. Due to inadequate maintenance the fleet of locomotive has considerably dwindled; the wagon capacity is very low, while the signalling communication system is virtually non-existent.

Within the plan period, the emphasis will be to rehabilitate the system to assume its role in the development of transportation.

High operating costs and lack of motive power and wagons have made the railway a poor second to the road transport in the carriage of bulk cargo. *Tables* 3 and 4 show the declining performance of the railway over the years.

TABLE 3

GHANA RAILWAY—WEIGHT BY COMMODITY 1967–68–1971–72
('000) TONS

Commodity	1967–68	1968–69	1969–70	1970–71	1971–72	1972–73	1973–74
Cocoa	232	176	213	214	221	251	118
Timber	517	488	491	457	467	516	302
Manganese	451	410	343	476	468	473	159
Bauxite	304	345	345	340	356	303	378
Others .. .	174	204	206	197	114	—	—
Total ..	1,678	1,525	1,598	1,684	1,626	1,543	957

TABLE 4

Year	Tonnage Conveyed (in M tons)	Passengers Carried (M. Passengers)	Total Earnings (All traffic M. ₵)	Deficit* (M. ₵)
1967/68 ..	1.68	7.23	10.01	2.75
1968/69 ..	1.52	7.51	9.13	4.47
1969/70 ..	1.60	7.96	10.31	4.79
1970/71 ..	1.69	8.16	10.08	5.08
1971/72 ..	1.63	6.99	11.12	5.93

*After charging depreciation.

The high operating cost is also attributable to low labour productivity and the inability of the Railway Authority to provide adequate training facilities to the staff.

The lack of an effective telecommunication system has hampered the efficient operations of the railway. Wagons cannot be positioned at the right time while trains can often arrive at station many hours after departure.

During the plan period attention will be focussed primarily on the rehabilitation of the railway system in the country. This objective will be achieved by:—

(1) rehabilitating and equipping of the workshops;

(2) improvement in the telecommunication system;

(3) improvement in the training facilities to equip personnel with know-how;

(4) increasing the carriage capacity of the railway by rehabilitation of locomotive.

In addition to these a programme to straighten the curves in the permanent way will be undertaken. Various studies will also be undertaken during the plan period. There are studies on the Awaso-Sunyani line, railway electrification programme and the doubling of the track on the western line. (Details of the programme are found in Appendix E).

The ports have continued to play their role in Ghana's export trade. However with bigger vessels now plying the seas to reduce operating costs it has become necessary to dredge the entrance to the ports at Tema and Takoradi. This programme will be undertaken with the Tema Shipyard and Drydock Corporation.

The development and rapid growth of Accra has made the terminal facilities very inadequate to receive cargo and passengers. At the moment the station facilities can receive only one passenger train. It has therefore become necessary to construct a new terminal complex comprising of a booking hall, arrival and departure lounges, waiting rooms, hotel accommodation and commercial complex as well as public toilet facilities. The new terminal complex will be resited away from the centre of the city.

2.9 The State Shipping Corporation (Black Star Line)

The National Shipping Line now operates 16 vessels. out of which 14 were purchased by the Government. The Corporation also owns 12 lighters and four tugs in addition to the present fleet of ships. The main problem confronting the corporation is its low marketing effort as a result of the use of old, slow and small vessels. The number of vessels operated by the shipping line is inadequate to withstand competition from foreign shipping companies whose mix of fleet is also superior. With its present fleet of 16 ships, the State Shipping Corporation is covering less than 10 per cent of Ghana's sea-borne trade. This excludes liquid and other bulk cargoes such as crude and refined oil as well as minerals which are all carried on foreign vessels. A major problem facing the shipping industry in Ghana is lack of multi-purpose ships capable of carrying containers and break-bulk cargoes. The State Shipping Corporation lacks bulk-carriers to bring grains, clinker and alumina to feed some of our industries and also for the export of manganese and bauxite. There are no tankers to transport imported crude oil for the GHAIP Oil Refinery and to transport the refined products as exports. To enhance the efficiency of the Corporation's operations and to boost up its competitiveness with other shipping lines, larger and faster vessels will be acquired.

The breakdown of the vessels required during the five-year plan period is as follows:—

1. *Four multi-purpose ships.*—Due to the extensive use of containers for the efficient and safe conveyance of cargo by other shipping companies it has become necessary that while the use of cellular container ships is kept to the minimum since such vessels cannot participate in the carriage of break-bulk cargoes as Ghana's main export of cocoa and timber, other types of ships which are capable of conveying both containers and break-bulk cargoes simultaneously are introduced. The older types of vessels being used by the National Shipping Line do not easily permit the use of fork-lifts on board and as a result the old fashioned and inefficient way of handling bags and other cargo manually by stevedores continue. To the shipper, this slow process means increased handling and labour charges. The multi-purpose ships will replace the existing older vessels and facilitate the use of modern mechanised methods to reduce terminal operating costs which in the developed countries served by the Black Star Line, form a major component of the ships' total operating costs. They will also be

used to meet the company's commitments in the U.K.–West Africa Joint Service in an Express Service to a special berth in Apapa, Nigeria. Only multi-purpose ships are used these days for Express Service.

2. *Two Bulk Carriers.*—The Black Star Line is the major transporter of imported grains used by the two flour mills at Tema and Takoradi. To ensure a steady supply of the grain to the mills, the Black Star Line services are often disrupted and higher paying cargoes are abandoned in order that the grains can be transported by the national ships. The Black Star Line cannot participate in the carriage of other types of bulk cargo such as manganese, clinker, alumina, bauxite, etc., moving to and from Ghana with its present fleet of general cargo vessels. These bulk carriers when acquired and operated by the Black Star Line will help conserve foreign exchange being paid as freight to the foreign-owned vessels which carry such cargoes at the moment. The acquisition of those bulk vessels will also enable the corporation to explore more profitable routes.

3. *Two handy-sized tankers of* 20,000 *to* 27,000 *tons deadweight.*—The original Five-year Development Plan of the Black Star Line considered the acquisition of two large tankers of about 100,000-ton deadweight for improved and efficient shipping service. However the prerequisite for the operation of such vessels as far as facilities of the country's two main ports are concerned is the absence of deeper berths and/or underwater pipelines through which the oil would be pumped. It has therefore been considered expedient to acquire smaller tankers instead of the large ones. Furthermore the capacity of the storage tanks at the GHAIP Refinery is only 88,000 tons and although it is proposed to instal additional tanks for 30,000 tons capacity, these would only hold reserve stocks against emergencies and would not increase the processing capacity of the refinery which is only about 100,000 tons a month. A larger tanker would not be able to discharge all its cargo immediately into the storage tanks in use and the consequent delay will mean extra operational costs to the corporation. Underwater pipelines and ancillary fittings if installed would cost about $25 million, but these too would be under-utilized having regard to the storage and processing capacities of the tanks and the Refinery respectively. The acquisition of these smaller tankers would enable the Black Star Line to carry Ghana's crude oil imports which is presently carried by foreign vessels.

4. The Black Star Line's Head Office at Osu, apart from its unsuitable location is without adequate space to accommodate the staff. Parking facilities are lacking and the corporation's archives is still located in the old Kingsway building. Essential facilities around the area are scarce. Construction of a permanent Head Office has been proposed and plot for the purpose acquired in the vicinity of the Ambassador Hotel. The Head Office when completed would enhance the corporation's efficiency.

5. The Corporation expects to make considerable savings through centralising its supplies to its ships. The use of widely-scattered sources of supply abroad would be minimised or discontinued. Stores for the ships' use to be purchased in bulk when the warehouse is completed, and other essential spare parts which are often air-freighted when urgently needed would be kept in this bonded warehouse. The warehouse to be built at Tema will ease distributions to be made to ships and at a lower cost to the corporation.

6. Two on-going projects will be carried further during the plan period:—

(1) The Corporation started work on Tema Agency Building in 1973. As of February, 1975, 80 per cent of the structural work, i.e. approximately 40 per cent to 45 per cent of the whole project has been completed. Shortage and unavailability of certain essential materials have delayed the completion of the project and it is expected to be completed during the 1975–76 financial year.

(2) The acquisition of ten lighters and four tugs to enable the Black Star Line to increase its participation in the Takoradi lighterage venture has become necessary following the Government's decision that other indigenous companies take part in the venture as from 1st April, 1975. The ten lighters being constructed by the Tema Shipyard and Drydocks will meet the expected 40 per cent share of the Black Star Line requirement. Any additional crafts would be purchased from the expatriate firms who have discontinued lighterage operations.

Appendix "F" shows the proposed projects, their estimated costs and foreign exchange component and source of fund for the five-year plan period.

2.10 Tema Shipyard and Drydock Corporation

Construction of the Tema Shipyard and Drydock started in June 1964 however operations began in June 1968, even though not the full complement of equipment and facilities had then been provided.

Although the Tema Shipyard and Drydock is capable of playing a vital role in the national economy, the corporation has not been able to make the full expected impact because of certain constraints. These include:

(1) dredging of the entrance and approaches to take vessels with a capacity of up to 100,000 tons deadweight;

(2) dredging of the fitting-out quay to accommodate large vessels. This calls for dredging of the existing berthing capacity of the quay of 14 ft. draught to 28 ft.;

(3) extension of mechanical slipway to provide three berths instead of one;

(4) provision of an intermediate gate at Drydock No. 1 to facilitate quick turn round of vessels in the drydock;

(5) construction of shipbreaking/shipbuilding berths to facilitate the scraping of old ships and building of new ones;

(6) provision of automatic bilge blocks to accelerate the process of docking vessels.

The policy objectives of the corporation are:—

(1) to construct small and medium size vessels to cater for the needs of the nation in the area of deep sea and aquatic transportation and fishing;

(2) to construct small and medium size vessels for the external market especially for countries in the ECOWAS;

(3) To provide docking and servicing facilities for all vessels;

(4) to undertake several heavy engineering and structure works both for the local and external markets.

To be able to achieve these objectives the Government will undertake the sections of project which were left out in the original design.

Serious attention will also be paid to the training of personnel in the Corporation.

Details of the programme are to be found in Appendix G.

2.11 Ghana Cargo Handling Company Limited

Before the establishment of the Ghana Cargo Handling Company Limited various firms, especially expatriate companies, operated as stevedores at Tema and Takoradi. With the Ghana Cargo Handling Company stevedoring is fully Ghanaianised.

Although the company since its inception has made an impact, there is yet room for improvement. It is still operating handling equipment which are obsolete while at the same time it has a labour force which needs retraining.

In addition to being stevedores the company has been directed by Government to increase its participation of the lighterage venture at Takoradi by 30 per cent. Here too the company faces a constraint in the acquisition of lighters.

During the plan period the company's objective will be to improve its operations. This objective will be achieved by:—

(1) improving the service conditions of the staff by providing them with accommodation and health services;

(2) mechanisation of the handling facilities at Tema and Takoradi; phasing out of other obsolete equipment;

(3) acquisition of lighters; and

(4) construction of a container farm.

In addition to these the company will train its personnel in modern security methods to reduce the incidence of pilferage at Ghana's ports.

Appendix H shows the programme for the plan period.

2.12 Ghana Nautical College

The Ghana Nautical College was established in 1958 to train sea going personnel. Since its inception officers and crew of the National Shipping Line, foreign shipping lines and crew of the national fishing industry have been trained. Among the countries which have benefitted from the college are Nigeria, Gambia and Tanzania. The college, although has produced a lot of sea going personnel, has not been able to expand its intake of personnel due to lack of dormitory accommodation. Thus during the plan period the college will place emphasis on housing the students. In addition it will complete the construction of the administrative block, a boat house and planetarium. It will also acquire a fleet of vehicles for its operation. The attached is its programme for the plan period.

TABLE 9

Ghana Nautical College

Project	*Year*	*Estimated Cost*
		¢
BUILDING PROGRAMME		
Administrative building	1975–76	300,000
Security fencing	1975–76	35,000
Total		365,000
Staff bungalows	1976–77	300,000
	1976–77	70,000
Total		370,000
Boat house	1977–78	85,000
	1977–78	35,000
		30,000
Total		150,000
Additional student accommodation	1978–79	300,000
Total building programme	1975–76 / 1978–79	1,155,000
VEHICLES		
1 bus	—	—
1 lorry	—	—
1 car	1975–76	600,000
1 bus	1977–78	25,000
1 van	1978–79	8,000
1 bus	1979–80	30,000
Total		123,000
Grand Total 1975–76 to 1979–80 ..		1,278,000

2.13 Department of Civil Aviation

The Department of Civil Aviation is responsible for safety in aviation. It devises regulations, policies and procedures to guide the growth of aviation at both national and international levels. It also provides facilities and services which go to ensure efficiency in the use of the nation's air space. To be able to do this the Department has to continually develop and evaluate air traffic control procedures, as well as organize the machinery for the licensing of all Ghanaian civil registered aircraft and personnel. During the plan period Government policy will be the consolidation of the existing airport facilities, improvement of traffic administration and the provision of the basic aviation infrastructure for domestic and international operations.

Projects to be undertaken during the plan period are:—

(1) *Kumasi Airport.*—Rapid development and growth in the vicinity of the existing airport have made further extension works and provision of other necessary facilities at this airport impracticable. A more suitable site has been identified for a new international airport. Construction will overlap the plan period.

(2) *Takoradi Airport.*—A new airport to serve Sekondi-Takoradi is to be sited near Shama. The existing airport which becomes waterlogged during the rainy season cannot serve the needs of both the Airforce and the Ghana Airways. Like the Kumasi project the construction will overlap the plan period.

(3) *Sunyani Airport.*—Further development works will be carried out at this airport to improve operations and safety.

(4) *Bolgatanga Airfield.*—An airfield is to be constructed at Bolgatanga. The project when completed will serve the north-eastern sector of the Upper Region.

(5) *Wa Airfield.*—This is to serve the north-western sector of the Upper Region. It is aimed at opening up this section of the region which has an economic potential.

(6) *Damongo Airstrip.*—This airstrip is to serve the Damongo area in the Northern Region.

(7) *Kotoka International Airport.*—Further works including construction of a cargo terminal, renovation to the terminal building and extension to the aircraft parking apron will be carried out. Additional navigational and lighting facilities will also be provided.

Communication plays a very important role in aviation especially when the aircraft is airborne. For this purpose the Department has as an objective the improvement in the communication system. New navigational aids will be installed to replace the obsolete ones.

To achieve the safety objective; emphasis will be placed on the training of personnel locally and abroad.

Table 10 gives a summary of projects to be undertaken during the plan period.

TABLE 10

SUMMARY OF FIVE-YEAR PROGRAMME

DEPARTMENT OF CIVIL AVIATION

	Project Title	*Amount* ¢
1.	Renovation of Terminal building, Kotoka International Airport	200,000
2.	Extension Parking Apron	500,000
3.	Taxiway Centre Line Lights	90,000
4.	Construction of Cargo Terminal and Apron	1,500,000
5.	Construction of additional Airport access road	500,000
6.	Relocation of Airport Fire Station	250,000
7.	Provision of water hydrants for main Runway	100,000
8.	Construction of new International Airport, Kumasi	20,000,000
9.	Construction of new airport, Sekondi-Takoradi	15,000,000
10.	Construction of new airport, Bolgatanga/Navrongo	6,000,000
11.	Construction of new airport, Wa	4,000,000
12.	Construction of new airstrip, Damongo	200,000
13.	Provision and installation of 2 bar vasis, Sunyani	127,140
14.	Fencing around airport, Sunyani	200,000
15.	Main power supply to Locator Beacon, Sunyani	120,000
16.	4 VOR Equipment	36,000
17.	Manned Radio station staff quarters	505,500
18.	Maintenance of vehicles for installed Navigational Aids	55,000
19.	Flight and Information Digital long-range Radar for Accra Airport	640,000
20.	Upgrading of ILS Equipment at Accra Airport to cope with modern Aircrafts like the Jumbo and Concords	270,440
21.	ILS for Tamale Airport	270,440
22.	Installation of Public Address system	155,000
23.	Calibration twice a year of VOR DME and ILS Equipment	60,000
24	Staff Accommodation	1,083,860

2.14 Meteorological Services Department

The Department has an important role in the agricultural programme by giving information on the weather, when farmers should plant and when to harvest. It is also responsible for the provision of information for aviation purposes.

The policy objectives of the Department during the plan period are:—

(i) to increase and improve the density of observation stations in the meteorological network in order to provide adequate climatic data and information;
(ii) to improve the meteorological telecommunication system;
(iii) to improve facilities in terms of equipment for weather forecasting and research;

(iv) to improve the standard and volume of weather forecast services.

To achieve these objectives the department will undertake the following programme:—

TABLE II

FIVE-YEAR DEVELOPMENT PLAN, 1975–80

METEOROLOGICAL SERVICES DEPARTMENT

Project Title		*Total Estimated Cost*
		¢
1. Expansion of Network of Meteorological Stations:		
1.1 Establishment of new Synoptic (Principal) Stations:		
(i) Akatsi		108,620
(ii) Abetifi		168,161
(iii) Kintampo		184,000
(iv) Dunkwa-on-Offin		154,000
1.2 Establishment of subsidiary Meteorological Station:		
(i) Agrometeorological Stations	(39)	
(ii) Climatological Stations	(13)	
(iii) Rainfall Stations	(29)	
2. Plant, Equipment and Vehicles:		
2.1 Plant and Equipment:		
(i) Ceilometers	(5)	315,000
(ii) Radiometers	(3)	56,000
(iii) SSB Radio Telephones	(15)	85,000
(iv) Scientific equipment	—	500,000
(v) Air-conditioners	(16)	24,000
(vi) Radiosonde equipment	(1)	92,000
(vii) Radio Teletype equipment	(4)	158,000
(viii) Windfinding Radar equipment ..	(1)	120,000
(ix) Storm Warning Radar	(2)	240,000
(x) Dobson Osone Spectrophetemeter ..	(1)	25,700
(xi) Combinet equipment	(1)	31,300
(xii) Transmiscometer	(4)	380,000
(xiii) Office equipment	..	30,000
(xiv) Furniture	..	14,000

2.2	Vehicles:	
	(i) Land Rovers/Peugeot pick-up .. (15)	140,000
	(ii) Mini buses	50,000
	(iii) Motoway buses	60,000
	(iv) Bedford truck	34,000
3.	Constructional Works:	
3.1	Central Forecast Office, Legon	350,000
3.2	Meteorological office, New Tamale Airport .	115,000
3.3	Main Departmental Stores	180,000
3.4	Duty-post staff quarters, Navrongo	215,000
3.5	Rehabilitation of existing outstation building ..	120,000
3.6	Duty-post staff quarters, Kotoka Int. Airport ..	200,000
3.7	Duty-post staff quarters, Sunyani	180,000
3.8	Office and Duty-post staff quarters, Ada	139,750
3.9	Duty-post staff quarters, Kumasi	180,000
3.10	Duty-post bungalows for Regional Meteorological Officers	315,000
3.11	Radiosonde Station, Tamale (Extensions)	57,000
3.12	Rehabilitation of Meteorological headquarters ..	20,000
3.13	Duty-post bungalows, Takoradi Airport	70,000
	Grand Total	5,291,691

2.15 Ghana Airways Corporation

The main objectives of the Corporation as set out in its Instrument are:

(i) to establish, operate and maintain airlines or regular services of aircraft of all kinds whether in Ghana or outside Ghana in an efficient and profitable manner; and

(ii) to carry on in Ghana and outside Ghana the business of transporting mails, passengers and goods, by the Corporation's own aircraft and conveyance or by the aircraft and conveyance of others.

To achieve these objectives Ghana Airways have operated a VC 10, for the international route and two F28 for the West Coast and internal routes. These aircraft, being old, have not given the adequate service to the corporation. The dependence on old aircraft has tendered to increase the operating and maintenance costs. Another result of the dependence on old aircraft is that the Corporation has not been able to cope with the increase in passenger traffic, both internally and externally. It has also not been able to develop new routes due to nonavailability of aircraft.

Another problem which has plagued the Corporation is that of ineffective management.

During the plan period the Corporation has as its objectives:—

(1) improvement in service on all routes
(2) training of personnel
(3) proper handling of goods
(4) improvement in management.

In order to achieve these objectives the Ghana Airways Corporation will undertake a number of projects. To improve its operations and develop new routes the Corporation will acquire:

Two DC-9 series 50 and one DC-10 series 30

It will also acquire modern ground equipment as well as construct a new hanger. To improve the quality of its personnel an intensive training programme will be mounted both locally and abroad. Conversion course for 30 engineers, 60 mechanics and 20 pilots will be organised while 30 new pilots and eight flight engineers will have to be trained. Local courses for management and accounting staff will be organised. To facilitate this various modifications such as classrooms, library and canteen/conference/film projection room will be made to the existing training centre.

Market Research Surveys for the following routes will be undertaken:

Accra-Lagos-Nairobi-Addis Ababa
Accra-Monrovia-Dakar-New York
Accra-Zurich-Frankfurt-London
Accra-Switzerland-Paris
Accra-Rome-Frankfurt
Accra-Madrid-London
Accra-Kinshasa-Nairobi-North Africa-London

Appendix I gives the details and the costs of the programme for the plan period.

2.16 Telecommunications—General

The provision of telecommunications facilities has not been able to cope with the rapid expansion in the economic activities in the country. There are places where economic activities take place however the lack of postal and telecommunication services has made it difficult to develop these areas.

The Posts and Telecommunications Corporation which is responsible for the provision of these services will in the plan period rehabilitate their facilities and provide services to the fast growing areas.

The Posts and Telecommunications Corporation comprises the Postal and the Telecommunication Services.

2.17 Postal Services

This division is responsible for receiving, collection, sorting, transportation and delivery of letters and parcel mails.

The division has faced a lot of constraints in the discharge of its responsibilities. Because of the inadequate public transport system it has not been able to cater fully and satisfactorily for mails conveyance. The railway which conveys the bulk of the mails has of late not been very reliable while the State Transport Corporation buses do not stop at all places. The use of private mail carriers has not been very dependable while at the same time costs more than the value of the mails.

The division itself has faced the problem of the shortage of adequate vehicular fleet.

During the plan period the division has as its objectives improvement in its service to the customers and increase in postal revenue. To this end the postal division will provide for:—

(1) extension and renovation of old congested post office buildings;

(2) provision of adequate accommodation at Tema to ease congestion at the station;

(3) the planning and design of a modern mail distribution centre at Accra;

(4) provision of more vehicles with the necessary spare parts to augment the existing fleet;

(5) upgrading of a number of postal agencies to full post offices;

(6) establishment of a security printing press and provision of philatelic equipment with the view to conserving foreign exchange in ordering stamps and postal orders from overseas.

2.18 Telecommunications Services

The objective of the telecommunications division will be to consolidate the existing domestic system, expand to new areas and improve the external system.

For sometime the internal domestic system has deteriorated. Efforts to rehabilitate it has been rather slow. However with the implementation of the World Bank programme during the plan period the system is expected to play an important role in the provision of infrastructure necessary for promoting trade and industry.

Calls to and from Ghana, even with our neighbours have to be routed through Europe. It is the objective of government to short circuit this long route which often requires 48 hours delay. In view of this the Corporation will pursue the construction of an earth satelite station and the Pan African Telecommunication link.

Details of the programme of the Corporation are given in Appendix J.

APPENDIX I

BRIEF DESCRIPTION OF PROJECTS (ROADS)

A.—PRIMARY ROADS

Accra-Tema Motorway, Phase III.—9.6 km (6 miles)

This is the continuation of phases I and II of the Motorway construction and involves the stretch from Nsawam Road to Winneba Road. Construction is in progress and it is hoped to complete the road by the end of 1977–78 fiscal year. The estimated cost to complete is ₵1,000,000.

2. Soronuasi-Morno.—70 km (44 miles)

This on-going project involves the improvement of the existing gravel road to a bitumen road standard. The project will be completed in 1976–77 fiscal year. Amount to complete is ₵450,000.

3. Morno-Yapei.—48 km (30 miles)

This road which is part of the Tamale-Morno-Soronuasi road has just recently been awarded on contract. It involves the tarring of the existing stretch of road between Morno-Yapei. The project will be completed in 1978–79 fiscal year. The amount needed to complete is ₵3,500,000.

4. Bolgatanga-Bawku.—83 km (52 miles)

This project which starts from km 29 (miles 18), just before the Red Volta Bridge to Bawku is in progress. It forms part of the international route to Upper Volta and carries a lot of traffic. This road has 3 major bridges over the Red Volta, White Volta and the Kulpie-Ligu rivers. It is expected that this road involving the reconstruction of a 56 km (35 miles) stretch will be completed by the end of the plan period. Amount needed to complete is ₵1,300,000.

5. Berekum-Dormaa Ahenkro.—56 km (35 miles)

This road is the continuation of the existing Kumasi-Sunyani-Berekum road that will lead to the Ivory Coast border and join with a first class road in the Ivory Coast. Being an international highway it is being constructed to bitumen surfaced trunk road standard. It is expected that the road will be completed by 1977–78 fiscal year.

6. Asikuma-Kpeve.—32 km (20 miles)

This route provides an alternative route to Kpandu avoiding the steep and dangerous Balma Pass. The road which is about 90 per cent complete, when finished will give impetus to the development of the area on which the German-Ghanaian development farms are located. About ₵600,000 is required to complete the project by the end of the 1975–76 fiscal year.

7. Hohoe-Dodi Papase-Bimbilla.—230 km (144 miles)

This road forms part of the Eastern North-South trunk roads, the Golokwati-Hohoe section has recently been reconstructed to bitumen surfaced trunk road standard and the next phase is for the Hohoe-Dodi Papase section to be reconstructed to the same standard. The project will spill over the plan period.

8. Kumasi-Abofour.—48 km (30 miles)

This road forms part of the Kintampo-Tamale road which is under construction. It is the central major link which from Accra to the Northern and Upper Regions through Kumasi avoids the Yeji ferry. Thus it is a very important link which is in a bad state. Both the horizontal and vertical alignments are very poor and need reconstruction. The project which requires ₵5,500,000 to complete is scheduled to continue after the plan period.

9. Bamboi-Wa-Hamile.—363 km (230 miles)

This forms, part of the Western primary route now in gravel. It will be reconstructed to a primary standard and bitumen surfaced. The project will continue over the plan period.

10. Navrongo-Tumu-Lawra.—220 km (138 miles)

This is the main East-West road in the Upper Region. It also forms part of the National Primary Route system and links the adjacent countries viz. Upper Volta, Togo and Ivory Coast. Presently it has a gravel surface. The road is now being reconstructed to a primary standard and bitumen surfaced. The reconstruction is expected to continue after the plan period.

11. Kumasi-Sunyani.—123 km (80 miles)

The existing road has poor horizontal and vertical alignments and carries heavy traffic composed mainly of heavy commercial vehicles. This road also connects the regional capitals of Ashanti Region and Brong-Ahafo Region. The reconstruction of the road is in progress and it is expected that it will be completed by the end of the plan period. Amount required to complete is ₵15,000,000.

12. Anyinam-Kumasi.—123 km (80 miles)

This is one of the roads being rehabilitated under the I.D.A. loan. The project involves the rehabilitation and strengthening of the pavement. This on-going project will be completed by the end of the Plan period. Amount required to complete is ₵15,000,000.

13. Accra-Yamoransa.—123 km (80 miles)

This project involves the rehabilitation of the existing bitumen road. The road is part of the Accra-Abidjan international highway. The project will continue after the plan period.

14. Asafo-Bunso.—12.8 (8 miles)

This on-going project when completed will shorten the present Accra-Kumasi road through Kibi by about 16 km (10 miles) and also avoid the difficult terrain at Petroasi. The project is scheduled for completion by the end of 1978–79 fiscal year.

15. Axim-Mpataba.—56 km (35 miles)

This road is part of the Accra-Abidjan international highway. The design for the existing gravel road is being upgraded to allow for a design speed of 96 km/hr or 60 mph. The total project cost is about ₵4.5 million.

16. Enchi-Goaso-Sunyani.—176 km (110 miles)

The above road when completed, will open up a large fertile area in the South-Western Sector of Ghana which is not at present accessible. It will also form part of the north-south route. It is intended to open up the area with a gravel road in the first instance and to upgrade it as traffic builds up. The project is scheduled to start in 1976-77 and will continue beyond the 5-year period.

17. Dunkwa-Takoradi.—128 km (80 miles)

The Dunkwa-Takoradi road was investigated as part of the Golden Triangle roads to connect Accra-Kumasi and Takoradi. It is also intended to connect Dunkwa with the Cape Coast-Twifu Praso road through a 16 km (10 mile) stretch. The project is scheduled to start in 1978-79.

18. Accra-Kumasi.—(Asphalt programme)

Under this phased programme, the pavement of the highly trafficked Accra-Kumasi highway will be strengthened by way of putting an asphalt carpert on the whole stretch. The programme has started with the Anyinam-Bunso Section.

19. Yamoransa-Takoradi.—90 km (56 miles)

This road is part of the Accra-Abidjan highway and it is also one of the projects being tackled under the I.D.A. rehabilitation programme. The project is scheduled to be started in 1975-76 and will be completed in 1979-80.

20. Achimota-Nsawam.—30.05 km (20 miles)

This project involves the rehabilitation and strengthening of the existing pavement. I.D.A. credit will be available for this project which is scheduled to start in 1975-76 and to be completed in 1978-79.

21. Mpataba-Elubo.—40 km (25 miles)

This is also part of the Accra-Abidjan highway. The road is being surveyed and designed with a grant from the African Development Bank. The A.D.B. is also expected to provide about 50 per cent of the total cost of construction. The project is scheduled to start in 1977-78 and will be completed in 1979-80. The total project cost is ₵8,300,000.

22. Rebuilding of Accra City Roads, Phase I.—80 km (50 miles)

Under this crash programme, about 80 km of key roads in the capital will be reconstructed to ease the congestion of traffic especially during the peak hours. The total cost of the project is ₵50 million and it is expected that loans will be available for the finance of about 50 per cent of the total cost.

23. Tema-Aflao.—160 km (100 miles)

This project is part of the Trans-West-African Highway within Ghana territory. The pavement of the existing bitumen surfaced road has failed in certain parts. Under this project, the road will be rehabilitated and provided with a stronger pavement.

24. Mpataba-Enchi.—80 km (50 miles)

This is one of the roads to be re-constructed in a bid to open the Western Region. The project is expected to continue beyond the plan period.

25. Bimbila-Yendi-Bawku.—240 km (150 miles)

This road forms part of the Eastern North-South trunk roads. During the plan period, designs for the road will be upgraded to conform with trunk road standard. The project will continue beyond the plan period.

B.—SECONDARY ROADS

1. Ayanfuri-Bawdia-Bogoso.—80 km (50 miles)

This is phased reconstruction of the existing gravel road serving as the main link between Kumasi and Takoradi. Under the project, the road will be upgraded to a bitumen surfaced trunk road standard. The project is scheduled for completion in 1978–79.

2. Abuakwa–Bibiani II.—25.6 km (16 miles)

Phase I of this project which involved the reconstruction of a 25-mile stretch from Abuakwa has been completed. The 2nd phase is the continuation of this road to link Bibiani with Kumasi. This on-going project will continue over the plan period.

3. Dabala-Srogbe.—37 km (27 miles)

This on-going road project when completed will serve as the main outlet for Keta avoiding the ferry at Ada and the Denu-Keta road which is under constant threat of washout by the sea. The road is being constructed to a bitumen surfaced trunk road standard.

4. Cape Coast-Twifu Praso.—80 km (50 miles)

The existing road is being reconstructed to trunk road bitumen standard and includes three bridges over the Kakum and Surowi rivers. It is also intended to extend this road to Dunkwa by constructing a 16 km stretch.

5. Akim-Oda-Nkawkaw.—101 km (64 miles)

The road from Nkawkaw to Oda is 101 km; 33.5 km at each end have been given to contract leaving a 35 km stretch at the middle. The middle section is being surveyed and designed for construction to start during the plan period.

6. Ayamfuri-Dominase-Bibiani.—81 km (51 miles)

Under this project, the existing road which passes through timber growing areas will be upgraded to meet traffic demands. The project which is scheduled to start in 1976–77 will continue over the plan period.

7. Yamoransa-Bekwai.—150 km (94 miles)

This is one of the important roads linking the coastal areas to Kumasi and the North. The existing road has many sharp curves. Currently the road is being reconstructed to a better standard. The project will go beyond the plan period.

8. Bawdia-Enchi.—100 km (63 miles)

The present gravel road which carries a lot of heavy timber traffic is being reconstructed to a higher geometric and pavement standard. The project will go beyond the plan period.

9. Apedwa-Kukurantumi.—22.5 km (14 miles)

The existing road is being reconstructed and bitumen surfaced. The Kukurantumi to Asafo portion has been completed leaving the Asafo-Apedwa portion which is being reconstructed. The project will be completed in 1978–79.

10. Koforidua-Kukurantumi-Bunso.—38.5 km (24 miles)

The existing major secondary road is being reconstructed to a better geometric and pavement standard. The project is scheduled to continue after the plan period.

11. Asikuma-Anum-Boso-Volta Lake.—25.6 km (16 miles)

This road when completed will serve as a secondary minor road and will connect the Asikuma-Peki-Kpeve road to the Anum-Boso area and the Volta Lake. It will also open up the area and facilitate fishing in the lake.

12. Kumasi-Kuntunase.—24 km (15 miles)

This is the road to the famed Lake Bosumtwi. About nine miles of the road has nearly been completed to bitumen surfaced standard. When the road is completed it will boost up tourism in the area.

13. Kumasi-Barekese.—27 km (17 miles)

This project is nearly completed. Work left includes the sealing of approximately four km. and the construction of 52 m (170 ft.) span bridge. The project will be completed in 1976–77.

14. Bogoso-Prestea.—19.1 km (12 miles)

The existing minor secondary road is being reconstructed and tarred. The road will be completed in 1977–78.

15. Asromaso-Effiduase.—19.1 km (12 miles)

This road which links Effiduase to Asromaso is connected to and just off km. 22.5 on the Kumasi-Yeji-Tamale road. The road is currently being bitumenised to secondary road standard. The road is scheduled for completion 1977–78.

16. Akosombo Port road.—22.5 km (15 miles)

The existing road with steep sections is being reconstructed in order to facilitate the lake transport. It is expected that it will be completed in 1977–78.

17. **Aburi Town Diversion.**—2.25 km (1.5 miles)

This diversion is being constructed to bitumen surfaced trunk road standard to enable through traffic to by-pass the present very narrow road with sharp bends passing through Aburi town. It is expected that the road will be completed by the end of 1975–76.

18. **Ada-Azizanya.**—3.2 km (2.0 miles)

This project is in connection with the Tourist complex to be established in the Ada-Azizanya area. The project is scheduled to start in 1975–76 and to be completed in 1977–78.

19. **Ayamfuri-Dunkwa.**—16 km (10 miles)

This road forms part of the present road link between Takoradi and Kumasi. The Bogoso-Bawdia-Ayamfuri section is now being reconstructed to bitumen surfaced trunk road standard. The Dunkwa-Kumasi stretch is already of this standard. The remaining 10 miles Ayamfuri-Dunkwa section has many sharp curves and poor vertical alignment and needs to be brought up to the similar standard as the adjacent sections. The project is scheduled to start in 1979–80.

20. **Accra-Aburi-Akropong-Adukrom-Koforidua.**—88 km (55 miles)

Under this project, the existing road will be rehabilitated and provided with a stronger pavement. The studies will be conducted into a by-pass from Legon to Aburi.

21. **Axim-Essiama-Eikwe-Bonyere-Half-Assini-New Town Coastal Road.**—12 km (7.5 miles)

Under this project the existing coastal road will be rehabilitated and a stronger pavement provided The project will continue beyond the plan period.

22. **Agona-Sefwi-Wiawso.**—48 km (30 miles)

This is one of the projects being undertaken to open up to the Western Region. Under this project the existing road will be rehabilitated and the pavement strengthened.

23. **Enchi-Dadieso-Yamatwa-Okrakrom-Dormaa Ahenkro.**—200 km (125 miles)

The completion of this border road will facilitate the checking of smuggling in the Western corridor. Under this project the existing road will be improved and a stronger pavement provided.

24. **Asankragwa-Sefwi-Wiawso.**—80 km (50 miles)

Under this project the existing road will be rehabilitated and the pavement strengthened. The road when completed. will facilitate the rapid development of the Western Region.

FEEDER ROADS

1. 560 km (350 miles) of economically viable feeder roads will be constructed/reconstructed annually at a cost of about ₵15 million. The names of existing roads to be reconstructed and new ones to be constructed will be spelt out when an inventory being carried out on feeder roads in the country by the Ghana Highway Authority is completed.

BRIDGES

1. Akora Bridge.—15.2 m (50 ft.) span

The existing narrow bridge is being widened as the whole of the Amanful-Nyakrom road has been reconstructed to trunk road standard. The project will be completed in 1975–76.

2. The White and Red Volta Bridges

The two bridges when completed will replace the existing narrow bailey bridges along the Bolgatanga-Bawku road which is being reconstructed to first-class bitumen trunk road standard. The two bridges will be completed by the end of the plan period.

3. Subinso Bridge.—30 m (100 ft.) span

This 30 m bridge between Wenchi and Bamboi is required to replace the existing substandard bridge. It will be at a higher level in order to have a safer frec-board over maximum flood level and enable the present steep approaches to be improved. The project will be completed in 1976–77 fiscal year.

4. Bamboi Bridge—205 m (680 ft.) span

The Bamboi Bridge when completed will replace the existing ferry service on the Wenchi-Bamboi-Wa road which is the main western north-south trunk road.

5. Yakasi Bridge—30m (100 ft.) span

This bridge will be constructed on the new re-alignment of the road from Enchi to Dadieso. The existing bridge on the old road is substandard and often over-topped by water.

6. Jumoro Bridge—182 m (600 ft.) span

The Jumoro Bridge which is about 182 m in span will replace the present ferry service on the Bogoso-Enchi road. The project will be completed by the end of the plan period.

7. Ankobra Mouth Bridge—134 m (440 ft.) span

This bridge forms part of the Accra-Abidjan International Highway. The concrete bridge when completed, will replace the existing old ferry.

8. Tano River Bridge

This bridge forms part of the Accra-Abidjan Highway. This border bridge will be financed jointly by the Governments of Ghana and Ivory Coast. The construction will start in 1977–78.

9. Asukawkaw Bridge—73 m (240 ft.) span

This is a 3-span bridge with an overall length of about 73 m. When completed, it will replace the existing ferry on the Asukawkaw River which crosses the Jasikan-Dumbai road. This on-going project is scheduled for completion in 1977–78.

10. Oti River Bridge—225 m (740 ft. (span)

This bridge is required to replace the ferry service across the Hohoe-Dodi Papase-Bimbilla road which is under construction. As this is an important north-south road linking the coastal area to the northern part of the country, it is expected to carry heavy traffic when completed. The project is scheduled to start in 1977–78.

PLANT/EQUIPMENT

1. In order to maintain all classes of roads under the jurisdiction of the Ghana Highway Authority, the Authority will require about ₵40.4 million in the rehabilitation and replacement of its existing road plant as well as in the acquisition of additional ones.

APPENDIX A

SUMMARY OF PUBLIC INVESTMENT PROGRAMME FOR ROADS

(IN ₵'000)

Project	*Total Expenditure in five years*	*Total Foreign component in five years*	1975–76		1976–77		1977–78		1978–79		1979–80	
			Total allocation	*Foreign component*	*Total allocation*	*Foreign component*	*Total allocation*	*Foreign component*	*Total allocation*	*Foreign component*	*Total allocation*	*Foreign component*
Primary roads	154,300	92,580	18,250	10,950	34,450	20,670	39,350	23,610	34,100	20,460	28,150	16,890
Secondary roads	35,580	21,348	4,680	2,808	6,850	4,110	8,250	4,950	8,100	4,600	7,700	4,620
Feeder roads	75,000	45,000	15,000	9,000	15,000	9,000	15,000	9,000	15,000	9,000	15,000	9,000
Bridges	9,270	5,562	850	510	2,200	1,320	2,720	1,362	2,100	1,260	1,100	840
Equipment	40,365	40,365	15,750	15,750	8,775	8,975	4,961	4,961	5,209	5,209	5,470	5,470
Total	314,515	204,855	54,530	37,018	67,475	44,075	70,281	43,883	64,509	40,529	57,420	36,820

APPENDIX A

FIVE-YEAR DEVELOPMENT PROGRAMME, 1975/76-1979/80

ANNUAL PROJECT EXPENDITURE

PRIMARY ROADS—*contd.*

Project	*Total Mileage* km	ml.	*Cost to complete in ₵'000*	*Total Expenditure in period in ₵'000*	*Annual Expenditure in ₵'000* 1975–76	1976–77	1977–78	1978–79	1979–80	*Remarks*
1. Accra-Tema Motorway, phase III ..	9.6	(6)	11,000	1,000	400	300	300	—	—	34% completed
2. Soronuas-Morno	70	(44)	450	450	200	250	—	—	—	82% completed
3. Morno-Yapei	48	(30)	3,500	3,500	300	800	800	800	—	Recently awarded
4. Bolgatanga-Bawku	83	(52)	1,300	1,300	150	300	300	300	250	34% completed
5. Berekum-Dormaa Ahenkro ..	56	(35)	1,200	1,200	300	500	400	—	—	75% completed
6. Asikuma-Kpeve	32	(20)	600	600	600	—	—	—	—	90% completed
7. Hohoe-Dodi-Papase-Bimbila ..	230	(144)	15,000	2,300	300	500	500	500	500	25% completed
8. Kumasi-Abofour	48	(30)	5,500	2,250	250	500	500	500	500	15% completed
9. Bamboi-Wa-Lawra-Hamile ..	368	(230)	39,000	2,150	150	500	500	500	500	Recently awarded
10. Navrongo-Tumu-Lawra	220	(133)	14,000	1,350	150	300	300	300	300	21% completed
11. Kumasi-Sunyani	128	(80)	15,000	15,000	3,000	3,000	3,000	3,000	3,000	14% completed
12. Anyinam-Kumasi	129	(81)	12,000	9,500	1,500	2,000	2,000	2,000	2,000	Recently awarded
13. Accra-Yamoransa	128	(80)	19,000	2,300	300	500	500	500	500	New project
14. Asafo-Bunso	12.8	(8)	1,600	1,600	150	500	500	450	—	New project
15. Axim-Mpataba	56	(35)	4,500	4,500	—	1,000	1,250	1,250	1,000	New project
16. Enchi–Goaso–Sunyani ..	176	(110)	22,000	1,000	—	—	—	500	500	New project
17. Dunkwa–Takoradi	128	(80)	20,000	2,000	—	—	—	1,000	1,000	New project
18. Accra–Kumasi (Asphalt Programme)	—	—	12,800	6,000	500	1,000	1,500	1,500	1,500	On-going project
19. Yamoransa–Takoradi	90	(56)	12,000	12,000	2,000	3,500	3,000	3,500	—	50% IDA Finance
20 Achimota–Nsawam ..	30	(19)	8,000	8,000	1,000	3,000	3,000	1,000	—	50% IDA Finance
21. Mpataba–Elubo ..	40	(25)	8,300	8,300	—	—	2,500	3,500	2,300	50% IDA Finance
22. Rebuilding of Accra City roads, phase I	80	(50)	50,000	50,000	4,000	10,000	12,000	12,000	12,000	50% From Loan
23. Tema–Aflao	160	(100)	15,000	15,000	3,000	6,000	6,000	—	—	New project
24. Mpataba–Enchi	80	(50)	15,000	1,000	—	—	—	500	500	New project
25. Bimbila–Yendi–Bawku .. .	240	(150)	45,000	2,000	—	—	—	1,000	1,000	New project
Total			341,750	154,300	18,250	34,450	39,350	34,100	28,150	

FIVE-YEAR DEVELOPMENT PROGRAMME, 1975/76–1979/80

ANNUAL PROJECT EXPENDITURE

SECONDARY ROADS

Project	Total Mileage km	Total Mileage ml.	Cost to complete in ₵'000	Total Expenditure in period in ₵'000	Annual Expenditure in ₵'000 1975–76	1976–77	1977–78	1978–79	1979–80	Remarks
1. Ayamfuri–Bawdia–Bogoso	80	(50)	5,000	5,000	1,500	1,500	1,500	500	—	54% completed
2. Abuakwa–Bibiani II	25.6	(16)	1,800	1,400	200	300	300	300	300	38% completed
3. Dabala–Srogbe	37	(23)	1,000	1,000	200	300	300	200	—	57% completed
4. Cape Coast–Twifu Prasu	80	(50)	4,000	2,350	350	500	500	500	500	35% completed
5. Akim-Oda–Nkawkaw	101	(64)	7,000	2,500	500	500	500	500	500	60% completed
6. Ayamfuri–Dominase–Bibiani	81	(51)	8,000	1,000	—	250	250	250	250	New project
7. Yamoransa–Bekwai	150	(94)	19,000	3,300	300	750	750	750	750	11% completed
8. Bawdia–Enchi	100	(63)	9,000	2,200	200	500	500	500	500	Recently awarded
9. Apedwa–Kukurantumi	22.5	(14)	700	700	100	200	200	200	—	87% completed
10. Koforidua–Kukurantumi–Bunso	38.5	(24)	2,500	1,980	380	400	400	400	400	65% completed
11. Asikuma–Anum Boso–Volta Lake	25.6	(16)	2,500	2,200	200	500	500	500	500	7.8% completed
12. Kumasi–Kuntunase	24	(15)	1,200	1,200	100	200	300	300	300	75% completed
13. Kumasi–Barekese	27	(17)	250	250	150	100	—	—	—	95% completed
14. Asromaso–Affiduase	19.1	(12)	400	400	100	200	100	—	—	85% completed
15. Bogoso–Prestea	19.1	(12)	700	700	150	300	250	—	—	75% completed
16. Akosombo Port Road	22.5	(1.5)	500	500	100	200	200	—	—	To be awarded on contract
17. Aburi town diversion	8.25	(1.5)	100	100	100	—	—	—	—	48% completed
18. Ada–Azisanya	3.2	(2.0)	300	300	50	150	100	—	—	To be awarded on contract
19. Ayanfuri–Dunkwa	16	(10)	2,000	500	—	—	—	—	500	New project
20. Accra–Aburi–Akropong–Adukrom–Koforidua	88	(55)	11,000	2,000	—	—	400	800	800	New project
21. Axim–Essiama–Eikwe–Bonyere–Half Assini–New town coastal road	120	(75)	15,000	2,000	—	—	400	800	800	New project
22. Agona–Sefwi-Wiawso	48	(30)	6,000	1,000	—	—	200	400	400	New project
23. Enchi–Dadieso–Yamatwa–Okrakrom–Dormaa Ahenkro	200	(125)	25,000	2,000	—	—	400	800	800	New project
24. Asankragwa–Sefwi-Wiawso	80	(50)	10,000	1,000	—	—	200	400	400	New project
Total			132,950	35,580	4,680	6,850	8,250	8,100	7,700	

ANNUAL PROJECT EXPENDITURE

BRIDGES/EQUIPMENT

Project	Total Mileage km	Total Mileage ml.	Cost to complete in ₵'000	Total Expenditure in period in ₵'000	Annual Expenditure in ₵'000 1975–76	1976–77	1977–78	1978–79	1979–80	Remarks
	Approximate span									
1. Akora bridge	15.2	(50)	100	100	100	—	—	—	—	On-going project
2. Red Volta bridge	100	(330)	600	600	100	200	300	—	—	On-going project
3. White Volta bridge	205	(680)	1,700	1,700	100	400	400	400	400	On-going project
4. Subinso bridge	30	(100)	175	175	50	125	—	—	—	Design
5. Bamboi bridge	205	(680)	1,700	1,700	300	500	500	400	—	To be awarded on contract
6. Yakasi bridge	30	(100)	175	175	—	175	—	—	—	New project
7. Jomuro bridge	182	(600)	1,500	1,500	—	300	400	400	400	New project
8. Ankobra mouth bridge	134	(440)	1,100	1,100	100	300	400	300	—	Design
7. Tano River bridge	—	—	900	900	—	—	300	300	300	Ghana to finance half cost 50% A.D.B.
10. Asukawkaw bridge	73	(240)	420	420	100	200	120	—	—	28% completed.
11. Oti River bridge	225	(740)	1,850	900	—	—	300	300	—	New project.
Total			10,220	9,270	850	2,200	2,720	2,100	1,400	
Rehab./Replacement of GHA equipment			40,365	40,365	15,750	8,975	4,961	5,209	5,470	CIDA loan — 7.0 m. World Bank—₵8.5m.
				FEEDER ROADS						
Feeder Roads	2,080	(1,800)	75,000	75,000	15,000	15,000	15,000	15,000	15,000	Roads to be specified after inventory by G.H.A.
Total			75,000	75,000	15,000	15,000	15,000	15,000	15,000	

PLANNED EXPENDITURES FROM 1975/76–1979/80

Description	*Total project cost*	1975–76 *Total Estimate*	1975–76 *Foreign Exchange Component*	1976–77 *Total Estimate*	1976–77 *Foreign Exchange Component*	1977–78 *Total Estimate*	1977–78 *Foreign Exchange Component*	1978–79 *Total Estimate*	1978–79 *Foreign Exchange Component*	1979–80 *Total Estimate*	1979–80 *Foreign Exchange Component*	*Source of Funds*
	₡	₡	₡	₡	₡	₡	₡	₡	₡	₡	₡	
CONSTRUCTIONAL WORKS (*a*) Depot and Offices (*b*) Bus Terminus (*c*) Shelters (*d*) Bungalows (*e*) Transit Quarters	3,514,700	717,000	358,500	717,000	358,500	717,000	358,500	717,000	358,500	746,700	373,350	Government
VEHICLES (*f*) 500 Buses (Willowbrooke and Neoplan)	30,000,000	7,200,000	5,760,000	7,200,000	5,760,000	7,200,000	5,760,000	7,200,000	5,760,000	1,200,000	960,000	Government
(*g*) 4 Recovery Trucks	213,500	106,500	106,500	—	—	53,250	3,250	53,250	53,250	—	—	Government
(*h*) 15 Service Vehicles	105,000	42,000	33,600	21,000	16,800	21,000	16,800	21,000	16,800	—	—	Government
SPARE PARTS	35,600,000	3,000,000	3,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,600,000	8,600,000	O.S.A.
PLANT, MACHINERY AND EQUIPMENT	75,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	O.S.A.
OFFICE EQUIPMENT AND FITTINGS	45,000	15,000	15,000	15,000	15,000	15,000	15,000	—	—	—	—	Government
Total	69,552,700	11,095,500	9,288,600	15,968,000	14,165,300	16,021,250	14,218,550	16,006,250	14,203,550	9,961,700	9,348,350	

TOTAL FOREIGN EXCHANGE COST = ₡61,525,000

APPENDIX C

FIVE-YEAR DEVELOPMENT PROGRAMME, 1975/76-1979/80

STATE TRANSPORT CORPORATION

Projects	1975–76		1976–77		1977–78		1978–79		1979–80		*Total number of vehicles*
	Quantity	*¢*	*Quantity*	*¢*	*Quantity*	*¢*	*Quantity*	*¢*	*Quantity*	*¢*	
VEHICLES											
Cars	—	—	—	—	20	225,070	20	225,070	20	225,070	60
Buses (others)	—	—	15	1,174,275	15	1,174,275	15	1,174,275	15	1,174,275	60
Buses (setra)	100	6,930,200	—	—	30	2,079,060	45	3,118,590	45	3,118,590	200
5-Ton Truck	39	317,358	40	325,500	30	237,036	30	237,036	60	474,072	199
35-Ton Articulator (type 1) ..	29	835,277	—	—	—	—	28	826,364	30	885,390	87
35-Ton Articulator (type 2) ..	2	155,632	2	155,652	2	155,652	2	155,652	—	—	8
20-Ton Articulator	4	300,000	4	300,000	4	300,000	4	300,000	—	—	16
12-Ton Articulator	2	209,512	—	—	—	—	—	—	—	—	2
15 Tanker	10	411,887	15	617,851	20	823,775	15	617,831	5	205,944	65
10 Tanker	8	303,400	32	1,213,600	9	341,325	—	—	—	—	49
Shop equipment/Spare parts ..	—	400,000	—	400,000	—	400,000	—	400,000	—	400,000	—
Total	194	9,883,278	108	4,186,858	130	5,736,193	159	7,054,818	175	6,483,341	766

Foreign Exchange Component is estimated as 100 per cent for all projects.

A. PRIMARY SYSTEM (V.L.T.C.)

Description	1975–76		1976–77		1977–78		1978–79		1979–80		TOTAL	
	Allocation	Foreign Exchange Component	Allocation	Foreign Exchange Component	Allocation	Foreign Exchange Component	Allocation	Foreign Exchange Component	Allocation	Foreign Exchange Component	Allocation	Foreign Exchange Component
	₡	₡	₡	₡	₡	₡	₡	₡	₡	₡	₡	₡
GENERAL CARGO												
1 Roll on Roll of palletised boats	500,000	500,000	—	—	—	—	—	—	—	—	500,000	500,000
Bow Ramp vessel	—	—	—	—	245,000	245,000	—	—	—	—	245,000	245,000
PETROLEUM PRODUCTS												
4 Tanker (350-ton capacity)	245,000	245,000	245,000	245,000	245,000	245,000	245,000	245,000	—	—	980,000	980,000
42 Containers	134,000	134,000	201,000	201,000	201,000	201,000	168,000	168,000	—	—	705,600	705,000
6, 4-ton truck trailers and 1 mobile crane (30-ton)	184,000	184,000	184,000	184,000	92,000	92,000	92,000	92,000	—	—	554,000	554,000
2 Oil depots at Akosombo/Yapei	70,000	70,000	—	—	—	—	—	—	—	—	70,000	70,000
	100,000	50,000	—	—	—	—	—	—	—	—	100,000	50,000
PASSENGER												
2, 80-Seater vessel	240,000	240,000	—	—	240,000	240,000	—	—	—	—	480,000	480,000
Service craft with Echo sounding equipment dredger	300,000	300,000	150,000	150,000	—	—	—	—	—	—	150,000	150,000
OTHER FACILITIES												
Shore facilities	50,000	30,000	25,000	150,000	25,000	15,000	—	—	—	—	100,000	60,000
Navigational Buoys/Aids	125,000	80,000	125,000	80,000	125,000	80,000	125,000	80,000	..	—	135,000	135,000
TRUCKS												
3 Leyland 16-tonner	135,000	135,000	—	—	—	—	—	—	—	—	135,000	135,000
2 Articulator trailers	—	—	—	—	—	—	195,000	195,000	—	—	195,000	195,000
7-ton trucks and 3 buses	64,000	64,000	—	—	—	—	—	—	—	—	64,000	64,000
Contingency and Engineering costs	429,440	—	186,000	—	234,800	—	165,000	—	—	—	1,015,000	—
Total	2,576,440	2,032,000	1,116,000	1,010,000	1,408,800	1,119,000	910,000	780,000	—	—	5,439,600	4,941,000

DETAILS OF EXPENDITURE PLANNED FOR THE LAKE 1975/76-1979/80

B. SECONDARY SYSTEM (GHANA HIGHWAY AUTHORITY) IN CEDIS

Description	1975–76		1976–77		1977–78		1978–79		1979–80	
	Allocation	*Foreign Exchange Component*	*Allocation*	*Foreign Exchange Component*	*Allocation*	*Foreign Exchange Component*	*Allocation*	*Foreign Exchange Component*	*Allocation*	*Foreign Exchange Component*
1. Assembly of ferry crafts	100,000	33,000	520,000	173,000	450,000	150,000	100,000	33,000	—	83,000
2. Reconditioning of ferries	75,000	50,000	150,000	100,000	350,000	232,000	450,000	30,000	250,000	83,000
3. New ferry craft for Kpandu, Afram Plains	1,900,000	1,900,000	—	—	—	—	—	—	—	—
4. Passengers craft for Lower Volta Basin	—	—	—	—	850,000	850,000	850,000	850,000	850,000	—
5. Uniilote ferries for Grubi and Ntoabana	—	—	160,000	160,000	220,000	160,000	—	—	—	—
6. Ferry spare	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
7. Workshop machinery and equipment	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	50,000	50,000
8. Vehicle	51,000	51,000	50,000	50,000	25,000	25,000	—	—	—	—
9. Widening of Keta–Yendi canal	—	—	150,000	75,000	100,000	50,000	—	—	—	—
10. Widening of Keta–Kojokrom canal	—	—	150,000	75,000	100,000	50,000	50,000	25,000	—	—
11. Akosombo shipway and workshop	—	—	100,000	75,000	10,0000	50,000	100,000	50,000	50,000	25,000
12. Yendi shipway	—	—	—	—	—	—	100,000	50,000	50,000	25,000
13. Improvement to Ada shipway	50,000	25,000	50,000	25,000	—	—	—	—	—	—
14. Adawso ramps and approaches	100,000	50,000	50,000	25,000	50,000	25,000	—	—	—	—
15. Dumbai ramp and approaches	100,000	50,000	100,000	50,000	50,000	25,000	—	—	—	—
16. Kete-Krachi ramp and approaches	100,000	50,000	50,000	25,000	50,000	25,000	—	—	—	—
17. Kpandu–Afram Plains ramp and approaches	100,000	50,000	50,000	25,000	50,000	25,000	—	—	—	—
18. Grubi ramp and approaches	—	—	100,000	50,000	100,000	50,000	50,000	25,000	—	—
19. Ntoabana ramp and approaches	—	50,000	100,000	50,000	100,000	50,000	50,000	25,000	—	—
20. Improvement to landing ramps	50,000	25,000	50,000	25,000	50,000	25,000	50,000	25,000	50,000	25,000
21. Akosombo for ferry personnel	150,000	75,000	150,000	75,000	150,000	75,000	150,000	75,000	150,000	75,000
22. Stores and W/S (Kpandu, Yeji, Adawso and Dambai)	50,000	25,090	50,000	25,000	50,000	25,000	50,000	25,000	50,000	25,000
Total	3,221,000	2,709,000	3,945,000	3,258,000	3,079,000	1,937,000	2,150,000	1,708,000	1,050,000	458,000

Project Description	Estimated Total cost in ₵'000	Foreign Exchange component	1st Year 1975–76 in ₵'000 Local	1st Year 1975–76 in ₵'000 Foreign	2nd Year 1976–77 in ₵'000 Local	2nd Year 1976–77 in ₵'000 Foreign	3rd Year 1977–78 in ₵'000 Local	3rd Year 1977–78 in ₵'000 Foreign	4th Year 1978–79 in ₵'000 Local	4th Year 1978–79 in ₵'000 Foreign	5th Year 1979–80 in ₵'000 Local	5th Year 1979–80 in ₵'000 Foreign	Source of Funds	Remarks
1. 20 Diesel Locomotives (8 main line and 12 shunting)	12,200	90%	—	3,900	200	2,050	300	2,250	—	4,100	—	—	Railway: 33⅓%; Govt. Loan 66⅔%	₵1.74 million provided in 1973–74 Estimates.
2. Re-alignment, sharp curves on railway main lines	1,800	80%	300	80	250	130	200	120	200	100	400	—	Govt. Loan: 70%; Railway: 30%	₵0.3 million provided in 1973–74 Estimates.
3. Permanent way materials rails turnouts, spiles, deepers, ballast, etc. ..	20,000	90%	400	4,000	600	4,000	990	3,000	770	300	240	3,000	Railway: 40%; Govt. Loan: 60%.	₵1.4 million provided in 1973–74 Estimates.
4. Railway telecommunication system radio telephone link	500	80%	70	2,000	100	2,000	200	300	—	—	—	—	Government Loan.	—
5. Training School	1,000	40%	300	200	—	—	—	—	—	—	—	—	Government Loan.	—
6. Plant and machinery	5,000	90%	—	1,000	250	1,000	250	100	250	500	250	500	Railway 30%; Govt. Loan 70%	—
7. Cost-benefit study, railway extention, Waaso–Sunyani, 153.6 km. ..	300	50%	250	50	—	—	—	—	—	—	—	—	External Aid	Engineering survey completed in 1952. Estimated cost of Railway Extention ₵35m.
8. Railway Electrification Feasibility Studies	250	—	50	100	50	50	—	—	—	—	—	—	—	Estimated cost of electrification: ₵185,000.
7. Doubling of track on Western line Feasibility Studies	260	—	60	150	50	—	—	—	—	—	—	—	—	Estimated cost: ₵218,750 per kilometre.
10. Rebuilding of station and anciliary faciliti..s	5,000	—	800	200	1,200	250	1,360	340	560	140	150	—	—	—
Total	46,310	—	2,230	11,580	2,950	9,680	3,320	7,010	1,140	5,140	1,040	3,500	—	—

APPENDIX F

STATE SHIPPING CORPORATION

Project	*Purpose*	*Total expenditure* ₵
1. 4 No. Multi-purpose carriers ..	Vessels capable of carrying both containers and break down bulk cargoes simultaneously in order to participate effectively in the cargo carriage ..	44,000,000
2. 2 No. Bulk Carriers	To facilitate carriage of grains, manganese, clinkers, alumina, bauxite, etc. ..	24,000,000
3. 2 No. Tankers (1 new, 1 second-hand)	For carriage of crude oil ..	34,500,000
4. Head Office building, Accra ..	—	3,075,000
5. Bonded warehouse, Tema ..	To centralize supplies and for storage stock of essential spares ..	315,000
6. 10 Lighters and 4 Tugs ..	To increase participation in lighterage ..	1,122,000
	Total	107,012,000

APPENDIX G

TEMA SHIPYARD AND DRYDOCKS CORPORATION

Project	*Purpose*	*Total expenditure* ₵
1. Dredging of entrance and approaches to Drydock and fitting our quay	To dredge from 6.5 m. to 8.5 m. and to fill our quay from 4.5 m. to 8.5 m. to enable the yard to the vessels of 100,000 dwt.	1,362,500
2. Extension of mechanical shipyard	To provide 3 berths instead of one at present	1,937,500
3. Intermediate gate in Drydock No. 1	—	322,500
4. Construction of Ship building and breaking berth	To enable under-taking of scrapping of old vessels and building of new ones	5,300,000
5. Provision of automatic bilge blocks	—	1,400,000
	Total	10,322,500

APPENDIX H

GHANA CARGO HANDLING COMPANY LIMITED

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
Lighterage venture, Takoradi	500,000	500,000	500,000	250,000	250,000	2,000,000
Main office Building ..	500,000	800,000	—	—	—	1,300,000
Housing (low cost for junior staff)	—	250,000	—	250,000	250,000	750,000
Management staff ..	—	90,000	—	90,000	90,000	270,000
Company hospital ..	—	200,000	200,000	—	—	400,000
Takoradi Branch office building	160,000	50,000	—	—	—	210,000
MECHANISATION						
Cocoa Handling .	70,000	80,000	80,000	50,000	—	280,000
Handling equipment, forklifts, cranes, etc. ..	500,000	500,000	400,000	200,000	400,000	1,500,000
Mobile vehicles, all types	180,000	80,000	50,000	50,000	25,000	385,000
Communications ..	—	40,000	—	—	—	40,000
Total	1,910,000	1,420,000	735,000	890,000	1,015,000	8,135,000

APPENDIX I

GHANA AIRWAYS CORPORATION

Project	*Purpose*	*Total Expenditure* ¢
1. Acquisition of aircraft ..	2 No. DC9 series 50 1 DC. 10 series 30 for efficient operation	47,500,000
2. Headquarters building complex, Accra	To be built at Kotoka International Airport, to reduce rents on office space ..	9,000,000
3. Staff housing	To provide housing for staff	6,400,000
4. Motor workshop	Required for servicing and repair of aircraft and other equipment	1,155,000
5. Office block for Ground Handling Company	—	500,000
6. Extension to Training Centre	—	200,000
7. Training aids	—	138,000
8. Training and conversion courses for pilots and flight Engineers	—	2,300,000
	Total	67,193,000

APPENDIX J

FIVE-YEAR DEVELOPMENT PLAN—INTERNAL TELECOMMUNICATIONS SERVICES

POSTS AND TELECOMMUNICATIONS CORPORATION

PHASE 1 PROJECT

No.	*Project Description*	1975 *Local*	1975 *Foreign*	1975 *Total*	1976 *Local*	1976 *Foreign*	1976 *Total*	1977 *Local*	1977 *Foreign*	1977 *Total*
PHASE I—DOMESTIC										
	Rehabilitation and expansion (Bank Financed Project)	—	—	—	—	—	—	—	—	—
1.	Building including air-conditioning	—	—	—	715,406	890,000	1,605,406	710,000	1,130,000	1,840,000
2.	Automatic exchanges equipment	—	—	—	—	380,000	380,000	180,000	1,940,000	2,120,000
3.	Local networks	—	—	—	506,000	500,000	1,006,000	659,000	2,500,000	3,159,000
4.	Subscriber Plant	—	—	—	—	200,000	200,000	180,000	500,000	680,000
5.	Local distance systems	—	—	—	—	250,000	250,000	560,000	1,100,000	1,660,000
6.	Telex	—	—	—	—	300,000	300,000	50,000	900,000	950,000
7.	Vehicles	—	—	—	—	200,000	200,000	—	200,000	200,000
8.	Miscellaneous	—	—	—	80,000	250,000	330,000	70,000	360,000	430,000
9.	Consultants	15,000	15,000	65,000	60,000	300,000	360,000	75,000	350,000	425,000
10.	Contingencies	—	—	—	90,000	398,479.10	488,479.10	406,000	1,890,000	2,296,000
	Total	15,000	50,000	65,000	1,451,406	3,668,479.10	5,119,885.10	2,890,000	10,870,000	13,760,000

No.	Project Description	1978			1979			1980			TOTAL		
		Local	*Foreign*	*Total*	*Local*	*Foreign*	*Total*	*Local*	*Foreign*	*Total*	*Local*	*Foreign*	*Total*
1.	Bank financed project	—	—	—	—	—	—	—	—	—	—	—	—
2.	Building including air-conditioning	1.011,000	400,000	1.411,000	–	–		–			2,436,406	2,420,000	4,856,000
3.	Automatic Exchange Equipment	100,000	2.900.000	3,000,000	100.000	590.000	690.000	—	–	—	380,000	5,810,000	6.190.000
4.	Local Networks	459,000	2,000,000	2,459,000	306.000	1.390,000	1.696,000				1,930,000	6,390,000	8,320,000
5.	Local Distance Systems	560,000	800,000	1,360,000	310,000	410,000	720,000	—	—	—	1,430,000	2,560,000	3,990,000
6.	Telex	50,000	—	50,000	—	—	—	—	—	—	100,000	1,200,000	1,300,000
7.	Vehicles	—	100.000	100,000	—	—	—	—	—	—	—	500,000	500,000
8.	Miscellaneous	70,000	250,000	320,000	70,000	300.000	370,000	—	—	—	290,000	1,160,000	1,450,000
9.	Consultants	50,000	70,000	120,000	50,000	70,000	120,000	—	—	—	250,000	840,000	1,090,000
0.	Contingencies	700,000	920,000	1,620,000	44,000	760,000	840,000	—	—	—	1,240,000	3,968,477.10	5,208,400
	Total	3,100,000	7,440,000	10,940,000	980,000	3,900,000	4,880,000	—	—	—	8,436,406	26,328,479.10	34,764,000

NORTHERN DEVELOPMENT PROJECT

No.	Project or Town	Building	Installations	Carrier and installations	Automatic Exchange and S.T.D.	External Plant and Coaxial	Towners	Access roads	Power Plants, Batt. and Gen.	Sub-Total	Total
		¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
1.	Tamale	—	35,000	30,000	—	—	—	—	—	—	65,000
2.	Repeater	75,000	70,000	—	—	30,000	30,000	120,000	30,000	—	355,000
3.	Damongo	131,000	70,000	6,000	100,000	100,000	100,000	120,000	30,000	—	587,000
4.	Repeater	75,000	70,000	—	—	30,000	30,000	120,000	30,000	—	355,000
5.	Bole	131,000	70,000	6,000	100,000	50,000	30,000	120,000	30,000	—	537,000
6.	Repeater	75,000	70,000	—	—	30,000	30,000	120,000	30,000	—	355,000
7.	Bui	131,000	35,000	12,000	100,000	100,000	30,000	120,000	30,000	—	558,000
	Sub-Total	—	—	—	—	—	—	—	—	—	2,812,000
8.	Sunyani	—	35,000	12,000	—	—	—	—	—	—	37,000
9.	Duayaw-Nkwanta	131,000	35,000	6,000	100,000	75,000	30,000	120,000	30,000	—	527,000
	Sub-Total	—	—	—	—	—	—	—	—	—	664,000
10.	Yeji	131,000	35,000	6,000	100,000	50,000	—	130,000	30,000	—	472,000
11.	Salaga	75,000	70,000	6,000	100,000	50,000	—	—	—	—	301,000
12.	Palbusi	—	70,000	—	—	—	—	—	—	—	70,000
	Sub-Total	—	—	—	—	—	—	—	—	—	843,000
13.	Bimbilla	131,000	70,000	6,000	100,000	50,000	30,000	100,000	30,000	—	537,000
14.	Yendi	—	35,000	6,000	—	—	—	—	—	—	41,000
	Sub-Total	—	—	—	—	—	—	—	—	—	578,000
	Total	—	—	—	—	—	—	—	—	—	4,877,000

NORTHERN DEVELOPMENT PROJECT

PHASE II—DOMESTIC REHABILITATION AND EXPANSION

	1978			1979			1980					
	Local	*Foreign*	*Total*	*Local*	*Foreign*	*Total*	*Local*	*Foreign*	*Total*	*Local*	*Foreign*	*Total*
	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
1. Building including air-conditioning	576,380.77	692,108.68	1,288,489.45	596,380	792,108	1,388,488	376,380	642,108	1,018,488	1,569,140.77	2,126,324.68	3,695,465.45
2. Automatic Exchange equipment ..	456,380	1,292,108	1,748,488	496,380	2,142,108	2,638,488	426,380	1,529,108	2,018.488	1,379,140	5,026,324	6,405,464
3. Local Networks ..	380	742,108	1,314,488	926,380	1,042,108	1,968,488	426,380	1,082,108	1,508,488	1,929,140	2,866,324	4,795,464
4. Subscriber plant ..	426,380	732,108	1,158,488	406,380	842,108	1,248,488	396,380	742,108	1,138,488	1,229,140	2,3.6,324	3,545,464
5. Long Distance systems	444,393	942,108	1,386,501	926,380	1,292,108	2,218,488	526,380	1,042,108	1,568,488	1,897,153	3,276,324	5,173,477
6. Telex	40,000	200,000	240,000	—	100,000	100,000	—	100,000	100,000	40,000	400,000	440,000
7. Vehicles	—	230,000	230,000	—	200,000	200,000	—	—	—	—	430,000	430,000
8. Miscellaneous ..	100,000	150,000	250,000	300,000	200,000	600,000	150,000	210,000	360,000	550,000	660,000	1,210,000
9. Consultants ..	100,000	200,000	300,000	40,000	30,000	290,238	40,000	180,000	220,000	180,000	630,238	810,238
10. Contingencies ..	150,000	330,000	480,000	240,000	930,000	1,170,000	240,000	750,000	990,000	630,000	1,908,014	2,538,014
Total	2,889,913.77	5,510,540.68	8,395,454.45	3,931,900	7,670,540	11,822,678	2,581,900	6 340,540	8,922,440	9,403,713.77	19,639,872.68	29,043,586.45

FIVE-YEAR DEVELOPMENT PROGRAMME

ADDENDUM TO PHASE II PROGRAMME

No.	*Description of Project*	*ESTIMATED COSTS IN CEDIS* *Local*	*Foreign*	*Total*
		¢	¢	¢
1.	Installation of a 200-line Automatic Telephone Exchange at Wa	89,300	200,867	290,167
2.	Installation of a 200-line Automatic Telephone Exchange at Navrongo	89,300	200,867	290,167
3.	Construction of 64 buildings (staff quarters) spread over all regions at the rate of 32 buildings a year ..	3,000,000	—	3,000,000
4.	Construction of a new Post Office building at Cape Coast	1,000,000	—	1,000,000
5.	Installation of additional multi-coin boxes	—	800,000	800,000
6.	Provision of Television lines between the following centres: Kumasi–Sunyani, Kumasi–Tamale–Bolgatanga, Accra–Ho	—	5,000,000	5,000,000
	Total Addendum to Phase II	4,178,600	6,201,734	10,380,334

No.	Description of Project	1975			1976			1977			1978			1979	
		Local	*Foreign*	*Total*	*Local*	*Foreign*	*Total*	*Local*	*Foreign*	*Total*	*Local*	*Foreign*	*Total*	*Local*	*Foreign*
		C	C	C	C	C	C	C	C	C	C	C	C	C	C
(*a*)	Phase I project	15,000	50,000	65,000	1,451,406	3,668,479	5,119,885	2,890,000	10,870,000	13,760,000	3,100,000	7,840,000	10,948,000	980,000	3,900,000
(*b*)	Phase II project	5,609,700	—	—	—	—	—	—	—	—	2,889,913	5,510,540	8,396,540	3,931,900	7,890,778
(*c*)	On-going project	3,609,720	5,852,000	9,461,720	2,190,000	1,333,300	3,523,300	—	—	—	—	—	—	—	—
(*d*)	*External Telecommunications Services*	1,702,350	1,069,210	2,771,560	884,700	7,310,500	8,195,200	334,000	1,491,300	1,825,300	125,000	—	125,000	50,000	—
(*e*)	*Investment Branch*	—	—	57,090	—	—	1,282,755	—	—	1,090,000	—	—	1,090,000	—	—
(*f*)	*Postal Services*	1,610,000	405,000	2,015,000	2,872,000	1,370,000	4,242,000	2,852,000	1,410,000	4,262,000	3,334,000	535,000	3,869,000	3,134,000	34,000
(*g*)	*General Administration and Accounts*	285,000	—	285,000	409,950	—	407,950	348,800	—	346,800	338,000	—	338,000	285,950	—
	Total On-going Works	7,237,070	7,376,210	14,655,370	7,808,056	13,682,279	22,773,090	6,422,800	13,771,300	21,284,100	9,787,213	13,885,540	24,766,540	8,381,850	11,824,778

SUMMARY

1978			1979			1980					
ocal	*Foreign*	*Total*	*Local*	*Foreign*	*Total*	*Local*	*Foreign*	*Total*	*Local*	*Foreign*	*Total*
₡	₡	₡	₡	₡	₡	₡	₡	₡	₡	₡	₡
00,000	7,840,000	10,948,000	980,000	3,900,000	4,880,000	—	—	—	8,436,406.00	26,328,479.10	34,764,885.10
89,913	5,510,540	8,396,540	3,931,900	7,890,778	11,822,678	2,581,900	6,304,540	8,922,440	9,403,713.77	19,639,872.68	29,043,586.45
—	—	—	—	—	—	—	—	—	5,799,720.00	7,185,300.00	12,985,020.00
25,000	—	125,000	50,000	—	50,000	—	—	—	3,096,050.00	9,871,010.00	12,967,060.00
—	—	1,090,000	—	—	1,090,000	—	—	690,000	—	—	5,299,845.00
34,000	535,000	3,869,000	3,134,000	34,000	3,164,000	—	—	—	13,802,000.00	3,754,000.00	17,556,000.00
38,000	—	338,000	285,950	—	285,950	—	—	—	1,666,000.00	—	1,666,000.00
37,213	13,885,540	24,766,540	8,381,850	11,824,778	21,292,628	2,581,900	6,340,540	9,612,440	42,221,889.77	66,778,661.78	109,000,551.55

CHAPTER 3

MANUFACTURING INDUSTRIES

3.1 General

Organisational Structure

The Ministry of Industries has overall responsibility for the formulation of the country's industrial policy, the promotion of new investment in industry, the appraisal of industrial project proposals, and the control and regulation of operating industries. It is also assigned the responsibility, under the Manufacturing Industries Act, 1971 (Act 356), for approving proposals for the establishment of new industries and for the expansion of existing ones.

The Ministry performs its functions through five Divisions, namely: General Administration; Investment Promotion and Project Appraisal; Planning, Projects and Research; Industrial Licensing; and Joint State/Private Enterprises and Small-scale Industries.

(*a*) *General Administration.*—This Division deals with the day-to-day administrative matters of the Ministry. It also deals with policy matters relating to the following bodies: the Ghana Industrial Holding Corporation, the Ghana Standards Board, the Tema Food Complex Corporation and the Loyalty Industries Limited.

(*b*) *Investment Promotion and Project Appraisal.*—The Division deals with the processing of applications for the establishment of new industries, and expansion of existing ones.

(*c*) *Planning, Projects and Research Division.*—The Division handles matters relating to industrial policy and industrial planning. It is also responsible for the co-ordination of industrial research activities as well as undertaking sector and pre-feasibility studies.

(*d*) *Licensing Division.*—The Division processes applications for import licences for industrial importers and interpretes import regulations and policy as they affect industrial importers. It is also responsible for advising on the preparation and implementation of the country's industrial import programmes.

(*e*) *Joint State/Private Enterprises and Small-scale Industries Division.*—This Division is generally responsible for overseeing Government's financial interests in industries established in partnership with private investors. The Division also caters for the promotion and development of small-scale industries.

During the plan period, the Ministry will strengthen the Planning, Projects and Research Division by establishing a technical unit to be responsible for taking inventory of industrial machinery to determine the types and varieties of plant and equipment installed within the country as well as their state and condition with a view to drawing up a programme for replacement spread over a specified period.

It will also investigate and determine the possible areas of further investment in the industrial sector, having regard to the extent of utilization of machinery already installed. The Division will publish a list showing these areas; particular emphasis will be placed on areas of marked export potential as well as the development of local raw materials and the establishment of the necessary linkages required to reduce the undue reliance on foreign inputs.

Furthermore, the Division will collect information and data relating to the rate of consumption of import licences granted to the industrial sector, the levels of operation of the various sub-sectors of industry and the degree of expansion required to satisfy the local market and meet export orders.

The Ministry of Industries is assisted in its task of industrial promotion by other statutory bodies and a standing Inter-Ministerial Advisory Committee comprising representatives of relevant key ministries and institutions. In particular, the Ministry works closely with agencies like the Ghana Standards Board, the Capital Investments Board and the National Investment Bank.

The Ghana Standards Board, under the direct administrative supervision of the Ministry, is responsible for standardization, quality control and certification of locally manufactured products.

The Capital Investments Board is actively engaged in the promotion of investments, granting of fiscal concessions and other related incentives for approved investments and generally assisting investors (both foreign and indigenous) in the establishment of projects in accordance with Government's policies.

Fiscal concessions granted by the Board include a tax holiday of up to five years; accelerated depreciation rates for buildings. plant and equipment; exemption from import and customs duties on machinery, raw materials, spare parts and fuel; deferment of company registration fees and stamp duty for up to five years on capital and profits; guaranteed remittances of capital and profits; and employment tax credit for a period up to ten years. At the discretion of the Board, any approved project for establishment may be accorded all or some of these concessions. The criteria for granting these concessions emphasize the project's contribution to the full and efficient utilization of domestic resources, foreign exchange savings and/or earnings, and fair country-wide distribution of investment.

The National Investment Bank (NIB) is a development oriented financial institution which plays an important role in the country's industrialization efforts. As at December 1974, the Bank's total financial assistance amounted to ₵94.4 million. This is made up of loans, equity

participation and guarantees, covering broad areas of economic activities such as manufacturing industries (46 per cent), agriculture (16 per cent), mining (9 per cent), transportation (8 per cent), commercial service (5 per cent), finance (2 per cent) and miscellaneous business (14 per cent). Out of the total financial assistance granted to manufacturing industries, agro-business, food processing and wood processing industries had 37 per cent, cement products and ceramic industries 35 per cent, textiles and leather products 15 per cent and metal industries 13 per cent.

Besides direct financing, the NIB has been active in the joint financing of projects. The Bank has promoted joint projects, including the manufacture of ideal milk and Milo, ceramics, concrete products, low tension electrical cables, dry cell batteries, wood products, chipboards, agricultural implements and plastics. The Bank's financial assistance to the agricultural sector is mainly for the cultivation of raw materials, like oil palm, cotton, rubber, tobacco and ginger for processing locally.

In addition to its normal banking operations, the National Investment Bank provides professional consultancy services to industrialists and investors through its Development Service Institute.

Manufacturing industries in Ghana have been established and operated as:—

(*a*) State Enterprises;
(*b*) Private Enterprises;
(*c*) Joint State/Private Enterprises; and
(*d*) Co-operative Enterprises.

State Enterprises.—These are enterprises wholly-owned by the Government and established either as statutory corporations or under the Companies Code (Act 179).

The Ghana Industrial Holding Corporation (GIHOC) controls and manages the largest and most diverse group of state enterprises. GIHOC now has sixteen divisions under its management. It also has two wholly owned subsidiaries (Cadco Ghana Limited, an advertising company, and Ghana Bottling Company, a soft drinks manufacturing company) and four associate companies which it owns jointly with other companies. The Tema Food Complex Corporation has under its management a flour mill, an animal feed mill, a fish cannery, an oil mill, a fish meal plant, a cold store and a fish smoking plant. The Ghana Cocoa Marketing Board operates the Cocoa Products Factory as its subsidiary. The Ghana National Trading Corporation runs a soft drinks factory as a division of the Corporation; Loyalty Industries Limited groups under a single management three state-owned factories engaged in knitting, garment manufacture and the production of synthetic fabrics.

Private Enterprises.—These enterprises are wholly owned by either Ghanaian or foreign investors or jointly by Ghanaian and foreign investors, and are established under the Companies Code, or under the Incorporated Partnership Act, or under the Business Names Act.

The bulk of manufacturing industries are owned by private investors, Ghanaians and/or foreigners. It is, however, the policy of Government to encourage the rapid development of Ghanaian entrepreneurship

through active participation in fields of economic activity where the financial, technical and managerial requirements fall within the proven ability and competence of Ghanaian businessmen. For this reason, the Investment Policy Decree (N.R.C.D. 329) has reserved certain specified enterprises wholly for Ghanaian ownership. Some of the manufacturing industries reserved exclusively for Ghanaians include bakeries, printing of books and stationery, manufacture of cement blocks, suitcases, briefcases, handbags, wallets and garments.

The Investment Policy Decree also makes provision for joint ownership of specified enterprises by Ghanaians and foreigners as a means of providing Ghanaian enterpreneurs the opportunity to work in partnership with foreign investors in order to acquire the necessary know-how and experience for future development. Industries falling within this category of joint ownership include manufacture of pharmaceuticals, cosmetics, plastic and metal containers, footwear, plastic products, and the assembly of vehicles, electrical equipment and appliances. Ghanaian participation in these industries ranges from 40 to 50 per cent of the capital of the enterprises.

Joint State/Private Enterprises.—These enterprises are owned jointly by the Government or statutory corporations in partnership with private investors, generally foreign investors with the requisite technical know-how in the relevant field. By the end of 1974, Government directly owned shares in fourteen manufacturing industries jointly with private foreign investors. In addition to these, the National Investment Bank had promoted sixteen manufacturing industries which it owns jointly with foreign technical partners. The number of joint state/private industries is expected to increase following the implementation of the Investment Policy Decree which requires state participation in specified strategic industries such as timber and mineral industries and big industries engaged in the manufacture of basic necessities, like sugar, soap, salt, fertilizers, matchets, hoes, agricultural implements, cement, rubber and rubber products. State participation in these industries ranges from 25 to 55 per cent of the capital of the enterprises concerned.

Co-operative Enterprises.—The enterprises are owned collectively by individual Ghanaians pooling their resources together to form co-operative societies. There are only a few industries which are owned on co-operative basis. These are mainly small-scale cottage industries. The Investment Policy Decree also seeks to promote increased involvement of co-operatives in the ownership of industries by making provision for worker participation on co-operative basis in enterprises specified for Ghanaian participation.

3.2 Salient Features of Manufacturing Industries

Manufacturing industries have made a significant contribution to the economy of Ghana since the country adopted an import-substitution industrialisation strategy soon after her independence. This led to the establishment of a number of industries which now supply goods which

were hitherto imported, particularly in production of tobacco, beverages, flour, aluminium ware, furniture, paints, textiles, household enamelware, asbestos cement pipes and roofing sheets.

The contribution of manufacturing industries sector to Gross Domestic Product at current prices increased from ₵213.9 million in 1968 to ₵501.8 million in 1974. But at constant 1968 prices, the 1974 contribution amounted to only ₵267.9 million. In real terms, the sector's contribution to Gross Domestic Product increased only slightly from 12.6 per cent in 1968 to 14.3 per cent in 1971 but declined thereafter to 12.2 per cent in 1974. The average annual growth rate over the period was 15.7 per cent at current prices compared with 4.9 per cent at constant 1968 prices.

Large-scale manufacturing industries have played a major role in the growth of the industrial sector. Their contribution to Gross Domestic Product has generally been slightly more than thrice that of medium- and small-scale industries. In other words, large-scale manufacturing industries have provided more than 75 per cent of the sector's contribution to Gross Domestic Product.

In 1964, the four largest industries, measured by gross output, were manufacture of wood (20 per cent), tobacco manufacture (15.4 per cent), beverage industries (13.3 per cent), and manufacture of chemicals and chemical products (12.6 per cent). By 1972, none of these activities was among the leading industries which comprised food processing (18 per cent) textiles (14.6 per cent) and basic metals (13.6 per cent). In 1972, these latter three industries accounted for more than 45 per cent of total industrial output as compared to their contribution of just over 6 per cent in 1964. Manufacture of leather products, paper products and machinery are among the industries which have remained relatively small over the period under review.

Recorded employment for large-scale manufacturing enterprises was 34,200 in 1964 and 50,000 in 1969. The shares of these in total recorded employment of large-scale enterprises in all sectors of the economy were 9.0 and 12.6 per cent respectively. Employment in large-scale manufacturing industry grew at an average annual rate of 7.8 per cent between 1964 and 1969. The corresponding growth rate for large-scale enterprises in all sectors of the economy was 1.2 per cent. Nevertheless, in 1969 service and construction sectors provided about 32 and 16 per cent respectively of large-scale employment.

3.3 Problems and Constraints

Under Utilization of Industrial Capacity.—A large number of local industries depend heavily on imported inputs, particularly raw materials. Consequently, the persistence of the country's balance of payments difficulties continues to limit the economy's ability to provide manufacturing industries with adequate imported raw materials leading to underutilization of installed industrial capacity. The situation is aggravated in some cases by poor planning and management, technical and financial difficulties. There are a few industries whose initial defective planning

have caused the installation of production capacities far in excess of domestic demand for their products.

Excessive Protection of Domestic Industries.—High tariff protection, quantitative import controls and restricted domestic competition have resulted in the excessive protection of some industries whose effective rates of protection far exceed 100 per cent. As a result of this situation, some inefficient high-cost producing industries continue to enjoy unnecessary protection against foreign competition. In the circumstances, the contribution of such industries to the country's foreign exchange savings and value-added is insignificant, or indeed negative, if the output of such industries are valued at competitive world market prices or at free market rates of foreign exchange.

Few Domestic Linkages.—The existing industrial structure is unduly geared towards the production of final consumer goods. Producer or capital goods industries and intermediate goods industries are so undeveloped as to provide little or no scope for forward and backward linkages with other industries or sectors of the economy.

Low Employment Generating Capacity.—The country's credit and fiscal policies as well as the import licensing system have tended to distort factor prices and to favour the importation of capital-intensive technology for medium- and large-scale industries. Consequently, limited primary and secondary employment has been generated by the industrial sector.

Neglect of Small-scale Industries.—Despite the immense potential of small-scale industries for contributing to the growth of industrial output, value-added and employment, the development of such industries have not been accorded the priority attention they deserve. Small-scale industries, therefore, continue to have difficult access to institutional credit, import licence, management training and technical advisory services.

Excessive Concentration of Industries.—There is an excessive concentration of industrial activities in the three major cities, namely: Accra-Tema, Kumasi and Sekondi-Takoradi. In particular, the Accra-Tema metropolitan area with less than 10 per cent of the country's population accommodates over 50 per cent of the country's industrial establishments. On the contrary, few industries are located in the rural areas. The concentration of industries in the urban areas tends to encourage the drift of population, especially the youth, from the rural to the urban centres and thereby exerting unnecessary pressure on the physical infrastructure and social facilities in the urban centres as well as contributing to some of the economic and social problems, like unemployment, crime, destitution, and child deliquency.

3.4 General Objectives and Strategy of Industrial Development

Policy Objectives

Accelerating Industrial Development.—Industrial policies and programmes have been formulated to stimulate an increased investment in manufacturing activities in order to promote a rapid expansion in industrial output and employment.

Self-sufficiency in selected consumer goods industries.--The objective is designed to lay down the basis for self-sufficiency in selected consummer goods industries with reasonably adequate domestic demand through the increased utilization of locally produced raw materials and thereby reduce overdependence on foreign supplies. In pursuit of this, appropriate policies and measures as outlined below, will be taken to ensure that these industries not only operate profitably but also produce and market high quality goods at competitive prices. Some of these consumer goods are sugar, milk. and milk products, beverages, edible oils, soap, textiles, and footwear.

Diversification of industrial sector.—Efforts at industrialisation have so far concentrated on the production of consumer goods. During the plan period, the foundation will be laid for an effective move towards the development of intermediate, basic and heavy industries. In this regard, measures will be taken towards the expansion of existing metal, electrical and transport industries (e.g. steelworks, and aluminium works) as well as the establishment of new plants, such as foundries, for the production of spare parts, tools, implements, and chemical industries like salt, caustic soda. charcoal.

Encouraging appropriate linkages between industry and other sectors.—The existing industrial structure will be rationalised to create appropriate linkages between the various sectors of the economy through the establishment of plants for the manufacture of fertilizers, animal feeds, and building materials.

Stimulating small-scale industries.—In order to enhance the contribution of small-scale industries to increased employment, production, and income, it is the aim of Government to institute measures, policies and programmes which will be directed at solving their existing technical and financial problems. In this connection, credit facilities and advisory services will be made more readily available through existing institutions like the banks, the Ghanaian Enterprises Development Commission, technical and Vocational Institutes. Additional training facilities and advisory centres will also be established.

Promotion of exports of manufactured products.—To take full advantage of the access to external markets provided under conventions with neighbouring countries forming the Economic Community of West African States (ECOWAS) and the European Economic Community (the Lome Convention), Government will provide necessary assistance and incentives to manufacturing industries with the potential for export to these markets, streamline the procedures for the issue of specific import licences for raw materials and for the prompt payment of export bonus and claims for duty draw-backs, and institute a National Export Award for deserving exporters.

Dispersal of Industries.—In order to encourage the location of industries away from the main urban centres, infrastructural and administrative facilities will be provided in other urban and rural areas in addition to fiscal concessions.

It is expected that the Regional Development Corporations will also play a meaningful role in the dispersal of industries.

Ghanaianisation.—One of the socio-economic objectives of the Industrial Plan is to increase the capacity of Ghanaians to participate actively and meaningfuly in the country's industrial development. In this regard, the Investment Policy Decree 1975 (N.R.C.D. 329) and its subsequent amendments provide the basic framework for increasing participation of Ghanaians in the onwnership and management of domestic industries.

MAIN TARGETS

The manufacturing industries sector is expected to grow at an annual rate of 7.5 per cent during the plan period. This will enable the sector to increase its contribution to Gross Domestic Product at constant 1968 prices from the estimated ₵346.2 million (or 14.90 per cent) in 1974–75 to ₵497.0 million (or 16.36 per cent) by 1979–80.

In view of the importance which the Government attaches to housing, efforts will be directed towards the domestic production of sufficient quantities of building materials. Some of the major items to be considered include cement and cement blocks, pipes and fittings, roofing sheets, burnt bricks, wall and floor tiles, water closets and washing basins, nails, padlocks, hinges, door locks, paint, window and door frames, louvre blades and lumber. Existing factories will be encouraged to increase production and wherever necessary new projects will be established.

Production targets for specific items are as follows:

PRODUCTION TARGETS FOR SELECTED BUILDING MATERIALS

Item	*Unit*	Estimated Production	Production Targets				
		1975	**1976**	**1977**	**1978**	**1979**	**1980**
Cement	Tons	550,000	600,000	660,000	700,000	750,000	800,000
Pipes	Tons	26,000	30,000	40,000	50,000	60,000	60,000
Roofing Sheets	Tons	50,000	55,000	60,000	80,000	80,000	80,000
Burnt Bricks	Pieces	1,000,000	10,000,000	18,000,000	20,000,000	20,000,000	20,000,000
Wall Tiles	Pieces	40,000	48,000	58,000	75,000	80,000	80,000
Water closet	Pieces	10,000	15,000	20,000	25,000	30,000	30,000
Hinges and Doorlocks	Pieces	3,000,000	3,300,000	3,600,000	4,000,000	4,000,000	4,000,000
Window and Door Frames	Pieces	500,000	550,000	600,000	700,000	800,000	800,000
Paint	Gallons	1,000,000	1,200,000	1,400,000	2,000,000	2,000,000	2,000,000

PRODUCTION TARGETS FOR SELECTED DIVISIONS OF GHANA INDUSTRIAL HOLDING CORPORATION ARE GIVEN IN THE TABLE BELOW:—

SELECTED INDUSTRIAL TARGETS FOR GIHOC

Division	*Unit*	*Capacity Installed*	1972	1973	1974	1975	*Targets* 1980
1. CANNERY DIVISION							
(*a*) Alcoholic Beverages	Litres	—	294,229	560,062	937,366	668,875	—
(*b*) Pineapple Products	Tons	—	75,546	29,196	27,177	131	1,500
(*c*) Tomato Products	Tons	—	—	242	129	109	5,000
2. DISTILLERIES DIVISION	Tons	408,046	146,664	288,000	252,691	137,021	400,000
3. FIBRE BAG DIVISION	Tons	14,076	4,440	4,464	6,706	8,948	12,000
4. PAPER CONVERSION DIVISION	Metric/Tons	12,323	7,644	8,140	9,069	8,768	25,000*
5. PHARMACEUTICAL DIVISION	Million Tablets	100	196	546	710	551	2,000*
6. GLASS MANUFACTURING DIVISION	Tons	7,836	4,129	3,624	2,658	2,678	20,000*
7. VEGETABLE OIL MILLS DIVISION	Tons	13,947	—	4,519	5,670	7,202	12,000
8. PAINTS DIVISION	Tons	3,570	1,212	2,341	2,409	1,812	4,000
9. METAL INDUSTRIES DIVISION	Tons	51,000	29,268	47,000	39,000	37,000	50,000
10. STEELWORKS DIVISION	Tons	8,300	2,964	8,398	8,488	2,820	25,000*
11. MEAT PRODUCTS DIVISION	Tons	3,852	—	647	1,492	199	3,500

*Expansion of installed capacity envisaged

STRATEGY

Government's strategy towards the attainment of the objectives of the industrial plan includes the establishment of new plants, the rehabilitation of existing industrial establishments and the re-activation and commissioning of abandoned but economically viable industrial projects. It is further recognised that industrial output could be considerably improved through the increased utilization of the present idle capacity in the operating industries. In this connection, judicious use of the import licensing system will be employed and greater processing of domestic raw materials as well as a vigorous export promotion drive will be embarked upon.

Rehabilitation and Expansion of Industries

There are a number of public enterprises under the Ghana Industrial Holding Corporation (GIHOC) which need rehabilitation and expansion. Details of the programme are discussed under the relevant sections of this chapter. Government will also support private sector moves to rehabilitate and expand existing industries.

Reactivation of Abandoned Industries

As a result of the change of government in 1966, certain projects started by the previous regime were abandoned. It is the aim of government to continue detailed study of these to determine their commercial viability and technical feasibility. Only those projects justifiable on economic, social and technical grounds will be recommended for reactivation. The following are the major projects involved: Prefabricated Large Panel Factory; Tarkwa Gold Refinery; Aveyime Tannery Project; Tema Food Complex Corporation Projects (Tin Can Factory; and Margarine Plant).

Studies on the Tarkwa Gold Refinery and the Aveyime Tannery Project have established that both projects, though technically feasible, conduct social cost-benefit appraisals before final decisions are taken. It is expected that the Tin Can Factory and the Margarine Plant of the Tema Food Complex Corporation will be commissioned in the plan period.

Establishment of New Industries

In addition to the rehabilitation and reactivation of existing establishments, it is expected that new industrial projects will be undertaken to supplement the present manufacturing production. Emphasis will, however, be placed on the promotion of those new industries which will involve a considerable utilization and processing of the country's agricultural, forest and mineral resources. At a time when the absence of imported inputs limits the capacity of the economy to expand, it is necessary that project selection will have to be in favour of those projects which are either net savers or earners of foreign exchange in order to make available the much needed foreign exchange for further development.

The concentration of economic activity in few areas of the country has tended to pose severe socio-economic problems and place strains

on the resources of the national economy. In this regard, it is the intension of the Government to encourage the location of new industries outside the main urban areas bearing in mind the need to maintain external economies and complimentarities. In order to effect the full utilization of the nation's material and manpower resources, new industrial projects will, as far as possible, be encouraged to apply improved technologies appropriate to Ghanaian conditions taking account of the need for labour-intensive techniques. Local research institutes will contribute through their programmes towards the attainment of this objective.

Generally, the establishment of new plants and the expansion of existing ones will not be authorised where considerable under-utilised capacity exists. New investments will be encouraged particularly within the priority areas of the economy provided they also meet the requirements of Government's investment policy as set out in the Investment Policy Decree, 1975 (N.R.C.D. 329).

3.5 Policy Framework

Priority Areas for Investment.—In the public and private sectors, the Government will encourage the establishment of agro-based industries, particularly for food processing (such as cereals, edible oils, dairy products, sugar) and processing of agricultural raw materials (like cotton, kenaf, rubber, tobacco). Establishment of industries based on the processing of local wood will also be encouraged. Priority will be given to the establishment of chemical industries (e.g. salt, caustic soda, fertilizers) as well as those industries producing building materials (like cement, brick and tiles, ceramics, iron rods and roofing sheets). Iron and steel, aluminium processing, machine part and tool industries will be given greater attention than hitherto.

Public and Private Investment.—Government will continue to promote a mixed economy in which state enterprises will co-exist with private and co-operative ventures. Generally speaking, industry in Ghana is predominantly private-owned. There has been relatively small direct investment by Government in manufacturing industries due partly to the limited resources of the government in relation to the many competing demands on these recources. During the plan period, however, Government wishes to be more directly involved in industrial production by investing directly in viable productive ventures either entirely by itself or in partnership with private enterprise. In this regard, emphasis will be placed on strategic projects, development-oriented projects with low private but high social profitability, and projects with large financial requirements which cannot be easily mobilised by local private enterprise.

In addition to direct participation in industry, Government will continue with its traditional role of indirect involvement by providing the basic infrastructure and a congenial investment climate to attract private investment. Foreign capital will continue to be welcome in areas of manufacturing which are not specifically reserved for Ghanaian entrepreneurs. Adequate protection and repatriation of foreign investment will be assured in accordance with existing regulations.

Small-scale urban and rural operators will be assisted financially and technically to improve and expand their activities. They will be encouraged, wherever possible, to organise into viable groups and co-operatives in order to reap the benefits of economies of scale in all spheres of their activities.

Under-utilization of capacity—This is one of the major factors limiting industrial development. The existence of considerable under-utilized capacity not only represents a waste of scarce capital but tends to lower productivity, raise unit cost of production and depress profits. It also has adverse effects on employment and prices. As already noted, a major factor contributing to low levels of capacity utilization is shortage of foreign exchange needed to import the required inputs. This has been highlighted by studies made by the Ministry of Industries and the Management Development and Productivity Institute. These studies have also established that other factors causing under-utilization of capacity include lack of demand, lack of finance, shortage of skilled labour and technical and managerial weaknesses.

The short-term solution to the shortage of foreign inputs resulting from the scarcity of foreign exchange will require that the import licensing system be restructed to reflect the priorities set out by government. The restructuring will enable firms to do more reliable forward planning, and aim at preventing the situation whereby some industries have been forced to shut down occasionally due to material shortage. A long-term solution will, however, require the development and increased production of domestic inputs as substitutes to the imported supplies. The import tax structure will be reviewed to eliminate discrimination against firms using a higher proportion of domestic inputs. Technical assistance, intensive training and incentive schemes will be designed to improve the skills and competence of not only the management but also other categories of manpower in the industries. In view of the wider market that the formation of the Economic Community of West African States (ECOWAS) will create, the government will encourage Ghanaian manufacturers, whenever possible, to increase production to cater for domestic consumption and demand in neighbouring countries.

Export Promotion.—Lack of adequate market information, inadequate raw materials and finance, poor quality and high cost of products are the main obstacles impeding the increased export of locally manufactured goods. During the plan period, a concerted and vigorous export drive will be undertaken jointly by public agencies (such as the Export Promotion Council and the Ghana Export Company) and the relevant manufacturing enterprises. The country's Diplomatic Missions abroad will be strengthened and adequately equipped to enable them assist Ghanaian manufacturers with the preliminary market research and the advertisement of their products on the markets concerned. Duty free shops will be opened at the main border towns, (e.g. Aflao and Paga) to promote the sale of Ghanaian products to neighbouring countries. Feasibility studies will also be conducted with a view to establishing a Free Port and/or Free Industrial Processing Zone at Tema or Takoradi. Ghanaian manufacturers will be given the necessary assistance by the

financial institutions, research organisations and the Ghana Standards Board, to enhance the competitiveness of locally manufactured products by improving their quality and reducing their production costs through improvements in production methods and techniques. The tarriff structure and local taxes will be reviewed to create a strong incentive towards the use of domestic resources.

Industrial Standards.—The Government will ensure that only manufactured products certified by the Ghana Standards Board will be allowed on the Ghanaian market. In the plan period, the promotion of industrial quality control schemes will be vigorously carried out by the Standards Board's scientific and technical staff. The Board's staff will also ensure high product reliability and quality from the factories through regular checks and tests by inspectors and other senior staff. In this connection, the Ghana Standards Board will set up an Inspection Unit to undertake the exercise.

High quality standards are vital to any export drive that the country may embark upon. Government's policy is to ensure that only goods which have been certified as being of saleable quality are exported. To this end, pre-shipment inspection of manufactured goods ready for exports will be carried out.

It is observed that approvals for the establishment of industries in Ghana do not prescribe minimum quality requirements or standard specifications expected from the manufacturers. This is considered a serious omission which has to be rectified. Every approval of an application to establish an industry in the country will henceforth specify the minimum standard or quality specifications to which the products of the factory will have to conform.

Regional Development and Rural Industries.—As already stated manufacturing industries in the country are concentrated in the three large cities namely: Accra-Tema, Kumasi and Sekondi-Takoradi. It is the policy of Government to encourage the location of industries in other areas through the granting of incentives to investors and the provision of necessary infrastructural facilities and amenities in other urban centres as well as the rural areas. Regional Development Corporations which have been set up to utilise the resource potentials of their respective regions to correct the imbalance in development, will be given the necessary financial support by the Government and the banking system to establish viable projects in their respective regions. In this connection, it must be noted that the Bank of Ghana has already established a special fund to help finance studies into the feasibility of various projects to be undertaken by the Regional Development Corporations.

The rural population will be encouraged through the provision of infrastructure, financial and technical assistance schemes to establish cottage industries on individual and co-operative basis in order to create additional job opportunities and raise income levels in the rural areas. The industries envisaged will be based primarily on the utilization of local raw materials and expertise. Some of these industries are cottage sugar

production, cassava processing, extraction of edible oils from fruits and oil seeds, soap making, bricks and tiles, wooden furniture. wood carving, grass-mat weaving, basket and straw-hat weaving, door-mat weaving and weaving of Kente cloth.

Small-scale Industries promotion.—Small-scale industries play an important role in the development of indigenous entrepreneurship and technical skills, in the creation of job opportunites, and in correcting imbalances in the dispersal of industries. It is the policy of Government to promote the rapid development of small-scale industries to enable them contribute effectively to the growth and transformation of the national economy. In this connection, appropriate programmes, embracing financial and technical assistance, training and procurement of equipment and other inputs. for the development of small-scale industries are being worked out with interested local agencies, foreign governments and international institutions.

During the plan period, Government will acquire large plots of land in the regional, urban and rural centres for development as industrial zones which will be provided with basic infrastructural facilites, like roads, electricity, water and telephones. Similarly, complete industrial estates will be established where feasible and provided with extension services covering technical, financial and commercial fields of business. It is the intention that these zones and estates will be allocated to small-scale Ghanaian industrialists and artisans on reasonable rental terms.

Small-scale industries training centres, similar to the Tema Centre will also be established in other centres to provide training, common facilities and advisory services to small-scale industries.

At the national level, Government is also collaborating with the Ghana Manufacturers' Association to establish in Accra a Research and Technical Services Centre to assist and guide particularly small-scale Ghanaian manufacturers. The Research Institutes will be required to participate fully in the activities of the Centre in order to help it achieve its objectives.

The Ghanaian Enterprises Development Commission will draw up and implement a comprehensive programme, embracing financial, commercial and technical assistance schemes, aimed at the development of small-scale Ghanaian enterprises.

Fiscal Incentives.—Generally, high taxes in the form of profit taxes, import duties, and excise taxes are disincentives to investment particularly in import-substituting manufacturing ventures. On the other hand, experience in Ghana has revealed that high import-duty reliefs not only tend to result in substantial losses of customs revenue but also encourage over-dependence on imported inputs and highly-capital intensive production methods. Unfortunately, increased domestic production of manufactured goods, though progressively replacing high duty-yielding manufactured products previously imported, has seriously failed to generate adequate revenue by way of excise duties, personal and corporate taxes to compensate for the heavy loss of revenue resulting from the reliefs.

Furthermore, the excessive tariff protection enjoyed by some long established "infant industries" has tended to encourage inefficiency and high-cost high-price production under usually monopolistic conditions detrimental to the interest of the domestic consumer.

There is, therefore, the urgent need for tax reforms affecting manufacturing industries. Such reforms will be directed at rationalizing the tariff and tax structure (including import duties, excise, sales, purchase and company income taxes). These reforms will also be aimed at providing the necessary incentives and protection for truly infant industries as well as generating adequate revenue for further investment in development projects.

The reforms will, furthermore, create incentives to encourage the processing of domestic raw materials and increase manufacturing value-added. Consideration will be given to the provision of additional incentives in the form of tax reliefs or subsidies on total employment, export sales, expenditure on training Ghanaian employees, transportation and development expenditures in respect of plants located in rural areas.

Price Policy.--The price policy of Government during the next five years will not only seek to protect the consumer but will also ensure that prices reflect high productivity and quality standard requirements comparable to those obtainable on the international market. This calls for closer collaboration between consumers and manufacturers, research and training institutions, Ghana Standards Board and Prices and Income Board.

Manpower.—Considerable industrial expansion is envisaged during the five-year plan period. It is necessary, therefore, to have the requisite manpower resources in terms of quality and quantity. While the general strategy for manpower development is to be found in the manpower section of the plan, with specific reference to industry the following will be emphasized: training programmes will be vigorously pursued to enable prospective managers and supervisors to acquire the necessary technical and management skills required by industry. The Management Development and Productivity Institute (MDPI) will therefore expand its training in industrial engineering, general management, personnel administration, project appraisal, accounting, office management and marketing.

While Government hopes to establish more special centres for small-scale industries to act as focal points for training, research and advisory activities, the Ghanaian Business Bureau of MDPI will continue to assist small and medium-scale businesses through short courses like "How to start a Business"; "How to establish Credit and Use It"; "Profit Planning and Control".

The training programmes offered by the MDPI, the School of Administration at Legon, and the Ghana Institute of Management and Public Administration at Greenhill, particularly in the area of management, will be co-ordinated to avoid unnecessary duplication of efforts.

The wage differential between skilled and unskilled labour will be so adjusted as to encourage more workers to undertake craft training.

Industrial Relations.—The successful performance of the industrial sector is largely dependent upon healthy industrial relations. To this end, government believes that improved performance of the industrial sector should be related to appropriate wage and salary adjustments in both the private and public sectors. Government will concern itself with fixing the minimum wage and an annual ceiling rate of increase, as and where necessary.

Environment and Industry.—Industries producing particularly petrochemicals, iron and steel and fertilizers, generate considerable waste substances which cause pollution of the environment. In view of the greatly expanded industrial programme envisaged under this and subsequent plans, Government wishes to take early steps now to forestall possible harzards to life and the quality of the environment resulting from industrial pollution. The National Environmental Protection Council will therefore, be required to make recommendations which will help maintain the quality of the environment.

Institutional Arrangements.—The need for greater liaison between industry and research can hardly be over-emphasised. It is also felt that Ghana does not have the resources to go into research for its own sake, but that research activities should reflect the priorities of the economy. Government will early in the plan period set up a unit which will be charged with the responsibility of providing an effective link between manufacturers and research institutions. In addition, pilot testing facilities will be made available at the research institutes to assist investors to test their processes and products. It is expected that manufacturers will contribute towards the cost of research.

An effective co-ordination of the activities of various agencies with responsibilities for industrial promotion and administration will be ensured in order to eliminate delays and simplify procedures for getting investment plans approved and incentives granted.

While the Capital Investments Board will continue to use social cost-benefit criteria to determine qualifications for tax exemptions and capital allowances, its incentives criteria system will be synchronized with criteria adopted by the Inter-Ministerial Advisory Committee in approving industries within the broad guidelines stated in this plan.

The Government will also streamline and publish all the procedures for the approval of industries, granting of incentives and exporting in order to apprise the business community very clearly of what to do.

3.6. Investment Programmes

Central Government Investment Programme

NEW PROJECTS

Kumasi Steel Factory.—Studies have recently been completed to show the viability of establishing a steel mill at Kumasi. The estimated capacity of the rolling mill is about 30,000 tons per annum. The project will be started during the plan period. The estimated cost of this project is ₵6 million.

CIMAO Cement Project.—The CIMAO Cement project is a joint venture between Ghana, Togo and Ivory Coast and is to produce about 200,000 tons of clinker per year. With the establishment of the project some of the country's clinker needs will be met from CIMAO. The Government's share of the equity holding is about ₵18.6 million.

Small-scale Industrial Training Centres.—Government places emphasis on the development of small-scale Ghanaian enterprises. To this end, a small-scale Industrial Training Centre has been established at Tema to offer technical training and advice to small-scale Ghanaian technicians and craftsmen. Similar centres will be established in other towns during the plan period. It is expected that about ₵2.5 million will be spent on three other centres.

Industrial Sites.—As already stated, it is the policy of Government to encourage the location of industries in other urban centres and rural areas. During the plan period, Government will acquire large plots of land in the regional, urban and rural centres for development as industrial zones which will be provided with basic infrastructural facilities like roads, electricity, water and telephones. Similarly, studies will be undertaken into the possibilities of establishing complete industrial estates provided with extension services covering technical, financial and commercial fields of business. It is the intention of Government that these industrial zones and estates will be allocated to Ghanaian industrialists on reasonable rental terms. An amount of ₵2 million will be spent on these projects during the plan period.

Pre-Investment and Capacity Utilisation Studies.—Government has noted that a number of industrial projects have been undertaken without sufficient pre-investment studies. This has led to the establishment of some unviable projects. It is the aim of Government to correct this, and during plan period pre-investment studies for project identification and feasibility will be undertaken to make future projects more viable.

It has also been recognised that installed capacities of certain projects deviate very widely from the capacities being utilised with the result that the projects have become uneconomic to operate. In order to correct this situation, Government will commission a number of studies into capacity utilisation of existing industries in order to ascertain how the under-utilised capacities can be fully utilised. It is proposed that ₵2 million will be spent on the pre-investment and capacity utilisation studies during the plan period.

Reactivation of Abandoned Cottage Industries

Following the change of government in 1966, a number of cottage industries being undertaken by the Government and at various stages of completion were abandoned. Government recently appointed a Committee to appraise these projects and advise on their reactivation. As a result of

the work of the Committee, Government has decided to reactivate some of these projects by completing them, repairing, and where necessary, replacing broken down or obsolete machinery and equipment.

Central Government Investment Programme

A summary of the Central Government new investment programme as well as the total investment involved in the reactivation of abandoned cottage industries is as follows:—

New Projects	*Amount*
	¢
CIMAO	18,600,000
Kumasi Steel Works	6,000,000
Small-scale Industrial Training Centre ..	2,500,000
Pre-Investment Studies	2,500,000
Industrial Sites	2,000,000
Total	31,600,000

Reactivation of Abandoned Cottage Industries

Project	*Amount*
	¢
1. Axim Coir Fibre Factory	99,320
2. Half-Assini Coir Fibre Factory ..	102,080
3. Denu Groundnut Processing Factory	120,080
4. Dabala Palm Leaf Weaving Factory	7,000
5. Manso-Amenfi Bambo Factory ..	105,560
6. Axim Bambo Factory	100,000
7. Oppon Valley Rattan Factory ..	33,000
8. Bobikuma Rattan Factory	42,268
9. Nkawkaw Rattan Factory	37,510
10. Enyirese Rattan Factory	37,540
11. Asawinso Rattan Factory	40,258
12. Asamankese Rattan Factory	38,494
Total	745,438

Ghana Industrial Holding Corporation

Some of the Divisions of the Ghana Industrial Holding Corporation have been operating against inherent deficiencies in plant and machinery due to imbalances in design and obsolete technologies. To correct these defects, the Corporation has drawn up a rehabilitation programme aimed at improving the physical production apparatus in selected divisions as well as the expansion of productive capacities through:—

(a) replacement of existing obsolete and inefficient plant and machinery;

(*b*) removal of production bottlenecks;

(*c*) provision of additional facilities;

(*d*) overhaul of existing plant and change in production techniques;

(*e*) reactivation of idle plant.

The main features of the Corporation's rehabilitation and expansion programmes are discussed elsewhere in this chapter. The following are the projects concerned:

(i) Glass Manufacturing Rehabilitation and Expansion
(ii) Pharmaceutical Plant Expansion
(iii) Paper Conversion Plant Expansion
(iv) Boatyards Expansion
(v) Steelworks Rehabilitation and Expansion
(vi) Pwalugu Tomato Factory Reactivation
(vii) Brick and Tile Rehabilitation and Expansion
(viii) Fibre Bag Factory—Balancing and modernisation.

In addition to these rehabilitation and expansion projects, the Corporation plans to establish a few new industries, namely:—

(i) Foundry at Tema
(ii) Granite Polishing Plant
(iii) Silicate Bricks Plant.

The Corporation is also undertaking a number of farming operations (notably pineapples, groundnuts, tomatoes, and kenaf) to provide adequate raw materials for its agro-based factories at an estimated total cost of about ₵7 million with a foreign exchange component of ₵3.6 million representing agricultural farm machinery and inputs and services. The total investment by the Corporation during the plan period is ₵50.0 million of which ₵35.45 million is the foreign exchange component.

The total cost of GIHOC's investment programme is summarised below:—

Project/Scheme	*Foreign Component* (¢'000)	*Total Investment Cost* (¢'000)
A. Rehabilitation/Expansion		
1. Glass Manufacturing Rehabilitation/Expansion	8,700	10,400
2. Pharmaceutical Expansion ..	3,500	5,800
3. Paper Conversion Expansion ..	3,500	5,000
4. Boatyards Slipway	1,300	1,800
5. Steelworks Rehabilitation/Expansion	2,000	2,500
6. Pwalugu Tomato Factory Reactivation	750	1,000
7. Brick and Tile Rehabilitation/Expansion	500	1,000
8. Fibre Bag Factory—Balancing and Modernisation	1,200	1,500
Total Rehabilitation/Expansion	21,250	29,000
B. New Projects		
1. Establishment of new Foundry	5,000	7,000
2. Granite Project	3,200	3,900
3. Silicate Bricks	2,400	3,100
Total New Projects	10,600	14,000
C. *Agro-business*		
Production of Raw Materials ..	3,600	7,000
Total Investment	35,450	50,000

Government believes that the implementation of these schemes is a necessary condition for the attainment of the long-term viability of the Divisions concerned. For this reason, every assistance will be given to the Corporation to accomplish the programmes on target. Funds totalling ¢23.1 million have been mobilised by the Corporation for financing a number of these programmes mainly from loan funds. Government recognises that it will not be financially viable, nor indeed desirable, that

the total programme be financed out of loans. Government will therefore provide ₵12.0 million as increased equity in the Corporation towards financing this programme. Government, however, expects the Corporation to generate sufficient returns on investment so as to be able to contribute ₵5.0 million towards financing the programme out of retained earnings. The shortfall of ₵10.0 million in investment funds will be financed out of additional long-term loans.

Tema Food Complex Corporation

On its establishment, the Tema Food Complex Corporation inherited two operating factories (the Flour and Animal Feed Mills) and six other uncompleted factories. Through hard work and with funds provided partly from accumulated profits by its predecessor (the Special Projects Division) and by the Corporation, and also partly by the banks, the Corporation now operates seven factories (the Flour Mill, the Feed Mill, the Oil Mill, the Fish Cannery, the Fish Meal Plant, the Cold Stores and the Fish Smoking Plant). A number of these factories, however, need some rehabilitation to improve efficiency and raise production.

The main problems facing the Corporation—the inadequacy of supply of raw materials for running some of the plants, notably, the Oil Mill, Fish Cannery and Fish Meal and the relatively high cost of local raw materials, which in itself is a reflection on the scarcity of local supplies have made it impossible to run the plants at economic levels. Also, as a result of foreign exchange constraints, the Corporation has not been able to obtain adequate import licence to supplement local supplies of inputs.

On the other hand, when modest supplementary imports have been permitted under import licences, these inputs are subject to prohibitive duties and taxes. For example, supplementary imports of raw fish for canning attract 50 per cent import duty; tomato puree for the preparation of recipe carries 50 per cent duty and 20 per cent levy; imported cans also carry 50 per cent import duty. Yet competing imports of canned sardines and mackerel attract a concessionary duty of 5 per cent. Supplementary imports of groundnuts for processing also carry 50 per cent import duty.

The operating plants, which have very high production capacities, having absorbed correspondingly high investments, are sharply under-utilised on account of inadequate supplies of basic inputs. For example, the maximum untilisation of capacity in the past has been about 5 per cent for the Oil Mill and still less for the Fish Cannery. Government is reviewing the situation and may grant a waiver of the duties for a specified period.

Currently, the Corporation has initiated schemes in the Ejura and Agbakope areas for the production of groundnuts and maize to supplement part of its raw material requirements, and it is intended to expand these farms within the plan period. It is expected that with policy

support by the Government and as the Operation Feed Yourself Programme gathers momentum, and rapid expansion of agricultural production is achieved, the Corporation will raise production and attain a high utilisation of the capacities of the existing plants.

The Corporation also expects to acquire some fishing vessels, or associate itself with some fishing interests, to ensure regular and substantial supplies of fish for its canning and smoking plants. Concurrently, the Corporation also plans to improve on production efficiency in its operating plants by overhauling or replacing some of its old production facilities and making further investments to provide additional machinery and storage facilities.

Flour Mill.—Some production machinery will be overhauled, repaired or replaced (e.g. the wheat unloader, the cleaning section, plansiter).

Feed Mill.—The existing warehouse will be extended for the storage of additional raw materials and finished products. Some production facilities, for example, the internal conveyor system and lifts, will also be overhauled.

Oil Mill.—Additional equipment for oil seed preparation prior to crushing will be installed. Other facilities for upgrading the quality of oil will also be provided.

Fish Cannery.—Equipment for producing smaller packs of canned fish will be installed.

Tin Can.—Depending upon success in raising production in the Fish Cannery and Oil Mill to economic levels, the Corporation will rehabilitate the Tin Can Factory to produce cans for the fish cannery and the margarine plant and to utilise filtered oil from the mill.

Cold Store.—Equipment for speedy intake and discharge of goods will be introduced for the efficient operation of the factory.

Fish Smoking.—Vacuum packing of smoked fish will be introduced.

Utilities.—With the expected increase in production there will be the need for some investment in the utilities, such as capacitors for the substation.

Farms.—Six thousand acres of farm land have been acquired at Agbakope in the Volta Region. Out of it, 2,000 acres have been cleared and about 600 acres currently under groundnut and maize cultivation. It is expected that cultivation at Agbakope will be raised to about 3,000 acres. Also, 2,000 acres farm land have been acquired at Ejura in the Ashanti Region. About 500 acres of it have been cleared and 250 acres planted with maize. It is expected that cultivation will be raised to about 1,000 acres.

The planned expansion of these farms will call for further investments in agricultural machinery (tractors, implements, and processing equipment such as maize shellers, groundnuts doculticators, farm storage sheds). The

total investments to be made by the Tema Food Complex Corporation in respect of these projects are summarised below:

Project	*Foreign Component*	*Local*	*Total Investment Cost*
	₵	₵	₵
1. *Feed Mill*	200,000	60,000	260,000
2. *Oil Mill*	331,000	90,000	421,000
3. *Fish Cannery*	50,000	5,000	55,000
4. *Smoking Plant*	60,000	10,000	70,000
5. *Cold Store*	876,000	105,000	981,000
6. *Utilities*	520,000	110,000	630,000
7. *Flour Mill*	956,000	109,000	1,065,000
8. *Farms*	330,000	238,000	548,000
	3,323,000	727,000	4,030,000

Joint State/Private Industries Investment Programme

Research and Technical Services Centre.—Government recognises that some small-scale manufacturers are in need of certain basic specialised skills and services which are not readily available. A Research and Technical Services Centre has therefore been established jointly by the Ghana Government and the Manufacturers Association to assist and advise small-scale Ghanaian industrialists on technical and economic matters. The total cost of the centre is estimated to be ₵1.5 million. The Government's contribution towards the financing of this project over the plan period will be ₵1 million.

Juapong Textiles Limited.—Juapong Textiles Limited is engaged in weaving and printing of suiting materials. During the plan period, the company will undertake an expansion programme to enable it start spinning cotton into yarns. Total investment envisaged is ₵11,000,000. Government's contribution to the financing of this project is ₵2,040,000.

Ghana Sanyo Manufacturing Company.—Ghana Sanyo Manufacturing Company is engaged in the assembly of electrical equipment such as transistor radios, television sets and electrical fans. An expansion programme will be undertaken during the plan period to enable the company produce parts for the assembly of refrigerators and air-conditioners. Total investment involved is about ₵1.6 million. Government's contribution is ₵800,000.

Joint State/Private Projects

New Projects	*Amount*
Research and Technical Services Centre	₵1,500,000
Sub-Total	₵1,500,000

Expansion Projects	*Amount*
Juapong Textiles Limited	.. ₵11,000,000
Ghana Sanyo Manufacturing Company	.. ₵1,600,000
Sub-Total	.. ₵12,600,000
Total Joint State/Private Investment	.. ₵14,100,000

National Investment Bank

The National Investment Bank has concluded feasibility studies on a number of projects for implementation as soon as suitable interested foreign technical and financial partners are located. Details of the projects are discussed under the relevant sections of this Chapter. A summary of the bank's investment programme is below:

NIB Joint Venture Projects

Projects	*Total Cost*	*Foreign Currency*	*Local Currency*
	₵	₵	₵
A. Projects under implementation			
1. Foundry Project, Takoradi ..	4,736,000	1,822,000	2,914,000
2. Chipboard Project, Nkawkaw ..	6,570,000	3,088,000	3,482,000
3. Salt Project, Sege	5,511,000	1,061,000	4,450,000
4. Brick and Tile Project, Prampram	9,020,000	1,567,000	7,453,000
5. Adansi Citrus Plantation, Akrokerri	328,000	—	328,000
Sub-Total ..	26,165,000	7,538,000	18,627,000
B. Expansion Projects			
1. Saltpond Ceramics, Saltpond ..	3,875,000	1,850,000	2,025,000
2. Food Specialities, Tema	4,300,000	4,300,000	—
3. Precast and Spun Concrete ..	450,000	100,000	350,000
Sub-Total ..	8,625,000	6,250,000	2,375,000

NIB Joint Venture Projects—contd.

Projects	*Total Cost*	*Foreign Curreny*	*Local Currency*
	¢	¢	¢
C. New Projects			
1. Meat Processing Project, Accra	1,001,000	448,400	552,600
2. Soap Project, Tema	7,571,000	2,600,000	4,971,000
3. Yeast Project, Accra	3,331,000	1,847,000	1.484,000
4. Fertilizer Project, Tema	15,480,000	2,748,000	12,732,000
5. Kumasi Wood Complex, Kumasi	4,000,000	1,332,000	2,668,000
Sub-Total ..	31,383,000	8,975,400	22.407,600
Grand Total Investment ..	66,173,000	22,763,400	43.409,600

3.7 PROGRAMMES AND PROSPECTS FOR MAIN GROUPS OF MANUFACTURING ACTIVITY

Food Industries.—The main food manufacturing activities are cocoa processing, flour milling, sugar production and meat processing. Other activities include production of ice cream, milk products and baby food, bakery products, fruit and vegetables processing, rice milling and fish processing.

Food manufacturing industries have made the highest single contribution to industrial output in recent years. But their contribution to domestic value added has not been impressive because of the high dependence on imported raw materials. The annual ratio of value added to gross output during the 1964–72 period averaged 53 per cent for all large manufacturing industries, but 33 per cent for the food industries.

Food manufacturing industries have the greatest potential for expansion during the plan period because of the high priority given to agriculture, especially the production and processing of all types of local food. Enough excess capacity exists in most industries to cope with the expected increases in the processing of additional food production.

Greater product diversity and value added will be achieved through additional investments in some areas of food manufacturing. Priority attention will be given to such activities as, rice milling and processing of maize; sugar production; extraction of edible oils from groundnuts, oil palm, coconut and soya beans; processing and canning of fruits and vegetables; fish preparations and canning; production of milk and other diary products and meat processing.

Cocoa Processing.—Three factories, two at Takoradi and one at Tema, with combined capacities of 100,000 tons per annum are engaged in the local processing of cocoa beans. All the three factories are equipped to produce cocoa mass which is further processed into cocoa butter plus

small qauntities of cocoa liquer, cocoa cake and powder. The Tema factory also produces chocolate in a separate plant. Utilisation of existing capacities is estimated at 40 per cent. The main objective during the plan period is to raise the existing low level capacity utilisation through increased processing of cocoa beans rather than the expansion of capacity.

Rice Milling.—The increased domestic production of paddy rice in recent years has considerably increased the need for additional milling capacity. The case for additional mills is expected to be further strengthened during the plan period as greater impetus continues to be given to the rice cultivation programme in the Northern and other parts of Ghana. The quality of the rice will also be improved through the application of modern improved processing techniques in order to satisfy the domestic as well as the export markets.

Flour Milling.—The installed capacities of the three existing flour mills, totalling over 140,000 tons per annum, are nearly double the current demand for wheat flour; and capacity utilisation is about 40 per cent. Substantial and viable improvement in capacity utilisation can only be achieved during the plan period if the allocation of foreign exchange for the importation of wheat can be increased in order to increase production of flour for the export market.

Bakeries.—The main bakery products are biscuits and bread. The bakeries use local flour and some imported sugar. Local supplies of sugar is expected to increase during the plan period. The capacities of existing bakeries are estimated to be adequate to cope with the modest increase in demand expected in the next few years.

Sugar.—Domestic consumption of sugar which has been increasing steadily over the years, has reached about 120,000 tons per annum and is expected to rise to about 150,000 tons by 1980. The increasing consumption of sugar has been and will continue to be influenced by factors such as increasing population and income, rapid growth in sugar-consuming industries, like beverages, bakeries, and confectionaries.

There are two main sugar factories: one at Asutsuare with an installed annual capacity of about 30,000 tons and the other at Komenda with a capacity of 15,000. Sugar production in Ghana is based on the processing of sugar cane. Production of the two factories in 1974 amounted to about 12,000 tons. This low production is caused by a number of serious problems, chief among which is inadequate sugar cane production resulting from poor variety of seed cane, inadequate irrigation facilities, poor farming and harvesting practices.

During the plan period, the Ministry of Agriculture will intensify its extension services in order to improve on the agricultural practices of sugar cane farmers who will also be provided with improved seed cane, farm machinery, financial assistance and other necessary inputs to enable them increase the cultivation of sugar cane to feed the existing factories expected to produce at full capacity of about 45,000 tons per annum. In addition, investigations are currently going on into the feasibility of establishing a third plant at Aveyime as well as small-scale cottage industries at Havi, Avenorpeme, Tsito, Mankessim, Amansaman and other areas.

Oil Processing.—Consumption of edible oils is estimated to be about 50,000 tons annually and domestic production around 40,000 tons. More than 80 per cent of domestic production is done by traditional small-scale producers. The Vegetable Oil Mills Division of GIHOC is the most important large-scale manufacturer.

Most of domestic vegetable oils are produced principally from the processing of oil palm, groundnut, coconut, and palm kernel. Some oil is also produced from the processing of soya beans and sheanuts.

Existing mills operate at low capacities due largely to inadequate supplies of raw materials resulting partly from low domestic production and high price incentives offered by competitors, such as the small traditional producers.

Programmes have been drawn up for the increased cultivation and processing of oil palm, soyabeans and sheanuts. Cultivation will be undertaken by small private holdings as well as on plantation basis. It is expected that the increased production of palm oil will also substitute for tallow in soap making. The Vegetable Oil Mills Division of GIHOC plans to cultivate 4,000 acres over five years to yield 20,000 tons of groundnuts. Forty per cent of the total investment cost of ₵1.0 million will be spent on the purchase of machinery and equipment.

The development of oil palm plantations has increased in recent years in Ashanti and Brong-Ahafo Regions. However, there is only one mill in the area to process the fruits. The Agricultural Development Bank, therefore, proposes to establish an oil processing mill in Kumasi to provide a ready market for the farmers' produce.

Fruits and Vegetables Processing.—There are seven large factories for processing local fruits and vegetables. Four factories (L. Rose & Co. Ltd. at Asebu, Economic Industries Limited at Winneba, Nkulenu Industries at Accra and Cape Coast Citrus) are privately-owned. The other three at Nsawam, Wenchi and Pwalugu, are state-owned factories constituting the Cannery Division of GIHOC. L. Rose & Company and Cape Coast Citrus produce lime juice and dried lime peel; Economic Industries concentrates on the production of pineapple juices and tomato paste; Nkulenu Industries specialises in the production of jam, lime juice, canned vegetables and soups.

The private plants operate at less than 50 per cent of their capacity due to problems of raw material supplies and market acceptability. Of the three state factories, the Nsawam plant, with an annual production capacity of 4,000 tons of pineapple juices, and the Wenchi factory are operational. The capacity utilisation of both plants is less than 20 per cent due to inadequate raw material supplies. The Pwalugu factory, with an annual capacity for 2,900 tons of tomato paste, has been producing at 20 per cent capacity due to problems of raw material supplies.

The raw material problems will be solved through programmes for increased cultivation of lime, pineapples, tomatoes and mangoes by private and co-operative farmers. The Cannery Division plans to cultivate 600 acres at Nsawam over the plan period to yield 12,000 tons of pine-

apples to feed the Nsawam factory. With regard to tomato, GIHOC has started cultivating about 400 acres of tomatoes at Vea during the 1976–77 cropping season to reactivate the Pwalugu factory. A total of 800 acres which will yield 12,000 tons of tomatoes (80 per cent of requirements) will be cultivated by the end of the plan period. Research efforts are being intensified to improve on the quality of the products. Vigorous export campaigns will also be launched in order to raise demand for the products to high enough levels as to justify mass production of the products at competitive prices.

Fish Processing.—Local processing of fish is undertaken by a large number of individuals and small enterprises, using traditional processing methods of smoking, drying and frying. It is estimated that about 50 per cent of annual landings of 160,000 tons of fresh and frozen fish is processed locally. There is also a substantial demand for sardines and other tinned fish preparations whose imports over the last decade averaged over 8,000 tons per year. Demand for tinned sardines alone is estimated at about 4,000 tons per annum.

The Fish Processing Plant of the Tema Food Complex went into production recently but the volume of output has been very low due to low landings of herrings. Whereas the plant is designed to produce 30,000 tons of sardines and tinned fish annually, the annual consumption of sardines and other tinned fish has been less than 10,000 tons. Average landings of herrings during the last decade have also been less than 10,000 tons and no spectacular increases are expected in the next few years. Even if large export orders are obtained, production of sardines and other tinned fish cannot be expected to increase significantly unless bumber harvests of herrings occur.

Meat Processing.—There are two major meat processing plants in operation in the country and another one under construction. One of the existing plants is a privately owned plant in Accra with an annual capacity of 450,000 lb. of bacon, smoked beef, pork sausages, and ham. The other one is a state-owned plant at Bolgatanga with capacity for 9,000 tins of corned beef daily. The main problem facing the meat processing plants is inadequate supply of fresh meat at reasonable prices.

GIHOC plans to establish a ranch which will include a grazing area of 5,000 acres for the rearing of 1,000 heads of cattle. Initially, 300 breeding cows and 15 bulls will be acquired at a cost of ₵1.7 million. The output from this project will feed the Meat Products Factory.

Although a number of cattle ranches will be established during the plan period, it is not expected that the situation regarding the supply of local cattle will change drastically during the period because of the relatively long gestation envisaged. Some improvements, are however, expected in the supply of the other animals.

Milk.—The Food Specialities Ghana Limited produces Ideal Milk and Milo for consumption in the country. To meet anticipated increase in demand and also to facilitate possible exports, it is proposed to establish a third production line for Ideal Milk. The production of baby food "Cerelac" will also be included in the expansion programme to reduce imports

of baby cereal foods. Preliminary estimates indicate investment requirements to be about ₵4.3 million.

Beverages.—Beer brewing is the predominant activity, accounting for 75 per cent of the value-added in the beverage industries, with the manufacture of spirits and soft drinks contributing the remaining 25 per cent.

Sugar and raw alcohol are the main local raw materials used by the beverage industries. Containers and packaging materials, like bottles, crown corks, labels and cartons are also produced locally. Emphasis during the plan period will be placed on increased production of local raw materials, bottles and packing materials to ensure more regular supplies than in the past.

Tobacco Manufacturing.—There are three tobacco manufacturing companies. Two of these, namely, Pioneer Tobacco Company Limited and International Tobacco Company Ghana Limited, produce cigarattes. The National Tobacco Rehandling Company produces black fat tobacco. Another company, the Ghana Tobacco Company, supplies the tobacco which is used as raw materials by the manufacturing plants. The main products of the sub-sector are cigarettes, pipe tobacco and black fat tobacco.

The existing plants have adequate capacities to cope with the domestic demand. No new plants are, therefore, to be established during the plan period. Attention however, will be directed towards increased cultivation of local tobacco to feed the existing plants.

Textiles.—Cotton processing (comprising ginning, spinning, weaving and printing) is the most developed activity in the group.

Two of the existing plants, namely, Ghana Textiles Manufacturing Company and Tema Textiles Ltd., are fully intergrated, producing mainly cotton prints and shirtings. Two others, Ghana Textiles Printing and Akosombo Textiles Limited, are engaged in the production of cotton prints. Juapong Textiles Ltd., United Textiles Ltd., and Loyalty Industries Ltd. undertake weaving and printing of suiting materials. Seraphim Textiles Ltd. is engaged in weaving of Khaki, whitedrill and shirtings.

The production of these companies is primarily for domestic consumption. However, Ghana Textile Manufacturing Company and Akosombo Textiles Ltd. have recently entered the export market.

There are twenty-five registered plants engaged in both knitting and garment manufacture. Most of the knitting firms produce knitted fabrics only for their own garment plants. The greater portion of the knitwear, especially for outer garments, is produced from man-made fabrics which are mainly imported.

In terms of the annual ratio of value added to gross output textile manufacture ranks among the lowest category with an annual average of 43 per cent as compared to the sector average of 53 per cent between 1964 and 1972.

Extensive import substitution has been achieved by the textile manufacturing industries. Their products, particularly printed cotton piece goods, are in high demand not only locally but also in neighbouring countries. Four of the major textile mills mentioned above have integrated the weaving and spinning of cotton. In some cases, however, the weaving capacities do not match those of spinning. It has, therefore, been necessary to import some yarn as well as fabrics to supplement domestic production. In the case of synthetic fabrics, the manufacture of yarn from imported fibres has been far less developed than in the case of cotton. The knitting industries rely heavily on imported man-made yarns. The share of woven fabrics is rather small.

Intensive efforts have begun in recent years to increase the domestic cultivation of cotton as raw material for the local textile mills. Cotton cultivation programmes will continue to be given high priority during the plan period. The investment programmes for the textiles industries will place emphasis on the balancing and modernisation of existing plants, rather than the establishment of new ones, in order to raise the level of capacity utilisation. Extension plans will provide for the full integration of the spinning and weaving processes. Prospects for increased exports are bright.

Other textile products are dominated by the manufacture of jute bags by the Fibre Bag Factory of GIHOC in Kumasi, producing bags primarily for the cocoa industry. There are a few companies producing mattresses, bed-sheets, and pillow cases.

The jute bag factory imports most of its raw materials, but serious efforts are now being made to replace the imports with locally produced kenaf. The demand for jute bags will continue to increase with the anticipated increase in the production of cocoa, rice, maize, groundnuts, cotton and other products which are packed in bags.

GIHOC contemplates the cultivation of 4,000 acres of kenaf to yield 2,000 tons of kenaf fibre annually for use by the Fibre Bag Manufacturing Division. The project which is to be spread over five years will cost ₵1.8 million of which ₵1 million will be used for the purchase of machinery and equipment such as crawler tractors, decultivators, pumps and sprayers.

Production prospects for jute bags are very bright provided the domestic cultivation of kenaf shows a substantial increase. GIHOC has embarked on a programme of balancing and modernising the Kumasi plant. Only marginal increases in output may be recorded for the other products in the group unless demand for them in neighbouring countries rises appreciably.

Manufacture of Leather and Footwear.—The main activities within the leather industries comprise the manufacture of natural leather, artificial leather and related articles thereof. There is only one small tannery in operation at Kumasi. All the leather produced is used as raw material by the local footwear industries. The production of artificial leather is undertaken by two firms whose products are used as raw materials for the manufacture of travelling goods, such as handbags and

related products using relatively cheap artificial leather. In 1972, value added for the group was ₵0.56 million accounting for less than one per cent of large-scale manufacturing value added, and the average annual ratio of value added to gross output was 40 per cent.

Substantial quantities of both natural and artificial leather are imported because of low domestic production. Studies are being carried out into the feasibility of reactivating the State Tannery project at Aveyime in the Volta Region which was abandoned in 1966.

The Footwear Division of GIHOC, located at Kumasi, is the dominant firm accounting for 50 per cent of the total capacity in large-scale footwear manufacturing. Ten firms share the other 50 per cent of capacity. In addition, there are many small-scale firms and artisans engaged in footwear manufacturing.

Most of the raw materials for footwear production is imported. The potential for increased production of domestic raw materials is very high. Increased utilisation of excess capacity will depend largely on increase in demand, particularly from abroad. Additional investment will be required only for the balancing and modernisation of existing plant.

Manufacture of Rubber Products.—Rubber manufacturing is dominated by one firm engaged in the production of lorry outer tyres and tubes. Other activities in the sub-sector include tyre retreading, manufacture of rubber soles for footwear and canvas shoes, as well as production of latex foam.

In 1972, the value added figure of ₵8.8 million accounted for three per cent share of manufacturing. The very high yearly growth experienced between 1968 and 1970 contributed to the increase. The annual rate of growth for the period (1964–1972) averaged 33 per cent. The average sectoral rate was 23 per cent. The groups' average annual ratio of value added to gross output of 56 per cent places it within the middle range of large-scale manufacturing industries in this respect.

With the exception of tyres for fork-lift trucks and earth-moving equipment which are in low demand, most of the domestic requirements for the common sizes of tyres for vehicles are met from local production. Further expansion of the tyre plant is in progress to meet expected increase in demand. No major increase in production is expected in the case of the other products.

Garment Manufacture.—Import substitution within this group of industries is far advanced and the quality of the products is high. There are 110 registered garment manufacturing companies, producing items like shirts, blouses, children's wear, socks and underwears.

The main raw materials, woven and knitted fabric and thread, are largely supplied by local manufacturers. Most of the small accessories and incidentals, such as hooks and eyes, buckles, and trimmings are imported. Items like zip fastners and buttons are, however, produced locally. Considerable excess capacity exists to cope with the expected increase in local demand and exports. For this reason, Government has imposed restrictions on new investments in this area of manufacturing activity.

Manufacture of Wood Products.—Sawmilling is the main activity. Other activities include the production of plywood, veneers, mosaic parquet, wooden toys and knocked down furniture.

The groups' production is largely export-oriented and is based entirely on local forest resources. Nearly one-third of the output is consumed by the local construction and furniture industries. Capacity utilisation of plywood mills is quite high but that of sawmills remains low. Considerable potential demand exists locally for wood products, especially in the construction and furniture industries. Appreciable increases in output can be realised, provided the treatment of wood can be improved and efficiency raised by eliminating waste and reducing production costs and prices. Some of the smaller sawmills require modernisation to raise the level of efficiency. The National Investment Bank has recently established a Chipboard Factory at Nkawkaw at a cost of about ₵7 million. Annual production capacity is expected to be 13,500 cubic meters of veneered and unveneered boards mainly for export. There will be job opportunities for 136 Ghanaians when the factory is in full production.

A factory at Kumasi for the production of stationery items, such as pencils and rulers, has commenced production. The project which was sponsored by the National Investment Bank, was constructed at a cost of about ₵2 million. There will be employment for 100 Ghanaians when the factory is in full production.

A number of other new plants are envisaged during the plan period to undertake the production of veneer, chipboard and particle board. Production of knocked down furniture for export will be increased.

Manufacture of Paper and Paper Products.—The Paper Conversion Division of GIHOC, which produces mostly corrugated cardboard boxes, contributes approximately 40 per cent of the volume of production for the group. The production of stationery is the next important activity. The Paper Conversion Division of GIHOC plans to undertake an expansion programme which involves the construction of a new warehouse, a new tissue paper factory and warehouse as well as the installation of another corrugating plant and converting machinery. This expansion is important since the Division is the major producer of corrugated packing containers in the country and the existing facilities and current production are inadequate to meet the needs of the user industries. It will enable the Division to increase its output of about 9,000 metric tons in 1974 to 15,000 tons.

Studies and investigations are still being conducted into the feasibility of manufacturing pulp and paper from various local raw materials. It is expected that a pilot project will be established during the plan period to produce pulp and paper from mixed tropical hardwoods. Modest increases in the production of paper and paper products can be expected through better utilisation of capacity by existing stationery plants and new schemes for manufacture of cement bags and carbon papers.

Manufacture of Petroleum Products.—The Tema Refinery (GHAIP) is the sole manufacturer of petroleum products, supplying all domestic needs except aviation spirit whose demand does not yet justify local production. The refinery relies completely on imported crude oil.

The annual ratio of value added to gross output for the period between 1964 and 1973 ranged between 80 and 97 per cent, with an average of 90 per cent compared to the large-scale manufacturing sector's average of 53 per cent. The petroleum ratio is the highest for the large-scale manufacturing industries. Capacity utilisation in the refinery is around 80 per cent. No addition to existing capacity is expected during the plan period.

Studies are being undertaken into the feasibility of setting up a local bitumen plant. It is expected that the studies will be completed soon and if results are favourable, the plant can be established before the end of the plan period. Only slight increases in output and value added can be expected in the plan period.

Soap.—Capacity utilisation in the soap industry is relatively high. The main soap manufacturing plant at Tema is working close to full capacity. Even at full capacity production, the existing soap plants cannot satisfy the local market. The National Investment Bank has plans for the establishment of an additional plant during the plan period. The project is to be located at Tema. It will produce 20,000 tons of soaps and detergents. Total investment requirements will be about ₵7,571,480. Initially, the factory will employ 420 people and this will increase to 520 when it reaches maximum production capacity.

Pharmaceuticals.—The Pharmaceutical Division of GIHOC will undertake an expansion programme aimed at increasing the production on the existing lines from 50 million to 2,000 million tablets; from one million to 100 million capsules and from 10 million to 25 million ampoules. New production lines will be introduced for the manufacture of five million units of antiseptic powders; five million tubes of creams and ointments; three million bottles aerosols; three million vials; 100,000 litres of syrup; and 100,000 litres of suspensions.

Fertilizers.—Preparations are far advanced for the establishment of a fertilizer granulating plant to supply the fast expanding domestic needs and to support the country's agricultural programme. It is expected that the proposed granulating plant will produce 46,000 tons of fertilizers annually. The project is estimated to cost about ₵15.5 million and arrangements for financing are in progress.

Salt Production.—Panbros Salt Industry, near Accra, is the largest saltwork in operation, producing about 20,000 tons of edible salt annually for domestic consumption and export. Total earnings from the export of local salt amounted to nearly half a million cedis in 1974.

Five new projects recently approved are expected to be established by the end of the plan period. They are: Vacuum Salt Limited at Sege (near Ada), Atlas Salt Industries at Prampram, Adina Salt Industries at Adina (near Denu), Wankam Salt Company at Anomabu and Asin Salt Industries at Apam. Total investments envisaged will be about ₵4.0 million, of which about ₵2.7 will be in foreign exchange. When completed, the projects will provide employment for nearly 1,000 people. They will produce mainly coarse and industrial salt as well as refined edible salt for domestic consumption and export. The projected expansion of salt production is

expected to provide a firm basis for the development of a caustic soda plant to feed local chemical based industries.

Caustic Soda, Calcium Carbide, PVC.—The anticipated processing of local bauxite into alumina will create a considerable demand for caustic soda. Studies are being undertaken into the feasibility of establishing a caustic soda plant based on the local solar salt industry which will be considerably expanded. Similar studies will be carried out on the establishment of a Calcium Carbide Plant and a Poly Vinyl Chloride (P.V.C.) Plant.

Cement.—Cement making in the country, consisting mainly of the grinding of clinker, is the most important activity within this group of industries (i.e. over 70 per cent in terms of the value of production). Its value added is, however, small because clinker is entirely imported. Investigations, are being undertaken to determine the feasibility of exploiting and processing local limestone deposits. Current expansions to the existing two cement mills will help close the gap between consumption and local production.

Glass Products.—The only glass factory at Abosso (near Tarkwa) produces bottles for beer, soft drinks and spirits. It is estimated that at least 70 per cent of the country's bottle requirements are produced locally. Glass table-ware, pharmaceutical and cosmetic glass containers (i.e. jars and bottles) are mainly imported. The expansion programmes of the factory, which involves modernisation of machinery and equipment, will increase capacity four times from 5,000 tons to about 20,000 tons per annum and ensure increased production of hollow glass ware.

The expansion will involve the replacement of existing obsolete sheet glass machinery with hollow glass equipment (of a total of 90 ton/day furnaces and associated equipment). The project will also involve a change of melting technique from oil to electricity and the improvement of auxiliary equipment and services. The scheme will include training of all levels of specialized personnel and the improvement of managerial practices.

Ceramics.—Saltpond Ceramics factory is the only local producer of ceramics, mainly sanitary ware and wall tiles. Extensions being carried out to the factory will ensure not only the increased production of the existing lines but also the introduction of new lines, like crockery. The expansion programme which is estimated at ₵2.4 million, will create an additional 150 jobs.

Bricks and Tiles.—The main Brick and Tile Factory is the GIHOC plant located at Weija, near Accra. There are a few small plants scattered all over the country. The existing factories are known to be high-cost producers of poor quality bricks using inefficient production methods. High grade clays suitable for good quality bricks have been identified throughout the country. Research is currently going on to improve on production, especially through the design and use of improved kilns. To this end, the Building and Road Research Institute will establish a number of pilot plants to demonstrate the use of improved techniques for the production of in-expensive, high quality bricks. It is expected that

by the end of the plan period at least one brick factory will be established in each regional capital.

The GIHOC plant at Weija will be modernised and extended to raise capacity from 1.0 million to 10.0 million bricks annually. The estimated ₵2.5 million programme is for the purchase of equipment which will enable the Division to overcome the serious problems it faces in all phases of its operations. There are difficulties in clay-winning, preparation and production of wet bricks and drying of finished products. It is planned under the expansion programme to acquire a new excavator and better dumper trucks to improve clay-winning. New box feeders, fine rollers and automatic cutters will be installed to improve the preparation and production of green bricks.

The National Investment Bank also proposes to establish a brick and tile factory at Prampram. The plant will have a production capacity of 54 million bricks annually. The project is estimated to cost ₵5,465,000 and will offer employment to about 100 people when completed.

The Bank of Ghana is actively involved in the development of the brick and tile industry in the country. The Bank is financing the establishment of brick and tile factories at various sites in the country. The first two of the factories have been sited at Alajo (near Accra) and at Ho in the Volta Region. The cost of setting up these two is estimated at about ₵2.2 million. Two more factories, involving some ₵5.5 million, will be established during the plan period.

Concrete Products.—There are four major producers of concrete products. Precast Spun Concrete Products Limited (formerly Pfeiffer Spun Concrete Products Limited) which is a joint N.I.B./foreign company, and African Concrete Products Limited produce mainly concrete poles and pipes for electricity, water and sewerage connections. One other company is engaged in the production of asbestos roofing sheets. There are many small enterprises engaged in the production of cement blocks.

The demand for these products far exceeds local production. Existing factories will therefore be expanded to cope with the demand. Precast Spun Concrete Products Limited has plans to establish another plant in Kumasi at the estimated cost of ₵450,000.

Metal Industries.—The value added of metal industries increased steadily until it reached ₵52.0 million in 1972 which was the highest of any group of industries in the manufacturing sector. The annual rate of growth of value added was 37.6 per cent between 1964 and 1972. The average annual ratio of value added to gross output was 40 per cent. The main metal industries are concerned with the manufacture of aluminium roofing sheets, household utensils and metal products, such as iron rods, nails, and tanks.

Aluminium products are made from imported aluminium sheets while local deposits of bauxite are exported in the raw form. The Valco plant at Tema also imports alumina which is processed into ingots and exported. The main missing links are a bauxite processing plant and an aluminium

rolling mill. Investigations and studies have been going on to find out the feasibility of establishing an integrated aluminium industry in Ghana based on local bauxite deposits. Negotiations with interested foreign investors are far advanced and the execution of the Kibi Project should be possible by the end of the plan period.

The principal steel products include iron rods, nails, wires, screws, hinges, bolts and nuts, crown corks, metal gates and furniture. Except for metal gates and furniture, which are produced by many small manufacturers, production of the steel products is dominated by the Metal Works and Steelworks Divisions of GIHOC, and the privately owned Crown Cork Factory.

Domestic consumption of iron rods and sections is estimated at over 35,000 tons for 1975 and expected to grow steadily to about 60,000 tons in 1980 and 75,000 tons by 1982. Production of the two local plants (Tema Steelworks Division of GIHOC and Ferro Fabrick Limited) which was just about 15,000 tons in 1973 is expected to reach about 22,000 tons in 1975. After the completion of current rehabilitation and expansion of the plants, local production will be expected to rise to about 45,000 tons per annum. In view of the shortfall in production, plans are being drawn for the establishment of a third steel mill at Kumasi based on rolling billets to supplement domestic production of iron rods and sections. The plant which is estimated to cost ₵6.0 million will have an annual capacity of 30,000 tons.

Preliminary investigations have shown that local iron ore deposits at Opon Manso are suitable for processing into steel to form the basis of an iron and steel industry in Ghana. Detailed feasibility studies are expected to be carried out early in the plan period at an estimated cost of nearly ₵3.0 million.

Expansion of GIHOC's Steelworks at Tema is aimed at raising production capacity from 8,000 tons to about 25,000–30,000 tons per annum. The investment programme involves the modernization of existing machinery as well as the installation of a new rolling mill and the expansion of electrical, water, oxygen and other services. The Steelworks Division also plans to establish a foundry at Tema at the estimated cost of ₵7.0 million to produce about 6,000 tons annually of grey cast iron and brass castings, such as ingot moulds, casting plates and pipes, pipe connections and joints, man hole covers and frames, coal pots and water taps. A second foundry sponsored by the National Investment Bank is already under construction at Takoradi. It is expected to produce about 2,000 tons annually of iron and steel castings based on local scrap. The project which is estimated to cost ₵4,736,000 will create about 130 job openings. Further investment opportunities have been identified for products, such as, wire drawing and ropes, galvanized steel pipes and lattice poles, steel cutlery, industrial and agricultural hand tools, door locks and hinges, car radiators and heat exchangers. Basic metal industries will be expanded during the plan period in order to lay the foundation for the future development of heavy producer goods industries in the country.

Manufacture of Transport Equipment.—The assembly of motor cars and trucks accounts for most of the activities within this group. The other important activities are the construction of wooden fishing and pleasure boats as well as the assembly of knocked-down ferries. There is also a factory at Kumasi for the assembly of motor-cycles and bicycles.

It is estimated that about 20 per cent of passenger cars and 50 per cent of commercial vehicles are assembled locally from imported CKD parts. Two bus assembly plants have recently been established jointly by the Government and foreign investors for the assembly of Willowbrook and Neoplan buses from imported completely knocked down parts. Less than 50 per cent of the capacities of the vehicle assembly plants are being utilised due largely to lack of foreign exchange to import the necessary parts.

Existing capacities can reasonably cope with demand during the plan period. Emphasis will be placed on increased capacity utilisation with priority attention being given to the increased production of commercial vehicles and buses to facilitate the transportation of agricultural produce to urban markets as well as to improve mass urban transportation. The Boatyards Division of GIHOC will be expanded and modernised to produce more boats as well as to provide improved servicing facilities for small boats and medium-sized ocean-going vessels. The expansion programme includes the construction of a new ₵1.3 million slipway to enable the Division to provide facilities for handling boats weighing between 500–1,000 tons as against the present 50 ton capacity. An amount of ₵600,000 will be spent on the purchase of machinery and equipment for the Engineering Workshop.

Manufacture of Electrical Products.—This group of industries covers the manufacture of a wide variety of products, such as air-conditioners, refrigerators and cookers, radios, TV sets, record players, tape recorders, electric fans, pressing irons and water heaters, auto batteries, dry cell batteries, electric motors, incandescent bulbs and flourescent tubes, plugs, switches, wires and cables. In most cases, only the assembly of imported components is being undertaken locally.

It is estimated that at least 50 per cent of the country's consumption of the above products are being assembled locally. Possibilities of manufacturing some components, especially for refrigerators, air-conditioners, cookers, radios, television sets, auto electrical parts have been investigated. Results are generally encouraging and appropriate action has been initiated for the establishment of projects which have been found viable. In this connection, mention should be made of the expansion programme of Ghana Sanyo Manufacturing Company involving the manufacture of refrigerator and air-conditioner cases and parts. A similar project has also been approved for Talva Industries Limited, a joint Ghanaian and foreign private company.

TABLE 1

MANUFACTURING INDUSTRIES' CONTRIBUTION TO GROSS DOMESTIC PRODUCT (1968–1974)

	1968	1969	1970	1971	1972	1973	1974
A. CONSTANT 1968 PRICES							
1. G.D.P. originating from sector in ₵'M ..	213.9	249.5	264.8	290.2	225.8	274.4	267.9
2. Percentage share of G.D.P.	12.58	12.84	13.73	14.30	11.41	13.14	12.20
3. Percentage yearly growth rate of sector's contribution to G.D.P.		16.64	6.13	9.59	–22.18	21.52	–2.37
B. CURRENT PRICES							
1. G.D.P. originating from sector in ₵'M	213.9	248.4	257.5	275.1	305.9	409.3	501.8
2. Percentage share of G.D.P.	12.58	12.42	11.40	11.00	10.87	11.69	10.76
3. Percentage yearly growth rate of sector's contribution to G.D.P.		16.13	3.66	6.83	11.20	33.80	22.60

TABLE 2

LARGE-SCALE MANUFACTURING INDUSTRIES' CONTRIBUTION TO GROSS DOMESTIC PRODUCT (1968–1974)

	1968	1969	1970	1971	1972	1973	1974
A. CONSTANT 1968 PRICES							
1. G.D.P. originating from large-scale industries in ₵'M	156.3	190.4	206.6	229.9	171.9	216.3	208.3
2. Percentage share of G.D.P.	9.19	10.56	10.71	11.33	8.69	10.36	9.49
3. Percentage share of manufacture output	73.07	76.31	78.02	79.22	76.13	78.83	77.75
4. Percentage yearly growth rate of sector's contribution to G.D.P.	—	21.82	8.51	11.28	–25.23	25.83	–3.70
B. CURRENT PRICES							
1. G.D.P. originating from large-scale industries in ₵'M	156.03	176.0	182.05	203.2	224.3	309.9	379.5
2. Percentage share of G.D.P.	9.19	8.80	8.08	8.13	7.97	8.85	8.14
3. Percentage share of manufacture output	73.07	70.85	70.87	73.86	73.32	75.71	75.63
4. Percentage yearly growth rate of sector's contribution to G.D.P.	—	12. 6	3.69	11.34	10.38	38.16	22.46

TABLE 3

MEDIUM AND SMALL-SCALE MANUFACTURING INDUSTRIES' CONTRIBUTION TO GROSS DOMESTIC PRODUCT
(1968–1974)

	1968	1969	1970	1971	1972	1973	1974
A. CONSTANT 1968 PRICES							
1. G.D.P. originating from medium and small-scale industries in ₵'M	57.6	59.1	58.2	60.3	53.9	58.10	59.6
2. Percentage share of G.D.P.	3.39	3.28	3.02	2.97	2,72	2.78	2.71
3. Percentage share of manufacturing output ..	26.93	23.69	21.98	20.78	23.87	21.17	22.25
4. Percentage yearly growth rate of sector's contribution to G.D.P.		2.60	11.52	3.61	–10.61	7.79	2.58
B. CURRENT PRICES							
1. G.D.P. originating from small-scale industries in ₵'M	57.6	72.4	75.1	71.9	81.6	99.4	122.3
2. Percentage share of G.D.P.	3.39	3.62	3.32	2.87	2.90	2.84	2.62
3. Percentage share of manufacturing output ..	26.93	29.15	29.13	26.14	26.68	24.29	24.37
4. Percentage yearly growth rate of sector's contribution to G.D.P.		22.69	3.73	–4.26	13.49	21.81	23.04

CHAPTER 4

MINERAL RESOURCES

4.1 General

The Ministry of Lands and Mineral Resources is responsible for directing, supervising and controlling the mining and mineral industries of the country. Under the Ministry is the Mines Department which is charged with overseeing the safe and economical exploitation of the country's mineral resources in addition to the enforcement of the country's mining laws and regulations. In the exercise of its functions, the Mines Department conducts proficiency examinations for the issue of certificates to key mining personnel such as blasting and rescue personnel, mine shift boses and mine captains. The Department also maintains a laboratory for testing mine winding ropes. In addition, the Department undertakes regular inspection of mines to ensure that mining is carried out in accordance with accepted practices, norms and regulations.

The Geological Survey Department is primarily responsible for the geological mapping of the country, providing the basic information on the occurrence of mineral deposits and undertaking the prospecting and evaluation of such deposits for their economic exploitation and processing.

There are six major enterprises engaged in the production and marketing of the country's mineral deposits. Two companies (the Ashanti Goldfields Corporation and the State Gold Mining Corporation) undertake gold mining, two (Ghana Consolidated Diamonds Ltd. and the Diamond Marketing Corporation) operate in the diamond industry, and one each engaged in manganese (Ghana National Manganese Corporation) and bauxite mining (Ghana Bauxite Company). Only one enterprise, the Diamond Marketing Corporation, is engaged solely in marketing. In addition to the six major mining companies, there are a number of small private operators engaged in diamond mining.

Existing mining companies in Ghana are owned and operated as statutory state Corporations, or private undertakings, or as joint state/private ventures. The State Gold Mining Corporation, the Ghana National Manganese Corporation and the Diamond Marketing Corporation are completely state owned corporations engaged in the fields indicated by their respective names. Until the participation of Government in the big mining companies in 1972, foreign private enterprises dominated the mining industry in Ghana. Following the participation, only small-scale Ghanaian diamond diggers now constitute the private sector of the mining industry. The joint state/private mining companies in which the state has acquired 55 per cent equity participation are the Ashanti Goldfields Corporation (Ghana) Limited, the Ghana Consolidated Diamonds Limited, and the Ghana Bauxite Company.

During the plan period, Government will strengthen the organisation of the mining sector by providing the necessary support and assistance, material and financial, to the various agencies concerned to enable them perform their functions with increased efficiency and contribute effectively to the expected improvement in the performance of the mining sector.

4.2 Recent Performance

The Mining Sector continues to play a very important role in the economic life of the country. Although the sector has, over the past decade, not shown the growth in production which characterized earlier periods, it has nevertheless made a substantial contribution to the development of the economy as a major foreign exchange earner and employer and as a significant contributor to the Gross Domestic Product.

The Mining Industry is second only to the cocoa industry in terms of its contribution to total export earnings. Its share of total export earnings reached a peak of 22.2 per cent in 1966, fell to 10.3 per cent in 1970 and rose again to 14.6 per cent in 1972. At current prices, exports have shown a steady rise over the past decade, from ₵14.6 million in 1966 to ₵48.7 million in 1970 and to ₵81.8 million in 1972 due to the high prices of minerals, particularly gold.

The level of employment in the Mining Industry has remained fairly stable over the period 1967 to 1974. Though, throughout the period, about 23,000 people were employed in the industry, the sector's share of the total labour force has declined from 7.3 per cent in 1967 to 6.4 per cent in 1969 and to about 6 per cent in 1974. One encouraging trend however is the decrease in the number of expatriate personnel employed in favour of Ghanaian personnel from 699 in 1960 to 196 in 1974.

4.3 Problems and Constraints

Between 1969 and 1972, the share of Mining, including quarrying, in GDP remained at about 2.3 per cent. One distressing feature of the mining industry in Ghana today is the stagnation of physical production. The main problems contributing to the existing situation are the lack of a vigorous prospecting and exploration programme leading to the discovery and exploitation of new ore bodies to augment existing ore reserves; the lack of facilities for the local processing of known mineral resources; inadequate injection of financial resources necessary for the modernisation and expansion of existing mines; inadequacy of local facilities for training the various types and numbers of technical and professional Ghanaian manpower required by the mines and mineral industries.

4.4 Policy Objectives

During the five-year plan period Government will institute measures to achieve the following objectives:

(1) Increasing the production of known minerals through the rehabilitation and expansion of existing mines and the opening up of new mines.

(2) Processing, whenever feasible, minerals which are now exported in their raw form in order to increase their foreign exchange earnings and create additional employment opportunities.

(3) Exploiting and, whenever technically feasible and economically viable, processing the vast deposits of bauxite at Kibi and Nyinahin, the iron ore deposits at Oppon Manso as well as other deposits of industrial minerals in order to lay a strong basis for further industrialization.

(4) Intensifying geological mapping of the country as well as prospecting and evaluating new mineral deposits for future exploitation and processing.

(5) Strengthening and expanding training facilities for the mining sector in order to complete the process of Ghanaianization of top-level management of the mines.

(6) Providing improved ventilation in the underground mines as well as social facilities and amenities (such as housing, schools, health facilities) for the mining workers and their families, in order to improve not only the safety and health standards of the mines but also the working conditions, well-being and efficiency of mine labour.

4.5 Main Targets and Financial Requirements

The Mining and quarrying sector is expected to grow at an average annual rate of 3.5 per cent during the plan period. The projected increase in production will continue to be dominated by gold production. Only a slight increase is expected from diamond production. Bauxite mining will be considerably boosted during the plan period if negotiations can be successfully concluded for the mining and processing of the Kibi and/or Nyinahin deposits.

The contribution of mineral exports to total export earnings is expected to rise from the 1973 estimated level of 13.4 per cent to over 16 per cent by 1980 with the earnings from gold exports rising from 75 per cent of mineral exports in 1973 to 81 per cent by 1980.

At the present level of operations, employment in the existing mines is expected to increase from the 1974 total of 23,820 to 25,320 by 1980. The gold mines will continue to offer the bulk of employment in the sector. In fact, employment in existing gold mines is expected to rise from the 1974 figure of 80 per cent of total employment in the mines to about 83 per cent by 1980. The situation is expected to improve drastically if plans for the opening of new mines materialise.

With increased Ghanaianization of the professional and top-level management grades, the number of expatriates employed in existing mines is expected to decrease from 182 in 1974 to about 148 by 1980.

To achieve the main targets set for the sector, a total amount of ₵335.01 million is expected to be invested in the mining sector during the plan period. Of this amount, ₵38.7 million will be invested directly by the Government, ₵265.01 million by existing State Corporations and ₵31.3 million by joint state/private ventures. (*See* Table 8).

The direct Government investment will be spent mostly on geological surveys, exploration and feasibility studies on new mineral deposits which together will amount to ₵26.4 million. An amount of ₵7.0 million is earmarked for investment in the three main institutions charged with the training of middle level and professional personnel for the mines and mineral industries. Investment in feasibility studies on bauxite and iron ore projects will amount to ₵5.3 million.

Investment in gold mining is estimated at ₵230 million representing 69 per cent of total investment in the mining sector. Investment on diamond, manganese, bauxite and iron ore will amount to ₵71.71 million or 21 per cent of total investment. (*See* Table 9).

4.6 Policies and Programmes

(i) General Policies

There has been an over-dependence of the mining sector on a few minerals (namely, gold, diamond, manganese and bauxite), often referred to as "traditional minerals". Since adequate facilities do not exist locally for processing these minerals, the minerals have been exported unprocessed and thereby preventing the country from deriving maximum benefits from its mineral resources. Through the existing practice of selective mining, most of the mines have considerably run down their reserves of high-grade ores. Though the recent boom in the free gold market has provided much impetus for the resuscitation of gold mining in the country, yet Government firmly believes that it is in the best interest of the country's long-term development to accelerate the exploitation and evaluation of base metals and other industrial minerals, whose processing will lay a solid foundation for future industrialisation. In this regard, priority attention will be given to deposits of bauxite, limestone, iron ore, refractories, dolomite, ceramic clays, feldspar, salt, mica, building stones and sands. Evaluation of major deposits and feasibility studies on them will be urgently undertaken towards the early realisation of some of the key projects like bauxite processing and iron and steel production.

In order to provide the necessary incentives to attract the much needed capital and know-how for the rapid growth of the Mining Industry, Government will undertake a critical examination of the country's mineral policy and laws with a view to modifying those aspects which tend to impede investment. Appropriate fiscal concessions will also be considered for investors engaged in processing industrial minerals. Whereas Government will continue to encourage private investment in the mining sector, it will actively support and promote genuine joint ventures with foreign private investors, particularly for the exploitation and processing of minerals, in order to ensure the full utilization of the country's mineral resources for the maximum benefit of the people.

Drastic security measures will be enforced alongside with appropriate incentive schemes aimed at combating the evils of smuggling which continue to deprive the country of a considerable portion of its foreign exchange earnings from mining operations.

Training facilities will be strengthened and expanded to ensure the increased promotion of all levels of skilled and professional Ghanaian personnel to handle all aspects of the mining and mineral industries in the country.

Specific policies, strategies and programmes designed to deal with the peculiar problems, circumstances and conditions of the different types of minerals are discussed below under the appropriate ore or subject.

(*ii*) *Gold Mining*

Gold mining is, by far, the dominant mining activity in the country both in terms of value of exports and employment. In 1965, gold contributed 43.9 per cent of the mining sector's contribution to the country's foreign exchange earnings. By 1969, this share had risen to 57.1 per cent and with the price of gold rising phenomenally on the World market, the share further increased to 61.6 per cent in 1972 and 75.2 per cent in 1973. The 1973 figure represents 10.1 per cent of the total foreign exchange earnings of the economy, compared with 8.5 per cent in 1965.

The Gold Mines employed 18,362 persons in 1967, 19,578 in 1970 and about 18,500 people in 1973. These represented 78.1 per cent, 80.8 per cent and 82 per cent of the total mining labour force for 1967, 1970 and 1973 respectively.

There are two Corporations presently engaged in the gold mining industry, the Ashanti Goldfields Corporation (A.G.C.) which runs the Obuasi Mines, and the State Gold Mining Corporation which has responsibility for the poorer mines at Tarkwa, Prestea, Dunkwa and Konongo.

A. Ashanti Goldfields Corporation (A.G.C.)

The A.G.C.'s mines at Obuasi are by far the richest mines in Ghana. The Corporation is a joint state/private enterprise owned 55 per cent by the Ghana Government and 45 per cent by Lonrho Limited.

The A.G.C.'s control of the very rich Obuasi mines enabled it to make substantial profits at a time when other companies, faced with increasing production costs and fixed price of gold, were forced out of business. The A.G.C. did not neglect exploration and development activities and when gold prices rose appreciably in 1972, the Corporation benefitted immensely in terms of increased profits because of the availability of substantial ores of high and medium grades ready for exploitation. In spite of the fact that the A.G.C. now finds it profitable to mine lower grade ores, ore averaging 14.10 dwts per ton was milled during the period 1972–73. As at 30th September, 1973, the ore reserves were valued at 5.2 million tons averaging 13.90 dwts per ton.

Over the past few years, production has increased from 568,153 tons in 1968 to 875,417 tons in 1974, but because of the milling of substantially lower grade ores, export figures showed a decrease from 480,423 fine ounces to 451,582 ounces. Between 1968 and 1974, the number of Africans employed increased from 6,608 to 8,664 while the number of expatriate staff fell to 101.

Over the period 1975–80 the *A.G.C. will invest* ₵28.3 *million* to enable the Corporation expand production from a 1975 estimate of 948,000 tons milled to 1,560,000 tons in 1980. The respective export figures are estimated to be 429,000 f.o.t. for 1975 and 520,000 f.o.t. for 1980. Employment is expected to increase from 8,664 in 1974 to 9,100 in 1980 for Africans and decrease from 101 to 75 for expatriates.

During the plan period, the A.G.C. will train four mining engineers to Diploma standard and will place four students on the General Mining Certificate Course every other year. The A.G.C. will also select some National Servicemen for further training for senior posts in mechanical and electrical engineering. In addition, approximately 50 apprentices will be in service at all times and will take courses organised by the National Vocational Training Institute, the Accra Technical Training Centre and the Tarkwa School of Mines. Further, it is planned to have four students every other year on a Mine Mechanics course and up to four students every other year on a Mine Electricians' course.

During the first few years of the plan, the Obuasi Mines Hospital will be completely rebuilt. The new hospital which will comprise three operation theatres, an out-patients department, a pharmacy and maternity and child-welfare clinic will have capacity for 150 beds. Work on a new primary school for nearly 600 pupils will also be started early. During the plan period, it is expected to continue the extensive housing programme already begun. The rate of building will be about 200 houses a year. The cost of all these projects is included in the Corporation's investment figure of ₵28.3 million mentioned earlier.

B. The State Gold Mining Corporation (S.G.M.C.)

The Corporation is 100 per cent owned by the Government of Ghana. The Corporation consists of four mines (namely, the Tarkwa, Prestea and Konongo Goldfields) and an alluvial dredging operation at Dunkwa. In the face of rising operating costs and a fixed price of gold which were experienced in the past, the Corporation suffered heavy losses and had to be subsidized by Government. The 1973–74 significant increase in the price of gold turned the Corporation into a commercially viable concern but full advantage could not be taken of this since while the Corporation was making losses, ore exploration and development activities received little or no attention. Besides, provision had not been made for replacement of obsolete and broken down machinery. It is therefore not surprising that the output of gold decreased considerably. The problems confronting the State Gold Mining Corporation are

further compounded by the fact that the Corporation faces shortage of skilled personnel at the supervisory level. The Corporation will in the plan period address itself to these problems in order to increase production as well as profits provided the price of gold which reached a peak of $195.5 at the end of 1974 does not fall below $120 during the period. It is also expected that efforts will be made to reconcile demand for salary and wage increases with actual increases in productivity on the operating mine units.

Tarkwa Goldfields

Between 1968 and 1974, the Tarkwa operations showed a decrease of about 45,000 tons milled. Gold exports for 1974 were about 54,300 fine ounces compared with 54,800 in 1968, showing that higher grade ore was milled in 1974 than in 1968.

During the period, the value of exports increased from ₵2.3 million to ₵10.3 million, reflecting the higher price of gold. Employment figures have shown a steady decline from 4,717 in 1968 to 3,845 in 1974 for Africans and from 38 to 15 respectively for expatriates.

Over the period 1975–80, the State Gold Mining Corporation will spend about ₵68.7 *million at Tarkwa* for ore development and prospecting, and for training and staff welfare programmes. Gold production from the Tarkwa Mines is expected to increase from the 1975 estimated output of 360,000 tons milled to 420,000 tons milled in 1980, equivalent to 68,400 ounces of gold for 1975 and 79,800 for 1980. Negotiations which began in 1974 between State Gold Mining Corporation and Ashanti Goldfields Corporation (Ghana) Ltd., towards the joint development of the Tarkwaian basin would hopefully lead to the mining of the vast quantities of low grade ore available in the area.

The main development projects include the Apinto Shaft Sinking where a final depth of 1,200 ft. was completed in May 1976. Shaft and Station equipping are now in progress and it is planned to have the shaft in operation by early 1977; the installation of a 102″ Aerofoil bladed radial Ventilation Fan at Ferguson Shaft, the sinking of the Fanti South No. 20 sub-vertical shaft and the A.V.S. 20.38 sub-vertical shaft; and the replacement of Bowl Classifiers, one 75 ft. x 10 ft. thickener and ore bins at the Reduction Plant will take place during the period.

Prestea Goldfields

Over the period 1968 to 1974, production at the *Prestea Mines* declined slightly. Exports declined from about 119,000 fine ounces to 103,000 fine ounces over the same period but in value were up by over 300 per cent, reflecting the recent price increase in gold. Employment of Africans increased slightly from 4,872 to 4,985 over the same period while the number of expatriates fell from 36 to 19. For the period 1975–80, the S.G.M.C. will spend ₵92.2 *million in the Prestea Mine.* This investment will cover the sinking of a 18 ft. x 10 ft. rectangular sub-vertical shaft from No. 24 level between Prestea and Bondaye Sections for further exploitation of the No. 3 South Orebody. The shaft will have a final

depth of 2,500 feet and will give greatly improved ventilation, compressed air, power supplies and access to No. 3 South Orebody.

Underground development between No. 24 and 30 levels in the No. 3 South Orebody will receive priority attention following the continuation of encouraging results in this area. Development will be extended on the West reef zone and in Bondaye and Tuappim Sections. Raise drilling equipment valued at ₵1,000,000 (plus accessories and spares) to be used initially for ventilation connections is to be acquired in 1976–77 through the assistance of U.N.D.P. In the Reduction Plant a total of ₵1,400,000 has been provided for a third Edward Roaster installation which should commence during 1976–77 in order to facilitate the treatment of planned increased tonnages.

Production is expected to increase from the 1975 estimated output of 420,000 tons to 540,000 tons in 1980. Exports will also rise slightly from the estimated 120,000 ounces in 1975 to a targeted 129,600 ounces in 1980. Employment will rise only slightly from 4,985 in 1975 to 5,400 in 1980 for Africans and decrease from 20 in 1975 to 15 in 1980 for expatriates.

Dunkwa Goldfields

The Dunkwa operations constitute the only alluvial dredging operations in the country. The mine is situated on the Offin River and its tributary, the Jimi River. The mine's operations have not been successful mainly because of the use of obsolete and, in some cases, unserviceable dredges. Production has continually fallen and so have exports which decreased from 47,923 fine ounces in 1968 to 16,725 fine ounces in 1974. Employment has also declined for both Africans (from 1,175 to 986) and Expatriates (from 16 to 4) over the same period.

The main development programme for the Goldfields will involve the purchase of new dredges and the necessary work for their construction and commissioning. It must be noted that although the installation of the new dredges will cover the whole of the 5 year plan, the dredges representing an investment of 12 million cedis are currently under construction at site. These are a 10 cu. feet dredge to work the Middle Offin Section to be known as D/5 which will replace the old D/3 unit which sank in June 1974 after almost 40 years in service, and a 6 cu. feet dredge D/6 which will start work at Buabinso on the Lower Offin. Construction work on D/6 is well advanced with the pontoon section almost complete and preparation is in hand for the erection of the superstructure.

The dredge is designed to handle 120,000 cu. yards per month and recover both gold and diamonds. At D/5 site problems were encountered with paddock excavation during the heavy rains of May/June 1976 but pontoon construction is now underway. This dredge is designed to treat 200,000 cu. yards per month for gold recovery only. Commissioning of D/6 is scheduled for early 1977 and D/5 for late 1977. Whilst production fell during 1974 to 16,725 ounces from 2,366,900 cubic yards dredged, output should be restored to 24,600 ounces per year by 1977–78 with the two new dredges in operation. State Gold Mining Corporation presently

has under consideration the purchase of two further dredges both of 19 cu. feet capacity to enable a four new dredge operation to begin by 1980. The first of these would replace the obsolete D/1 and D/2 dredges operating from Subin Camp on the Upper Offin, the Second to work in tandem with D/5 on Middle Offin. It is expected that by 1980, with four new dredges in operation, the mine will be exporting more than 40,000 fine ounces per year. Employment should also increase to 1,000 for Africans. The overall expenditure involved is estimated at ₵35.4 *million* over the plan period.

Konongo Goldfields

This mine seems to have a very bleak future indeed. As at January, 1975 ore reserves stood at 53,423 tons. This represents not more than 30 months' operations. If no new ore bodies are discovered, it is likely that the Konongo mines will be closed down. About ₵6.3 million will however, be invested in the mines over 1975-77 to investigate ore bodies in the immediate vicinity of the mine. It is expected that some 42,000 tons of ore will be milled in each of the years 1975 to 1977. This will enable the Company to export 7,350 ounces of gold.

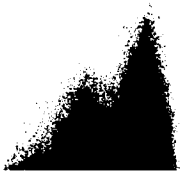
S.G.M.C. Exploration Programme

As a result of the high prices of gold which has made the operation of the S.G.M.C. profitable, the management has decided to intensify its exploration and development activities. *At Tarkwa*, attention will be concentrated on surface prospecting at Akontansi. The areas, like the axes North and West of Apinto Shaft, will be covered by diamond drilling.

At the Prestea Mines, priority attention will be given to continuation of work on the No. 3 ore body between No. 24 and 30 levels. Surface drilling at Buesichem sections will be extended because of the encouraging intersections which have recently been obtained. The areas surrounding Prestea and Bogosu, once characterized by gold mines, will be investigated further in order to locate prospective areas for mining. Exploration will be concentrated at the Chuja-Dumasie, and Ablifa-Densu prospects and the Boppo areas. This programme will receive assistance from U.N.D.P. whose operators have already started drilling at Chuja.

With respect to the *Dunkwa Mines*, management will continue to investigate further the Anum river. Results so far indicate that the mine's life could be extended by some 30 years. The rivers in Bibiani and the Ada river will also be explored. This programme will also receive assistance from U.N.D.P. during the plan period.

At Konongo, there is the likelihood that the mine will be closed. However, the Obenemase mine will be re-opened if current studies prove the technical and economical feasibility of the project during the plan period.



S.G.M.C. Training Programme

The management of the S.G.M.C. has drawn up a five-year staff development and recruitment programme which is aimed at solving the serious senior technical manpower problems that the Corporation now faces.

The Corporation plans to train junior operatives to occupy about 30 per cent of senior and middle management positions in the production and support services sectors, and the remainder by direct recruitment of qualified personnel. In addition, during the plan period, firm arrangements will be made with reputable consultants, consultancy firms and mining houses to provide high-level technical support to ensure the efficient running of the mines whilst the numbers of expatriate personnel is being drawn down.

Below is a summary of the training proposals of the S.G.M.C. during the five-year period of the plan.

SUPPORT SERVICES—TRAINING OF TECHNICIANS

Year	*Tarkwa School of Mines*	*Overseas*	*Total*
1	—	10	10
2	—	10	10
3	4	6	10
4	6	4	10
5	8	2	10
Total	18	32	50

Fifty technicians will be trained to provide the special skilled manpower required for the maintenance of winders, etc. As indicated by the above table twenty technicians will be trained in the first two years in foreign institutions while Tarkwa School of Mines is being strengthened to cope with its increased responsibilities in the training of mine technicians locally from the third year. Sixteen graduates will be recruited in the first year and subsequently fifteen graduates annually to undergo an 18 months apprenticeship course covering all sections of the Engineering Department both surface and underground. Six trainees will be sponsored each year on attachment abroad to undergo postgraduate training with emphasis on management.

One hundred and thirty-one trainees are required over the plan period. It is proposed to sponsor 25 students in each of the first two years and 27 in each of the subsequent three years. After training, the trainees will qualify for the Shift Boss Certificate. Six of the existing mine captains and shift bosses will also be released annually for postgraduate attachment courses overseas.

S.G.M.C. Welfare Programme

At Tarkwa and Prestea, new schools for employees' children will be completed. Plans are also in progress for the construction of workers' compound houses and nurses quarters and new bungalows at Fanti Mines. The redecoration of workers' houses and bungalows will also be completed. At Dunkwa, 12 timber frame houses will be built for construction employees. Hospitals extensions and renovations will also be carried out. At Konongo, the Mines Hospital will be expanded and renovated.

C. Abandoned Mines

Government will, in the Plan period, take steps to re-open some of the abandoned but economically and technically feasible goldmines. In view of the huge investment involved in assessing and re-opening these abandoned mines, government will carefully examine the possibilities of inviting a reputable foreign mining house to participate in the studies as well as the exploitation of these mines. Government will concentrate on the following abandoned mines during the Plan period: Manpanhwe, Obenemase, Nangodi, Dokurupe, Kayiankai, Obuom, Siwum and Tokosua.

There are also a number of thin reefs in the mineralized zones of the country whose exploitation would definitely increase the output of gold. The Government will seriously consider the exploitation of these deposits by open cast methods using small mobile plants. These mobile plants will each have cyanidation equipment capable of recovering gold from the ores at an efficient rate. Small-scale miners will be licensed to operate in specified areas and their activities might cover gold mill dumps, some of which carry values up to seven cwt/ton.

D. Tarkwa Gold Refinery

The Tarkwa Gold Refinery which was abandoned following the change of government in 1966 is being restudied with a view to reactivating the plant. Studies so far have confirmed the technical feasibility of the project and it is indicated that with some modifications. the project would be economically viable.

In view of the amount of money sunk into the project and the flexibility that the refining of gold locally would give to the Bank of Ghana in marketing the country's gold resources, the Government will pursue the matter further to ensure that production commences within the five-year period.

(iii) Diamond Mining

Diamond Mining is the next most important mining activity in the country after gold. Production has stagnated over the last decade, falling from 2.8 million carats in 1966 to 2.4 million carats in 1969 and recovering in 1974 to 2.6 million carats. Over the whole period 1964 to 1974 output has remained between 2.27 and 2.82 million carats.

The contribution of diamonds to the foreign exchange earnings of the mining sector has decreased from 31 per cent in 1965 to 26 per cent in 1969 and to only 14 per cent in 1973. This declining share reflects the stagnation in diamond prices as compared with gold prices. The 1965 share was 6.0 per cent of total export earnings of the country while 1973 share was a mere 1.9 per cent. The level of employment has also shown a decrease, falling from 2,664 in 1961 to 2,281 in 1974, although the share of total mining sector employment remained fairly stable at about 10 per cent. Employment of expatriates, however, has fallen heavily from 102 in 1960 to 22 in 1974.

There are two main diamond areas in the country: the Birim area in the Eastern Region and the Bonsa area in the Western Region. So far, the Birim area has been the major source of diamonds. Alluvial diamonds are obtained as a by-product from the operations of the Dunkwa Goldfields Limited in the Offin and Jimi Rivers. There is only one major company in operation. The Ghana Consolidated Diamonds Limited (formerly the Consolidated African Selection Trust) which is by far the major producer. There are also a relatively large number of small private diggers. The Diamond Marketing Corporation is the sole agency responsible for purchasing diamonds from local producers and marketing them on the international market.

One feature of the diamond industry in Ghana has been the declining share of private diamond diggers in total winnings. Whereas in the early 1950s the diggers accounted for about 50 per cent of winnings, this share had fallen to 29.4 per cent in 1962 and a mere 0.62 per cent in 1968. Their share, however, increased to 6.38 per cent in 1974 following higher prices offered by the Diamond Marketing Corporation. It is estimated that the winnings of the private diggers will be increased to about 280,000 carats or 10.4 per cent of total output by 1980 if the present system is maintained.

It must be noted that the offer of higher cedi prices to diamond winners involves a huge Government subsidy. During the plan period, government will review this subsidy system with a view to ensuring that the high prices offered really reflected the scarcity value of foreign exchange. To achieve the targeted output, Government will, through the Geological Survey Department, assist the small diggers to correct their use of defective production techniques through demonstration and on-the-job training. Financial assistance will also be provided to enable small operators to buy water pumps for controlling water while prospecting for diamonds.

The major factor accounting for the low share of the small private diggers has been an upsurge in smuggling of winnings out of the country. Government will strengthen security measures in the diamond areas to prevent a worsening of the problem which has to some extent been eased by the offer of higher prices by the Diamond Marketing Corporation. To this end, the number of wardens will be increased and diggers who consistently show low recoveries will have their areas scrutinised by wardens. Any digger who fails to show improvement in his production will have his licence cancelled.

Ghana Consolidated Diamonds Limited

The winnings and earnings of the *Ghana Consolidated Diamonds Limited* (G.C.D.) have remained fairly stable over the past decade. Production has been between 2.20 and 2.28 million carats while employment has increased slightly from 2,728 in 1968 to 2,306 in 1974.

For the next five years, it is expected that employment will remain at about 2,500 while production will remain stable at 2.4 million carats. On the basis of current prices the *investment programme for* 1975–1980 is *estimated at* ₵3.0 *million* and will cover the supply for new mining and transport machinery and equipment for replacement of unserviceable machinery for maintaining existing plant capacity.

The company will continue to train its personnel on the job and at its training centre. Personnel will also be trained at the Tarkwa School of Mines, the Ghana Institute of Management and Public Administration and the Management Development and Productivity Institute.

The G.C.D. Limited maintains residential accommodation for senior staff and 80 per cent of junior employees. The company has also provided school buildings in the mining communities, market buildings and stores, hospital and health facilities and, social and sporting facilities, such as club house and stadium. During the five-year period of the Plan, the company will maintain and improve the existing facilities.

(*iv*) *Manganese Mining*

The manganese industry in Ghana has to date been concentrated at the Nsuta Mine which was formerly owned by the African Manganese Company. The Government, in its effort to improve the sale of manganese ores from Ghana, incorporated the Ghana National Manganese Corporation with effect from 25th September, 1973. The Corporation, from its inception, had been solely a marketing organisation, marketing Ghana manganese ores then mined by the African Manganese Company Limited. From 1st January, 1975 the Corporation was empowered by the Government to take over the mining of the manganese company in addition to marketing.

Since the take-over of the management and administration of the mine from African Manganese Company, the Corporation's activities have been geared towards:—

(*a*) Rehabilitation of the mine, through procurement of urgent spare parts for many of the mine machinery which are worn out.

(*b*) Procurement of capital equipment to sustain production within the target set for the next five years, viz. 400,000–450,000 tons of manganese ores of various grades per year.

(*c*) Establishment of a mining exploration team to prospect the manganiferous zone within the mine and the extension of the zone.

Production has been on the increase after the take-over and output for the first six months (January–June, 1975) was 223,000 tons. This rose to 349,000 tons during the financial year 1975–76. This production figure would have been higher, had it not been for the rehabilitation work which was being carried on simultaneously with production.

Exports for the eight months from November, 1973 to June, 1974 of 152,477 tons of ore amounted to ₵4,581,412 showing an average selling price of ₵30.05 per ton as compared to an average of ₵24.31 in 1972–73. For the financial year ending 30th June, 1975, the tonnage of ore shipped was 351,281 and this yielded an amount of ₵15,061,556 (showing an average of ₵42.00 per ton). This upward trend of the Corporation's mining and marketing activities was achieved through the hard work of the mine workers and efficient management. Exports for the financial year 1975–76 amounted to ₵18.3 million.

The following export forecasts have been made for the period 1975–80:—

Year	*Exports (Tons)*
1975	465,000
1976	465,000
1977	557,000
1978	372,000
1979	372,000
1980	372,000

Employment and Welfare

The Mine employs 39 senior officers and 1,313 junior officers. Out of the 39 senior officers, 10 are expatriates and the rest Ghanaians. With the establishment of the proposed Nodulization and the Ferro-alloy Projects, the number of employees may rise significantly.

The Corporation provides, free of charge, housing, drinking water, conservancy, electricity, medical attention at the Mines Hospital and other social amenities such as swimming pools, tennis courts, golf course and social clubs. The Corporation also subsidises the food and other articles purchased by the employees from the canteens and stores at the Mine.

Development Projects

The high grade manganese oxide ores at Nsuta, which have been mined continuously over the past 50 years have now a limited life and the Corporation has already embarked on two major projects which when successfully completed, would enable it to continue with the production of manganese oxides and ferro-alloys at Nsuta for many years to come. The two projects are based on the extensive manganese carbonate ores (about 28 million tons) which occur below the oxides at Nsuta. Total investments by the Ghana National Manganese Corporation envisaged during the plan period is estimated at ₵63.41 million.

The breakdown of the investment is as follows:—

(1) Rehabilitation of the Mine	₵ 3.7 million
(2) Nodulization Project:—	
(*a*) Feasibility Studies	₵ 0.07 million
(*b*) Nodulization Plant	₵12.0 million
(3) Ferro-manganese/silico-manganese ..	₵45.0 million
(4) Expansion of Hospital facilities	₵0.24 million

Rehabilitation of the Mine

An amount of ₵3.7 million has been spent on spare parts and capital equipment needed to rehabilitate the Mine, and already a qualified geologist has assumed duty at the Mine to prospect and re-evaluate the ore reserves of the Nsuta deposits and the extension of the manganiferous zone. Work on the rehabilitation of the mine will continue.

The Nodulization Project

Feasibility Studies

The first project consists in the calcining of about 500,000 tons of manganese carbonate in a rotary kiln to produce about 300,000 tons of marketable manganese oxide nodules. Technological tests have already been carried out successfully on the carbonate, and the second part of the feasibility studies will be completed by 1977 at the cost of about ₵66,000.

Nodulization Plant

The total cost of the establishment of the complete nodulization plant is estimated at about ₵12,000,000 of which ₵8,500,000 will constitute the foreign exchange component. Based on the 1975–76 negotiable price of ₵55.00 per ton, the production of 300,000 tons of nodules per year will increase the corporation's annual turn-over by ₵16.5 million.

The Ferromanganese/Silicomaganese Project

The Ferromanganese/Silicomanganese Project is based on the Ghana manganese nodules. About 100,000 tons of ferromanganese/silicomanganese per year in the proportion of 45,000–60,000 tons Ferromanganese and 15,000–20,000 tons Silicomanganese will be processed.

The technological tests on the use of the Ghana manganese nodules for ferroalloys have already been carried out with success. The next phase of the feasibility studies will commence in 1977. The estimated cost of the 60,000–80,000 tons capacity ferroalloys plant is estimated at ₵45,000,000 of which about ₵38,000,000 will constitute the foreign exchange component. The total turn-over, according to the 1975 prices of ₵460/ton for ferromanganese and ₵175/ton for silicomanganese, is estimated at ₵23–₵32 million per year.

For the Ferroalloy Project, Ghana National Manganese Corporation has already received proposals from some interested foreign investors for joint-venture participation, which will be examined in detail at the appropriate stage of implementation.

Future of Manganese in Ghana

With the completion of the above two projects the emphasis of the Corporation's activities, for the next decade or so, will shift on to the production and sale of manganese nodules (at a target rate of 200,000–250,000 tons per annum) and (60,000–80,000 tons annually) of ferromanganese/silicomanganese.

Aside from these, the Corporation will prospect and evaluate the medium to low grade manganese deposits at Yakau and Salman (in the Western Region), Gomoa Amanfor (in the Central Region), Odumasi and Yenahin (in Ashanti) and Kalimbi (in the Northern Region) and carry out research on their beneficiation with the view to developing them all commercially.

Expansion of Hospital Facilities at the Mine

Major expansion work to be carried out at the hospital within the plan period consists of the building of:—

(*a*) Senior Staff Ward

(*b*) Maternity Unit

(*c*) Changing Room for Medical Officer and Theatre Staff

(*d*) General Office, and

(*e*) Matron's Office

An amount of ₵240,000 has been allocated for this project.

(*v*) *Bauxite Mining*

Although bauxite has the potential of being, perhaps, the most important mining activity in Ghana in the future, it is nevertheless, the least important of the four minerals currently mined in terms of foreign exchange earning and employment.

Although there are vast deposits at Nyinahin and at the Asewa Range near Kibi, it is only the smaller Awaso deposits which are being mined for export. The operations of the mine had, until the government recently acquired 55 per cent interest, been in the hands of a foreign private company. In 1965, the Awaso mine exported 283,000 long tons of bauxite. This had fallen to 211,000 long tons by 1970 but increased to 348,000 tons in 1971 and 307,000 tons in 1973. Bauxite's share of the export earnings of the mining sector has remained fairly stable. It was 3.0 per cent in 1965 2.7 per cent in 1969 and 2.8 per cent in 1973. Employment for Africans fell from 564 persons in 1968 to 489 in 1970 and increased to 534 in 1974. For expatriates, the corresponding figures were 17, 18 and 14.

During the period 1975–80, production is expected to increase gradually from 370,000 metric tons to 500,000 metric tons following the expected improvement on the ability of the Railways to transport the ore to the harbour and the expansion of the market. The Ghana Bauxite Company, which runs the *Awaso mines*, expects the number of Africans employed to increase to 550 by 1980, while the number of expatriates will fall by 50 per cent from the 1974 figure of 14.

Training of personnel will be on an "in industry" basis, and will continue at four levels:

(1) sending selected candidates to overseas institutes to widen their horizons;

(2) sponsoring selected candidates at Ghanaian institutes for technical and administrative training to fill junior and middle management positions;

(3) training selected candidates at Technical Institutions to the level of craftsmen and charge hands;

(4) general and specific training at the mines' own school of Artisans.

The mine will continue to provide and improve upon educational facilities for children of their employees and other children from nearby communities through scholarship schemes as well as the provision of ante-natal and post-natal medical facilities free of charge. The Company will also continue to improve upon the standard of housing and sanitation.

Apart from the deposits at Ejuanama, Kibi and Nyinahin which have been evaluated, there are other deposits, at Asempaneye, Bekwai and Ahwiaso which are yet to be evaluated. Preliminary investigations will be carried out on these during the plan period.

The use of aluminium is rapidly expanding, but in spite of the vast deposits of bauxite at Nyinahin and Kibi, alumina is imported to feed the VALCO smelter at Tema. It is the policy of Government that a fully-integrated aluminium industry should be established in Ghana based on the Kibi and Nyinahin deposits.

The Kibi deposits are estimated at 88 million tons with a potential of about 150 million tons. The Government has formed a consortium, BASCOL, with reputable foreign companies, to explore the possibilities of exploiting the Kibi deposits for processing in Ghana. A letter of Intent has already been signed between BASCOL and the Aluminium Industries Commission and detailed feasibility studies are going on.

It is hoped that an alumina plant with a capacity of 600,000 tons will be established by the middle of 1980. The estimated total capital cost of this project is three hundred and ninety million cedis (₵390.00 million) about twenty-four million Cedis (₵24 million) of which will be for the provision of infrastructure. The operation of the mine and the alumina plant together with the transport system will require about 1,047 people, 854 of whom will be Ghanaians.

More importantly, if the project is realized within the plan period other ancillary factories would be established to supply the other basic raw materials, the most important of which are caustic soda and lime.

The Government is also negotiating with a foreign company to undertake feasibility studies on the establishment of an alumina plant that will be based on the huge Nyinahin bauxite deposits. Meanwhile, funds will be provided for those infrastructural facilities that will be required by this project.

(*vi*) *Iron Ore*

There are two known deposits of iron ore which may prove to be of economic importance, namely the Sheini Iron Ore deposits in the Northern Region and the Oppon Manso deposits south of Dunkwa in the Western Region. The present proven reserves of the Sheini ore are about 670 million tons with an average iron content of 45 per cent. The proven reserves of the deposits at Oppon Manso are 42 million tons with an iron content of 43 per cent.

Unlike the Sheini iron ore deposits, the Oppon Manso ore deposits appear to have a very low silica content (averaging 3 per cent) but a high phosphorus content. The deposits are only six miles from the Takoradi-Kumasi railway line and are also near to the hydroelectric power lines from Dunkwa to Tarkwa and the limestone, manganese and charcoal resources in the Western Region.

For the above-mentioned reasons, the Government will give top priority attention to the exploitation of the Oppon Manso iron ore deposits for an iron and steel project within the plan period. A pre-feasibility report which has already been submitted on this project is being actively studied. The present indications are that the contents of the deposits at Oppon Manso are such that the following products could also be obtained in addition to iron and steel: clinker, alumina and phosphates for the manufacture of fertilizers.

Initially, the Government will concentrate on the detailed preparation of the full feasibility report. If this proves viable, the Government will make the necessary arrangements for the financing of the project which is estimated to cost ₵219 million.

The Government attaches great importance to this project because of the great impetus which iron and steel can give to the process of industrialization. Moreover, this project will not only create considerable employment opportunities, but its implementation will also lead to the development of other industries such as charcoal production and lime manufacture.

(*vii*) *Limestone*

Limestone is a major raw material for the production of cement, lime mortar, and other cement products such as aluminous cement for which there is vigorous demand in the world market. Limestone is also used as flux in metallurgical industries as well as in the production of refractory materials. Large quantities of limestone are also required in the manufacture of paper and glass, in the purification of water, in sugar refining and tanning. Unfortunately, the known deposits of limestone at Nauli, Buipe and Bongo-Da have not yet been developed.

So far, attention has been concentrated on the Nauli deposits where estimated reserves are 400 million tons with a potential of 1,000 million tons in the whole of the Tano basin. Although Ghana will continue to be a joint partner in the consortium for the exploitation of the Togo Limestone deposits, the Government will continue to explore the possibility and feasibility of exploiting the huge limestone deposits at Nauli, so as to increase the supply of this mineral for the benefit of the ECOWAS Community

Other deposits which exist at Buipe and Bong-Da in the Northern Region are also considerable. The deposits at Bongo-Da are estimated at 20 million tons and those evaluated at Buipe are estimated at 10 million tons. At Buipe, however, the whole area has not been evaluated but it is estimated that over 19 million tons of limestone exist in the area. One other fact about Buipe deposits is that the limestone deposits overlie huge deposits of dolomite which can also be used as flux and in the production of refractory materials. The dolomite deposits are estimated at 100–200 million tons.

During the five-year period of the plan, the Government will consider the economics of the alternative uses to which these deposits could be put so that the country derives maximum benefit from their development. The deposits at Oterkpolu in the Eastern Region will also be evaluated. The deposits are quite suitable for the production of terrazo chippings for floor works. The country is also endowed with huge deposits of gneiss and granites which could be dressed to produce dimension stones for the building and construction industries. The export market for these products is large and every effort will be made during the five-year period to develop these resources.

(viii) Geological Mapping, Mineral Exploration and Evaluation

The Geological Survey Department (G.S.D.) which is the sole agency charged with the responsibility of carrying out a systematical mapping of the country, also undertakes the prospecting and evaluation of mineral deposits of economic value for industrial use.

The Department is currently faced with a shortage of professional geologists and technical personnel. This is due partly to the small number of students which is attracted to train in geology and other related fields and partly to the relatively unattractive salaries and conditions of service obtainable in the Department. This has led to frequent loss of personnel to organisations like the Mines, Universities, Research Institutions which offer relatively better salaries and conditions of service.

The Department also encounters the problem of inadequate equipment. While some of the existing equipment and machinery need to be completely replaced, others require to be supplemented and increased to cope with the increasing volume of work.

The Department is further experiencing difficulties with the early and regular publication of the results and findings of geological investigations and studies due to the insufficiency of trained personnel and facilities for processing the field and laboratory materials for publication.

To tackle these problems and equip the Department more adequately for its functions, a programme estimated at a total cost of ₵26.4 million will be embarked upon. An amount of ₵1.8 million is earmarked for the construction of additional offices, laboratories and residential accommodation. An amount of ₵7.0 million will be required for the purchase of vehicles, field equipment and other equipment for the Department's Mineralogical, Chemical, Geochemical and Geophysical laboratories. A further sum of ₵17.6 million will be needed mainly for geological surveys, prospecting and evaluation of mineral deposits. Further details of the Department's programme are contained in Table 10.

During the plan period, the Geological Survey Department will continue the normal geological mapping of the country aimed at identifying and isolating economic mineral deposits occurring in diffierent parts of the country. Attention will be concentrated in the Volta and Eastern Regions in order to complete the coverage of the country with adequate geological maps.

Government will, in the five-year plan period, use airborne magnetic survey techniques to locate minerals, particularly gold, which the G.S.D. believes is deposited in the South-western area of the country, traditionally considered a rich gold mining area. In fact, the preliminary mapping and the mode of occurrence of deposits all point to the existence of still undiscovered gold ore deposits.

The G.S.D. will investigate the limestone deposits at Buipe and Bongo-Da with a view to establishing the total resources. So far, only a small area. less than a square mile has been evaluated at Buipe.

The G.S.D. will have survey crews working on the Oppon Manso and Sheini iron ore deposits. Prospecting teams will also be working on the abandoned gold mines at Mampamhwe, Obuom, Kanyaikor and Nangodi. Their activities will include pitting, geochemical sampling and gold assay reports.

The Government will in the plan period, give every encouragement to all companies engaged in or showing active interest in both off-shore and on-shore oil exploration in Ghana. The Geological Survey Department will provide any such company with basic geological data and offer all geo-technical services that might be required.

Gravity surveys carried out by the Geological Surveys in the Volta Basin have proved large thickness of sediments (15,000 ft. and 18,000 ft.) favourable for the accumulation of oil pools. Favourable geological structures have also been revealed by the gravity results. In the plan period, geological data on the oil potential of the Voltain Basin will be assembled to facilitate oil exploration.

Other major projects to be undertaken by the Department include quarry site investigations, engineering and foundations investigations, diamond drilling, seismological investigations, analysis and evaluation of clay deposits for the manufacture of bricks, tiles and other building materials.

In view of the serious manpower problems facing the Department, an elaborate programme has been drawn up to cover the training of professional, middle-level and technical personnel. The Department's school at Saltpond will be expanded by providing additional dormitory and classroom space. The school will also be strengthened to cater for the expected increase in the intake of trainees and more variety in the training courses of technical officers, field assistants and other junior staff. The service conditions of professional and technical officers in the Geological Survey Department will be reviewed to remove existing disparities and anomalies which tend to discourage qualified personnel from working in the Department.

(*ix*) *Training Facilities*

There are three main institutions which are involved in the training of people for work in the mining and related industries. The Tarkwa School of Mines is the institution which has been largely responsible for the training of people to fill technical and middle-level positions and it is generally accepted that the products of the school have been extremely useful to the mining industry. The Department of Mines and Mineral Engineering at the University of Science and Technology, Kumasi, set up only two years ago, is yet to turn out its first output of Mining Engineers. The Department not only lacks the full complement of staff but also has inadequate mineral laboratory facilities and no permanent buildings. It, however, has the advantage of being part of a large and established Engineering Faculty within a University Community. The Department of Geology at Legon is responsible for the training of geologists for the mines as well as the Geological Survey Department. The output is, however, uncomfortably low because of low intake.

The Committee recently set up to examine and formulate training proposals for the mining and mineral industries sector has already submitted its report to the Government. Steps are being taken to implement the Committee's main recommendations including the establishment of an Institute of Mining and Mineral Engineering under the auspices of the University of Science and Technology, Kumasi and comprising two schools. The Tarkwa School of Mines will concentrate on the training of middle-level and technical personnel while the Kumasi school will produce graduate and post-graduate personnel for the main professional grades. An amount of about ₵7.0 million will be spent on the development of the three institutions during the plan period. Details are provided in Table 11.

With respect to geologists, the problem is that only very few students are offering to take the subject at degree level. Government will, in the plan period, take measures to introduce geology on a large-scale in selected secondary schools. The Government will also use its scholarship scheme to attract more students to the study of geology.

Appropriate incentive schemes will be worked out to attract and retain able and suitably qualified Ghanaian geologists, mining engineers and related professionals so much required to boost up mining activities in the country.

TABLE 1

TOTAL EXPORT OF DOMESTIC PRODUCE AND MINERALS (MILLION CEDIS) 1965-1973

Ore	1965	1966	1967	1968	1969	1970	1971	1972	1973
Bauxite	1.3	1.5	1.6	1.5	1.4	1.3	2.3	2.7	2.6
Manganese	9.6	12.2	0.9	10.5	7.0	7.2	6.6	10.2	7.3
Diamond	13.5	10.8	12.6	17.4	13.9	14.5	11.8	18.6	12.1
Gold	19.1	17.1	21.0	29.0	29.8	25.7	28.5	90.4	70.1
Total Mineral Exports ..	43.5	41.6	44.4	58.4	52.1	48.7	49.2	81.8	92.1
Total Export of Domestic Produce	223.5	185.9	239.8	337.3	390.8	460.2	348.9	549.4	697.4

TABLE 2

VALUE OF MINERAL EXPORTS AS A PERCENTAGE OF TOTAL VALUE OF EXPORTS OF DOMESTIC PRODUCE 1965–1973

Ore	1965	1966	1967	1968	1969	1970	1971	1972	1973
Bauxite	0.5	0.8	0.6	0.4	0.3	0.2	0.6	0.4	0.4
Managanese	4.2	6.5	3.8	3.1	1.7	1.5	1.8	1.8	1.0
Diamond	6.0	5.8	5.2	5.1	3.5	3.1	3.3	3.3	1.9
Gold	8.5	9.1	9.7	8.5	7.6	5.5	8.1	9.1	10.1
Total Mineral Exports ..	19.2	22.2	19.3	17.1	13.1	10.3	13.8	14.6	13.4

TABLE 3

EMPLOYMENT STATISTIC OF THE MINING SECTOR 1968–1974

	1968	1969	1970	1971	1972	1973	1974
Africans	22,875	23,116	23,310	22,310	22,245	23,006	23,638
Expatriate	356	339	304	287	271	248	182
Total	23,231	23,455	23,614	22,597	22,516	23,252	23,820

TABLE 4

EMPLOYMENT IN THE MINES, 1974

Mine	*Africans*	*Expartriates*	*Total*
Gold	19,547	139	19,686
Diamond	2,306	18	2,324
Manganese	1,251	11	1,262
Bauxite	534	14	548
Employment in all Mines ..	23,638	182	23,820

TABLE 5

GOLD EXPORT FORECAST (1975–1980)

Mine	*Units*	1975	1976	1977	1978	1979	1980
GOLD							
A.G.C.	f.o.t.	420,000	444,000	480,000	516,000	520,000	520,000
Tarkwa	f.o.t.	68,400	64,800	69,600	77,500	77,200	79,800
Prestea	f.o.t.	120,000	109,200	112,500	120,000	122,400	129,600
Dunkwa..	f.o.t.	20,900	11,600	24,600	29,700	29,700	28,300
Konongo	f.o.t.	7,350	7,350	—	—	—	—
Total Gold Export ..	—	636,650	636,950	686,700	743,200	749,300	757,700

TABLE 6

EXPORT FORECAST FOR DIAMOND, MANGANESE AND BAUXITE (1975–1980)

Mine/Ore	*Units*	1975	1976	1977	1978	1979	1980
Ghana Consolidated Diamonds ..	Carats	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
African Diggers ..	Carats	124,000	140,000	160,000	190,000	230,000	280,000
Total Diamonds ..	Carats	2,524,000	2,540,000	2,560,000	2,590,000	2,630,000	2,680,000
MANGANESE							
Manganese Corporation ..	Long Tons	465,000	465,000	557,000	372,000	372,000	372,000
BAUXITE							
Ghana Bauxite Corporation ..	Metric Tons	370,000	400,000	400,000	400,000	400,000	500,000

TABLE 7

EMPLOYMENT FORECAST IN THE MINES, 1980

Mine	*Africans*	*Expa-triates*	*Total*
Gold	20,867	115	20,982
Diamond	2,500	15	2,515
Manganese	1,251	11	1,262
Bauxite	500	7	507
All Mines	25,118	148	25,266

TABLE 8

ESTIMATED CAPITAL INVESTMENT IN THE MINING SECTOR BY TYPE OF INVESTOR (1975–80)

	Estimated Investment (Million Cedis)
1. DIRECT STATE INVESTMENT	
(*a*) Bauxite Deposits—Feasibility Studies	2.30
(*b*) Iron Ore Deposits—Feasibility Studies	3.00
(*c*) Geological Survey Department (GSD)	26.40
(*d*) Training	7.00
Sub-Total	38.70
2. INVESTMENT BY STATE CORPORATIONS	
(*a*) State Gold Mining Corporation (S.G.M.C.) ..	201.60
(*b*) Ghana National Manganese Corporation ..	63.41
Sub-Total	265.01
3. JOINT STATE/PRIVATE INVESTMENT	
(*a*) Ashanti Gold Fields Corporation (A.G.C.) ..	28.30
(*b*) Ghana Consolidated Diamond Limited	3.00
Sub-Total	31.30
Grand Total Capital Investment	335.01

TABLE 9

ESTIMATED CAPITAL INVESTMENT IN THE MINING SECTOR BY TYPE OF PROGRAMME (1975–80)

	Estimated Investment (Million Cedis)
1. GOLD MINING	
(*a*) State Gold Mining Corporation (S.G.M.C.)	
(i) Tarkwa Mines	68.70
(ii) Prestea Mines	92.20
(iii) Dunkwa Mines	34.40
(iv) Konongo Mines	6.30
Total	201.60
(*b*) Ashanti Gold Fields Corporation (A.G.C.) ..	28.30
Total Gold Mining	229.90
2. DIAMOND MINING	
Ghana Consolidated Mining Limited	3.00
3. MANGANESE INDUSTRY	
Ghana National Manganese Corporation	63.41
4. BAUXITE MINING	
Feasibility Studies on Kibi and Nyinahin Bauxite Deposits	2.30
5. IRON ORE MINING	
Opon Manso Project Studies	3.00
6. GEOLOGICAL SURVEY EXPLORATION	26.40
7. TRAINING	7.00
Grand Total Investment	335.01

TABLE 10

GEOLOGICAL SURVEY DEPARTMENT

ESTIMATED COST OF DEVELOPMENT PROJECTS (1975/76—1979/80)

Project	*Estimated Cost (Million Cedis)*
1. CONSTRUCTION	
(*a*) Office and laboratory buildings	1.00
(*b*) Residential accommodation	0.80
Total Construction	1.80
2. PLANT AND EQUIPMENT	
(*a*) Geophysical equipment	0.80
(*b*) Equipment for Seismological station	0.70
(*c*) Other field and laboratory equipment	4.80
(*d*) Vehicles	0.70
Total Plant and Equipment	7.00
3. ON-GOING PROJECTS	
(*a*) Geophysical exploration	1.50
(*b*) Diamond evaluation	2.00
(*c*) South-west mapping	3.60
(*d*) Clay investigation	3.30
Total On-going Projects	10.40
4. NEW PROJECTS	
(*a*) Prospecting of Limestones	1.60
(*b*) Reactivation of Gold mines	1.50
(*c*) Prospecting of Iron ore deposits	1.50
(*d*) Geological mapping (Eastern Region)	1.30
(*e*) Geological mapping (Volta Region)	1.30
Total New Projects	7.20
Grand Total Capital Expenditure	26.40

TABLE 11

TOTAL GOVERNMENT INVESTMENT ON HIGHER INSTITUTIONS FOR THE TRAINING OF MIDDLE-LEVEL AND PROFESSIONAL MANPOWER FOR THE MINING AND MINERAL INDUSTRIES 1975/76—1979/80

Items	*Capital Expenditure in Cedis*
1. CONSTRUCTION WORKS	
(*a*) U.S.T. School of Mines, Kumasi	1,200,000
(*b*) U.S.T. School of Mines, Tarkwa	920,000
(*c*) Department of Geology, Legon	195,000
Total Construction	2,315,000
2. EQUIPMENT	
(*a*) U.S.T. School of Mines, Kumasi	440,000
(*b*) U.S.T. School of Mines, Tarkwa	270,000
(*c*) Department of Geology, Legon	257,000
Total Equipment	967,000
3. OTHER CAPITAL EXPENDITURE	
(*a*) U.S.T. School of Mines, Kumasi	1,498,560
(*b*) U.S.T. School of Mines, Tarkwa	2,157,000
(*c*) Department of Geology, Legon	72,000
Total Other Capital Expenditure	3,727,560
Grand Total Investment on Professional and Manpower Training	7,009,560

CHAPTER 5

FOREST RESOURCES

5.1 Review of Current Situation

Introduction

The country falls into two major vegetation zones, the Savannah Woodland Zone to the north covering two-thirds of the country and the High or Closed Forest Zone covering the remaining one-third. Over the whole country, forest reserves form just over 12 per cent of the land area and less than 19 per cent over the Closed Forest Zone. There should therefore be in the Closed Forest Zone, making allowance for areas taken by cities, towns, villages, roads and highways, close to 20,000 square miles of land available for various forms of land use other than permanent forestry.

The main products from the forests are commercial timbers, firewood and charcoal for household use, and a considerable number of minor produce such as poles, gum, resin, wild rubber, herbs and wild fruits. The forests also contain species suitable for the manufacture of pulp and paper. The bulk of the timber produced in the country comes from the Closed Forest Zone whilst the less productive Savannah Forests provide mainly building poles and firewood.

Out of the 360 recorded timber species only about 40 have markets; 12 are regularly exploited but only about eight make up about 90 per cent of the total production. The timber products mainly include, logs, lumber, plywood, veneer, blackboard, chipboard or particle board, products of furniture and joinery.

Administration of Sector

The granting of timber licences and concessions is controlled or regulated by the provisions of the Concessions Act, 1962 (Act 124), the Concessions Regulations, 1962, and the Timber Leases and Licences Regulations 1962. Applications for timber licences and concessions are lodged with the Lands Department and the licences granted on behalf of the land-owning stools by the Lands Commission whose Chairman is the Commissioner for Lands and Mineral Resources. Timber licences are granted for parcels of land not exceeding three square miles in area and for only three-year periods. Concessions are, on the other hand, granted over areas greater than three square miles and for a minimum of five years or multiples thereof but not exceeding twenty-five years.

Exploitation of concessions is controlled by the Forestry Department which comes under the Ministry of Lands and Mineral Resources. Royalty fees are paid by the concessionaires or licensees for all trees felled and removed according to the rates laid down in the Timber Royalties Regulations 1965 (L.I. 495/65).

The Timber Marketing Board, which comes under the Ministry of Trade and Tourism, besides its function of planning, developing, controlling and marketing of forest products, controls the number of mills and factories and their siting, and declares the species of timber that should be turned into finished and semi-finished products.

The Forest Products Research Institute of the Council for Scientific and Industrial Research is under the administrative control of the Ministry of Economic Planning.

There is the Ghana Timber Association, a non-statutory body, which embraces all loggers, sawmillers, plymill-owners and exporting companies. Its main functions are to safeguard the interest of its members and serve as a negotiating body on any matter that affects the association.

Organisation of Sector

Logging and forest industries are largely in private ownership. Direct State participation in these activities is principally related to the four timber companies in which the State has acquired majority shares and ownership of one sawmill by the Ghana Timber Marketing Board, two sawmills by the State Gold Mining Corporation and a paper conversion factory by the Ghana Industrial Holding Corporation.

There are both independent loggers producing for the open market as well as logging firms which own mills. Logs are transported from the forests to the mills and the Takoradi harbour by road or rail.

There are about 85 sawmills. Of this number as many as 42 are located in and around Kumasi. Most of the mills are located in the High Forest Zone in the south-western third of the country. A number of sawmills are being run below capacity. The idleness of capacity is attributable largely to lack of spare parts and obsolescence of some milling parts. Pitsawing, one of the ancient drudgeries, is on the decline.

There are six large plywood plants in the country. Two others are under construction. The plywood plants are located as follows: One each in Samreboi and Dwinasi and two each in Kumasi and Takoradi. There is a veneer plant at Manso Amenfi which produces laminated coverstock blocks and bundles for export. The factory at Samreboi also produces block-board. One of the Takoradi factories produces, in addition to plywood, sliced veneer and parquet flooring. Two other factories produce parquet flooring. The veneer industry is yet to be firmly established. There are several enquiries by existing and new enterpreneurs concerning investment in veneer and plywood production.

One chipboard factory is under construction and there are plans to establish a pulp and paper mill. There are a number of furniture factories a few of which are engaged in the production of knocked-down furniture for export.

The log market feeds the local mills and the exporting companies which generally rely on Ghanaian logging enterprises. Most of the bigger sawmills have their own concessions and log production units which feed them with logs while the majority of the smaller mills depend mainly on independent loggers.

The local market for lumber is in the hands of timber sellers at the various timber markets in the country. Large consumers like the State Corporations may lodge contracts directly with sawmills or tender for their supplies. Export lumber is shipped directly by mills or through agents in Takoradi. The bigger companies have their own sales agencies overseas to handle their exports.

In early 1975 the Timber Marketing Board established Timber Depots at Bolgatanga in the Upper Region, and Aflao, near the Togo border, to facilitate trade in lumber between Ghana and her immediate neighbours. Plans are afoot to establish similar depots in Tamale, Ho and Accra.

There are distribution firms which sell plywood at a commission on behalf of the local plywood manufacturers. These firms are usually furniture makers or firms which sell building materials. The Timber Marketing Board sees to it that contracts with poor prices are not executed to the detriment of the country's economy. The pattern of trade continues to be dominated by the export of wood products to mainly developed countries.

It can be seen from the foregoing that products which can be manufactured from the forest resources and the processes employed to convert them into other articles are such that there appears to be some type of forest industry suitable for virtually every stage of economic development. This is one of the main reasons for the importance of the forestry sector in the development of a developing economy like that of Ghana.

Much of the demand for wood products comes from other industries and the inputs of many wood-using industries are products of other industries. Thus, through these forward and backward linkages, the expansion of forestry and forest industries can act as a stimulating force for many economic activities.

Contribution to national economy

The contribution of the Forestry sector to Gross Domestic Product has remained fairly stable since 1969, reaching a level of 3.5 per cent in 1972. Total earnings from timber exports rank third after cocoa and minerals. Owing primarily to the high world prices of timber during the last few years, the value of Ghana's timber exports increased from about ₵33 million in 1971 to ₵130 million in 1973. This encouraging trend has however been adversely affected by the current recession in the major

industrialised countries which consume most of Ghana's timber. One significant feature of the timber industry has been the steady growth in the country's veneer exports in recent years.

5.2 Problems and Constraints

Illegal destruction of the Forest Estate.—Considerable damage is done to the permanent forest estate through the activities of illegal farmers. If this situation is not arrested, it will have a debilitating effect on the forest estate and the role of forest industries in the national economy.

Uneconomic concessions and wastage.—Fragmentation of forests into small unviable concessions hardly makes operations efficient and economic. It rather makes a mockery of management since such areas cannot be worked with any semblance of sustension as demanded by the national forest policy.

There are too many petty timber contractors in the industry who are poorly equipped and produce without having any markets in view with the result that a lot of their production runs to waste. A high rate of wastage also occurs in the exploitation of timber through the practice of selective harvesting.

It is also observed that whereas some firms have more concessions than necessary, others have very little resulting in under-utilization of machinery and equipment.

Heterogeneity of wood species.—The large variety of wood species, which are scattered all over the forest areas, creates difficulties in the economic exploitation of many species to support local industries. For example, the indigenous species of wood, such as wawa, edwuma, and emire, which can support a local pulp and paper industry, are scattered throughout the high forest zone.

Inadequate equipment and materials.—Wood-based industries depend to a large extent on external sources for machinery and spares, vehicles and raw materials, such as lacquer, thinner, phenolic and urea glues, hinges and locks, paper board for packaging and sand-paper. Inadequate import licence is often provided for the procurement of these very essential items.

Many logging companies do not have adequate, efficient and well-serviced equipment and vehicles. This situation generally has disastrous effects on logging operations. Haulage of wood products to the ports for export is in equally poor state. The Ghana Railways and Ports Authority cannot provide enough trucks and vans. Road haulage trucks are inadequate and the rates are extremely high. The execution of export orders has therefore often fallen behind schedule.

Inadequate port facilities.—Takoradi harbour is ill-equipped to cope with the increasing volume of timber exports. Storage facilities for wood products at the harbour are inadequate. There are two transit sheds for sawn-timber, plywood, veneer, knocked-down furniture, profiles and others. These sheds were built around 1953, but the bulk of the mills were set up much later.

Lighterage and stevedoring activities at Takoradi also require considerable improvement. The Cargo Handling Company, which is a joint state/private venture, has very few and old tugs and lighters for operations at the port. Lighterage, as a result, is slow and delays are too much. The cranes belonging to the Ports Authority are very old and constantly break down.

Low domestic utilization of wood.—A fundamental obstacle to the full utilization of the country's forest resources is the heterogenous nature of the forests. As mentioned already, only a handful of local species are being exploited. The consumption of wood in Ghana has been low largely because of the poor performance of local wood in construction. The bulk of the wood used in the past was mainly juvenile wood and sap-wood, which are known to be naturally not durable. This situation has not only earned for wood the impression of non-permanence but also created a nation-wide prejudice against wood. This prejudice has to be removed before there can be general application of wood in construction.

Another factor militating against the use of wood is its high cost. The production cost of lumber has rocketed in recent years to a point where wood has virtually become non-competitive with other building materials and thereby almost pricing itself out of the market.

Financial problems.—Small Ghanaian producers of logs and timber products experience difficulties in obtaining adequate finance, especially from the banking institutions, for the acquisition of plant and machinery as well as for working capital.

Marketing problems.—The marketing of forest products is characterised by poor organization, lack of adequate market information and direct contact with foreign buyers, resulting mainly in the exploitation of small indigenous producers.

Manpower problems.—There is an acute shortage of skilled manpower for both managerial and research positions in the sector. The situation is especially serious in the professional grades of the Government forest service. Unattractive service conditions and comparatively poor emoluments in the Forestry Department appear to be major reasons behind the shortage of professionals in the Department. Most of the few professionals in the Department continue to leave the forest service for the timber industry, research institutions and other organisations which offer more lucrative conditions. This is a serious drawback to forest conservation and management.

Administrative problems.—The administration of the forestry sector is hampered by the fact that the country's forest estate is managed by different departments and agencies under the administrative direction and control of different Ministries as discussed earlier. For example, the dichotomy between the production and the marketing of forest products has sometimes led to a clash of responsibility between the Forestry Department and the Timber Marketing Board to the detriment of the sector.

5.3 Policy Objectives

Protecting the Forest Estate from Destruction.—The Forest Estate will be protected from wanton destruction by trespassers through the review and strict enforcement of appropriate land-use policies and legislation.

Expanding the wood base and arresting the threat of the Sahel.—The wood base will be expanded by increasing the annual planting rate under the afforestation programme as well as by instituting special tree planting and forest plantation programmes in the Northern and Upper Regions as a means of arresting the threat of the southward drift of the Sahel.

Reducing wood waste in the forest.—The rate of wood wastage in the forest will be minimized through the application of improved forest management and harvesting techniques and practices.

Encouraging greater domestic processing and utilization of timber.—Policy measures and incentive schemes will be instituted for encouraging greater domestic processing of timber, particularly the lesser known species. Increased domestic consumption of timber will also be stimulated through the implementation of special wooden housing schemes for both urban and rural areas.

Strengthening links with other industries.—Wood-based industries will be diversified and their links with other manufacturing industries strengthened through the establishment of new wood-based industries (e.g. building materials and charcoal industries, and an integrated pulp and paper industry).

Increasing the net foreign exchange earnings from the export of wood products.—Net foreign exchange earnings from the export of wood products will be increased by expanding the country's share of the European, American, Middle Eastern and African markets through the application of vigorous and aggressive sales promotion policies.

Improving transportation and p ort facilities.—Facilities for the efficient transportation of timber from the forests to the main consuming centres will be improved through the improvement and expansion of the country's road network and the rehabilitation of the railway system. Additional warehousing and berthing facilities will also be provi ded at the Takoradi harbour.

Increasing Ghanaian participation in the timber trade and forest industries.—Small-scale Ghanaian log-producers, saw-millers and manufacturers of wood products will be encouraged and assisted through technical and financial assistance schemes to increase their contribution to the national economy.

Improving the quality of manpower.—The quality and number of trained and skilled manpower engaged in forestry and forest industries will be improved through the expansion of training facilities and programmes for all levels of personnel embracing formal technical and on-the-job training.

Streamlining administrative machinery.—The institutional machinery for the administration of the forestry sector will be strengthened and streamlined and, where necessary, the relevant agencies will be reorganised to ensure efficient performance.

Strengthening co-operation with other African timber producers.—Co-operation with other African timber producing countries will be strengthened within the framework of the appropriate international bodies to safeguard the common interest of producers and ensure the most beneficial use of their forest resources.

5.4 Main Targets and Investments

The forestry sector is expected to grow during the plan period at an average annual rate of about five per cent while export prices of timber and forest products are expected at least to keep pace with world inflation. The projected growth rate will enable the sector to raise its contribution to domestic production, value-added and employment through increased domestic utilization and processing as well as export of the country's forest resources.

During the plan period, the sector is expected to recover fully from the recent slump which has affected it as a result of world-wide recession and inflation following the recent oil crisis. Earnings from the export of timber and timber products are consequently projected to rise from their estimated 12 per cent of total export earnings in 1973 to over 15 per cent by 1980. The yield from timber export duties are also expected to increase from the 1974–75 estimated level of ₵5.3 million to about ₵11.2 million in 1979–80.

The bulk of investment in the forestry sector will be made directly by the Government. Private investment in forest industries are reflected in manufacturing sector investment. Total direct Government investment in the forestry sector is estimated to be ₵59.8 million. Out of this amount, ₵55.6 million representing 93 per cent will be spent on projects to be undertaken by the Forestry Department while the remaining ₵4.2 million representing seven per cent, will be spent on projects to be implemented by the Forest Products Research Institute.

About 81 per cent of the total investment of the Forestry Department will be spent on the establishment of forest plantations not only to replenish the depleting stock of timber trees but also to help arrest the southward drift of the Sahel. The annual planting rate is expected to be stepped up to about 27,000 acres by 1980.

5.5 Policies and Programmes

Expansion and Management of Forest Estate

The answer to the wanton destruction of the forest estate for agricultural purposes lies in the scientific husbanding of the unused, underused and misused agricultural lands which should be made more productive. This calls for the establishment of a Land-use Committee to examine the land-use pattern in the country and devise appropriate policies and measures to improve on the existing situation.

Since a considerable amount of timber continues to be extracted from unreserved forests, such areas need to be fully exploited. Concessions outside forest reserves which in the view of the Forestry Department need to be protected should be so protected after consultation with the landowners without the concessionaires having to ask for them to be released for the production in the first instance as required by the Protected Timber Lands Act, 1959.

The rate of growth of the forest resource has not kept pace with the rate of exploitation in recent years. The Forestry Department therefore plans to step up the reforestation programmes to an annual planting rate of 27,000 acres. Plantations will also be established in the Northern and Upper Regions to arrest the threat of the southward drift of the Sahel.

The present system of granting concessions, whereby some firms get more, and some less concessions than necessary, renders operations inefficient and uneconomical. During the plan period, concessionaires will be grouped into categories based on such factors as number of employees, annual turnover, capital, plant and machinery, to enable the granting of concessions to be related to concessionaires' capacity for exploitation. The fragmentation of forests into small unviable concessions will be discouraged and new concessions granted only to applicants who can mobilise resources or have the means and the facilities to operate them efficiently. To minimise the present high wastage arising from selective harvesting of timber, the practise will be discouraged by either fining or withdrawing the concessions of producers who leave unnecessarily large volume of timber unexploited.

Domestic Processing and Utilisation

Domestic utilisation of timber products particularly for housing, has been low due to factors such as humid tropical conditions which favour decay, the attack of wooden structures by destructive insects and the high cost of wooden houses. During the plan period, the Forest Products Research Institute will set up two pilot chemical treatment plants in Accra and Kumasi to demonstrate how best to protect and prolong the life of timber in order to encourage their use by the construction industry.

Government plans to set the pace for the stimulation of increased domestic consumption of timber products in the construction industry, through the massive construction of inexpensive wooden houses. To facilitate the implementation of this programme, proposals are being worked out for the establishment of appropriate plants for the mass production of prefabricated housing components like wooden frames, doors, windows, and partitions.

The high production cost and wastage in the furniture industry will be reduced by giving furniture producers technical assistance through the establishment of special technical training centres in Accra, Kumasi and Takoradi. Guidance will also be provided to furniture producers in the use of secondary and lesser known species.

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Manufacture of wood products, like railway carriages and coaches, chipboard and particle board will be encouraged. In this connection, emphasis will be placed on greater processing of the secondary and lesser known species, by improving the capacities of the existing sawmills and establishing new processing plants.

The major logging companies worked at full capacity during the 1973 boom and essential equipment and spares to service them were drastically run down. It is therefore important for the provision of adequate import licence and foreign exchange cover for the procurement of these essential items in order to take advantage of improved market conditions. The Ghana Timber Marketing Board's programme of importing bulk quantitites of spares should be extended to cover the secondary processing factories to replenish their stocks.

Charcoal Production

A Charcoal Production and Utilization Project is being implemented based on wood waste in the reforestation areas. Initially, two charcoal-producing centres are being established in Kumasi and Takoradi to make use of the large wastage resulting from the harvesting of timber. The project also provides for the services of experts to advise and assist local kiln manufacturers in the design and fabrication of improved kilns. Research results have shown that useful by-products, such as wood tar and pyreligueous liquor can be obtained if production of charcoal is undertaken on a large scale. It is expected that the project will help substitute locally-produced charcoal for other types of fuel in some fields of manufacturing activity. It will also create new job openings particularly in the rural areas.

Pulp and Paper Project

Ghana spends a considerable amount of scarce foreign exchange annually on the importation of the pulp and paper products. Some experts estimate the country's present consumption of paper products to be about 50,000 tons annually. The domestic demand for these products continues to grow at a fast rate, as a result particularly of the rapid expansion of educational, cultural and industrial activities.

The country's potential for the export of pulp and paper products is also considerably enhanced by the current shortage of the products on the world market. Suitable raw materials and other inputs are available to support a viable local pulp and paper industry. For example, a recent evaluation of seven principal potential sources of local raw materials for the production of pulp and paper (namely, round wood from secondary species, residuals from current logging operations, residuals from current manufacturing operations, roundwood from plantations, bagasse, bamboo and waste paper) has concluded that roundwood from plantations provides the most adequate, reliable and economical source of raw materials. Results of other investigations and studies have confirmed the technical and economic feasibility of establishing a local pulp and paper industry based on the utilization of local mixed tropical hardwoods. An appropriate technology for pulping mixed tropical hardwoods has also been identified.

One obstacle in the way of the establishment of a local pulp and paper industry is the excessive heterogeneous composition of the tropical forests contributing to the high costs of harvesting and transporting the most suitable species of wood for pulping. The appropriate solution will be the establishment of plantations of uniform species based on selected species of fast growing trees. Trial plantations so far established in the country have shown favourable indications that exotic species like pine, gmelina and eucalyptus can also be developed into plantations to supplement the indigenous species like wawa, edwuma, edinam, emire which are known to be suitable for the production of pulp and paper.

In view of the positive findings of various studies and the encouraging assessment of the country's potentialities for pulp and paper manufacture, the Government has recently set up a Committee comprising representatives of relevant agencies to draw up an appropriate programme for the development of a pulp and paper industry based primarily on local raw materials and to ensure an effective co-ordination of the activities and policies of the agencies concerned for the early and successful realisation of the programme. Government will also continue to give the necessary support to current research work on the development of various types of local raw materials.

Export Promotion

Until 1972, the marketing of forest products, especially the export of timber logs and lumber, has been seriously hampered by poor marketing organisation, lack of adequate market information and lack of effective contact between local producers and foreign buyers resulting in a considerable loss of foreign exchange to the country. The government of the Supreme Military Council has already initiated measures for improving the marketing of timber abroad through the drastic review of marketing procedures, the reorganisation of the Ghana Timber Marketing Board and state participation in the timber industry. Constant vigilance will be maintained over the situation to monitor performance and ensure appropriate corrective action wherever necessary.

To increase the country's net foreign exchange earnings from the export of timber and forest products, aggressive sales promotion policies will be continuously pursued with a view to increasing the country's share of the European, American, Middle Eastern and African markets. In addition to its London Office, the Ghana Timber Marketing Board is actively considering the possibility of opening offices in Jeddah, Valencia, Bremen as well as in the United States of America and in Italy. Plans are also being worked out for the opening of a permanent exhibition at the Jeddah Building Centre in Saudi Arabia to serve the Arabian Gulf countries. The Ghana Timber Marketing Board is examining the possibility of opening sales depots along the country's northern border on similar lines as the depot at Aflao. To increase the export of processed timber, Government will at the appropriate time impose a ban on the exportation of round logs, square logs and poles.

Transportation

Delays in the transportation of logs and lumber from the forests to the harbour constitute a serious bottleneck in the flow of timber exports. Difficulties in the transportation of timber from the forests to the harbour arise mainly from poor conditions of the roads, in some cases lack of access roads to the forest areas and the shortage of timber trucks and railway locomotives. The road construction and improvement programme envisaged during the plan period will help remove this bottleneck. Government will examine the import licensing system with a view to facilitating the importation of trucks to alleviate the shortage of timber trucks. The financial institutions will be called upon to provide the necessary financial support for the importation of the trucks. The Railway and Ports Authorities plan to acquire more locomotives to facilitate the transportation of timber. New berthing facilities will be provided at Tema to ease the congestion at the Takoradi harbour.

The trend in timber exporting throughout the world is towards bulk shipments. For Ghana to maintain, or increase, her share of the world timber market, there is need for large quantities of timber to be shipped to arrive at regular intervals to enable overseas importers to plan their orders and maintain prompt deliveries and firm selling prices. The National Shipping Line plans to acquire four multi-purpose ships and two bulk carriers during the plan period for the bulk shipment of timber products. Other Ghanaian shipping lines will be encouraged to purchase or charter adequate modern carriers for the efficient and regular shipment of timber and wood products.

As mentioned already, facilities for storage of timber and wood products at Takoradi harbour are inadequate. To enable ships to come and go in the shortest possible time, the port storage and ancillary facilities will be increased. Unfortunately, there is little room for a major expansion except to turn some of the import warehouses into export ones.

Financial Assistance

Available information indicates that in the period 1968-1974 only about two per cent of total bank loans and advances went to the forestry sector. This situation is considered unsatisfactory for the rapid development of this important sector of the economy. For this reason, the commercial banks will be requested to increase the level of their lendings to the forestry sector to about five per cent of total loans and advances. In addition to this, the existing financial assistance scheme operated by the Ghana Timber Marketing Board will be expanded to provide more financial assistance to the small Ghanaian firms engaged in the production and processing of timber.

Ghanaian Participation

Increased Ghanaian participation in the timber industry remains a priority of the Government. Ghanaian firms engaged in the industry will be assisted financially and technically to increase their share of the export business. Ghanaian entrepreneurs will also be encouraged to enter into joint ventures with foreigners particularly in the processing of timber. Small Ghanaian-owned timber and wood-processing firms will be offered

increased financial assistance through the banking system and the special credit scheme operated by the Ghana Timber Marketing Board for the acquisitition of plant and machinery as well as working capital. These small firms will be encouraged to expand their activities through formation of bigger companies and co-operatives in order to qualify for the assistance envisaged.

Training

One major constraint in the forestry sector has been the lack of adequate skilled manpower for both managerial and research positions. At present there are no facilities in the Universities for undergraduate work in Forestry. The problem deserves serious and careful study and the local universities will be asked to examine the possibility of organising adequate training courses locally or in collaboration with other institutions in neighbouring African countries. Meanwhile, Ghanaian students will continue to be sponsored for University training in Forestry in foreign friendly countries. The University of Science and Technology will embark on a post-graduate course in Forestry and Wood Technology during the plan period.

The Forestry Training School at Sunyani has facilities for training Technical Officers in forestry. The quality of the school's products is considered high enough for the normal needs of the Department. The school will, however, be expanded in order to cope with the increased demand for its graduates.

Training of skilled manpower for forestry and forest industries will also be vigorously pursued. The Timber Marketing Board is setting up a saw doctoring centre to train saw doctors for the timber industry. The centre which will be set up in Kumasi will also manufacture narrow and band blades for sawmills and furniture factories. Cutters for moulding machines will also be manufactured from imported steel.

Research

Some of the major research programmes to be undertaken by the Forest Products Research Institute during the plan period include projects, such as tree breeding, tropical pine production, pulp and paper manufacture. The Government will support and encourage the activities of the Institute by providing it with adequate funds and research facilities.

The Forest Products Research Institute will also be provided with funds, as and when the need arises, to set up pilot plants to implement and to demonstrate the results of their findings. Conferences, public lectures and seminars will also be organised for scientists, research officers, industrialists and other interested people to discuss research results and their application to industry. Details of the Institute's estimated ₵4.2 million development programme are contained in Table 10.

Institutional Arrangement

Government is taking a critical look at the administrative problems besetting the forestry sector with a view to introducing appropriate measures aimed at improving efficiency and fostering closer co-ordination of the activities of the various organisations and agencies responsible for the different segments of the sector. In this regard, Government will commission a study into the advisability of creating one Ministry to be specifically responsible for the management of the country's forest estate as well as for other matters concerning the timber trade and forest industries.

International Co-operation

Ghana recognizes the important role which the newly established African Timber Organization in Libreville can play in the creation of a new international economic order. For this reason, the government will fully co-operate with other members of this organisation to ensure the most beneficial use of their forest resources.

TABLE 1

CONTRIBUTION OF FORESTRY AND LOGGING TO GROSS DOMESTIC PRODUCT

	1969	1970	1971	1972
Contribution of Forestry and Logging to Gross Domestic Product (at constant 1968 prices) (Million Cedis)	66.9	67.0	96.2	72.2
Percentage Contribution of Forestry and Logging to Gross Domestic Product	3.7	3.5%	3.4%	3.7%

TABLE 2

PRODUCTION OF TIMBER (MILLION CUBIC FEET)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
LOGS														
Recorded Exports	28.91	21.48	20.34	23.65	24.26	19.72	16.82	17.86	20.10	24.60	21.22	24.95	33.60	38.48
Sawmills intake	27.19	29.00	34.57	29.85	34.02	33.31	29.48	26.66	25.65	19.10	30.94	29.03	28.14	29.92
Veneer/Plywood intake	0.57	0.60	1.18	1.79	1.60	1.61	1.59	2.39	2.60	2.72	2.68	3.02	4.29	4.49
Pit sawing	1.09	1.75	1.75	1.75	1.24	1.17	1.17	0.50	0.50	0.50	0.40	0.40	0.30	0.40
Total Output of Logs	57.76	52.83	57.84	47.04	61.12	55.81	49.06	47.41	48.85	46.92	55.24	57.40	66.33	73.29
SAWN TIMBER (a, SAWNMILLS)														
(*a*) Recorded Exports	8.34	8.70	9.32	8.36	8.90	8.11	7.24	6.69	7.60	7.73	8.50	6.56	8.84	8.46
Local sales	3.21	3.56	3.92	3.99	5.53	5.52	3.44	3.02	3.38	3.29	3.32	3.39	4.02	3.79
Own use by Mills and Mines	0.92	0.98	1.22	1.28	1.15	1.22	0.88	0.93	0.86	0.82	0.89	0.87	1.67	1.05
Additions to stocks	0.30	0.84	0.39	0.52	0.14	0.67	1.90	1.00	0.24	0.81	0.23	0.63	2.40	0.45
(*b*) Pit Sawing	0.54	0.87	0.87	0.87	0.62	0.58	0.58	0.25	0.25	0.25	0.20	0.20	0.20	0.20
Total Output of Sawn Timber	13.31	14.95	15.72	15.02	16.06	16.10	14.04	11.89	11.85	12.90	12.68	11.64	17.13	13.05

TABLE 3

TOTAL VALUE OF TIMBER PRODUCTION (MILLION CEDIS)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
LOGS													
Recorded Exports	21.72	13.90	14.44	16.16	13.26	10.88	12.83	16.28	24.12	19.88	20.34	42.29	88.55
SAWN TIMBER													
(*a*) Recorded Exports	14.88	15.43	11.62	13.34	11.43	9.98	9.66	12.30	14.96	17.09	2.22	21.17	41.76
Local Sales	4.68	5.14	4.78	7.74	7.54	5.16	5.18	4.33	4.33	4.50	6.27	12.86	11.34
Own use by Mills and Mines	0.53	0.58	1.24	1.04	1.11	0.82	0.93	1.12	1.10	1.20	1.24	3.34	3.86
Additional to stocks	0.60	0.43	0.46	0.12	0.56	1.58	1.20	0.31	1.07	0.30	0.88	4.30	1.35
(*b*) Pit sawing	1.06	1.06	0.88	0.58	0.58	0.58	0.25	0.33	0.34	0.34	0.22	0.24	0.8
Total value of sawn Timber	21.77	22.64	.8.88	22.82	21.22	18.06	17.22	18.29	21.80	23.43	30.83	41.91	59.11

TABLE 4

VOLUME OF TIMBER EXPORTS

'000 *Tons*

	1965	1966	1967	1968	1969	1970	1971	1972	1973
Timber (Logs) Tons ('000) ..	442.4	328.6	341.4	395.6	504.7	395.0	503.4	710.9	731.4
Timber (Sawn) Tons ('000)	167.5	141.4	130.1	146.4	144.3	148.5	136.7	146.6	165.0
Total Timber Exports Tons ('000)	609.9	470.0	471.5	542.0	649.0	543.5	640.1	857.5	896.4

TABLE 5

VALUE OF TIMBER EXPORT (MILLION CEDIS)

	1965	1966	1967	1968	1969	1970	1971	1972	1973
Timber (Logs) ..	13.3	10.9	12.7	16.3	24.1	19.9	20.5	42.3	88.6
Timber (Sawn) ..	11.4	10.5	9.7	12.3	15.0	17.1	12.2	21.2	41.8
Total Timber Exports	24.7	21.4	22.4	28.6	39.1	37.0	32.7	63.5	130.4
Total Earning from the Export and Domestic Produce	223.5	185.9	239.8	337.3	390.8	460.2	348.9	549.9	697.4

TABLE 6

VALUE OF TIMBER EXPORTS AS A PERCENTAGE OF TOTAL VALUE OF EXPORTS OF DOMESTIC PRODUCTS

	1965	1966	1967	1968	1969	1970	1971	1972	1973
Logs Export (%)	5.9	5.8	5.2	4.8	6.1	4.3	5.8	7.6	12.7
Sawn Timber Export (%) ..	5.1	5.8	4.0	3.6	3.8	3.7	3.4	3.8	6.0
Total Timber Exports (%) ..	11.0	11.6	9.2	8.4	9.9	9.0	9.2	11.4	18.7

TABLE 7

OUTPUT OF VENEER AND PLYWOOD (THOUSAND CUBIC FEET)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
VENEER														
Export	19.06	34.56	30.88	15.48	14.36	19.80	19.10	5.17	3.12	16.92	14.80	36.42	17.02	144.30
Local sales	—	—	—	—	—	—	—	0.16	1.16	2.55	0.98	2.84	0.57	4.31
Own use	8.37	12.39	12.10	8.16	19.28	19.10	17.99	19.60	13.56	—	—	—	—	0.06
Additional to stocks ..	1.33	0.81	0.25	0.05	0.09	1.30	2.76	—	0.88	3.57	0.43	7.82	6.09	89.92
Total output of Veneer ..	28.76	47.76	43.23	23.69	33.73	40.20	39.85	24.93	18.73	23.04	16.21	47.08	23.68	238.59
PLYWOOD														
Export	151.13	145.41	456.06	488.49	503.89	459.25	479.34	635.39	730.94	668.53	766.34	909.75	890.86	656.67
Local sales	99.10	129.25	108.99	188.21	253.89	221.40	209.40	246.35	222.74	196.35	281.99	474.12	478.76	439.45
Own use	7.44	7.19	10.34	10.93	10.24	11.35	19.82	12.66	24.67	4.25	4.28	8.77	9.20	16.31
Additional to stocks ..	1.89	12.27	43.35	4.02	25.90	6.59	14.00	53.26	21.40	19.82	52.98	13.96	273.51	235.22
Total output of Plywood ..	259.56	294.22	618.74	691.65	803.92	698.59	722.56	947.66	999.75	888.95	1,105.59	1,406.60	1,652.33	2,347.65

TABLE 8

TOTAL VALUE OF OUTPUT OF VENEER AND PLYWOOD (THOUSAND CEDIS)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
VENEER													
Export	73.22	83.98	71.22	73.98	79.04	107.52	35.57	15.60	147.60	79.62	235.84	211.76	740.52
Local sales	—	—	—	—	—	—	0.80	5.80	12.74	0.49	1.49	0.24	5.66
Own sales	56.64	47.00	34.28	77.12	76.40	89.95	90.00	67.80	—	—	—	—	—
Additions to stocks	3.67	1.27	2.02	0.36	1.08	12.13	—	4.50	18.65	2.24	6.49	75.76	368.67
Total Value of Veneer	133.53	132.25	107.52	151.46	156.52	209.60	126.37	93.70	178.99	82.35	230.91	287.76	1,114.85
PLYWOOD													
Export	700.78	1,539.08	1,616.53	1,694.50	1,363.73	1,512.36	2,160.33	2,410.00	2,653.00	3,040.00	1,822.00	4,488.07	11,409.66
Local sales . ..	649.90	576.24	788.36	1,066.34	928.80	1,045.00	1,108.88	560.00	1,412.00	1,988.03	1,266.00	3,351.32	3,446.46
Own use	34.32	41.16	43.72	32.76	36.32	99.20	56.97	74.00	13.22	27.57	13.30	28.52	66.02
Additions to stock ..	58.25	165.52	16.08	114.88	21.08	56.00	213.04	64.00	60.88	162.80	43.17	847.88	1,839.46
Total Value of Plywood	1,443.25	2,322.00	2,464.69	2,678.48	2,350.93	2,712.56	3,539.22	2,980.00	4,139.10	5,217.40	3,144.47	8,715.79	16,761.63

TABLE 9

FORESTRY DEPARTMENT

CAPITAL ESTIMATES (1975/76 to 1979/80)

Project	Estimated Total Cost (Million Cedis)
(*a*) FOREST PLANTATION PROGRAMMES	
(i) Normal Forest Plantation Programme	44.3
(ii) Afforestation to Arrest Drift of Sahel	0.8
Total Forest Plantation Programmes	45.1
(*b*) CHARCOAL PROJECT	1.5
(*c*) SUBRI PULPWOOD PROJECT	9.0
Total Capital Costs	55.6

TABLE 10

FOREST PRODUCTS RESEARCH INSTITUTE

CAPITAL ESTIMATES (1975/76 to 1979/80)

Projects	*Estimated Cost (Million Cedis)*
(*a*) CONSTRUCTION WORKS	
(i) Office and Laboratory Buildings	1.0
(ii) Residential Accommodation	0.5
(iii) Other Construction..	0.3
Total Construction	1.8
(*b*) EQUIPMENT AND VEHICLES	
(i) Office and Laboratory Equipment	0.6
(ii) Vehicles	0.3
Total Equipment and Vehicles ..	0.9
(*c*) OTHER CAPITAL	
(i) Silviculture Management Research Projects ..	0.5
(ii) Wood Protection Research Projects	0.5
(iii) Wood Utilization Research Projects	0.5
Total Other Capital	1.5
Grand Total Estimated Cost	4.2

CHAPTER 6

GAME AND WILDLIFE RESOURCES

6.1 Role of Wildlife

The Department of Game and Wildlife, under the Ministry of Lands and Mineral Resources, is the organisation responsible for ensuring the conservation, development and rational utilization of the country's game and wildlife resources.

Ghana embarked on an organised programme of conserving her wildlife resources in 1968 with a total area of about 900 square miles or 2,331 square kilometres. The country now has four National Parks which are included in the United Nations' list of National Parks and Equivalent Reserves. These parks extend over a total area of 4,014 square miles or 1,141,986 hectares. In addition to these parks, there are three Game Production Reserves covering 357 square miles or 92,494 hectares, two Wildlife Sanctuaries extending over 48 square miles or 12,573 hectares and two Zoological Gardens. Further details of existing wildlife conservation areas are contained in Table 1 of this chapter.

The most outstanding uses of the country's wildlife resources are exploitation as a source of food, in the form of meat, and exportation of wild animals. There is evidence of the use of wild animal by-products in carving and other crafts but this has not been surveyed yet. The touristic use of the country's wildlife resources is increasing gradually. Government also obtains a little revenue from the control of the exploitation of game and wildlife resources. The wildlife sector makes valuable contributions to the country's foreign exchange earnings, employment creation, recreation, sport and education. Yet most of these contributions are extremely difficult to quantify.

Meat Supply

A large proportion of the meat supply in the rural areas is derived traditionally from wild animals. Results of market surveys carried out in recent years clearly indicate that there exists a considerable demand for bushmeat in Accra, Kumasi, Sekondi-Takoradi and other urban centres. With the increasing demand for meat, including bushmeat, and the subsequent increase in meat prices, all types of wild animals are being killed for sale rather than for direct consumption by the hunters. Thus, hunting for the pot has been largely displaced by hunting for the market. This has led to increasingly ruthless exploitation of wildlife in the country.

Over the period 1970 to 1975 bushmeat price in Accra rose at the rate of 66 per cent per annum and thereby making bushmeat the most expensive meat in Accra and other Ghanaian urban markets where data are currently available.

Export Trade

The exportation of wild animals and their trophies has since 1971 been put on permit. Trade is largely between Ghana and the following countries: Holland, West Germany, Belgium, United Kingdom, Italy Spain, Netherlands, United States of America, Saudi Arabia, and Japan. Parrots constitute about 70 per cent of the animals exported. Other animals exported include agama lizards, tortoise, royal python, African python, red patas monkey, spot nose monkey, mona monkey, and green monkey. For the period 1971–75, the export trade rose at a rate of about 20 per cent per annum, and it is estimated that over 20,000 animals, made up of 50 or more different species, have been exported annually over the period. There is grave concern about illegal trade in endangered species such as colobus monkey and chimpanzee.

Recreation and Tourism

Recreational use of wildlife is popularly known in terms of tourism. Hence, it is generally held that the development of wildlife provides an important boost to the tourist trade. Ghana, however, has not yet been able to take full advantage of her wildlife resources in promoting tourism because of the poor and undeveloped nature of tourist accommodation and infrastructure in the national parks and game reserves.

Education and Culture

Zoological gardens are important as living museums, cultural and educational centres. They are heavily patronised at week-ends and during public holidays. School children constitute the largest group of visitors to the zoos. The number of visitors to the zoos has been increasing slowly but steadily. During 1970–71 fiscal year, about 117,000 people visited both the Kumasi and the Accra Zoos. This number increased to 168,000 during 1974–75.

Revenue Source

It has been customary for chiefs to tax away part of the game or animal killed or trapped by a hunter. For example, one leg, the tail and one tusk of every elephant killed went to the chief. The Central Government began to collect revenue directly from the exploitation of wildlife resources following the recent introduction of hunting licences and permits for the exportation of animals. Some revenue is also derived from the sale of animals and trophies by the Department of Game and Wildlife, from motel and rest-house charges, from guide and transport fees paid by visitors to parks and reserves, and from gate fees paid by visitors to zoological gardens. The total revenue from these sources has been very

small but continues to grow though slowly. The total revenue which was nearly ₵23,000 in 1970–71 increased to about ₵51,000 in 1974–75 (*see* Table 2).

6.2. Problems and Constraints

Abuse of Resources.—Although wildlife regulations have been on the statute books since 1901, it has only been in recent years that a concerted effort is being made to enforce them seriously. Meanwhile, the lucrative trade in bushmeat and wild animal products continues to provide a strong incentive for illegal hunting and trade in these goods. Moreover, in the absence of a well-defined national land-use policy, the increasing pressure on the land resulting from growing population and increasing extensive agriculture and lumbering have contributed to the wanton destruction of game and wildlife resources. There is little public awareness of the importance of these resources for national development due to insufficient public education.

Ineffective Control of Export Trade.—There is evidence that control of the export of large numbers of animals and animal by-products has been ineffective. Traders' inability to appreciate that it is in their own interest to co-operate and ensure that they get a good deal from their trade counterparts abroad is an underlying difficulty in the control of trade in this field. Exporters undercut their competitors. Consequently, foreign importers take advantage of lack of team approach to the trade and play down price payable to them.

Inadequate Facilities.—As a result of the long neglect of this sector, the infrastructure and other facilities, such as, accommodation and social amenities, provided in the national parks, game reserves and other conservation areas are inadequate for touristic, recreational and other uses. Inadequate equipment, vehicles and telecommunication facilities seriously hamper the efficiency and mobility of the personnel working in these areas.

Manpower Problems.—The Department of Game and Wildlife is faced with an acute shortage of professional and technical personnel due partly to the hazardous nature of the work and partly to the poor conditions of service which make it difficult to recruit and retain an adequate number of the right calibre of manpower.

6.3. Objectives

The development of the country's game and wildlife resources during the five-year plan period will be based on the following main objectives:—

(1) conservation and judicious utilization of existing game and wildlife resources through public education and strengthening of measures to control the illegal and wanton destruction of these resources;

(2) provision of additional and improved facilities in the main conservation areas for touristic, recreational, educational cultural and other uses;

(3) survey of the country's wildlife resources to form a basis for a comprehensive and systematic programme of expanding conservation areas into various vegetational zones which will ensure the preservation of samples of these vegetational zones and their fauna under permanent scientific management;

(4) expansion of the supply of game and bushmeat as additional source of protein for domestic consumption;

(5) creation of appropriate linkages between the game and wildlife sector and other sectors of the economy such as tourism, education and culture, forestry and health;

(6) training and development of all levels of manpower.

6.4 General Policy Framework

Wildlife Conservation Policy.—The Government recognises that the wildlife of Ghana, embracing both animals and plants. provide valuable renewable natural resources of economic, educational. cultural and scientific significance to the country and that it owes an obligation to posterity to ensure that these wildlife resources do not become excessively impoverished or extinct. To this end, the Government has embarked on a wildlife conservation policy consisting of the establishment, development and scientific management of wildlife conservation areas to ensure the efficient utilisation of these resources for the economic, educational, social and aesthetic benefit of the people.

During the plan period, a National Wildlife Advisory Committee, comprising representatives of appropriate institutions and individuals, will be set up to advise on all aspects of wildlife policy and development. A national wildlife resource survey will be undertaken by the Department of Game and Wildlife to appraise the major factors of vegetation and animal life upon which wildlife resources of the country depend. This survey is expected to provide useful material for the future planning and management of the country's network of conservation areas.

Exploitation of wildlife resources.—There is an urgent need for a review of existing wildlife legislation to ensure an effective control of the exploitation and trade in wildlife products. Adequate provision will be made in a new legislation for the protection of endangered species; wildlife species that may be legally hunted or captured will be clearly spelt out in the law; suitable weapons and methods to be allowed in killing, hunting and capturing the animals will also be specified; and adequate penalties for breaches of the law will be provided. The Department of Game and Wildlife will be provided with adequate staff and the necessary equipment and vehicles to ensure the strict enforcement of the law.

It is noted that there is at present little control of the trade in wild animals, especially with regard to the species and the quantities which can be exported. The situation has to be checked through legislation to

prevent a possible destruction of the resource base. In the plan period, besides education of exporters and trappers, legislation governing the export trade will be re-examined in the light of International Conventions and trade agreements on wildlife signed by the Government

Expansion of bushmeat supply.—Meat from wild animals, largely bushmeat, provides an important source for supplementing the country's domestic supply of protein. The Department of Game and Wildlife has initiated a programme to help increase the commercial production of bushmeat on sustained yield basis. The programme consists mainly of providing interested people with a high-yielding breeding stock of grasscutters for breeding as well as offering the necessary extension services and research support to participants in the programme.

The Shai Hills Game Production Reserve is being developed especially to produce the breeding stock for the grasscutter breeding project. It is expected that the construction of cages by the Department will be stepped up to at least 500 per annum by the end of the plan period for distribution to participants in the programme. Grasscutter breeders in the Greater Accra, Eastern, Central and Ashanti Regions will be assisted by the Department to increase production. It is planned that the grasscutter breeding project will be expanded by embracing more participants, increasing the breeding stock and providing more staff, vehicles and other facilities required for effective extension and supporting services.

Public Education.—The successful implementation of Government's wildlife development programme will require the effective participation of the entire population of Ghana. This can only be achieved through a comprehensive public education programme aimed at educating both the young and old to appreciate the need for the conservation of the country's wildlife resources for the benefit of the present and future generations. Public education will also aim at creating the understanding that properly controlled hunting will help reduce the danger to life and property posed by animals, like the buffalo and elephant, when they become enraged as a result of being wounded while being hunted with inadequate weapons.

The public education programme to be undertaken during the plan period will include public lectures, radio and television broadcasts, extension services and formation of wildlife societies in the educational institutions, organised group excursions and tours of conservation areas. In addition, educative postcards, posters, pamphlets and brochures will be printed for wide distribution. The Ghana Film Industry Corporation has been requested to produce a short film on wildlife conservation in Ghana to be shown throughout the country. The execution of this programme will be undertaken by the Department of Game and Wildlife in close collaboration with the Ministry of Information, the educational institutions and interested societies and other bodies.

Promotion of Tourism.—As far as the touristic use of wildlife is concerned, increasing efforts will be made during the plan period to ensure that constraints which prevent the wildlife sector from playing an effective

role in Ghana's tourist trade are removed. At the moment recreational facilities in National Parks are inadequate to meet demand. In the plan period, the existing facilities will be expanded and appropriate provision made to cater for those parks that at present are lacking in them.

6.5. Development Programmes

It is estimated that Government's direct investment on the development of game and wildlife resources during the plan period will amount to about ₵19.0 million. Over 76 per cent of the investment, amounting to ₵14.5 million will be spent on constructional works, comprising residential and office accommodation, tourist facilities (such as motels and rest-houses), access roads, and water supplies. An amount of ₵1.7 million will be spent on the purchase of means of transport, ₵1.1 on equipment and furniture, ₵1.3 on training and ₵0.4 on miscellaneous items. Details of the investment programme are shown in Tables 3 and 4.

National Parks

National Parks are the conservation areas with the greatest potential for tourist use. In these areas, the programme is to provide tourist facilities and open them up for general recreational use while at the same time taking steps to guarantee the conservational integrity of the areas. Emphasis during the plan period will be placed on the development of existing parks into tourist centres through the provision of modern motels, chalets, restaurants and necessary infrastructure, such as roads, water, and electricity.

Resettlement of villages affected by the creation of the Digya and Bui National Parks will be completed during the plan period. Effective patrols will also be provided along the portion of the Digya Park bordering the Volta Lake as well as along the western boundary of the Bui Park overlapping the Ghana–Ivory Coast border.

Five other areas have been selected for further survey and investigations with the ultimate objective of being developed as national parks. These are:

(*a*) Cape Three Points
(*b*) Krokosua Game Reserve
(*c*) Boin Game Reserve
(*d*) Yoyo Game Reserve
(*e*) Ankasa Game Reserve
(*f*) Wli Falls Game Reserve

Investigations will also be continued along the coastline to select a suitable site for the establishment of a Marine National Park.

Game Production Reserves

Game Production Reserves serve not only as important areas for recreation and research but also as reservoirs for the production of game meat. During the plan period, existing reserves will be stocked with selected species of animals for game viewing and sport hunting. The Shai Hills Reserve will be particularly developed as a game ranch and also as the main seat of the Department's research work.

The main projects to be undertaken in the game reserves will include the construction of offices and laboratories, staff accommodation and scout camps, the provision of water, electricity, and roads. Priority will also be given to the provision of field and laboratory equipment for research work, transport, arms and ammunition for the mobility of staff and effective anti-poaching checks.

Wildlife Sanctuaries

Wildlife sanctuaries are mainly conservation areas where other bodies are permitted to have projects but strict protection of animals under reserve rules are in force. They are useful for educational and research purposes. The existing two sanctuaries, the Owabi and the Bomfobiri Wildlife Sanctuaries, are being developed particularly for wild fowl.

Major development projects to be undertaken in the sanctuaries, during the plan period include the construction of office and staff accommodation, roads, picnic and camping grounds.

Zoological Gardens

The country's two main zoological gardens stock and display a wide variety of animals. Emphasis during the plan period will be placed on the breeding of local endangered species of animals.

At the Kumasi Zoo, the drainage system is being improved and adequate security fencing being provided. Other projects envisaged are the construction of a crocodile pond, a laboratory and education centre, a bar, restaurant and play-ground complex.

In view of the limited space for the expansion of the Accra Zoo, a new site has been selected for development particularly as a Nature Park.

Wildlife Research Programmes

It is recognised that wildlife conservation impinges on many disciplines and that all professional officers of the Department must carry out some amount of research work for the effective management of conservation areas under their administration. Such work carried out in the Department since 1964 has shown the need for a strong wildlife research unit to support the country's wildlife service. Consequently, in the plan period the Department of Game and Wildlife will be reorganised to

incorporate a Wildlife Research Unit to be based at Shai Hills Game Production Reserve. The Unit will be equipped with permanently engaged research officers. It will have as its major laboratory the Shai Hills Game Production Reserve. In addition, it will set up small units in all National Parks and important wildlife areas of the country.

The present grasscutter domestication programme will be expanded and breeding stocks will be established by the Department to ensure proper selective breeding for litter size, growth rate, food conversion efficiency, and gestation length. Other research projects to be undertaken will include work on parasites and diseases, the biology, physiology and economics of meat producing wild animals as well as game species.

The unique thing about wildlife research work so far done in the Department is that unlike most of other wildlife research programmes elsewhere, the Department works on animals currently in use to find a scientific basis for expansion and improvement of their supply on sustained yield basis. Work carried out in some countries try to find out what can be, or may be developed for such purposes. Consequently, the research work of the Department has direct and immediate application, taking into consideration current and possible constraints in the application of research results that come out.

Other areas of investigation by the Research Unit will be as follows: plant and animal ecology, population dynamics, food web, seasonal movements and interspecific relations of game and their environment in order to determine short and long-term land-use policies, development and management of conservation areas; diseases of wild animals with particular reference to transmission between wild species and domestic stock-carcasses; analyses of meat production potential and development in wild animals including cropping, processing, storage and marketing techniques; comparison of productivity of wild lands with settled areas; experiments of domestication and "farming" of wild animals (as is being done with the grasscutter), control of destructive animals and pests. The Department will continue to co-operate closely with the Universities and other educational institutions, scientific research institutes, private societies and international bodies in the field of research and interchange of ideas.

A number of research projects which were started by officers of the Department in relation to their normal duties now require to be carried out into greater depth by research officers and students. The projects will continue as research priorities during the plan period. Other projects are expected to be initiated for ultimate transfer to the full time research officers of the Department. In this way, it is expected that work carried out in the Research Unit will be directly relevant to the needs of the Department and found to be of immediate application.

Ecological study of the Mole National Park

The main purpose of this project is to accumulate data on the habitat of the Mole National Park to enable a management plan to be drawn up for the overall development and management of the park. The study began in 1974 as a joint project between the Department and University of Aberdeen (Scotland) with the intention of making a more detailed study of the area. It is expected to continue throughout the plan period. It is also envisaged that similar projects will be initiated with interested Universities and institutes for other conservation areas.

Vegetation Survey of Shai Hills Game Production Reserve

Until 1971 when staff conditions improved for the protection of Shai Hills Game Production Reserve, the area, like its environ, had been subjected to over-grazing and repeated burning. With increasing protection and planned burning regime, the habitat is expected to change. Vegetation survey was instituted in 1972. The first report has been issued. Permanent slide and herbarium reference material which are currently being established will continue during the plan period. Storage and photographic recordings and code systems will be developed to monitor trends in habitat change which can be related to wild animals to be introduced.

Bushmeat Research Project

This project, began modestly in 1964 as a survey of the extent to which wild animals are used as source of animal protein in Ghana, became a permanent project in December 1968. Earlier results have already been published and Ghana is said to be unique in this field. The project aims at the identification of fauna in use, their breeding condition at the time of their capture, age and sex exploited. It also involves economic studies to determine such things as size of market, seasonality of supply and demand, price trends, and production costs. Studies undertaken by the Food Research Institute indicate that bushmeat compares favourably in composite and nutritive values with livestock. The analysis of the market study in collaboration with data provided by the Central Bureau of Statistics on domestic meat has proved that this source of meat is a useful complement to other sources of meat.

Manpower Training

The training programme envisaged covers the professional, technical and sub-technical staff. The training of professional and technical staff is undertaken primarily by local and foreign institutions, while sub-technical staff have been trained on-the-job supplemented with release and concentrated training at the time of selection for promotion. The training of all levels of staff will be intensified during the plan period.

Sub-technical staff training will be institutionalised to train supporting staff to assist the few professional officers. The number of professional staff trained at local and foreign universities will be increased through the award of Government scholarships and foreign technical assistance fellowships. Hitherto, seminars, conferences and team work with visiting scholars and expedition teams have been invaluable means of training staff at all levels. This will continue during the plan period and be supplemented with planned release of middle grade officers for local short courses. In all the training programmes, the order of priority will be:

(1) Pre-entry and in-service training

(2) Middle grade technical staff

(3) Professional and conversion of technical professional grade training

(4) Post-professional training

The importance of training and high priority given to it is based on the past experience of the very serious limitations set by lack of suitably qualified manpower for effective implementation of the necessary conservation measures required for the success of the national wildlife restoration programme which necessitated the creation of the Department of Game and Wildlife. It also takes into consideration the fact that wildlife management involves many disciplines.

TABLE 1

EXISTING WILDLIFE CONSERVATION AREAS BY TYPES

Type of Conservation Area	*Location*	*Date established*	*Area Covered*		*Remarks*
			Hectares	*Square Miles*	
1. NATIONAL PARKS					
(*a*) Mole Park ..	Damongo District in Northern Region	Nov., 1971	591,444	1,896	Park has the most developed facilities (e.g. a 100-bed motel and a workshop). It remains open throughout the year.
(*b*) Digya Park ..	Western shores of Volta Lake over parts of Ashanti and Brong-Ahafo Regions	Nov., 1971	312,596	1,200	Park is still being developed and therefore closed to general public. Resettlement of people in affected villages being undertaken.
(*c*) Bui Park	Parks of Wenchi District (Brong-Ahafo Region) and Bole District (Northern Region) overlaps Ghana-Ivory Coast border ..	Nov., 1971	207,360	800	Resettlement of people still going on. Swimming and angling are among sporting activities visitors can enjoy.
(*d*) Bia Park	Sefwi-Wiawso District in Western Region	Jan., 1974	30,586	118	Park has no resettlement problem. Facilities are not yet developed and therefore park is closed to general public.
2. GAME PRODUCTION RESERVES					
(*a*) Gbele Reserve ..	Tumu/Wa District in Upper Region ..	June, 1975	54,650	211	Reserve being developed for game meat production and sport hunting.
(*b*) Kalakpa Reserve	Ho District in Volta Region ..	June, 1975	32,400	125	Reserve being developed for bushmeat production and sport hunting.
(*c*) Shai Hills Reserve	Osudoku District in Greater Accra Region	Nov., 1971	5,444	21	Reserve being developed for bushmeat production and research.

TABLE 1—contd.

EXISTING WILDLIFE CONSERVATION AREAS BY TYPES

Type of Conservation Area	*Location*	*Date Established*	*Area Covered*		*Remarks*
			Hectares	*Square Miles*	
3. STRICT NATURE RESERVE					
(*a*) Kogyae Nature Reserve	Sekyere District in Ashanti Region	Nov., 1971	32,400	125	Reserve being developed primarily for research.
4. WILDLIFE SANCTUARIES					
(*a*) Owabi Sanctuary	Kumasi District in Ashanti Region	Nov., 1971	7,258	28	Being developed as a wild fowl sanctuary and for research.
(*b*) Bomfobiri Sanctuary	Mampong District in Ashanti Region	June, 1975	5,315	20	Being developed for game meat production and research.
5. ZOOLOGICAL GARDEN					
(*a*) Accra Zoo ..	Flagstaff House, Accra in Greater Accra Region	1961	8 acres	—	It started as a private zoo. Has limited space for expansion. Site being selected for a new zoo in Accra.
(*b*) Kumasi Zoo ..	Near Kejetia at Kumasi in Ashanti	1957	8 acres	—	Perimeter fencing and drainage construction being completed.

TABLE 2

REVENUE FROM WILDLIFE SOURCES, 1970–75

Item	1970–71	1971–72	1972–73	1973–74	1974–75
Sale of animals and trophies ..	1,608.60	6,600.50	6,797.70	13,637.76	8,267.52
Motel and rest-house charges ..	6,199.50	1.805.00	8,976.10	6,977.50	10,914.36
Guide and transport	2,021.60	5,092.10	4,011.25	3,479.10	4,381.00
Gate proceeds (zoos)	13,061.15	13,235.55	21,986.25	16,686.29	20,886.75
Game licences*	N.A.	60.00	1,025.00	1,705.00	4,450.00
Export permits	—	1,628.00	1,062.90	1,055.00	1,305.00
Workshop charges	—	—	325.30	322.00	756.00
Total	22,890.85	28,421.15	44,184.50	43,872.65	50,960.63

*Some Game Licences are issued by the Ghana Police Force and these are not accounted for in this Table.

TABLE 3

PROJECTED EXPENDITURE FOR THE GAME AND WILDLIFE DEPARTMENT DURING THE PLAN PERIOD (IN CEDIS)

	1st Year	*2nd Year*	*3rd Year*	*4th Year*	*5th Year*	*Sub-Total*
1. CONSTRUCTION						
(i) Access roads and tracks	537,000	509,000	688,000	455,000	400,000	2,629,000
(ii) Fences and Pillars and Game Production Reserves	139,000	148,000	100,000	28,000	—	415,000
(iii) Residential accommodation (staff quarters, bungalows, camps for Game Scouts)	467,000	936,000	1,053,000	1,056,000	688,000	4,200,000
(iv) Office accommodation/laboratories	250,000	1,085,000	1,850,000	950,000	—	4,135,000
(v) Schools for children of staff	58,000	32,000	76,000	78,000	82,000	326,000
(vi) Water supplies	93,000	76,000	101,000	50,000	32,000	352,000
(vii) Tourist facilities (Hotels, motels, chalets, swimming pools)	360,000	708,000	765,000	454,000	200,000	2,487,000
Total Construction	1,904,000	3,494,000	4,635,000	3,071,000	1,442,000	14,544,000
2. VEHICLES						
(i) Trucks	122,000	154,000	94,000	120,000	110,000	600,000
(ii) Land Rover/Pickups	137,000	78,000	100,000	150,000	—	465,000
(iii) Mini-buses	40,000	50,000	83,000	90,000	120,000	383,000
(iv) River craft, barges, boats	9,000	9,000	99,000	30,000	60,000	207,000
Total Vehicles	308,000	291,000	376,000	390,000	290,000	1,655,000
3. EQUIPMENT						
(i) Equipment for hotels, restaurants	—	—	70,000	85,000	15,000	170,000
(ii) Office equipment	43,000	43,000	86,000	68,000	85,000	325,000
(iii) Scientific equipment (laboratory equipment and instruments)	10,000	55,000	17,000	10,000	43,000	125,000
(iv) Cameras and cinema projector	10,000	20,000	25,000	25,000	10,000	90,000
Total Equipment	63,000	118,000	224,000	195,000	110,000	710,000
Total Carried Forward	2,275,000	3,903,000	5,233,000	3,656,000	1,842,000	16,909,000

TABLE 3—contd.

PROJECTED EXPENDITURE FOR THE GAME AND WILDLIFE DEPARTMENT DURING THE PLAN PERIOD (IN CEDIS)

	1st Year	*2nd Year*	*3rd Year*	*4th Year*	*5th Year*	*Sub-total*
Total brought forward	2,275,000	3,903,000	5,233,000	3,656,000	1,842,000	16,909,000
4. FURNITURE						
(i) Camp Furniture	—	20,000	15,000	—	—	35,000
(ii) Cages, holding pens for animals	30,000	90,000	125,000	92,000	68,000	405,000
Total Furniture	30,000	110,000	140,000	92,000	68,000	440.000
5. MANPOWER TRAINING	178,000	310,000	410,000	288,000	146,000	1,332,000
6. MISCELLANEOUS						
(i) Firearms, chemicals, food	25,000	33,000	33,000	40,000	10,000	141,000
(ii) Restocking	20,000	70,000	50,000	50,000	20,000	210,000
(iii) Production of films, pamphlets, postcards	20,000	20,000	7,000	1,000	1,000	49,000
Total Miscellaneous	65,000	123,000	90,000	91,000	31,000	400,000
Grand Total	2,548,000	4,446,000	5,873,000	4,127,000	2,087,000	19,081,000

TABLE 4

FIVE-YEAR DEVELOPMENT PLAN (1975–80)

SUMMARY OF MAJOR CONSTRUCTIONAL WORKS TO BE UNDERTAKEN IN VARIOUS WILDLIFE CONSERVATION AREAS

Conservation Area	Constructional Projects							
	Motel Complex Rest-houses	*Bungalows*	*Junior Staff Quarters*	*Scout Camps*	*Block of Offices*	*Roads Miles*	*School Block*	*Petrol Station Workshop*
A. National Parks								
1. Mole National Park	3	—	45	16	1	140	1	2
2. Digya National Park	1	9	50	30	1	278	—	1
3. Bui National Park	1	6	20	25	—	180	—	1
4. Bia National Park	1	6	8	20	1	200	—	1
Total National Parks	6	21	123	91	3	798	1	5
Proposed Parks								
1. Krokosua	—	2	1	10	1	40	—	—
2. Boin	—	1	1	2	—	—	—	—
3. Cape Three Point	—	—	—	2	—	—	—	—
4. Yoye	—	1	1	2	—	—	—	—
5. Ankasa	—	1	1	3	—	—	—	—
6. Wli Falls	1	2	2	3	—	10	—	—
Total Proposed Parks	1	7	6	22	1	50	—	—
B. Game Production Reserves								
1. Gbele	—	2	6	20	1	100	—	—
2. Kalakpa	—	2	6	20	1	120	—	—
3. Shai Hills	—	5	20	6	1	50	1	—
Total Game Production Reserves	—	9	23	46	3	270	1	—

CHAPTER 7

EDUCATION

7.1 Introduction

The pivotal role that education plays in the social, cultural and economic development of a nation cannot be over-emphasized. In a developing country manpower constitutes a key resource which has to be developed fully, in order to assure its fullest and most productive utilisation in all aspects of nation building. Education is also the main instrument for ensuring the effective participation of the masses of the people in productive life.

As a direct investment in human capital, education is the principal instrument for providing the skills required by the economy and also for improving the overall levels of the efficiency, productivity, technological and managerial performance of the labour force.

As a consumer good, education helps to improve the quality of life by giving the citizen access to new dimensions within his environment, as well as making life more meaningful to him. A minimum basic level of educational opportunities for consumptive purposes as well as a base upon which further development could be planned must be accepted in any development strategy.

Government, therefore, regards education, properly directed, as a major form of investment. It follows from this that access to minimum basic educational facilities, including a level of functional literacy, should be a fundamental birth right of every citizen of the country. The first claim on available resources earmarked for this sector should, therefore, go to equalise educational opportunity at this minimum level—that is up to Junior Secondary School level.

In our present situation, Government's involvement in further education and training beyond the "social minimum" level, should be selective and progressively favour the improvement, both quantitatively and qualitatively, of knowledge and skills necessary for promoting our economic, social and cultural development. Since beyond this minimum level, both the beneficiary and the nation stand to gain directly in improved income, productivity and growth, some partnership in the sharing of educational costs will have to be carefully worked out.

7.2 The Current Education System

The present pre-university education system in Ghana consists of six years primary schooling starting at age six, followed by four years middle schooling. These ten years of elementary education are free and theoretically compulsory. In 1961 it was decided that these ten years of education should be free and compulsory. So far it has been possible to

give tuition free education only at this level; it has not been possible to enforce the compulsory element. Promotion from Primary Six to Middle Form 1 is automatic. Entry to secondary schools in the public system is by competitive examination, the Common Entrance Examination, which in a few cases is sat in Primary 6 and in the majority of cases in any grade of the middle school. The chances of elementary school pupils getting into secondary schools are at present about one in seven (about 15 per cent), the majority of whom do so from Middle Form 2, Middle Form 3 and Middle Form 4. The Secondary School course is of five years duration at end of which the West African Examinations Council School Certificate Examination is taken. The percentage of passes in this examination is 75 per cent of whom approximately 30 per cent gain admission to 2-year Sixth Form Course to G.C.E. 'A' Level.

At the end of the middle school there is a Middle School Leaving Certificate Examination taken in Middle Form 4 by those who have not moved on via Common Entrance to Secondary Schools. In order to make middle school education more meaningful for this large majority, the Continuation courses of two years' duration were introduced in the middle schools focussed on the teaching of practical subjects.

Entry to technical institutes for craft courses and to commercial colleges is open to Middle Form 4 candidates who have successfully gone through the Common Entrance Examination.

There is also a separate entrance examination, the Combined Examination for entry into four-year teacher training colleges and for Pupil Teachers' Selection, taken at the end of Middle Form 4 for entry to 4-year teacher training colleges for the initial training course leading to Certificate 'A'.

Successful Secondary School Leavers from Form 5 can also enter teacher training for a 3-year Post-Secondary Course, or may pursue technician courses at the Polytechnics, or enter other vocational training institutes.

7.3 Problems of Bottlenecks in the present Educational System

To meet the increasing demand for education there has been a phenomenal expansion of the educational system at all levels in the last two decades. There have been corresponding increases in public outlays, which now stand at about 30 per cent of the total Government annual expenditure. Relevant tables on current and projected enrolment at the various levels of the educational system are indicated in the Appendices I to IV.

To illustrate the magnitude of educational expansion it may be stated that in the academic year 1973–74 enrolment in the various levels of the educational system totalled 1,599,789, of which 1,014,964 were in primary, 440,065 in middle, 72,036 in secondary, 12,800 in technical, 14,299 in teacher training institutions and 5,625 in the universities.

Education at the primary and middle school levels suffer seriously from the limited number of places available as compared with the size of the school-going population, the lack of adequate facilities in a large number of the existing schools, disparities in the distribution of facilities as between regions, unwieldly class sizes in the urban areas, resulting in poor teaching and inadequate in-service training opportunities for teachers. The relevance of the curriculum has also been questioned.

Secondary school education also suffers from poor and inadequate facilities especially for science teaching, and inequalities in the distribution of these facilities among schools and among regions. Admission levels are too low in terms of the numbers seeking secondary school education, while undue emphasis seems to be placed on the grammar school type of education. There is also a tendency in some schools to introduce specialisation at too early an age. The problems of technical and vocational education are similar to those mentioned above. There is a dearth of qualified and trained teachers; equipment is either inadequate or obsolete; and training in many cases is not related to the needs of the straining economy. Teacher education also suffers from lack of adequate numbers of good quality teachers, including specialists, and poor physical facilities.

University and higher education is plagued by the high cost of training students, the predominance of arts and social science students, inflexibility in the available subject options, failure to place emphasis on the areas that are relevant to the manpower needs of the economy, the absence of effective co-ordination between research departments of universities and higher research institutes and implementing agencies, both government and private, and the lack of alternative openings for higher education outside the universities.

7.4 Major Objective of Educational Policy

The major objectives of Ghana's educational policy are:

(1) To expand and consolidate facilities for education so as:—

(i) to increase progressively the intake of children of school going-age so that, by the end of the plan period, every child of school going-age has access to at least basic formal education that is, up to the Junior Secondary School level;

(ii) to provide for as many of the adult population as possible facilities for adult education;

(2) To reform the structure and content of general education so as to make it much more employment-oriented and thus correct the present mismatch between the pattern of educational output and the available job opportunities;

(3) To make the educational system more positively responsive to the manpower needs of the country;

(4) To strike the right "mix" between education as a consumer good and education as an investment in "human capital";

(5) To correct the present imbalance and disparity in the distribution of educational facilities in the country;

(6) To ensure that both the private and public sectors follow one structure and content of education;

(7) To raise the quality of the teacher and of teaching in our educational institutions; and

(8) To rationalize the administration, planning, co-ordination and financing of education with the objective of achieving economy and efficiency.

7.5 The New Educational System and Action in the Plan Period

To solve the problems mentioned above and to ensure the relevance of education to the needs of the economy, the Government, as from September 1974, introduced the new educational system which comprises:

(1) Kindergarten education of 18 to 24 months duration for the age group 4–6.

(2) Basic first cycle education comprising six years primary plus three years Junior Secondary.

(3) Second Cycle Education—from the Junior Secondary Course there will be selection into the following terminal courses:

(i) Senior Secondary Lower Course (School Certificate/"O" Level of two years duration;

(ii) Technical courses of two years duration; or

(iii) Commercial courses of two years duration

(iv) Pupils completing (i), (ii), (iii) above who wish to continue formal education and possess the necessary qualifications can proceed to:

(*a*) A Senior Secondary Upper Course of two years duration leading to the "A" Level.

(*b*) A Teacher Training Course of three years duration, or

(*c*) Polytechnic Courses of one to four years duration.

The significance of the new structure and content of education for Ghana is that it reduces the length of time taken by the average Ghanaian child from elementary school to the end of secondary education by four years. Secondly, the new structure has a large practical content which aims at equipping the individual with skills which will not only make him useful as a citizen, but are also relevant to the economic development needs of the country.

The courses at the various levels have been so structured as to reflect fully the basic principles and objectives underlining the new reforms. The study of languages, mathematics, science, agriculture and practical and vocational subjects has been given the greatest emphasis and pupils will be expected to participate fully in cultural activities, youth programmes and in sports and games.

7.6 Implementation of the New Structure

The implementation of the new structure and content of education for Ghana started with the intake into Primary 1 in September, 1974. It is expected that by the end of the five-year plan period the first intake into Primary 1 under the new education structure would have completed Primary 6 and would be getting ready to enter Junior Secondary Form 1 in September 1980. It is important to state that during the plan period significant sections of the old structure, namely, the middle school section will run concurrently with the new and will begin to phase out from the end of the plan period. The Junior Secondary Schools will begin to replace the middle schools as from September, 1980. The phasing out of the middle schools will be completed at the end of the 1982–83 academic year as indicated below.

TABLE 1

THE INTRODUCTION OF JUNIOR SECONDARY SCHOOLS AND THE PHASING OUT OF MIDDLE SCHOOL CLASSES, 1980–81 TO 1982–83

Year	*P1*	*P2*	*P3*	*P4*	*P5*	*P6*	*M1/ JS1*	*M2/ JS2*	*M3/ JS3*	*M4*
1974–75 ..	255,930									
1975–76 ..		222,659								
1976–77 .			211,526							
1977–78 .				200,950						
1978–79 .					192,912					
1979–80						187,125	Last M1			
1980–81 .							JS1	Last M2		
1981–82 ..								JS2	Last M3	
1982–83 ..									JS3	Last M4

7.7 Nursery and Kindergarten Education

Education at this level has been in the hands of the Ghana Education Service, the Department of Social Welfare and Community Development, local communities, private individuals and organisations. The main thrust of Government policy during the plan period will be to encourage the establishment of Nursery and Kindergarten institutions by private and voluntary organisations. The Government will however, maintain the nine Nursery and Kindergarten Institutions and one Nursery Training Centre already established by the Ghana Education Service for demonstration and training purposes. These institutions are located in the following places: Accra, Cape Coast, Sekondi, Kumasi, Sunyani, Tamale, Bolgatanga and Ho.

It is planned to spend a total of ₵460,000 in completing the three Nursery and Kindergarten projects already started in Sekondi, Kumasi and Accra.

7.8 Primary and Middle Education

Since 1960, Ghana has made great strides in the provision of primary educational facilities. Enrolment in primary schools has grown from 642,292 in 1961–62 to 1,014,012 in the 1974–75 academic year, representing a percentage increase of 57.0, though this growth has not been uniform between the regions. However, in spite of this impressive achievement, about 30 per cent of the children of school-going age are still not in school although there are places, particularly in the rural areas, where facilities in the existing schools are under utilised. It is the government's intention to improve this situation by working towards the progressive attainment of universal primary education. Enrolment in primary one will be increased from the 1974–75 figure of 223,701 to 334,489 by the end of the plan period, thereby, embracing 79.00 per cent of children of school-going age. By the end of this period, the total primary school enrolment is expected to have increased from 1,051,012 to 1,468,265. This will involve the opening of 440 primary schools throughout the country during the 5-year period. Of these 60 will be opened in the Northern and Upper Regions and parts of Brong-Ahafo at a total cost of ₵1.8 million to the central government. It should be noted that in the rest of the country the responsibility for the building and equipment of primary and middle schools rests with the Local Authorities.

TABLE 2

ENROLMENT PROJECTIONS FOR PRIMARY 1
1974–75—1979–80

Year	*Projection of 6 Years Old*	*Primary 1 Enrolment*	*Participation Rate %*
1974–75	367,727	223,701 (Actual)	60.83
1975–76	377,656	270,006	71.5
1976–77	387,853	284,856	73.4
1977–78	398,325	300,523	75.5
1978–79	409,080	317,052	77.5
1979–80	420,125	334,489	79.0

With regard to middle school education, enrolment has equally been impressive having risen from 184,292 in 1961–62 to 439,655 in 1974–75. To redress the imbalance in the regional distribution of schools and also to improve the chances of primary school leavers gaining admission into middle schools, school places will be increased through the building of 400 middle schools to admit 531,729 pupils by the end of the plan period. Of these middle schools 60 will be built in the Northern and Upper Regions and parts of Brong-Ahafo at a total estimated cost of ₵1.5 million to the central government. The 400 middle schools will eventually be converted into Junior Secondary Schools through the provision of the basic minimum facilities at a total cost of ₵14,630,000.

To improve the quality of teaching at the primary and middle school levels, staffing of primary and middle schools will be strengthened by the progressive replacement of pupils teachers by trained teachers and the upgrading of serving teachers through in-service training. In addition, the supervisory services at the primary and middle school levels will be strengthened in order to ensure that officers of the Inspectorate Division of the Ghana Education Service inspect and visit schools more regularly.

Further, education at the primary and middle school levels will be progressively given a vocational orientation to ensure employability. In this connection, it is planned to build more Home Science, Vocational, Woodwork, Art and Crafts and Science Centres and also to establish Teachers Resources Centres in each education district.

7.9 Continuation Schools

These schools were devised to predispose children in middle schools to practical skills that would facilitate their further development and thus improve their chances of employment, The continuation school courses embrace the study of practical, technical, domestic and vocational subjects in addition to general education subjects. The objective is that particular bias of any school operating continuation classes should be related to the kind of occupation generally followed within the school district. 700 schools out of the present 3,760 schools have continuation classes and it is proposed to add about four schools to the programme each year in each of the 62 education districts in the country, i.e. 248 schools a year totalling 1,240 additional continuation schools by the end of the plan period.

Currently there are 108 Woodwork Centres and five Science Centres in the country which serve a total of 378 schools. It is expected that wherever the continuation schools are, they will form the basis of the proposed Junior Secondary Schools, i.e., their facilities, including workshops and Science Centres, will be taken over for use by the proposed Junior Secondary Schools which will come into being as from the beginning of the academic year 1980–81. The total cost to the government of converting the 1,240 middle schools into continuation schools during the plan period and thereby making them suitable for use as Junior Secondary Schools as from September, 1980 will be ₵45,540,000.

NOTE

Basis for the calculation.—Number of middle schools to be converted into continuation schools will be 1,240:

Number of middle schools to share a Centre will be three.

The total number of Centres to be established is 414.

The estimated cost of constructing and equipping workshops. home science block and science laboratories is as follows:—

	₵
(1) Workshops (2-units—woodwork and metal work)	40,000
(2) Home Science block	20,000
(3) Converting classroom into science laboratory (fittings)	5,000
Total	65,000

Equipment	*Estimated Cost*
Science laboratory	5,000
Home Science	10,000
Metal workshop	20,000
Woodwork	10,000
Total	45,000

Total estimated cost of one Centre to serve three schools ..	110,000
Therefore total estimated cost of 414 Centres to serve 1,240 middle schools	45,540,000

It should be noted that the above are the minimum facilities required for the teaching of practical subjects and science subjects only. They do not constitute the basic minimum facilities required for converting a middle school into a Junior Secondary School. The basic minimum facilities referred to above include science laboratory, workshop, Home Science, library, store, improved office for Headmaster, staff common room, toilet.

It is proposed to implement the continuation school programme during the plan period as indicated in the following table.

TABLE 3

IMPLEMENTATION OF THE CONTINUATION SCHOOL PROGRAMME

Year	*No. of middle schools to be converted*	*No. of middle schools sharing a Centre*	*No. of Centres to be built*	*Estimated cost of building and equipping Centres*
				¢
1975–76	—	—	—	—
1976–77	312	3	104	11,440,000
1977–78	309	3	103	11,330,000
1978–79	312	3	104	11,440,000
1979–80	309	3	103	11,330,000
Total				45,540,000

Pre-vocational subjects being taught currently by the continuation schools including such practical subjects as agriculture (including poultry and livestock), fishing, home science, metal work, woodwork, wood carving, pottery, adinkra cloth-making, tie and dye, hair-dressing, catering, canework, and fret work. While the programme in each school district will reflect the economic activities of the area, the children will be taught the economic factors that aid production and marketing of products e.g. banking facilities, transportation and co-operative activities. It is also intended to modify the existing programmes in certain important respects. First, the pre-vocational courses will start from Form I of the middle schools participating in the programme instead of at Form 3 as at present. Second, the range of courses covered by the continuation schools will be extended during the plan period to cover such subjects as vulcanising, auto mechanics, plumbing, welding, electrical repairs, black-smithing and draughtsmanship. The main bottlenecks in the programme are lack of qualified teachers and shortage of funds for building workshops and for the purchase of equipment. Although there are no qualified teachers for the crafts, resource personnel drawn from local sources as instructors have so far served well. It is, however, planned to use the new teacher training programme as an instrument for training the corps of teachers required for this programme. Until the products from the training colleges become available, the employment of local craftsmen as teachers of weaving, leatherwork and other traditional skills will after a period of induction, continue.

An evaluation exercise which is being currently undertaken has given indications that woodwork, masonry, poultry farming, tailoring, sewing, leatherwork involving shoe and handbag making and weaving are popular.

Follow-up studies of past pupils of the programme also seem to indicate that a few of those that have been so far identified have settled down and are working on their own. Some have found employment in already established firms and quite a number have gained admission into technical institutes. The preliminary investigations indicate that the programme is viable and can be easily incorporated into the Junior Secondary School programme.

7.10 Junior Secondary Schools

In the new education structure, the middle school education programme is replaced by a 3-year Junior Secondary School. The Junior Secondary School course is both terminal and continuing. At the end of the Junior Secondary School programme there will be a school leaving examination which will also be used for selecting candidates for admission into the Senior Secondary Lower. Those who do not continue with their formal education can enter the world of work. Those who continue their formal education can proceed to (*a*) the Senior Secondary Lower which will be of 2 years' duration and lead to the School Certificate 'O' level or (*b*) Technical or Commercial institutions.

The curriculum for the Junior Secondary School course will comprise academic, cultural, technical and vocational subjects.

The present middle school programme will begin to phase out as from the beginning of the 1980–81 academic year and will be completely replaced by the Junior Secondary School at the end of the 1982–83 academic year. To enable the Junior Secondary School programme to start as planned in September, 1980, it is proposed to develop the middle schools through new building programme and the provision of the requisite equipment to make them suitable for conversion into Junior Secondary Schools. This programme of conversion will be spread over a period of ten years. The first phase of the programme involving the conversion of middle schools into Junior Secondary Schools will be undertaken during the period of this five-year development plan and will involve the provision of such basic minimum facilities as workshops, Home Science blocks and science laboratories, including the relevant equipment required for the teaching of science and technical/vocational subjects only. The programme of conversion and the estimated cost during the five-year plan period is as shown in the table 4 below.

CONVERSION OF MIDDLE SCHOOLS INTO JUNIOR SECONDARY SCHOOLS, 1975/76–1979/80

Year	NO. OF MIDDLE SCHOOLS WITHOUT WORKSHOP				NO. OF CENTRES/LAB. TO BE BUILT			ESTIMATED COST OF BUILDING AND EQUIPPING A CENTRE/LABORATORY			ESTIMATED TOTAL COST OF BUILDING AND EQUIPPING A CENTRE/LABORATORY			
	Workshop	Home Science	Science Laboratory	No. of Schools sharing a Centre	Workshop	Home Science	Science Laboratory	Workshop	Home Science	Science Laboratory	Workshop	Home Science	Science Laboratory	Grand Estimated Total Cost
								€	€	€	€	€	€	€
1975–76	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1976–77	540	375	630	3	180	125	210	70,000	30,000	10,000	12,600,000	3,750,000	2,100,000	18,450,000
1977–78	540	375	630	3	180	125	210	70,000	30,000	10,000	12,600,000	3,750,000	2,100,000	18,450,000
1978–79	531	375	627	3	177	125	209	70,000	30,000	10,000	12,390,000	3,750,000	2,090,000	18,230,000
1979–80	531	375	627	3	177	125	209	70,000	30,000	10,000	12,390,000	3,750,000	2,090,000	18,230,000
Grand Total	2,142	1,500	2,514	—	714	500	838	—	—	—	49,980,000	15,000,000	8,380,000	73,360,000

It must be noted that under the continuation schools programme (which will phase into the Junior Secondary Schools) the following facilities have been provided:—

(1) 378 Middle Schools are served by 108 workshop centres.
(2) 1,020 Middle Schools are served by 610 Home Science centres.
(3) 5 Middle Schools are served by 5 Science Laboratories.

Another 1,240 Middle Schools will be provided with Workshop, Home Science and Science Centres under the continuation schools programme during the Five-Year Plan period.

It is expected that the remaining basic minimum facilities such as library, store, improved office for the Headmaster and staff common room, which cannot be provided in the first phase of the programme for conversion of middle schools into junior secondary schools because of their cost implications, will be provided in the second phase of the programme during the next plan period. The total cost of providing these facilities according to present day prices will be about ₵83 million and was arrived at as follows:

	₵
Estimated cost of Library	10,000
Estimated cost of Staff Common Room ..	5,000
Estimated cost of improved Headmaster's office	2,000
Estimated cost of store	5,000
Total estimated cost of basic minimum facilities	22,000
Estimated cost of providing the existing 3,760 middle schools with the above facilities..	82.720,000
The estimated cost of providing the 400 new middle schools opened during the plan period with the above facilities ₵8 million. The total estimated cost of providing 4,160 middle schools with the above facilities will be	91.520,000

7.11 Education for the Handicapped

There are at present in the public system of education, eight schools for the deaf, two schools for the blind and the home and school for mentally retarded children. These institutions have an overall total enrolment of 937 made up as follows:

(*a*) Schools for the Deaf .. .. 599 pupils
(*b*) Schools for the Blind .. .. 182 pupils
(*c*) The Home and School for Mentally Retarded Children .. .. 156 pupils

During the plan period the existing institutions will be consolidated and their facilities improved upon. In addition, two of the schools, namely, the Home and School for Mentally Retarded Children in Accra and the Volta School for the Deaf at Hohoe, will be rehoused. A central Audiological Clinic will be built at Mampong Akwapim to provide audiological services on a national basis. The cost to the government of these projects has been estimated at ₵1.5 million for the five-year period.

At present, the schools for the Handicapped provide only elementary and limited vocational education. By the end of the plan period, these schools will provide full vocational education. It is planned that the Demonstration School for the Deaf at Mampong, Akwapim will, in addition, provide with effect from September, 1976 secondary education for all deaf children who can benefit from it at a cost of ₵230,000.

7.12 Secondary Education

Impressive gains have been made in secondary school enrolment since the early 1960s. Between 1966–67 and 1973–74, enrolment increased from 42,276 to 72,036, representing a percentage increase of 78.2. But these gains have been made in the face of severe physical and financial constraints and bottlenecks.

During the plan period, therefore, steps will be taken to remove these constraints and expand secondary school education to meet the growing requirements of the nation in terms of middle and higher level manpower as well as the needs of the universities, teacher training colleges and technical institutes. It is proposed to improve the opportunity of the elementary school leaver getting a secondary school place by opening 40 new secondary Form 1 classes each year to absorb about 1,460 pupils. This means that during the plan period about 7,300 additional children will be admitted to secondary schools thus raising the total secondary school population from 69,397 in 1973–75 to 101,999 in 1979–80.

To ensure that new secondary schools opened are viable units, each secondary school will initially start with two streams. Of the 40 new Form One classes which will be opened during each year of the plan period, ten will constitute the nucleus of five new secondary schools to be opened each year in areas which are under-provided or deprived while the remaining 30 will be allocated for the expansion of the existing secondary schools. The facilities of phased out training colleges will be used in establishing new secondary schools. In addition, the facilities of private and community secondary schools will be brought into the public system in order to reduce the cost to government of putting up new secondary schools. It is estimated that it will cost the government a total of ₵10 million during the plan period to add to and improve upon the facilities of these new schools.

This programme of expansion aims at increasing not only the level of enrolment in our secondary schools and thus increase the proportion of elementary school pupils entering secondary schools from the present level of 21.1 per cent to 26.6 per cent in September, 1979, but also at reducing the imbalance in the distribution of secondary school facilities among schools and regions. The expansion programme will also increase the prospective annual output of the secondary schools ('O' Level) from 11,227 in 1974–75 to 15,784 in 1979–80.

TABLE 5

PROPORTION OF ELEMENTARY SCHOOL LEAVERS GAINING FORM 1 SECONDARY SCHOOL PLACES IN THE PUBLIC SYSTEM

Year	*Pupils Eligible for Secondary Schools*	*Pupils who Actually take the Entrance Examination*	*Secondary Form 1 Intakes*	*Getting S.1 Places*
1974–75	439,655	77,784	16,439	21.1
1975–76	543,724	80,273	18,250	22.7
1976–77	468,243	82,842	19.710	23.8
1977–78	483,226	85,493	21,170	24.8
1978–79	498,689	88,229	22,630	25.6
1979–80	514,647	91,052	24.090	26.6

Note. Pupils in M1, M2, M3, M4 and Primary 6 (in some few schools) are eligible to take the Common Entrance Examination for admission into secondary schools.

Percentage of pupils getting secondary Form 1 (S.1) places is based on the number of pupils who actually take the Common Entrance Examination.

Apart from the opening of 40 Form One classes each year, the main thrust of Government policy at this level of education will be on the rehabilitation and consolidation of the existing secondary schools. In line with this policy, it is planned to rehouse every year as from the 1976–77 financial year 10 of the existing schools which are in poor or temporary premises, i.e. a total of 40 schools during the plan period at a total estimated cost of ₵50 million. (Please see Appendix VIII for the list of schools to be rehoused.) In addition the facilities in 40 of the existing secondary schools will be added to and improved upon at a total estimated cost of ₵9 million.

In all it is expected that the Government will spend a total of ₵69 million during the plan period on the building of new secondary schools and the rehabilitation and consolidation of existing schools. Increased emphasis will be placed on the provision of such basic facilities as classrooms, science laboratories, dormitories (for existing boarding schools in the rural areas) and staff houses. The Government will continue with its policy of providing equal facilities for secondary education throughout the country. To achieve this, it is intended that the distribution of secondary schools should continue to reflect the country's overall population distribution. As a means of reducing the cost of secondary school education both to the Government and to the parent, emphasis will be placed as far as possible on the provision of day secondary schools especially in the urban areas.

TABLE 6

SECONDARY SCHOOL FORM FIVE OUPTUT SHOWING THE NUMBER THAT ENTER VARIOUS INSTITUTIONS OR JOIN THE LABOUR FORCE

Year	*Secondary 5 Output*	*6th Form Intake*	*Post Sec. Teacher Tr. Intake*	*Intake to other institutions, nursing, polytechnics, Agric.,etc.*	*Output entering labour market*
	(actual)	(actual)			
1974–75	11,227	2,662	1,366	1,909	5,290
1975–76	11,535	3,083	2,950	1,961	3,541
1976–77	12,335	3,576	2,950	2,097	3,712
1977–78	13,265	4,069	2,950	2,255	3,991
1978–79	14,528	4,643	2,950	2,469,	4,466
1979–80	15,784	5,375	2,950	2,683	4,766

7.13 Sixth Form Schools

The Government will embark on a programme of Sixth Form expansion to provide more places for the increasing number of students completing Fifth Form courses. Out of the 9,546 Fifth Formers who sat the School Certificate Examination in June, 1974, 2,662 (28 per cent) pupils gained admission to the Lower Sixth Form. It is intended progressively to increase this intake to provide for the high and middle level skills required by the economy. Sixth Form places will, therefore, be increased during the plan period from the present Lower Sixth Form enrolment of 2,662 to 5,375 in 1979/80. This will involve the opening of 28 Sixth Form classes each year—a total of 140 classes by 1979/80. Since in all cases Sixth Forms are physically part of secondary schools, the cost of expansion envisaged at 6th Form level has been included in the estimated cost of expanding secondary schools during the plan period. Increased attention will be given to the expansion of the number of Science and Mathematics places as well as the building and equipment of new science laboratories. In line with this objective, the Government is undertaking the construction of a Sixth Form College of Science and Mathematics which will have a maximum enrolment of 600 at an estimated cost of ₵5,457,000. This college which is sited next to the Presbyterian Secondary School, Legon, is intended to increase the production of Sixth Formers with Science and Mathematics qualifications.

It should be noted that the Sixth Form is both terminal and continuing. Those Sixth Formers who satisfy the admission requirements at the 'A' level Examination can proceed to (*a*) the universities for both academic and professional training, and (*b*) the polytechnics and other

vocational institutions for high level courses in mechanical, electrical and building engineering, accountancy, secretaryship, etc. Opportunities also exist for professional and vocational training in such institutions as the Nurses Training Colleges and the Specialist Training College (Winneba)

7.14 Curriculum of Secondary Schools

The curriculum of the secondary schools, including sixth forms, will continue to be diversified through the inclusion of such practical subjects as agriculture, electronics, applied electricity, home economics, business studies and technical subjects including woodwork, metal work, catering, dress-making and technical drawing to improve the chances of school leavers securing employment.

The science content of the secondary school curriculum will be enlarged and its teaching intensified. To accomplish this, it is proposed, during the plan period to embark on a special programme to provide all secondary schools in the public system with adequate science laboratories and equipment, and also equip 18 selected secondary schools. (*See* Appendix V) with facilities for the teaching of technical subjects at a total estimated cost of ₵6 million.

7.15 Teacher Training Colleges

During the plan period, the structure and content of teacher education will undergo a significant change to bring it into line with the proposals in the "New Structure and Content of Education for Ghana". under this scheme, teachers will be trained at three different levels:—

(*a*) A 4-year Post-Middle (Junior Secondary) School programme which commenced in September, 1975, will prepare teachers to teach in primary schools. In-service training will be provided for (serving) primary and middle school teachers to adapt them to the requirements of the new curriculum.

(*b*) A 3-year Post 'O' Level Teacher Training programme which also came into operation in September, 1975, will produce teachers for Junior Secondary Schools. These training colleges have been grouped into three categories and each specialising in one of the following areas (*See* Appendix VI)

(i) Mathematics, Science, Agriculture/Home Science;
(ii) Social Studies, English and Ghanaian Languages;
(iii) Practical and Vocational subjects—students in this group will be required to specialise in two subjects in the following areas:
  (1) Building Technology, metal work (Engineering) Art;
  (2) Home Science, Catering, Beauty Culture, Dressmaking, Art;
  (3) Tailoring, Leatherwork, Basketry, Vulcanising Art;
  (4) Commercial subjects, Book-keeping, Typing, Shorthand, Office Practice, Accounting, Art/Music.

There will, however, be subjects which will be common to all the groups. These subjects are English, Education, Ghanaian Languages, Physical Education and Current Affairs.

There are, at present, 39 Teacher Training Colleges in the country; of these 10 will offer the 4-year Post Middle (Junior Secondary) Teacher Training Programme; 22 will offer a 3-year Post-Secondary Teacher Training courses, while the remaining 7 will be retained for in-service training.

In addition to these, the Government set up in September, 1975, an Advanced Training College for Diploma Studies which comprises the present Advanced Teacher Training College, Winneba, the Specialist Training College, Winneba, the National Academy of Music, Winneba, the School of Ghana Languages, Ajumako and St. Andrews (Agriculture) Training College, Mampong-Ashanti, to offer courses leading to the award of Diplomas. The courses will take three years. These diplomate teachers will be used to staff Secondary Schools and Teacher Training Colleges.

It is expected that as a result of the expansion in teacher training capacity together with the improvement in quality, the general diversification of the curriculum with more emphasis on science, mathematics and other practical subjects, the present number of trained teachers which stood at 44,005 in 1974/75 out of 52,161 at post will be increased to 51,341 by the end of the plan period at a total estimated cost of ₵8 million. The number of untrained teachers in the system will, therefore, be reduced from the 1974/75 figure of 8,156 to 4,214 by the end of the plan period. It is expected that by the end of the plan period, the 4-year colleges will have produced a total of 6,955 teachers; the existing 2-year Post-Secondary Teacher Training Colleges, 2,126 teachers, and the new 3-year Post-Secondary Teacher Training Colleges, 5,900 teachers. (*See* Appendix VII.)

In addition to the improvements in the quality of teachers which the new system will bring about, in-service training courses in Mathematics, Science, Language and Infant Methods, will be given to serving teachers during the plan period to bring them up to date in the teaching of these subjects. To this end, seven Teacher Training Colleges have been converted into in-service training colleges.

7.16 Administration and Co-ordination

To ensure the smooth management of the educational system and to provide for the progressive solution of the problems mentioned above, the Government set up in February 1974 the Ghana Education Service. The Service is responsible for all matters affecting the operation of pre-university education, including the management of the personnel involved in the system. The establishment of the Service has speeded up the process of decentralisation. Administrative responsibility, including financial control over all pre-university educational institutions at the regional level will be effectively under the charge of Regional Directors of Education by the end of the plan period thus leaving Headquarters to concentrate on policy formulation, financial and personnel control, educational planning, curriculum research and development, inspection and supervision of schools.

7.17 Qualitative Improvement of Education

Any improvement in the quality of education must necessarily take account of the tools required for the purpose. Among these may be mentioned availability of qualified teachers with a sense of responsibility and the right attitude to work, opportunities for further training and supervisory services as well as the availability of textbooks and other school materials including audio visual aids, buildings and equipment.

(*a*) *Supervisory Services*

In addition to improving the quality of both the primary and middle school teaching and of elementary education generally it is intended to strengthen the Inspectorate Division of the Ghana Education Service to enable it carry out its supervisory functions much more efficiently by means of more frequent inspections and visits to schools and colleges. These measures will not only give professional support to the teachers but will also promote efficiency in schools and colleges. During the Plan period the country will be divided into two sectors for the purposes of school visits and inspections. The Northern sector of the Inspectorate which will be based at Kumasi will cater for schools and colleges in Ashanti, Brong-Ahafo, Northern and Upper Regions. The Southern Section will be based in Accra and will concentrate on schools and colleges in the Greater Accra, Volta, Eastern, Central and Western Regions.

(*b*) *Textbooks*

The primary and middle schools have, for too long, been plagued by lack of adequate textbooks and materials. One of the causes of this has been the supply bottle-necks, resulting mainly from over-dependence on overseas suppliers. To remedy this, the Government will continue to encourage Ghanaian authors to write textbooks for publication and also to enter into agreement with foreign publishers to have their textbooks reprinted in this country where necessary on a licence basis or through the copyrights involved. On the whole, it is intended to spend a total of ₵60 million on the procurement of textbooks and stationery during the plan period. In addition efforts will be made to stimulate the local manufacture of other school materials in order to cut down costs. Distribution methods will also be streamlined and more stringent checks will be introduced on the stocks of books and materials at the district and school levels. To accomplish this successfully it is planned to build a National Textbooks Distribution Depot at Tema during the Plan period at a cost of ₵2 million. In the meantime, temporary accommodation for the storage of school textbooks and materials has been acquired at Kaneshie North Industrial Area and all textbooks and materials imported and/or produced locally are now stored here for distribution to schools. With this as nucleus it is planned to build up during the Plan period a system centred upon the National Textbooks Distribution Depot at Tema that will be responsible for indenting, clearance, warehousing and distribution of textbooks and materials to schools and colleges. It is planned to acquire a fleet of vehicles

at a total cost of ₵780,000 to take over the responsibility of distributing textbooks and other materials to schools which is now undertaken by selected private agencies and organisations. This re-organisation is expected to result in greater efficiency.

(c) School Buildings

The Central Government is responsible for the building and equipment of primary and middle schools in the Northern and Upper Regions and parts of Brong-Ahafo. In the rest of the country, the responsibility for the provision of these facilities devolves on local authorities many of which have found difficulty in meeting their financial commitments in respect of education. Government will continue with the system whereby the building and equipment of primary and middle schools is undertaken on partnership basis with the Local Authorities until their resources improve. It is also expected that the Government will initiate measures during the plan period to bring the system of building and equipping primary and middle schools in the Northern and Upper Regions and parts of Brong-Ahafo in line with the rest of the country.

7.18 Technical and Vocational Education

Technical and Vocational education plays a vital role in the development of this country through the production of much needed skilled middle level manpower required by the economy in the fields of industry, commerce and agriculture. While the universities and other higher institutions provide the professional and other high level personnel, our technical and vocational institutions aim at producing technicians and skilled craftsmen to support the professional personnel as well as offer training for self-employment. These aims, have, however, not been effectively achieved because of inadequate training facilities. Some of the other major obstacles which have been responsible for this situation are:

(i) inadequate financial allocations over the years have not made it possible for the quantitative and qualitative improvements desired in the system of technical and vocational education. This has accounted for poor and inadequate facilities including obsolete equipment in the technical institutions;

(ii) dearth of suitably qualified teaching personnel. It has been difficult to recruit and retain qualified teaching personnel because of more attractive job opportunities elsewhere. Moreover the facilities for training technical teaching staff are grossly inadequate;

(iii) inadequate opportunities for students to acquire practical industrial experience have impaired the effectiveness of the training programme of the Technical Division of the Ghana Education Service; and

(iv) poor quality of student material in our technical institutions.

To correct these deficiencies and render technical education more efficient, the following programme will be undertaken:—

(i) expansion and improvement of the existing technical institutes and polytechnics through new building programmes and the provision of modern equipment;
(ii) improvement in the curriculum of the technical institutions by the addition of new technician and craft courses and the injection of more practical content into the existing programmes;
(iii) expansion and improvement of the two technical teacher training institutions at Kumasi and Mampong Ashanti; and the upgrading of their programmes;
(iv) intensification of staff recruitment drive as well as opportunities for further staff training overseas.

7.19 Polytechnics

The Polytechnics will continue to be developed with a view to improving and expanding the technician courses now in operation, and introducing more high level technician courses in Mechanical Engineering, Electrical Engineering and Building. All full-time courses at the Polytechnics will be post-secondary and will include supervised industrial training during the vacation periods. It is also intended during the plan period to expand the following courses offered at the Polytechnics: Middle Level Accounting and Secretaryship, Plant Maintenance, Laboratory Technician, Dispensing Technician and Construction Technician. Moreover new courses will be introduced in instrument maintenance, Highway Construction, Surveying, Dental Technician, Fabrication Engineering, Industrial Electronics, Telecommunications, Chemical Technician, Graphic Arts, Metallurgy, Computer Systems and application, Traffic Engineering, Tailoring, Photography, Printing, Industrial Measurement and Control and Data Processing. To enable the Polytechnics to operate efficiently and at optimum level, it is intended during the plan period to remove the problem of inadequate, defective and obsolete equipment through a systematic programme of rehabilitation and replacement. It is expected that as a result of these programmes the enrolment of the polytechnics will increase at a rate of 15 per cent each year reaching a target of 9,500 by the end of the plan period at an estimated cost of ₵12 million.

7.20 Technical Institutes

There are 9 technical institutes at Ho, Kikam, Sunyani, Kpandu, Koforidua, Asuansi, Bawku, Kukurantumi and Tamale. These institutions provide craft training up to City and Guilds intermediate level and Business studies up to R.S.A. Stage II level. The courses available in these institutions include the following:—

(1) Building craft courses;
(2) Mechanical, Electrical and Electronic craft courses;
(3) Furniture manufacture;
(4) Business Certificate courses (Accounting and Secretarial options)
(5) Catering craft courses;
(6) Dress-making course.

In addition to these technical institutes there are also the Accra Technical Training Centre and the Tema Machine and Power Building Centre. These together with the 9 technical institutes provide institutional training at the craft level and in addition organise courses for apprentices, craftsmen and tradesmen engaged in industry on block release and part-time basis. This group of institutions will continue to be developed and expanded during the plan period to offer full-time and part-time courses in close co-operation with industrial and commercial enterprises. The content of courses offered at each institution will however vary in level and type, but will, continue to be mainly at two levels (craft and advanced craft] in engineering and building.

7.21 New Technical Institutions

Six new technical institutions will be developed during the plan period. These are the Cape Coast Polytechnic, the Kumasi Technical Institute, the Takoradi Technical Training Institute, the Amankwakrom Fishing and Agricultural Institute, the Abetifi technical institute and the Akwatia Technical Institute. The Cape Coast Polytechnic will provide training at the technician level on full-time basis while the remaining institutions will provide training at the craft level. The Amankwakrom Fishing and Agricultural Institute will provide training in fishing technique, fish processing, fish-gear making and mending as well as animal and crop husbandry.

The main fishing and agricultural courses will be supported by a number of other craft courses such as agricultural mechanics, welding and outboard motor repair, boat and yacht building. These courses will be designated and geared to training which will enable the graduates of the institute to work on their own or seek paid employment.

As a result of the expansion envisaged of the level of the technical institutes and the technical training centres which has been estimated to cost ₵16 million, it is expected that the total enrolment of these institutions will rise from the present level of 6,510 to 14,150 by the end of the plan period.

7.22 Technical Teacher Training

The problem of inadequate teaching personnel will be aggravated during the plan period by the proposed large-scale expansion of our technical training programmes. The number of technical institutions will be increased from 17 to 24. There will also be an increase in the number of courses. For the efficient operation of training programmes in the technical institutions, it is planned to increase the corps of the teaching personnel progressively from 560 in 1975–76 to 1,470 in 1979–80. To this end, it is intended to expand the existing technical teacher training institutions at Kumasi and Mampong-Ashanti at an estimated cost of ₵1.2 million to enable them increase the intake of students. These two technical teacher training colleges train technical and commercial teachers for our

technical institutions, secondly, commercial and continuation schools. In addition it is proposed to embark on a massive staff recruitment drive aimed at making available qualified Ghanaian staff (obtainable both locally and overseas) to teach at the appropriate levels in the technical institutions. It is also intended to send some of the existing staff overseas for further training.

7.23 Links with Industry

It is planned to strengthen the links which have been established between technical educational institutions and industry through advisory committees on which industry is represented. The objective is to continue to get industry involved in the planning and operation of our technical education programmes. This will ensure the relevance of technical and vocational education to the economy. Currently it has been possible through the aid of this programme for apprentices who are admitted into the Accra Technical Training Centre for a special 4-year programme to do 13 weeks institutional work while spending the rest of the period in industry. Advisory committees have been set up at the Accra Technical Training Centre for the various craft courses. Membership of these advisory committees is from industry and the staff of the institutions. The appreciation and the acceptance of the value of the closer links that have been established with industry are exemplified by the willingness of industries which cannot release their personnel on full-time or block release basis to pursue further technical/vocational training to arrange for the training of their workers through the evening course programmes organised by the institution. Similarly since a period spent in industry is a *sine qua non* for the training of technicians, relevant industrial attachment programmes are arranged for such trainees. This process of developing links with industry which has proved successful at the Accra Technical Training Centre will be applied and intensified in the other technical educational institutions in the country using appropriate measures such as the establishment of production units for skill training as circumstances may permit.

APPENDIX I—TABLE 7

FIVE-YEAR DEVELOPMENT PROGRAMME

PRIMARY AND MIDDLE SCHOOLS ENROLMENT, 1964–65 TO 1974–75

Level	1964–65	1965–66	1966–67	1967–68	1968–69	1969–70	1970–71	1971–72	1972–73	1973–74	1974–75
Primary	1,066,516	1,137,495	1,116,843	1,072,723	1,015,457	975,629	947,502	960,403	1,000,510	1,014,964	1,051,012
Middle	246,933	267,434	280,566	329,679	381,569	424,430	434,842	455,398	446,695*	440,065*	439,655
Total Primary and Middle	1,313,449	1,404,929	1,397,709	1,402,202	1,397,026	1,400,059	1,391,344	1,415,801	1,447,205	1,455,029	1,490,667

Note:

* Declining total enrolments in these two years is a direct result of the continuous fall in Primary One enrolment from 1964–65 to 1968–69, which constitute the Middle School enrolment in these two years.

The fall in Primary School enrolment is due to a number of factors:—

1. When fee-free and compulsory primary and middle school education was introduced in 1961, the children who were admitted to Primary 1 included a number of over-aged children. Earlier drop-outs also applied to rejoin school at the point they left because of the opportunities opened up by the abolition of fees. From 1964–65 the situation was becoming normal.

2. Introduction of the textbook fees in primary and middle schools in 1966–67.

3. The growing unemployment among middle school leavers made some parents reluctant to send their children to school.

APPENDIX II—TABLE 8

FIVE-YEAR DEVELOPMENT PROGRAMME

ENROLMENT PROJECTION FOR PRIMARY AND MIDDLE SCHOOLS
1974/75 TO 1979/80

Class	1974–75 (*Actua*)	1975–76	1976–77	1977–78	1978–79	1979–80
P1	223,701	270,006	284,856	300,523	317,052	334,489
P2	192,211	222,659	234,905	247,825	261,455	275,835
P3	182,119	200,499	211,526	223,160	235,434	248,382
P4	165,554	180,545	190,474	200,950	212,002	218,912
P5	149,371	161,093	173,323	182,855	192,912	203,522
P6	138,060	147,613	156,260	168,123	177,369	187,125
Total PJ to P6	1,051,012	1,182,415	1,251,344	1,323,436	1,396,224	1,468,265
M1	123,116	129,839	136,837	144,853	155,850	164.421
M2	114,164	112,067	120,231	126,711	134,134	144,317
M3	108,896	103,946	103,550	111,093	117,081	123,940
M4	94,279	90,008	87,938	87,603	93,847	99,051
Total M1 to M4 ..	439,655	435,860	448,556	470,260	500,912	531,729
Total P1 to M4 ..	1,490,667	1,618,275	1,699,900	1,793,696	1,897,136	1,999,994

APPENDIX III—TABLE 9

FIVE-YEAR DEVELOPMENT PROGRAMME

ENROLMENT PROJECTION FOR TECHNICAL INSTITUTIONS

	1974–75 *Actual*	1975–76	1976–77	1977–78	1978–79	1979–80	*Annual Increase* %
Polytechnics	5,500	6,050	6,655	7,653	8,880	10,120	5–15
Technical Institutions ..	4,700	5,250	5,857	7,993	10,911	14,200	10–30
Kumasi Technical Teachers' College and Mampong Technical Teachers' Institute	540	560	600	720	980	1,400	20–50
Total Polytechnics	10,740	12,980	14,690	17,710	20,500	25,050	—

APPENDIX IV TABLE 10

FIVE-YEAR DEVELOPMENT PROGRAMME

PROJECTED ENROLMENT IN PUBLIC SECONDARY SCHOOLS, 1974/75—1974/75—1979/80

Forms	1974–75	1975–76	1976–77	1977–78	1978–79	1979–80
S. 1	16,439	18,250	19,710	21,170	22,630	24,090
S. 2	15,360	16,790	18,250	19,710	21,170	22,630
S. 3	14,296	15,177	16,622	18,068	19,513	20,958
S. 4	12,650	13,402	14,418	15,971	17,165	18,537
S. 5	11,227	11,535	12,330	13,265	14,528	15,784
Total S. 1 to S. 5 ..	69,972	75,154	81,330	88,004	95,006	101,999
L. 6	2,664	3,083	3,576	4,069	4,643	5,375
U. 6	2,203	2,532	3,052	3,540	4,028	4,597
Total L. 6 and U. 6 ..	4,867	5,615	6,628	7,609	8,671	9,972
Total S1—U6	74,839	80,796	84,382	95,613	103,677	111,971

APPENDIX V

LIST OF SECONDARY SCHOOLS TO BE PROVIDED WITH FACILITIES FOR THE TEACHING OF TECHNICAL SUBJECTS

1. Tema Secondary School, Tema
2. Accra Academy, Accra
3. Accra High School, Accra
4. Nkawkaw Secondary School, Nkawkaw
5. Oda Secondary School, Oda
6. Prempeh Secondary School, Kumasi
7. Obuasi Secondary Technical School, Obuasi
8. Kumasi High School, Kumasi
9. Mfantsipim Secondary School, Cape Coast
10. Swedru Secondary School, Agona-Swedru
11. Tarkwa Secondary School, Tarkwa
12. Bibiani Secondary School, Bibiani
13. Mawuli Secondary School, Ho
14. E.P. Secondary School, Hohoe
15. Nkoranza Secondary School, Nkoranza
16. Tepa Secondary School, Tepa
17. Tamale Secondary School, Tamale
18. Bolgatanga Secondary School, Bolgatanga

APPENDIX VI

3-YEAR POST-SECONDARY TRAINING COLLEGES

1.	Presby Training College, Akropong	Group 1 Subjects—Mixed
2.	Foso Training College	Group 1 Subjects—Mixed
3.	St. Francis Training College, Hohoe	Group 1 Subjects—Mixed
4.	Akrokerri Training College	Group 1 Subjects—Mixed
5.	Bagabaga Training College, Tamale	Group 4 Subjects—Men
6.	Wesley College, Kumasi	Group 1 Subjects—Mixed
7.	St. Andrew's Training College, Mampong-Ashanti	Group 1 Subjects—Men
8.	Accra Training College	Group 2 Subjects—Mixed
9.	Berekum Training College	Group 2 Subjects—Mixed
10.	Amedzofe E.P. Training College ..	Group 1 Subjects—Mixed
11.	Jasikan Training College	Group 2 Subjects—Mixed
12.	Peki Training College..	Group 2 Subjects—Mixed
13.	Holy Child College, Takoradi ..	Group 3 Subjects—Women
14.	S.D.A. Training College, Asokore ..	Group 3 Subjects—Mixed
15.	Aburi Women's Training College ..	Group 3 Subjects—Women
16.	Akatsi Training College	Group 3 Subjects—Mixed
17.	Komenda College	Group 3 Subjects—Mixed
18.	St. John Bosco's Training, Navrongo	Group 3 Subjects—Men
19.	St. Joseph's Training College, Bechem	Group 3 Subjects—Men
20.	St. Monica's Training College, Mampong-Ashanti	Group 3 Subjects—Women
21.	St. Louis Training College, Kumasi ..	Group 3 Subjects—Women
22.	Mount Mary Training College, Somanya	French

SUBJECT AREAS

Group I—Science, Mathematics, Agriculture/Home Science.

Group II—Social Studies, English, Ghanaian Languages.

Group III—Vocational Subjects, Commercial Subjects, Home Science, Music, Agriculture.

APPENDIX VII—TABLE 11

FIVE-YEAR DEVELOPMENT PROGRAMME

ELEMENTARY SCHOOL: TEACHER SUPPLY AND DEMAND
1974/75–1979/80

Year	*Total Enrolment*	*Teacher requirement*	*FORECAST OF QUALIFIED TEACHER SUPPLY*			*Total supply*	*Short fall (to be filled by untrained Teachers)*
			Continuing from previous year (97%)	*Newly trained from previous June A (4-yr.)*	*A (post sec.)*		
1974–75 (Actual) ..	1,490,667	52,161	39,609	3,251	1,145	44,005	8,156
1975–76 ..	1,618,275	52,671	42,685	2,792	926	46,403	6,268
1976–77 ..	1,699,900	53,121	45,011	1,200	1,200	47,411	5,710
1977–78 ..	1,793,696	51,248	45,989	1,221	—	47,210	4,038
1978–79 ..	1,897,136	54,204	45,794	1,063	2,950	49,807	4,397
1979–80 ..	1,999,994	55,555	48,312	679	2,950	51,341	4,214

Note.— 1. The last batch of two-year Post Secondary teachers came out in June, 1976.
2. The Three-Year Post Secondary Colleges which have replaced the Two-Year Post Secondary Colleges in September, 1975 will start turning out each year from June, 1978.

APPENDIX VIII

LIST OF SCHOOLS TO BE REHOUSED DURING THE PLAN PERIOD

1. Ebenezer Secondary School, Accra
2. Christian Methodist School, Accra
3. O'Reilly Secondary School, Accra
4. Kaneshie Secondary Technical, Accra
5. West Africa Secondary School, Accra
6. Presbyterian Secondary School, (Osu) Accra
7. Ada Secondary School, Ada
8. Adonten Secondary School, Aburi
9. Begoro Secondary School, Begoro
10. Manya Krobo Secondary School, Odumase
11. Yilo Krobo Secondary School, Somanya

12. Assin Manso Secondary School, Assin Manso
13. Breman Asikuma Secondary School, Breman Asikuma
14. Nsaba Secondary School, Nsaba
15. Nkroful Agriculture Secondary School, Nkroful
16. Takoradi Secondary School, Takoradi
17. Sefwi Wiawso Secondary School, Sefwi Wiawso
18. Bueman Secondary School, Jasikan
19. Krachie Secondary School, Kete-Krachie
20. Nkwanta Secondary School, Nkwanta
21. Peki Secondary School, Peki
22. Vakpo Secondary School, Vakpo
23. Worawora Secondary School, Worawora
24. Agogo State Secondary School, Agogo
25. Antoa Secondary School, Antoa
26. Asanteman Secondary School, Kumasi
27. Bompata Secondary School, Bompata
28. Dwamena Akenten Secondary School, Offinso
29. Adu Gyamfi Secondary School, Jamasi
30. Kumasi Girls' Secondary School, Kumasi
31. Akomadan Secondary School, Akomadan
32. Tepa Secondary School, Tepa
33. Juabeng Secondary School, Juabeng
34. Berekum Secondary School, Berekum
35. Duayaw Nkwanta Secondary School, Duayaw Nkwanta
36. Hwidiem Secondary School, Hwidiem
37. Kintampo Secondary School, Kintampo
38. Nalerigu Secondary School, Nalerigu
39. Yendi Secondary School, Yendi
40. Wa Secondary School, Wa.

EDUCATION SECTION OF THE FIVE YEAR DEVELOPMENT PLAN—1975-76—1979-80

SUMMARY OF EXPENDITURE

	Item	Estimated Cost
		¢
1.	Nursery and Kindergarten—Completion of 3 Nursery schools at Accra, Sekondi and Kumasi ..	460,000
2.	Primary Schools—Construction and equipment of 60 schools	1,800,000
3.	Middle Schools—Building equipment of 400 schools and their conversion to Junior Secondary Schools	16,130,000
4.	Continuation Schools—Conversion of 1,240 Continuation Schools for use as Junior Secondary Schools	45,540,000
5.	Junior Secondary Schools—Conversion of Middle Schools for use as Junior Secondary Schools ..	73,360,000
6.	Education for the Handicapped—Rehousing of 2 schools and construction of Central Audiological Clinic at Akropong-Akwapim	1,500,000
	(*b.*) Deaf Education Secondary School—Mampong-Akwapim	230,000
7.	Secondary Education—Expansion, rehabilitation and consolidation of schools..	69,000,000
8.	Sixth Form College at Legon	5,457,000
9.	Science and technical equipment for 18 Secondary Schools	6,000,000
10.	Teacher Training—New Teacher Education Programme..	8,000,000
11.	Procurement of textbooks and stationery ..	60,000,000
12.	National Textbooks Depot at Tema	2,000,000
13.	Vehicles for distribution of textbooks and materials to schools	780,000
14.	Polytechnics—Rehabilitation and replacement of obsolescent equipment	12,000,000
15.	Technical Institutes—New facilities and improvement to existing facilities	16,000,000
16.	Expansion of Technical Teacher Training Colleges at Kumasi and Mampong-Ashanti	1,200,000
	Total	319,457,000

FIVE-YEAR DEVELOPMENT PROGRAMME—EDUCATION

CAPITAL FLOW

Item	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
1. Nursery and Kindergarten	90,000	90,000	100,000	90,000	90,000	460,000
2. Primary Schools	360,000	360,000	360,000	360,000	360,000	1,800,000
3. Middle Schools	3,000,000	3,000,000	3,452,000	3,452,000	3,226,000	16,130,000
4. Continuation Schools	9,000,000	9,000,000	9,216,000	9,216,000	9,108,000	45,540,000
5. Junior Secondary Schools	14,672,000	14,672,000	14,672,000	14,672,000	14,672,000	73,360,000
6. Handicapped Institutions	346,000	346,000	346,000	346,000	346,000	1,730,000
7. Secondary Schools	14,891,400	14,891,400	14,891,400	14,891,400	14,891,400	74,457,000
8. Science and Technical equipment	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	6,000,000
9. Teacher Training	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	8,000,000
10. Textbooks Supply Depot	12,556,000	12,556,000	12,556,000	12,556,000	12,556,000	62,780,000
11. Polytechnics	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	12,000,000
12. Technical Institutes	3,200,000	3,200,000	3,200,000	3,200,000	3,200,000	16,000,000
13. Technical Teacher Training	240,000	240,000	240,000	240,000	240,000	1,200,000
Total Capital Flow	63,555,400	63,555,400	64,233,400	64,223,400	63,889,400	319,457,000

HIGHER EDUCATION

7.24 General

The three Universities in Ghana have the primary responsibility of producing the high level manpower that the country needs for its rapid social and economic development. Since their establishment, the universities have made considerable progress in producing the type of high-level manpower needed for the political and administrative evolution of the nation. The manpower needs in the critical areas of science and technology so vital in contemporary world situation have of necessity, not received the desired attention in the development of our universities.

In general, each of our universities has a clearly defined role as indicated by the type of the majority of its courses. Similar courses are nevertheless offered in more than one of our universities; but as far as possible, efforts have been made to avoid unnecessary duplication of courses in the universities.

The University of Ghana which was established in 1948 has presently more than 45 departments grouped into seven faculties namely, Agriculture Arts, Law, Medicine, Science, Social Studies and School of Administration. In addition to these departments, there are four institutes namely, the Institute of African Studies, Institute of Adult Education, the Institute of Statistical, Social and Economic Research (ISSER) and the Institute of Journalism and Communication Studies.

The University of Science and Technology started as a teacher training college in 1952 and through its transformation and orientation over the years a decision was taken to make it a purely science and technological institution. Like the University of Ghana it has seven faculties dominated by science and science-based professional departments namely, Agriculture, Art, Engineering, Architecture, Pharmacy, Science and Social Studies.

University of Cape Coast, the latest of the three universities was inaugurated in 1962. The primary purpose of the university is to produce graduate teachers in Arts and Science subjects for the second cycle education in the country. The University has four faculties namely, Arts, Science, Social Studies and Education. There are also two new departments; the department of Agriculture for the training of Agricultural science teachers; and the department of Science Education (a constituent department of the Faculty of Education) responsible for the pedagogic aspect of the training of Science and Mathematics teachers at the University.

Enrolment in the Universities has increased considerably from 2,065 in 1962/63 to 7,143 in 1975/76 (*see* Table 1 in the Appendix). This has led to considerable expansion in facilities in the universities. In spite of this substantial increase over the years there is continuous pressure on the universities to accommodate students who qualify for university education.

University education is very expensive. The annual recurrent cost of maintaining one under-graduate worked out at ₵2,662 in 1969–70 and working on an average length of 3½ years of university education, the total recurrent cost of producing one graduate was estimated at ₵10,325 in 1969–70. This has risen to ₵5,208 and ₵18,228 respectively in 1975–76 (*see* Appendix Table II). It has been difficult to increase student intake due to the fact that our universities are primarily residential and government continues to meet the total cost of students including tuition, boarding and lodging involving a heavy financial burden on the state. This burden will be heavier still in the future with the provision of additioual facilities to cope with some of the pressures for university places in the country taking into consideration the rising cost of construction and other recurrent expenditures.

While our Universities must expand if they are to meet the challenges of the times, the expansion must now be structured in such a way as to enable them produce more qualified persons in the areas that are critical for the development of the economy.

Examination results of the universities (Table III in the Appendix) indicate that 9,427 graduates were turned out of our universities between 1963 and 1975. Out of this, one-third or 3,114 were products of Science and Science-based subjects and the rest 6,313 were Arts and Social Science students. There is at present concern over this imbalance in the output of Arts and Social Science students on the one hand, and Science/Mathematics students on the other hand, in our universities. This imbalance in output is attributable mainly to the inadequacy of science facilities and insufficient good quality science student material for science courses in our universities.

The main problems facing our universities are:

(*a*) lack of facilities in the form of classrooms, lecture theatres, laboratory facilities and equipment, residential accommodation for students as well as staff;

(*b*) the inadequate output of qualified high-level manpower needed for our economic development, particularly in science and mathematics-based occupations;

(*c*) increasing demand for university education due particularly to the inadequacy of alternative facilities for higher education outside the universities;

(*d*) the rising cost of higher education.

7.25 Strategies

Facilities.—To enable the expansion required in the universities and to render them much more efficient, Government plans to remove the bottlenecks in the way of the universities, viz. lack of adequate classrooms, laboratories, equipment, studios, workshops and offices, etc. during the plan period. A number of academic buildings under construction in the three universities will be completed during the first three years of the plan period.

While it is clear that the expansion in enrolment will necessitate the provision of additional students accommodation in the universities it is equally obvious that the limited funds available will not permit the construction of adequate student residential accommodation on the campuses. University students have for some time now begun to share rooms originally designed for single occupation. This situation will be a regular feature of student accommodation policy in the universities and during the plan period funds will be provided for carrying out alterations and for acquiring additional furniture necessary for doubling up students in existing single rooms. This will not solve the accommodation problem and some students will have to be admitted on non-residential basis. In this connection Government will during the plan period pursue a policy of gradual de-emphasis on in-campus residence for students in favour of off-campus residential system as the long-term development strategies of our universities. The main ingredient of policy in this direction will be to provide adequate incentives to private and other Government housing agencies to build hostel facilities near our universities. The Government will appoint a Committee to examine this issue and make appropriate recommendations.

Balanced Qualified Manpower.—Ghana has for many years suffered from a chronic shortage of graduate teachers in mathematics and science, and at present the needs of the schools are already outstripping the supply, as indicated in Table IV in the Appendix. Since the production of potential science students depends on the quality of science teaching in the secondary schools, the universities will be encouraged to produce adequate science graduates to meet the manpower needs of teaching in the secondary schools and training colleges in addition to the needs of the research establishments and industry. Consequently, the intake of students into the arts and social science courses will be progressively tailored to assessed needs. Efforts will, however, be made to ensure the adequate production of teachers in such essential fields as Statistics, Economics, Planning, Accountancy, Business Administration, French, English and Ghanaian Languages. Admission of students into these specific areas will continue to be an essential feature of Government guidance to the universities to ensure that the high-level manpower requirements for those specific fields receive the attention of the universities. Already the Ghana Manpower Board, and the Scholarship Secretariat, have been indicating to the universities the specific priority fields into which new students should be enrolled from year to year.

Efforts that have begun in recent years to reduce the imbalance between students in arts and social science courses on the one hand, and those pursuing courses in mathematics, physical and biological sciences on the other hand, will be intensified. To effect an eventual increase in the output of science and mathematics graduates from our universities, Government will, during the plan period, expand secondary school education with emphasis on science and mathematics so as to turn out more science graduates to feed our universities as well as other essential areas.

New Courses.—Existing faculties in the universities will be expanded to provide training for an increasing student population especially in the areas where particular kinds of skilled manpower are required. This programme in the biological sciences will be expanded to allow for more intensive work in Oceanography and Marine Science. Courses in Computer Science, will be developed and made available to students in several faculties. Emphasis will also be placed on the improved teaching of English, French, Spanish, Arabic, Swahilli and on the intensive study of the principal Ghanaian Languages. In the professional courses, vacation training for students will continue to be organised, and, where appropriate, sandwich courses involving the use of facilities provided by commerce and industry will be introduced to enhance the practical content of the courses. The use of existing facilities for the training of high-level manpower for the mining industry will be stepped up and this will involve an effective collaboration between the University of Science and Technology and the Tarkwa School of Mines.

Priority will be given to the production of more teachers from the University of Cape Coast particularly those qualified to teach Mathematics and the Sciences in secondary schools, training colleges, polytechnics and technical institutes. Efforts will also be made to provide adequate facilities for technical teacher training, pre-university technical education and adult technical education.

During the plan period, therefore, the universities will be guided in the expansion and improvement of the courses they offer. The National Council for Higher Education will make every effort to ensure that in the establishment of new departments or faculties in the universities, there is no unnecessary or wasteful duplication.

7.26 Medical Education

As pointed out in the Manpower and Employment chapter of this plan, there is an acute shortage of medical and para-medical personnel in the country due to limited training facilities in the country. By establishing the School of Medical Sciences at the University of Science and Technology in addition to the Ghana Medical School at Legon, the Government has taken a vital step towards increasing the output of not only medical doctors but also the training of para-medical personnel and medical technologists, needed for improving the health services in the country. During the plan period, therefore, work will be carried out in phases on the fairly extensive physical facilities required for all the disciplines connected with medical education in the two universities. The phasing of these facilities at both Legon and Kumasi will require substantial financial support to the tune of ₵60.2 million.

7.27 Adult Education

The Institute of Adult Education has since its inception in 1948 provided a variety of programmes such as those which raise public awareness to important issues and problems in national and international

affairs; those which provide remedial courses leading to G.C.E. Ordinary and Advanced Level Examinations; those which offer professional courses in Accountancy and Secretarial Studies as well as Liberal Studies leading to external degrees in Arts and Social Sciences of the University of Ghana. The Annual New Year School which has been held uninterrupted for 27 years has provided the opportunity not only for the participants but for the whole nation to discuss matters of national importance. Currently, 12,000 adult students are reached throughout Ghana with the programmes of the Institute by correspondence as well as through face-to-face meetings in regular classes, short residential courses and conferences.

The external degree programme of the Institute has been concentrated at Accra Workers College since its inception. In view of the growing demand for such programmes from many parts of the country, the Institute will, during the plan period, embark on an expansion through the establishment of their degree programme at Cape Coast and Kumasi and the expansion of their programme in Accra so as to enable them make use of lecturers from these university towns to give tuition to students who want to pursue external degree courses. In addition, the Institute will extend its correspondence programme to cover external degree courses as well.

In view of the continued high cost of public education to the government, the Institute of Adult Education will intensify its programme activities in collaboration with employing organisations such as the T.U.C. Government Departments, etc. The practice of charging fees for these tailor-made courses will continue with the aim of making the Institution less dependent on public funds. At the moment the Institute raises nearly 12 per cent of its annual budget of about a million cedis from fees. This percentage is expected to reach at least 30 per cent by the end of the plan period.

During the plan period, government will provide adequate funds for physical facilities including workers' colleges at the various regional capitals and well-equipped library facilities to enable the Institute keep up with the increasing demand for its services.

7.28 Research

The Government will continue to support research activities in our Institutions of Higher Education and by individuals but it will ensure that research projects are harnessed to the needs of the country. It will also ensure that resources are directed to research areas such as Medical Science, Engineering, Agricultural Management and Physical Sciences which are crucial to the development needs of the country. During the plan period, therefore, emphasis will be placed on extension work in agriculture. Research in the various branches of agriculture will be intensified and the research findings in definite fields will be passed on to the various organisations that can use them for the improvement of the agriculture in the country. The moderate research efforts being made in dairy, livestock, poultry and crops at the Nungua, Kpong and Kade Agricultural Extension

Stations of the University of Ghana and the University of Science and Technology will be extended to the North of Ghana. In furtherance of the research efforts, more emphasis will, during the plan period, be placed by the universities on the development of post-graduate courses which will have both professional and academic orientation leading to the Masters and Doctorate Degrees and Graduate Diplomas.

Alternative Openings.—As a major innovation in higher education, in addition to Polytechnics, Government will consider the establishment of a number of institutions throughout the country to cater for training of middle and higher level manpower urgently needed for the rapid development of the country, e.g. accounting, farm management and farm machinery mechanics, fisheries technology, and food service management, laboratory technology, marketing, medical technology, etc.

These institutions will provide an attractive alternative higher education facility, including salary differentials, to students who by disposition or aptitude, do not wish to pursue formal university training. Candidates for these institutions will normally be secondary school leavers including sixth formers.

7.29 Financial Estimates

It is estimated that during the plan period a total amount of ₵406 million will be required to meet the expenditure on higher education as a whole. The breakdown of this is indicated in Table V in the Appendix.

APPENDIX

TABLE I

FIVE-YEAR DEVELOPMENT PROGRAMME

ENROLMENT AND PROJECTIONS OF STUDENTS IN THE THREE UNIVERSITIES

Courses	1961–62	1962–63	1963–64	1964–65	1965–66	1966–67	1967–68	1968–69	1969–70	1970–71	1971–72	1972–73	1973–74	1974–75	*Total*
Science ..	745	925	1,160	1,515	2,086	2,109	2,364	2,626	2,373	2,212	2,462	2,639	2,701	2,909	28,826
Arts	645	1,140	1,301	1,899	2,215	2,369	2,104	2,409	2,383	2,519	2,599	2,782	2,929	3,094	30,388
Total ..	1,390	2,065	2,461	3,414	4,301	4,478	4,468	5,035	4,756	4,731	5,061	5,421	5,630	6,003	59,214

PROJECTIONS

	1975–76	1976–77	1977–78	1978–79	1979–80
University of Ghana	3,620	3,980	4,380	4,820	5,300
University of Cape Coast	1,205	1,330	1,460	1,600	1,760
University of Science and Technology	2,318	2,741	3,096	3,383	3,645
Total	7,143	8,051	8,936	9,803	10,705

FIVE-YEAR DEVELOPMENT PROGRAMME

GOVERNMENT EXPENDITURE IN SECONDARY SCHOOLS AND UNIVERSITIES BASED ON THE APPROVED ESTIMATES FOR 1975–76

LEVEL / *Item*	*Secondary Schools*	*Universities Total*	*UNIVERSITIES*							
			University of Ghana	*School of Administration*	*Ghana Medical School*	*U.S.T.*	*College of Art*	*University of Cape Coast*	*Institute of African Studies*	*U.S.T. Medical School*
	₵	₵	₵	₵	₵	₵	₵	₵	₵	₵
1. TUITION COSTS										
(*a*) Salaries (Teaching and Administrative)	22,665,076	19,910,884	4,974,258	519,720	2,749,689	5,870,413	467,000	4,287,436	481,184	40,000
(*b*) Other Recurrent	4,952,940	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
(*c*) Equipment (consummable)	1,938,840	902,248	(142,130)*	(13,000)*	(105,000)*	(489,248)*	(N.A.)*	(152,870)*	(11,300)*	(N.A.)*
(*d*) Sub-total (*b* + *c*)	6,891,780	11,626,160	4,221,218	170,740	1,005,081	3,553,337	206,200	2,525,084	124,516	55,500
(*e*) Total (*a* + *d*)	29,556,856	31,071,540	9,716,660	690,460	3,754,770	9,423,750	763,200	6,812,520	605,700	95,500
N.B.–Enrolment	80,796	6,969	2,955**	188	376	1,992**	270	1,188**	64	26
Unit Tuition Cost (*e* – *f*)	₵365.82	4,458.54	3,288.21	3,672.66	9,986.09	4,579.09	2,493.33	5,653.54	9,464.06	3,673.08
2. BOARDING AND LODGING COSTS Unit Costs (*see* Notes 1, 2 and 3)	₵99.23	750.00	—	—	—	—	—	—	—	—
Total Unit Cost	₵465.05	5,208.54	—	—	—	—	—	—	—	—

* The amounts shown in brackets are the original amounts allocated to consummable equipment, the amounts allocated after the approved estimate are not available but are included in the sub-total (*b* + *c*).

** This figure excludes enrolment in the listed schools and Institutes, I.S.S.E.R. as well as foreign students who are not sponsored by the Ghana Government.

N.B.–(*a*) This Institute has been excluded in the Unit Cost calculations because of its heavy bias for research work.

(*b*) This School has been excluded in the unit cost calculations because of its small size.

NOTES

1. Total Government expenditure on 60,944 boarding students in Secondary Schools was ₵6,047,684 (Scholarships and Bursaries: ₵4,050,000; Salaries of Domestic Bursars and Kitchen Staff; ₵1,997,000)
2. The Scholarships and Bursaries in Secondary Schools are awarded as follows:—
   (i) ₵60.00 per annum for each of three students per class in Forms 1 to 5, (₵240.00 per annum has been proposed for 1976–77).
   (ii) ₵180.00 and ₵170.00 per annum respectively for each lower 6th and upper 6th Form students. (₵270.00 per annum has been proposed for 1976–77).
   (iii) A bursary of ₵320.00 per annum is allocated to each Secondary School class to be used in assisting needy students (₵480.00 per annum has been proposed for 1976–77).
3. ₵750.00 per annum is paid to cover boarding and lodging expenses of each Government sponsored university student in Ghana. A total amount of ₵7,200,000 was spent on Government sponsored students in universities within and outside Ghana. It has been estimated that about 55 per cent (₵3,960,000) of the amount was spent on students in Ghana.

EXAMINATION RESULTS OF THE THREE UNIVERSITIES IN GHANA, 1962/63–1974/75

Course	1962–63	1963–64	1964–65	1965–66	1966–67	1967–68	1968–69	1969–70	1970–71	1971–72	1972–73	1973–74	1974–75	*Total*
Medicine	—	—	—	—	—	—	39	25	31	51	47	4	56	293
Administration	—	—	27	40	42	39	54	48	60	53	52	61	67	543
Law	—	16	45	52	31	39	42	53	40	51	41	57	46	513
B.A.C., Agriculture	13	6	27	12	25	43	21	14	61	75	52	57	75	481
Home, Science	—	—	—	—	—	—	5	4	7	6	1	2	—	25
B.Sc: Design	—	5	11	3	19	7	5	14	26	17	20	19	18	164
B.Sc., Building Technology	—	—	1	10	9	5	11	20	16	17	15	13	17	134
B.Sc., Planning	—	—	—	—	—	—	—	—	—	—	7	13	14	34
B.Sc., Civil Engineering	11	11	12	16	13	15	10	17	26	18	15	18	17	199
B.Sc., Electrical Engineering	8	9	12	10	12	11	12	19	17	17	14	9	11	161
B.Sc., Mechanical Engineering	2	2	8	7	14	10	16	22	14	12	19	11	8	145
B.Sc., Geodetic Engineering	—	—	—	1	—	1	—	1	—	—	—	—	—	3
B.Sc., Agricultural Engineering	—	—	—	—	—	—	—	—	—	—	—	—	1	1
B.Sc., Chemical Technology	—	—	—	—	2	—	3	3	8	8	19	36	34	113
B. PHARMACY	—	7	24	25	17	20	21	23	17	—	9	17	26	206
B.A., Art	—	—	7	14	15	20	20	37	35	39	9	19	26	241
B.A., Education	—	—	24	36	66	47	86	80	74	128	127	140	255	1,063
B.Sc., Education	—	—	—	2	10	56	62	13	61	44	55	48	62	413
B. EDUCATION	—	—	—	—	—	—	—	—	—	—	—	21	34	55
Sciences	29	9	23	43	53	63	70	103	129	149	129	132	142	1,074
Social Sciences	20	26	39	45	73	45	31	49	47	56	50	68	42	591
Arts	139	137	221	210	194	245	298	270	282	275	281	239	184	2,975
Total Courses	222	228	481	526	595	666	806	815	951	1,016	962	1,024	1,135	9,427

BROAD CLASSIFICATION OF RESULTS

Course	*Product* (1962–63 *to* 1974–75)
Science and related subjects	3,114
Arts and related subjects	6,313
Total Results	9,427

APPENDIX TABLE IV

FIVE-YEAR DEVELOPMENT PLAN

PROJECTED DEMAND AND SUPPLY OF TEACHERS FOR SECONDARY SCHOOLS AND TEACHER TRAINING COLLEGES

Year and Subject	*No. required*	*No. available*	*No. who are graduates*	*Graduate percentage*	*Shortages*	*No. of classes*
1973–74						
Mathematics	527	387	104	26.8	140	2,423
Physics	166	87	38	43.7	79	
Chemistry	171	92	39	42.4	79	
Biology	186	146	88	60.3	40	
1974–75						
Mathematics	556	389	115	29.6	167	2,558
Physics	175	64	34	53.1	111	
Chemistry	180	75	43	57.3	105	
Biology	197	141	100	70.9	56	
1975–76						
Mathematics	592	420	115	27.4	172	2,696
Physics	185	48	31	64.5	137	
Chemistry	190	58	43	74.1	132	
Biology	262	135	107	79.3	127	

TABLE 5

FIVE-YEAR DEVELOPMENT PROGRAMME, 1975-80

FINANCIAL REQUIREMENTS

ESTIMATED EXPENDITURE ON THE UNIVERSITIES AND OTHER INSTITUTIONS OF HIGHER EDUCATION

	Requirement	*Capital*	*Equipment*
	¢	¢	¢
National Council for Higher Education Secretariat	383,310	170,900	—
University of Ghana (including all institutes, schools and research stations)	99,345,770	(*a*) 66,126,880	(*b*) 10,975,600
University of Cape Coast	43,146,200	14,865,000	2,500,000
University of Science and Technology (including College of Art)	65,707,975	(*c*) 50,775,400	(*d*) 9,376,645
National Archives	4,865,050	6,220,000	—
Ghana Museums and Monuments Board	5,334,400	2,237,500	5,000
Ghana Universities Press	499,390	100,000	—
Ghana Atomic Energy Management Committee	8,433,850	11,657,500	995,000
Institute of Chartered Accountants (Ghana)	673,500	645,000	—
Ghana Science Association	119,360	—	—
Ghana Academy of Arts and Sciences	339,100	150,000	—
Encyclopaedia Africana Secretariat	400,000	—	—
Grand Total	229,256,905	152,948,180	23,852,245

Notes.—(*a*) Includes ¢15 million for the Medical Centre Complex.
(*b*) Includes ¢5 million for the Medical Centre Complex.
(*c*) Includes ¢15 million for the U.S.T. School of Medical Sciences.
(*d*) Includes ¢5 million for the U.S.T. School of Medical Sciences.

CHAPTER 8

MANPOWER AND EMPLOYMENT

8.1 General

In general, economic development is associated with technological advancement which depends on the availability and effective utilisation of scientific, technical and managerial or administrative manpower. It is from the ingenuity and hard work of this body of creative, trained and enterprising scientists, technicians, skilled workers and managers and other high level manpower that significant advances in human welfare have been witnessed in the world. The importance of educating and training our manpower as a significant component of the development effort cannot therefore be exaggerated.

Ghana's labour force in 1960 was estimated to be 2.7 million. The 1970 population census revealed that the labour force had increased by 22.4 per cent to 3.3 million during the decade. Out of the total labour force of 3,331,618, 3,133,047 were employed and 198,571 were unemployed.

The broad industrial distribution of the employed labour force in 1960–70 is shown in the table below (*Table I*).

TABLE I

DISTRIBUTION OF EMPLOYMENT BY INDUSTRIES
1960–70

Industry	1960 *Number*	1960 *% of Total*	1970 *Number*	1970 *% of Total*	*% change in Employment* 1960 and 1970
Agriculture ..	1,581,331	61.8	1,786,730	57.2	13.1
Mining ..	48,221	1.9	30,986	1.0	–35.8
Manufacturing	223,947	9.1	380,415	12.0	70.8
Construction ..	88,655	3.5	73,564	2.3	–17.0
Utilities ..	14,189	0.6	12,205	0.4	–13.7
Commerce ..	371,131	14.5	435,972	13.9	17.8
Transport, Storage and Communications ..	67,823	2.6	—	2.7	24.3
Services ..	154,088	6.0	328,874	10.5	113.4
All Industries ..	2,559,383	100.0	3,133,047	100.0	22.4

The distribution of the labour force by broad industrial classes as shown in Table I above reveals that the agriculture, commerce and services sectors together account for over four-fifths (82.3 per cent in 1960 and 81 per cent in 1970) of the total employed labour force, whilst mining, construction, utilities, transport and communications together accounted for less than 8.6 per cent in 1960 and 6.4 per cent in 1970.

During the plan period, it is estimated that the labour force will increase at a rate of about 3 per cent per annum adding annually about 90,000 people to the labour force.

The employment implication of this sharply accelerated rate of growth of the labour force is that, about 500,000 new jobs will have to be created during the period to absorb the new entrants to the labour force.

One significant aspect of Ghana's population which places a premium on the maximum utilisation of all members of the labour force is its age structure. As stated in the population section of this plan, Ghana's dependency ratio is rising to such an extent that it is becoming more and more imperative to provide gainful employment for all able-bodied persons if the burden of dependency is not to be worsened. It is, therefore, essential that members of the labour force are equipped with basic skills required for productive activity in all sectors of the economy.

During the past decade, Ghana has made significant strides in her efforts to develop and improve the quality of her human resources. This had been achieved through accelerated expansion at all levels of her educational system and training facilities ensuring annually the entry into the labour force of people with ever rising levels of education. Available statistics on education in Appendices II and III indicate the progress made during the last few years in establishing a good basis for the development of the human resources of the country. Despite these efforts, the country still suffers from low levels of educational attainments of the Ghanaian labour force in certain critical areas (*see* Table II), and shortages of skills in professional, managerial, administrative as well as in the middle-level or skilled categories.

TABLE 2

EDUCATIONAL ATTAINMENT OF GHANAIAN WORK FORCE—1970

	None	*Primary and Arabic*	*Middle*	*Secondary*	*Teacher Training*	*Commercial Technical*	*University*
All Occupations ..	72.2	7.9	16.2	0.6	0.9	0.8	0.4
Professional, Technical and Related Workers	9.3	1.4	38.1	14.9	25.1	3.8	7.4
Administrative and Managerial Workers	18.3	3.9	35.2	20.6	1.5	5.4	14.8
Clerical and Related Workers, Government Executive Officials	2.9	0.6	66.1	18.2	0.4	10.9	10.0
Sales Workers ..	77.9	8.1	12.7	0.9	0.0	0.3	0.1
Agriculture, Animal Husbandry and Forestry Workers, Fishermen and Hunters ..	84.8	7.7	7.4	0.1	0.0	0.0	0.0
Production and Related Workers Transport Equipment, Operators and Labourers ..	57.7	10.8	29.7	0.9	0.0	0.9	0.0
Service Workers ..	52.8	6.6	36.9	2.6	0.1	1.0	0.1

Source.—Demographic and Social Statistics Division, Central Bureau of Statistics.

The inadequacy of some skills as stated above has led to the use of expatriate employees in the country's economic activities. There are presently 22,530 expatriates holding work-permits and working with various establishments in the country.

During the past few years the ability of the economy to create employment opportunities has not been very encouraging. Recorded employment as shown in Appendix I indicates only marginal increases in employment since 1960 (annual growth rate of 1.3 per cent).

This slow rate of growth of recorded employment was in the main due to the failure of the economy as a whole to show a marked growth during the period. A rather low level of investment activity due to a number of difficulties including those relating to import policy have all contributed to the slowing down of industrial expansion and increasing unemployment.

In 1970, unemployment was estimated at 6 per cent of the labour force or made up of 141,467 males and 57,104 females.

The age-specific unemployment rates for 1960 and 1970 shown in Table 3 indicates that the unemployment problem is most acute for the young members of the labour force, especially the males between the age 15–24.

TABLE 3

UNEMPLOYMENT RATES—1960, 1970 (NATIONAL)

Age	1960			1970		
	Total Labour Force	*Male*	*Female*	*Total Labour Force*	*Male*	*Female*
15+	6.0	6.5	5.2	6.0	7.6	3.9
15–19	21.2	23.0	20.3	24.9	30.0	19.1
20–24	9.4	11.7	6.1	13.1	17.8	8.0
25–29	4.9	6.0	2.9	5.2	7.4	2.4
30–34	3.2	3.9	1.9	2.6	3.9	0.9
35–39	2.6	3.0	1.7	1.8	2.7	0.6
40–44	2.1	2.5	1.5	1.3	2.0	0.4
45–49	2.1	2.3	1.6	1.1	1.6	0.4
50–54	2.0	2.1	1.8	0.9	1.3	0.3
55–59	2.1	2.1	2.1	0.9	1.2	0.4
60–64	2.0	1.8	2.3	0.7	0.9	0.3
65+	2.2	1.9	2.8	0.5	0.7	0.5

The rural-urban unemployment rates shown in Table 4 indicate that the unemployment problem is more severe in the urban areas than in the rural areas; the unemployment rate in the urban areas was 8.6 per cent in 1970 as compared with 4.9 per cent in the rural areas.

TABLE 4

RURAL-URBAN UNEMPLOYMENT RATES—1970

Age	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*
15+	8.6	9.5	7.2	4.9	6.7	2.5
15–19	33.9	37.1	30.7	21.2	27.2	13.9
20–24	16.6	19.9	13.9	16.0	16.8	5.2
25–29	6.3	7.6	4.4	4.6	7.3	1.5
30–34	3.4	4.5	1.8	2.2	3.6	0.6
35–39	2.5	3.5	1.2	1.5	2.4	0.4
40–44	2.2	3.0	1.0	1.0	1.6	0.3
45–49	2.0	2.7	0.9	0.8	1.2	0.2
50–54	1.8	2.6	0.7	0.6	0.9	0.2
55–59	1.8	2.5	0.8	0.6	0.8	0.2
60–64	1.6	2.3	0.7	0.4	0.6	0.2
65+	1.7	1.8	1.0	0.4	0.4	0.4

The high level of unemployment in the urban areas is directly the result of the wide gap between rural and urban conditions of life and employment which has led to a continuous drift on an increasing scale of young people to the urban areas.

In addition to open unemployment, Ghana suffers from the incidence of under-employment the magnitude of which is not known.

Manpower problems facing the country are therefore summarised as follows:—

(1) Low absorptive capacity of the modern sector to provide employment opportunities for the existing unemployed and the new additions to the labour force.

(2) Growing unemployment particularly in the urban areas and largely among the age-group 15–24.

(3) Widening discrepancy between certain categories of products of our educational institutions on the one hand and job opportunities on the other.

(4) Widespread under-employment, both visible and disguised mainly in the rural areas.

(5) Critical and crucial shortages of strategic skills at all levels, professional, managerial, technical and middle-level and skilled manpower.

(6) Inadequacy of training, paucity of qualified instructors and "physical" facilities for practical training.

(7) Low productivity and under-utilization among certain segments of the labour force.

To provide a permanent machinery for solving the manpower problems of the country and for ensuring the effective development and utilisation of the human resources of the country on a continuous basis government in 1968 set up the Ghana Manpower Board. The detailed functions of the Board and the actions which are envisaged to be undertaken during the five-year plan period under its auspices are spelt out in later paragraphs of this chapter.

During the plan period our manpower strategy will have two-fold objectives:—

(1) Attainment of higher levels of productive employment commensurate with the absorptive capacity of the economy.

(2) Building of a flexible and dynamic labour force with skills relevant to the development of the economy.

The attainment of higher levels of employment of the labour force will depend upon the capacity of the economy to create and expand the volume of employment needed to absorb and effectively utilise the mass of the nation's job-seekers. This Five-year Development Plan proposes policy measures and programmes which will make substantial impact on the unemployment problem. The expansion envisaged in industry and agricultural development, the promotion of exports, road buildings and maintenance works, including the network of feeder road construction as well as the construction of health posts and centres and the provision of water supplies and other facilities particularly in the rural areas will create job-openings both in the urban and the rural areas and considerably reduce unemployment in the country.

The strategy here is to bring these projects close to centres of unemployment so as to prevent the movement of people from place to place in search of jobs. In this connection, government will ensure that there is a meaningful distribution of industrial activity so that undue concentration in already well-served areas can be avoided. In line with this policy, private industry will be encouraged through appropriate incentives to move into hitherto under-develop areas.

In the private sector of the economy, the capacity of an industry to create employment will be given due consideration in the selection of projects to be supported by Government. In addition, Government will encourage the use of labour intensive technology through its fiscal policies in order to promote increased labour absorption.

Apart from promoting employment opportunities in the rural areas, Government will be taking measures to improve the social life of the rural people through the provision of social amenities like electricity, water supply, health centres and posts, rural housing and schools. In addition, Government will enlist the aid of the relevant governmental agencies, particularly the Ministry of Agriculture, Departments of Co-operatives, Community Development and Rural Development, to encourage and facilitate the active involvement of the rural population in the various measures envisaged under this plan. Some of the steps which Government envisages for improving rural life and encouraging the rural population in the various efforts to develop the rural areas include the provision of marketing facilities, the manipulation of prices of agricultural commodities to encourage production, the provision of financial and other support to farmers including the provision of storage facilities. To supplement these efforts the Agricultural Development Bank, the Regional Development Corporations, as well as other Boards, Corporations and commercial houses that operate in the rural areas will be encouraged to direct their attention to assisting through the provision of loans and technical advice enterprising farmers as well as enterpreneurs wishing to set up small-scale or agro-based industries in the rural areas.

In order to alleviate the unemployment problem facing the youth in the age-group 15–24 amongst which unemployment is increasing at an alarming rate, Government will utilise the services of such agencies as the National Youth Council, the National Service Corps, National Vocational Training Institute, the Department of Social Welfare and Community Development, Labour Department, Council for Women and Development and other private agencies to help promote the skill training and employment for the youth.

In addition, block and settlement farms will be established in the rural areas to provide employment for the young and thus reduce the influx of young school leavers into the big towns. The section of the plan on regional and rural development elaborates on these measures.

The lack of a close relationship between some courses in our training institutions, especially in the middle, secondary and technical institutions, and requirements of the employment world aggravates the unemployment problem. This is one of the problems which necessitated the Govern-

ment's adoption of the new education structure already discussed in the chapter on education in this plan. Through the implementation of this new structure and content of education, the educational system will become more responsive to the manpower needs of the country and thus contribute towards minimising the present discrepancy between the output of our educational institutions on the one hand and job-opportunities on the other.

It is expected that when the new educational structure comes into full force, it will help considerably to reduce unemployment particularly among the youth whose exposure to practical training will facilitate their chances for employment including self-employment or further training.

In view of the high growth rate of the labour force and the possible increase in the size of the unemployed, one of the solutions to the problem of unemployment is to encourage self-employment through the provision of facilities for skill training and other facilities for promoting self-employment which will be provided by the various measures envisaged in the plan for expanding the economy.

Government recognises the contribution which well-organised vocational guidance programmes and counselling services can make in reducing the imbalances in the demand and supply of manpower at different levels of skills and in promoting better planning, closer co-ordination and more purposeful programming of technical and general education. The Ghana Manpower Board in collaboration with the Ghana Education Service, the Universities, the National Vocational Training Institute, Labour Department and other interested agencies will set up during the plan period a network of vocational guidance and counselling services with the objective of guiding our educational institutions to train young persons in occupations where opportunities exist for gainful employment, including self-employment.

As indicated earlier, Ghana suffers from the incidence of under-employment, the extent of which is not known. During the plan period efforts will be made to undertake studies into the incidence of this phenomenon with a view to finding solutions to the problem.

In order to create more employment openings for skilled members of our labour force Government will continue to ensure that expatriate employees are only recruited to fill positions in respect of which Ghanaians lack the requisite expertise and experience. In such cases employing establishments will be required to organise under-study arrangements and report periodically as to progress made in developing Ghanaian counterparts. The Immigration Quota Committee will rigidly apply the conditions laid down for expatriate employment in the economy and assist in the follow-up action to ensure the success of this programme.

8.2. Skills in Short Supply

Ghana, like most developing countries, suffers from the very limited availability of the relevant skills needed for the rapid expansion and modernisation of the economy.

The table below gives an indication of the distribution of skills in five broad occupational groups, namely, Administrative Managerial, Professional, Middle-level Sub-Professional and Technical Group, Middle-level Administrative and Managerial Group and skilled Craftsmen and Tradesmen Group.

	1975	1980	*Estimated additional requirements* 1975–80
Administrative and Managerial ..	12,528	15,660	3,132
Professional	17,687	22,110	4,423
Middle-level Sub-Professional and Technical	92,417	115,521	23,104
Middle-level Administrative and Managerial	65,950	82,437	16,487
Skilled Craftsmen and Tradesmen	79,641	99,600	19,959

Source.—Ghana Manpower Establishment Survey (1973–75) (Unpublished) Ghana Manpower Board.

Although significant progress has been made in the production or development of managers and administrators, this category continues to be one of the scarce categories in view of the growing complexity of the economy and the increasing demand for qualified managerial and administrative personnel so much needed to manage it. The School of Administration, the Management Development and Productivity Institute and the Ghana Institute of Management and Public Administration constitute the main institutions for the development of management personnel in the country. These are supplemented by training facilities abroad. From the point of view of implementing the plan, this category of manpower will continue to be in short supply; between the commencement of the plan in 1975 and the end of the plan period in 1980 it is estimated that Ghana will require about 3,000 administrators and managers in addition to the present stock. The intensification of the training programmes envisaged by the Ghana Institute of Management and Public Administration (G.I.M.P.A.), Management Development and Productivity Institute (M.D.P.I.) and the School of Administration will accelerate the output of this category of personnel to meet requirements at least numerically. To maintain a high level of management and administrative performance, top level management will during the plan period intensify and improve upon their management and supervisory roles, step up on-the-job training as well as co-operate effectively with the management training institutions, to jointly organise more seminars and training sessions.

The management institutions in the country and such bodies as the Ghana Management Association as well as the Ghana Employers' Association, the Ghana Manufacturers' Association, and the Chamber of Commerce will pool their resources to organise seminars, exchange of ideas, inter-industry visits and contacts to improve and foster the application of management skills and the development of new techniques. Appendices IV and V give an indication of the training activities of G.I.M.P.A. and M.D.P.I. during the plan period. In addition to local training, overseas training of management and administrative personnel will be continued in special cases.

Like managers and administrators, economic development heavily depends on the availability of scientific, professional and technical personnel. Although in the past few years quite a considerable number of such personnel have been produced in the country and in overseas institutions, there are still significant shortages of personnel in science and mathematics based occupations in the country. Such personnel as geologists, engineers of all types, agriculturists, meteorologists, surveyors, architects, planners are in short supply in the country. Others in short supply are medical doctors of all types (general practitioners and specialists) dentists, supporting medical personnel such as laboratory technicians; X-ray technicians, nurses and midwives. There are also in short supply, teachers both at the university and secondary school levels, in technical schools and polytechnics particularly those engaged in the teaching of science and mathematics. Other personnel in short supply are accountants, statisticians, and economists, middle-level management and administrative personnel such as supporting accounting personnel, executive personnel, secretaries and stenographers. There are also shortages of selected categories of highly skilled supervisors, foremen, craftsmen, production process workers and technicians in civil, electrical, telecommunications, mechanical and agricultural fields.

The principal reasons responsible for the shortages of these specialised skills are: inadequacy of existing institutional, in plant, in-service or apprenticeship training in the country, and the poor quality in certain areas of our vocational and technical education, selection, recruitment and promotion procedures, unrealistic attitudes, expectations and aspirations of job seekers, the lack of correspondence between the "world of education" and the "world of work", the imperfect functioning of the employment market mechanism, lack of adequate facilities for vocational guidance and counselling, lack of adequate co-ordination and liaison between the employing establishments and the educational institutions, etc.

The emphasis on the production of graduates with training in science and mathematics and the technical professions has however yielded some good results although more effort is needed in this direction. As indicated in the paragraphs on higher education, the policy of increasing the production of such personnel will be intensified during the plan period towards meeting the shortages that still persist in this important segment of our skill force. The setting up of a sixth form college of science and mathematics and the expansion of science and mathematics facilities at the second

cycle level of the educational system will provide a solid basis for achieving the objectives of this policy. In 1975 the estimated number of such personnel in the system stood at not less than 17,687. For the execution of the plan, it is envisaged that at least 22,110 professional personnel will be employed, Appendix 3 indicates the output of high level manpower from our universities between the period 1951 and 1974. Appendix 7 gives the magnitude of some of these shortages in key occupational categories.

In the case of geologists only about half the number of geologists required in 1975 were available. (These were 42 out of which nine were expatriates). The estimated requirements between 1975 and 1980 are around 150. The average annual output of geologists from the University of Ghana in the past five years has been nine. The University of Ghana, therefore, will during the plan period step up considerably its output of geologists. In addition to this measure, supplementary overseas training facilities will be utilised whilst expatriate personnel recruitment will be continued during the plan period.

In the case of civil, mechanical and electrical engineers, the output of the University of Science and Technology which is estimated around 60 per annum between 1975–80 is not adequate for the needs of the economy. The requirements for these three categories of engineers are estimated at about 166 per annum during the five-year period. The University of Science and Technology will, therefore, expand its facilities to take in more students. At the same time, the country will continue to use additional expatriate personnel in these fields. There are presently no adequate facilities available in Ghana for training engineers in some specific fields, viz. chemical, metallurgical, mining, textile, telecommunications, irrigation and agricultural. The expansion anticipated in the engineering faculty of the University of Science and Technology, Kumasi will take into consideration the need in these fields.

The additional requirements for agriculturists during the plan period is estimated at between 450 and 500. The expected availability of agricultural graduates in Ghana for the period 1975–80 is estimated to be around 350 and 400. Thus the estimated shortage between 1975–80 is about 100. It is expected that the bulk of this shortage will be met through an increase in the enrolments for agricultural courses both at the University of Science and Technology, Kumasi and the University of Ghana, Legon. Unless this expansion in enrolment takes place, the shortages of high level agricultural manpower will assume serious proportions particularly in the Civil Service because of the large turn-over of agricultural personnel from the Civil Service to Boards and public corporations and to banks and private industry due to higher scales of pay, service conditions and fringe benefits. The Universities will also provide for increases in such personnel as graduates in animal husbandry in view of the developments envisaged in livestock production. In this connection, the need for veterinary surgeons assumes great importance.

The present stock of veterinary doctors in Ghana was 49 in 1975. The total number of veterinary assistants in position in 1975 was 183. The additional demand for veterinary doctors over the plan period is estimated

at 50, and that for veterinary assistant at 420. During the plan period the estimated additional supply of veterinary doctors is six per annum: that of veterinary assistants is 30 per annum. There are at present about 35 students training as veterinary doctors overseas. By the end of the plan period the shortage of veterinary doctors on the basis of expected intake will be about 20. During the plan period, therefore, the training of veterinary doctors which is only available overseas will be intensified. Similarly, the local training school for the training of veterinary assistants turns out only 30 graduates per annum while the estimated requirements during the plan period is 420. Thus only 150 veterinary assistants are expected to be available during the plan period and in view of this big shortage, it is planned to train as many as possible of these assistants abroad.

The main sources of supply of accountants are overseas institutions. The School of Administration produces graduates in administration with accounting options. These graduates through articleship and examinations are admitted into membership of the Ghana Association of Chartered Accountants. Others proceed overseas to obtain similar professional qualifications. The majority of accountants in the economy obtain on-the-job or in-service training and are eventually appointed into senior accounting positions. The existing facilities for training accountants are under review with a view to ensure the production of more accounting personnel in the country. In the meantime, a scholarship programme has been organised by the Scholarships Secretariat to help train more accountants overseas. The Institute of Accountancy Training under the Ministry of Finance will be expanded and given more financial and other support to be able to train more supporting accounting personnel for the Civil Service in particular. The programmes of the M.D.P.I. and G.I.M.P.A. will be expanded to make room for the mounting of courses for accounting personnel both for the public and private sectors. These efforts will be made in close collaboration with the Ghana Association of Chartered Accountants.

In the case of medical doctors and supporting medical personnel such as pharmacists and technicians and other para-medical staff, the needs are great. The local output of medical doctors is presently estimated to be around 60 per annum. The need for doctors and the supporting staff personnel are quite considerable. If Ghana has to improve her doctor population ratio which is presently around one to 9,000 then the facilities for training doctors should be considerably expanded to raise annual enrolments at the Ghana Medical School which is at present around 80 per annum. The decision of Government to set up a second medical school at the University of Science and Technology, Kumasi and then to expand the present Ghana Medical School at Legon is directed towards this purpose. The end result of the implementation of these decisions will be to improve considerably the doctor population ratio and help raise health standards in the country and particularly influence the productivity of the labour force. So far as training of medical specialists is concerned, with the exception of the few areas for which local facilities are available though inadequate, the majority of our specialists will continue to receive

training in institutions abroad. The estimated output of 300 doctors over the plan period from the Ghana Medical School will be completely absorbed by the economy. This is considered inadequate in relation to the estimated growth of the population; at the present, low doctor population ratio of one to 9,000 at least 100 additional doctors will be needed some of whom will be required for replacement purposes.

The training of nurses and midwives and other para-medical personnel will be intensified during the plan period in both local and overseas institutions. This will include the provision of in-service training facilities to ensure more frequent training courses. The number of current vacancies for professional nurses is around 929, that of auxiliary nurses is estimated at 921 while that of professional midwives is estimated at 289. The projected output of professional nurses in 1975–80 is estimated at 1,040 while that of auxiliary nurses is estimated at 5,430. The output of midwives and auxiliary midwives is estimated at 1,740 and that of psychiatric nurses 1,370. On the basis of the above projections, it is hoped that the deficiencies in the staffing position in the medical field particularly in relation to doctors and nurses will be corrected to a reasonable extent. The output of medical technicians, e.g. dental, laboratory and X-ray technicians, will have to be stepped up considerably. The future demand for doctors (both general and specialists) and para-medical personnel will depend on the anticipated expansion of the medical services and the extent of the resources for such expansion. The provision made for skill development and supply both local and overseas seem adequate for the requirements of the plan.

8.3 Middle Level Technical Personnel

One disquieting characteristic of the occupational structure of the labour force in Ghana is the lop-sided development of the normal staffing pyramid which shows a more favourable ratio of professionals to technicians and a lower ratio of technicians to craftsmen than is normally to be found in more advanced countries. This lop-sided development is indicative of the serious shortages of specialised manpower in Ghana at the middle or intermediate level which constitute the mainstay of the development effort.

The qualitative aspects of training programmes at various levels have not yet received adequate attention. This may be primarily ascribed to the continued shortages of qualified, trained and experienced instructors, lack of adequate shop-floor facilities for practical training, dearth of good teaching materials, equipment and library facilities, the low level of basic education and training, the unfavourable teacher-pupil ratio, inadequate budgetary provision, and lack of effective liaison between the employing establishments and the training institutes.

Studies carried out so far indicate that while there is growing unemployment among some categories of the products of the technical schools there is at the same time serious shortages among other categories of technicians in the economy. The reasons for this situation have been mentioned above but stress must here be laid on the need to improve

considerably the supplies of equipment, and other facilities, the need for substantial increases in technical teacher supply and better conditions of services to attract and retain them. Appropriate measures have been proposed in the section on technical and vocational education for remedying these deficiencies. During the plan period the training of technical school teachers will be intensified and the programme of overseas training of technical personnel (including technical instructors) will be substantially expanded. The National Vocational Training Institute will considerably expand its activities, set up trade standards for more occupational areas and expand its trade testing programmes. The local programme for improving technical education both qualitatively and quantitatively will be supplemented with overseas training of technicians and craftsmen (particularly in the practical fields) who will be mainly used for purposes of training others in institutions and industry. It is hoped that this programme of overseas training will considerably help towards eliminating as rapidly as possible the skill shortages among the middle level technical categories.

In the selection of training programmes, very careful consideration will be given to factors like flexibility, adaptability, effectiveness, economy and easy accessibility. Generally speaking, the training programmes particularly at technician and skilled workers' level, will be broad-based, and given a measure of 'built-in' flexibility to allow inter-occupational transfer or changes within broad occupational groups. This will enable the trainees to acquire the ability to adapt themselves to new technological changes and innovations, new processes and new types of raw materials, machinery and equipment. As far as possible training programmes will be located at places which not only offer maximum facilities for theoretical and practical training, but are easily accessible to the large sections of prospective trainees. Practical training will be intensified.

The vital need for further strengthening, diversifying and broadening the scope of our institutional, in-plant and apprenticeship training programmes in the country has already been mentioned in the paragraphs under technical and vocational education. It is important to emphasise the need for providing more opportunities for practical training both in training institutions and in industry as an integral part of the technical education programme. This aspect of the technical school programme has received scant attention in the past. During the plan period, this situation will be corrected as indicated in the relevant paragraphs of the plan. Government recognises the low-level of technical knowledge in the country and has already directed the adoption of measures for large-scale training and up-grading of the skills of tradesmen and craftsmen in local and overseas institutions. During the plan period action in this direction which is already in progress will be intensified under the auspices of the Ghana Manpower Board. The Manpower Board will also in collaboration with the Scholarships Secretariat continue to assist the agencies which are seriously handicapped by skill shortages beyond the scope of existing local institutions to secure appropriate overseas training programmes.

Government will also continue to encourage all those Ghanaians who have qualified abroad in critical manpower-shortage areas to return home. It is, therefore, urgent to continue to ensure the maintenance of up-to-date records of students and to maintain regular contacts with them so that their progress can be monitored and appropriate guidance with regard to their studies and their eventual employment in Ghana provided. In order to avoid the tendency of students staying abroad after their training, government will ensure through appropriate arrangements and measures with the foreign countries concerned that future sponsored students are returned home after the completion of their studies.

8.4 Productivity

Although there has not been any serious study of labour productivity in the country, it is generally believed that the productivity of the Ghanaian labour force is very low, especially in the public sector of the economy. This defect hinders considerably efforts to speed up the expansion of the economy. Increased productivity and performance on the part of the employed labour force is of paramount importance for the growth of our industries, for their viability and competitive status in both foreign and domestic markets, and also for the growth of the national product.

Low productivity of the labour force has one of its roots in the low level of education and training of the labour force which is due to the limited facilities for training and the absence of any systematic training programmes in many establishments. Whilst low productivity may be due to other factors outside the control of management namely, poor or lack of raw materials, inefficient machinery and equipment, to a large extent the problem stems from inadequate supervision and management which to some degree is due to the dearth of high level management personnel with the requisite training and experience and scope for effective management and supervision of subordinate personnel in the conduct of their work. In many establishments the network of managerial and supervisory services is very weak, due invariably to unclear lines of demarcation and control. This may lead to poor work discipline and attitudes among subordinate personnel.

During the plan period therefore, Government will ensure that the training of Ghanaians in all walks of life is intensified. In this connection, departmental training programmes will be reorganised to ensure that Ghanaians in all vital positions in all sectors of the economy who are capable and can undergo further training as well as training others are selected and trained locally or abroad. The trained cadres will be used as the motive force behind the Ghanaianisation programme and the efforts to improve the general productivity of serving personnel. The strategy of training employed manpower is of crucial importance as it offers prospects of immediate gains in individual performance and sizeable increases in productivity, output and incomes.

In this crucial field of up-grading management, supervisory and middle-level skills, government will continue to support the efforts of such agencies as the Ghana Institute of Management and Public Admi-

nistration, the Management Development and Productivity Institute and the National Vocational Training Institute which are contributing towards the up-grading of management, supervisory and middle-level skills in both the public and private sectors of the economy. These three Institutes will up-grade the skills of 31,827 people at various skill levels during the plan period. The training programmes of the Institutes are shown in Appendices 4, 5 and 6.

The programme of up-grading skills at all levels will be extended to the private sector where government plans to operate a compulsory levy scheme which will provide for the training of employees in this sector. The details of this scheme will be worked out and provided for under an appropriate instrument of government after consultation with the relevant bodies, particularly the Ghana Employers' Association, Ghana Manufacturers' Association and the Ghana Trades Union Congress.

8.5 Wages and Incomes Policy

Any manpower and employment policies and programmes can only be effectively implemented within the framework of appropriate and realistic prices and incomes policies. Since wage levels are influenced by fluctuations in real incomes, it is important that a pragmatic approach to a prices and incomes policy which will seek to promote effective human resources development programmes and manpower deployment should be adopted. It is for this reason that government intends, during the plan period, to continue to ensure that its prices and incomes policy is in keeping with the development efforts of the country and promotes the achievement of their objectives. The Prices and Incomes Board which has been set up to formulate national incomes policy and advise the Government on all aspects of policy relating to wage and salary rates now have effective control over industries in determining price increases. In the course of the 5-year plan period, the Board will continue its efforts to achieve price stability by regulating increases in wages and prices. Government is fully aware of the important role that an appropriate prices and incomes polices can play in the management of the country's economy, particularly in creating the conditions and the proper frame within which labour can be effectively utilised and distributed among the relevant sectors of the economy. A realistic prices and incomes policy is an effective instrument in human resources development in particular, by way of directing people into training in those fields which are pertinent to the development of the country. The wages and incomes policy is therefore one of the measures which in the course of the 5-year plan period Government will use in developing skills in the most critical areas as well as effecting an appropriate distribution or deployment of the essential skills within the economy. During the plan period, therefore, Government will ensure that the Prices and Incomes Board is strengthened and given full support.

Any effective planning depends on adequate data. Unfortunately the available data needed for planning is grossly inadequate despite efforts made so far: in this connection available data on human resources employment, unemployment, etc., have been rather poor and in some cases

not easy to obtain on regular basis. To achieve more realistic plans therefore it is essential that the existing institutions for data collection should be sufficiently strengthened and their activities improved upon. The Central Bureau of Statistics which is the principal data collection agency of government has in the past suffered from constant depletion of staff required for its normal operations. The resultant paucity of lack of useful information constitutes a serious draw-back to effective planning in all sectors of national life. During the plan period, Government will give the C.B.S. and other bodies involved in data collection all the essential facilities, equipment and funds to ensure that they can attract and retain the requisite personnel.

8.6 Ghana Manpower Board

The Government reconstituted the Ghana Manpower Board in 1974 with added powers and functions to enable it to carry out its functions of over-all manpower planning and human resources development activities in the country.

The reconstituted Board has been charged to implement manpower policy defined to include:—

(1) Maximum and efficient utilisation of the nation's manpower and avoidance of wastage of skills and training by purposeful direction, guidance, and accurate placement of trained and skilled members of the labour force;

(2) Periodic review of the national system of education and training schemes with a view to their effective adaptation to changing manpower requirements;

(3) Emphasis on building a flexible and dynamic labour force with skills which are adaptable to occupational shifts, technological changes and industrial growth;

(4) Increased emphasis on the development of agricultural skills, better technical support for farmers and rural communities, and the provision of qualified agricultural specialists;

(5) Emphasis on building those skills which are basic to the development of the country, such skills as management at all levels, supervision and foremanship, professional and sub-professional occupations, and middle level mechanical skills and know-how which are interchangeable between occupations and industries;

(6) The study of the population and migration policy in relation to the growth of the labour force, the scale of employment, the rate of unemployment and the burden of dependency.

The Board will therefore implement the above manpower policy through the execution of the functions ascribed to it, namely:—

(1) to formulate plans and policies for the development, education and training and the effective utilisation of all the human resources in all sectors of the national economy:

(2) to review and evaluate the manpower aspects of national economic plans and the main priorities for providing the needed supply of manpower;

(3) to advise and evaluate plans for the development of a national system of education and training with the object of meeting manpower and employment needs and achieving the objectives of national development;

(4) to evolve suitable plans to develop and maintain full information on the employment status of university graduates from both Ghanaian and foreign universities and in co-operation with the appropriate agencies devise an active programme to assure their productive employment, together with suitable plans for the reception, transportation and accommodation of all graduates from overseas;

(5) to undertake periodic assessments of the manpower resources and requirements of the country and foster the development of regular statistical services for this purpose;

(6) to develop plans and propose suitable programmes for vocational guidance;

(7) to develop plans and programmes to promote, expedite and co-ordinate the production of needed skills through actual employment experience and work-related training within employing establishments and in co-operative programmes which link formal schooling with work experience;

(8) to develop and ensure the implementation by appropriate bodies, of plans, programmes and projects designed to reduce unemployment and check the causes thereof;

(9) to initiate policies, plans and programmes for the periodic assessment of the manpower resources and requirements of the country in consultation with and utilising the services of the Central Bureau of Statistics and other appropriate agencies;

(10) to maintain continuous and close contact with employing authorities and agencies concerned with manpower problems particularly with the Public Services Commission, Ministry responsible for Education, the Universities, the Scholarships Secretariat, Ministries responsible for Labour, Social Welfare, Youth, Rural Development, Agriculture, Industries, Trade, Ghana Employers' Association, Chamber of Commerce, the Trades Union Congress, institutions concerned with Management training and vocational training and other affected agencies;

(11) to review from time to time the policy of the Government on population and migration and advise on appropriate action as well as on measures to be taken to ensure the fullest development and utilisation of the human resources of the country and to co-ordinate population activities in the country generaly; and

(12) to exercise such other functions as are necessary for the implementation of the provisions of the Decree establishing the Board.

During the plan period, the Board will concentrate on achieving the fullest development and deployment of all available manpower in the country. This will involve the formulation of measures to intensify the training efforts of the country and to mobilise all available manpower for effective participation in the development programme. The training activities of the country will be intensified as mentioned above to enable individuals to acquire as rapidly as possible the skills needed for facilitating their employment either as paid employees or self-employed.

In this connection as mentioned above, the facilities of the relevant development agencies, particularly the banks and development corporations, will be placed at the disposal of all those who have viable projects. The Board, during the plan period, will continue to carry out various studies on the manpower situation so as to improve its knowledge on the skill mix as well as the skill requirements of the economy so as to enable it to take appropriate measures in establishing the right equilibrium between the supply and demand of manpower in the country. It will focus its attention on efforts to ensure the production on an increasing scale of the professional, sub-professional, managerial and technical skills which are in critical demand for the execution of the development programmes envisaged under this plan.

In this connection, it will continue to work in closer collaboration with all branches of the educational system particularly with the higher institutions, polytechnics and technical schools with a view to guiding them along the lines on which they should intensify their efforts.

The Board will maintain its close relationship and collaborative effort with the Scholarships Secretariat and the Council for Higher Education in carrying out on a continuous basis a re-examination and re-orientation of the country's scholarship policies and programmes in the light of current and prospective manpower requirements of Ghana, giving priority attention to the areas and fields of disciplines in which Ghana is already confronted with serious shortages of high level manpower.

The machinery of the Manpower Board provides enough facilities for this collaboration and already a good working relationship for this purpose has been established. To sharpen the tools and efficacy of the Board as many as seven standing committees have been established to guide and give technical support to the Board in the execution of its functions. These committees have been constituted in such a way as to accommodate a wider spectrum of disciplines relevant to the work of the Board. The Board is thus in a better position than hitherto to carry out its responsibility for co-ordinating the functions and activities of all agencies involved in the development and utilisation of the country's human resources, and to adopt measures necessary to ensure the implementation of the government's manpower policy defined above and to achieve the goal of total manpower development and deployment.

*The Committees are:—

(1) Manpower Development and Planning Committee
(2) Management Development and Productivity Committee
(3) Educational Planning and Development Committee
(4) Employment Planning and Promotion Committee
(5) Committee on Population
(6) Research and Studies Committee
(7) Evaluation and Appraisal Committee.

APPENDIX I

RECORDED EMPLOYMENT 1961–1970

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	*% Increase or Decrease*
Agriculture, Forestry and Fishing	48,046	38,791	46,330	50,698	56,077	49,243	43,659	47,536	46,516	48,929	1.8
Mining and Quarrying ..	28,466	28,720	29,861	27,258	26,738	25,540	26,299	26,236	25,955	25,248	11.8
Manufacturing	29,301	29,301	32,364	34,767	32,485	35,820	41,155	44,849	52,874	52,785	+80.0
Construction	63,259	63,259	58,551	64,532	72,932	46,475	47,790	54,783	57,467	49,993	–20.9
Electricity, Water and Sanitary Services ..	15,735	15,912	14,969	14,412	14,033	15,030	14,381	16,023	17,642	14,780	–6.1
Commerce	37,686	39,244	37,295	46,200	35,957	35,482	35,620	36,913	35,930	35,929	–4.6
Storage, Transport and Communications ..	33,498	32,065	32,605	27,245	30,436	31,537	29,962	36,374	29,571	32,543	–2.8
Services	93,941	109,377	121,985	121,748	129,153	122,153	122,477	128,547	134,859	137,761	46.7
All Sectors	349,932	356,215	374,086	386,860	395,811	361,502	361,351	391,261	400,814	397,968	13.7

Rate of growth of Recorded Employment between 1961–70 = 1.3 per cent per annum for all sectors.

APPENDIX II

EDUCATIONAL OUTPUT FROM ELEMENTARY, SECONDARY, TEACHER TRAINING AND TECHNICAL STREAMS IN GHANA,1966/67–1975/76

Levels	**1966–67**	**1975–76** (*Porjections*)	*%Increase Decrease*
Middle Form 4	56,594	100,000	76.2
Secondary Form 5	6,147	11,000	78.0
Upper Sixth Form	1,131	2,300	94.6
Teacher Training	3,634	3,000	–17.4
Technical	843	4,000	375.5

APPENDIX III

OUTPUT OF HIGH-LEVEL MANPOWER FROM OUR UNIVERSITIES, 1951–1974

	1951–61	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	*Total*
Arts	201	59	51	62	157	158	184	229	323	283	303	348	317	134	2,809
Social Science	247	55	115	132	206	239	237	229	230	262	241	261	258	317	3,029
Science	277	110	146	129	176	177	235	162	337	402	505	505	519	554	4,234
Total	725	224	312	323	539	574	656	620	890	947	1,049	1,114	1,094	1,005	10,072

APPENDIX IV

GHANA INSTITUTE OF MANAGEMENT AND PUBLIC ADMINISTRATION

Type of Course	1974–75	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
The Diploma Course	32	35	38	41	44	45	235
The Certificate Course	54	30	50	50	50	50	284
The Senior Management Course	60	60	60	60	60	60	360
The Personnel Management Course	30	30	30	30	30	30	180
Development Planning and Project Management Course	—	60	60	60	60	60	300
Continuing Training Course for Administrative Officers	44	52	50	50	50	50	296
Diploma in Public Administration, Foreign Service Bias	21	25	25	25	30	30	156
Diploma in Advance Agricultural Administration	—	12	20	20	25	30	107
Local Government Management Course for District Chief Executives	—	25	30	30	30	30	145
Management and Health Administration Course for Medical Doctors	—	27	30	60	60	60	237
Population and Family Planning Programme Management Courses	22	25	25	25	25	25	147
Special Purpose or Tailor-made Course in Management for Public Services Organisations	100	100	100	100	100	100	600
Total	387	481	542	575	588	594	3,167

APPENDIX V

TRAINING ACTIVITIES OF MANAGEMENT DEVELOPMENT AND PRODUCTIVITY INSTITUTE 1975/76–1979/80

Sections	NUMBER OF TRAINEES					
	1976	1977	1978	1979	1980	*Totals*
Supervisory	170	160	160	160	160	810
General Management	510	520	580	550	310	2,470
Industrial Engineering	200	230	250	270	290	1,240
Accounting	300	285	210	255	140	1,290
Marketing	210	210	220	260	260	1,160
Management of Training	80	90	90	100	110	470
Research	80	80	80	80	80	400
Totals	1,550	1,575	1,590	1,675	1,450	7,840

APPENDIX VI

NATIONAL VOCATIONAL TRAINING INSTITUTE NUMBERS TO BE TRAINED

Trade	1974–75	1975–76	1976–77	1977–78	1978–79	1979–80	*Totals*
Mechanical Maintenance Fitters	100	140	160	180	210	240	1,030
Construction Machinery and Automobile Mechanics	500	550	600	600	650	650	3,350
Construction and Maintenance Electricians	260	280	300	330	350	350	1,870
Building Construction:—Carpenters, Masons and Others	300	350	400	450	470	500	2,470
Air-conditioning and Refrigeration Mechanics	150	150	180	180	200	220	1,080
Welders, Sheetmetal Workers and Blacksmiths	100	150	200	250	250	280	1,230
Automobile Electricians	170	100	130	150	170	200	920
Auto-body Repairers	100	120	160	180	200	250	1,010
Maintenance Fitters/Machinists	100	130	160	200	200	250	1,040
Clerical and Secretarial	650	700	750	800	900	1,000	4,800
Printing	50	100	120	140	180	200	790
Dressmaking and Tailoring	—	—	100	150	200	250	700
Catering	—	—	30	50	100	150	330
Totals	2,480	2,770	3,290	3,660	4,080	4,540	20,820

APPENDIX VII

MANPOWER SITUATION IN KEY OCCUPATIONAL CATEGORIES

Occupation	*Total Employed* 1975	*Projected Employment by* 1980	*Estimated Output* 1975–80	*Shortages and Surpluses*
Civil Engineers	508	761	100	- 153
Mechanical Engineers	566	920	100	- 254
Electrical Engineers	291	516	100	- 125
*Metallurgical Engineers	62	187	—	- 125
*Mining Engineers	115	292	—	- 177
*Chemical Engineers	51	91	—	- 40
*Agricultural Engineers	41	58	—	- 17
Architects and Town Planners	422	1,049	200	427
Surveyors	640	1,623	200	783
Doctors	952	1,427	300	175
*Dentists	42	53	—	- 11
Geologists	42	192	25	125
*Veterinary Surgeons	49	99	30	20
Agriculturists	635	1,135	400	100
Civil Engineering Technicians	1,182	1,772	60	530
Electrical Engineering Technicians	1,111	1,863	711	41
Telecommunications Technicians	1,871	2,772	200	701
Mechanical Engineering Technicians	1,403	2,281	805	73
Mining Technicians	1,479	3,790	170	-2,141
Professional Nurses	6,153	7,464	810	- 501

*These are skill areas in respect of which local training facilities do not exist. The supply is through external recruitment and overseas training of Ghanaians.

FIVE-YEAR DEVELOPMENT PLAN, MANPOWER AND EMPLOYMENT

CAPITAL FLOW

SUMMARY

Agency	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
Management, Development and Productivity Institute	1,732,700	2,770,570	1,414,750	1,193,900	1,249,980	8,361,900
National Vocational Training Institute	475,000	724,000	275,000	95,000	—	1,569,000
Labour Department	490,000	575,000	205,000	150,000	150,000	1,570,000
Department of Co-operatives	312,336	902,920	2,095,000	2,215,000	1,890,000	7,415,256
National Youth Council	1,233,907	1,419,672	2,405,110	2,405,578	2,305,578	9,769,845
Ghana Institute of Management and Public Administration	718,000	1,823,300	1,614,000	310,000	270,000	4,735,300
Total	4,961,943	8,215,462	8,008,860	6,369,478	5,865,558	33,421,301

FIVE-YEAR DEVELOPMENT PROGRAMME

MANAGEMENT, DEVELOPMENT AND PRODUCTIVITY INSTITUTE

CAPITAL FLOW

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
Administration block, etc. . .	869,800	500,000	—	—		1,369,800
Classroom block, etc. . .	862,900	230,570	—	—	—	1,093,470
Laboratory	—	150,000	—	—	—	150,000
Residential accommodation for participants	—	1,045,000	—	—	—	1,045,000
Staff housing	—	400,000	910,000	980,000	1,000,000	3,290,000
Equipment	—	445,000	192,750	213,900	249,980	1,101,630
Lecture and Assembly hall . .	—	—	312,000	—	—	312,000
Total	1,732,700	2,770,570	1,414,750	1,193,900	1,249,980	8,361,900

FIVE-YEAR DEVELOPMENT PROGRAMME

NATIONAL VOCATIONAL TRAINING INSTITUTE

CAPITAL FLOW

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
Pilot Training Centre, Accra, On-going	80,000	—	—	—	—	80,000
New training centre, Tema . .	210,000	680,000	170,000	30,000	—	1,090,000
Trade Test Centres						
Tema	80,000	2,000	—	—	—	82,000
Accra	90,000	12,000	—	—	—	102,000
Sunyani	—	—	15,000	30,000	—	45,000
Ho	—	—	10,000	25,000	—	35,000
Cape Coast	15,000	30,000	—	—	—	45,000
Clerical Training Centre						
Kumasi	—	—	80,000	10,000	—	90,000
Total	475,000	721,000	275,000	95,000	—	1,569,000

FIVE-YEAR DEVELOPMENT PROGRAMME

LABOUR DEPARTMENT

CAPITAL FLOW

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
Labour Department offices, Accra (*On-going*)	450,000	450,000	—	—	—	900,000
Labour Department offices, Sunyani (*On-going*)	40,000	85,000	40,000	—	—	165,000
Labour Department offices, Volta Region (Juapong/Hohoe District)	—	40,000	40,000	—	—	80,000
Labour Department offices, Northern Region (Yendi District) ..	—	—	30,000	—	—	30,000
Labour Department offices, Central Region (Regional District offices block)	—	—	20,000	50,000	50,000	120,000
Labour Department offices, Eastern Region (new project)	—	—	50,000	50,000	50,000	150,000
Labour Department offices, Upper Region (Wa/Bawku Districts) extensions	—	—	25,000	50,000	50,000	125,000
Total	490,000	575,000	205,000	150,000	150,000	1,570,000

FIVE-YEAR DEVELOPMENT PROGRAMME

DEPARTMENT OF CO-OPERATIVES

CAPITAL FLOW

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
District Offices	102,000	380,000	450,000	500,000	650,000	2,082,000
Co-operatives College ..	—	70,000	1,000,000	1,000,000	430,000	2,500,000
District staff accommodation	100,000	225,000	360,000	360,000	420,000	1,465,000
Equipment . ..	110,336	227,920	205,000	355,000	390,000	1,368,256
Total	312,336	902,920	2,095,000	2,215,000	1,890,000	7,415,256

FIVE-YEAR DEVELOPMENT PROGRAMME

NATIONAL YOUTH COUNCIL

COST ESTIMATES OVER THE PLAN PERIOD

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
Youth Fishing Training Station and Marketing Co-operatives at Kpone in the Greater Accra Region	273,820	475,230	394,038	594,038	594,038	2,531,164
Youth Cocoa Farming Village Project in Brong-Ahafo Region, Ashanti Region and the Western Region	61,860	202,818	256,208	320,260	320,260	1,161,406
Youth Livestock Project in the Northern and Upper Regions ..	120,384	132,424	145,664	182,080	182,080	762,632
Rural Youth Training Centre at Manya Krobo in the Eastern Region ..	96,120	—	—	—	—	96,120
Rural Youth Village Training Centre, Western and Upper Regions ..	122,523	—	—	—	—	122,523
Youth Training Institutes	179,200	179,200	179,200	179,200	179,200	896,000
Youth Settlement Scheme	30,000	30,000	30,000	30,000	30,000	150,000
Youth Complex, Accra	50,000	400,000	1,200,000	1,100,000	1,000,000	3,750,000
Youth Outward Bound Centre	300,000	—	—	—	—	300,000
Total	1,233,907	1,419,672	2,405,110	2,405,578	2,305,578	9,769,845

FIVE-YEAR DEVELOPMENT PROGRAMME

GHANA INSTITUTE OF MANAGEMENT AND PUBLIC ADMINISTRATION

CASH FLOW

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
Student accommodation ..	186,000	500,000	714,000	—	—	1,400,000
Bungalows	154,000	460,000	300,000	160,000	170,000	1,244,000
General Services. Transport. etc.	88,000	863,300	600,000	150,000	100,000	1,801,300
Classrooms	290,000	—	—	—	—	290,000
Total	718,000	1,823,300	1,614,000	310,000	270,000	4,735,300

CHAPTER 9

HEALTH

9.1 General

Investment in health has both an instrumental and independent value: it contributes to productivity and it increases the enjoyment of life. The Government of Ghana controls the largest part of the organised health care system of the country. Policy is executed principally through a directorate in the Ministry of Health. The Director is assisted at headquarters by four deputies who are respectively charged with Medical Care, Public Health, Dental Services and Planning. At the Regional level are Medical Officers of Health who are responsible for supervision of staff, for budgeting and for the general development of the health services within the region. Policy decisions as well as final decisions on budget estimates, development proposals, purchasing of drugs, deployment of staff, are however taken centrally at headquarters. The lack of clearly spelt-out functional relationships between the Ministry of Health and other health-related agencies both in the public sector and in the private and voluntary sectors has been a major bottleneck in the efficient administration of the health services and in the improvement of the health status of the people of this country.

9.2 The Health Care System

The health care system is characterised by a hierarchy of institutions which have been developed on a regional basis. The lowest level of the hierarchy which comprises private practitioners, health centres, health posts, etc. is usually the point of first contact with the health services. The inadequate distribution of such services, poor transport facilities and the overconcentration on hospital services in the urban areas make it difficult for many communities to obtain primary health care. The secondary health services comprising the district hospitals have therefore become the point of first contact for the majority of the population.

Thus by December 1974, there were for the nation as a whole one teaching hospital (Korle Bu), 8 regional hospitals, 32 district hospitals, 12 quasi-government hospitals, 33 Mission hospitals, 13 mines and private hospitals, about 58 health centres: about 60 health posts, 254 dressing stations, and 159 maternity homes.

Between 1967 and 1975, there was an appreciable increase in the number of health facilities particularly in the number of health posts as indicated in Table 1.

TABLE 1

HEALTH INSTITUTIONS IN GHANA 1967 AND 1974 (*a*)

Health Institutions	1967	1974
Hospitals (Government and Quasi-Government) ..	52	64
Hospitals (Mission)	33	33
Health Centres	45	58
Health Posts	9	60

(*a*) Not including about 63 health posts under construction.

There is however an unbalanced distribution of these facilities between regions and between the urban and rural areas of the country.

The Central, Brong-Ahafo, Northern and Upper Regions are the worst off with respect to health facilities. Although these four regions account for about 38 per cent of the total national population, they have only about 22.8 per cent of total hospital beds or a little less than what is available to the Greater Accra Region alone. Secondly, the three major cities of Accra-Tema, Sekondi-Takoradi and Kumasi where most of the health facilities are concentrated have an average bed/population ratio of 1: 390, a figure which is far better than the national average of 1:870. (*See* Table 2.)

TABLE 2

BED/POPULATION RATIOS AS AT 1970

Region	*Bed/Population Ratio*
Upper	1: 1,262
Northern	1: 1,477
Brong-Ahafo	1: 1,698
Volta	1: 788
Western	1: 799
Eastern	1: 1,186
Central	1: 1,451
Ashanti	1: 933
Greater Accra	1: 307
National Average	1: 870

Between 1952 and 1973, there were tremendous increases in the numbers of health personnel as shown in Table 3.

TABLE 3

HEALTH MANPOWER RESOURCES

Category	1952	1973	*Per cent Increase*
Physicians	152	951	525.7
Dental Surgeons	6	30	400.0
Pharmacists	256	583	110.2
Nurses	990	6,153	521.5
Midwives	362	4,932	1262.4
Laboratory Technicians	0	276	—
Sanitarians	110	260	136.4

In spite of the growth in health manpower resources, however, there is a shortage of the various categories of health personnel. This is due partly to population increase and partly to the expansion of facilities.

Secondly, the distribution of health manpower is concentrated in the big urban centres. By the end of 1973, for instance, there were about 1,000 doctors both in the public and private sectors. Out of this number, 688 were in the Government services and 343 in the private sector. The uneven distribution of these doctors is clearly demonstrated in Tables 4A and 4B which indicate that about 82 per cent of all doctors in the public services and 67 per cent of all doctors in both the public and private sectors were found in towns with population of 20,000 and over which contain only 18 per cent of the total 1970 population.

TABLE 4*A*

DISTRIBUTION OF DOCTORS IN THE PRIVATE AND PUBLIC SECTORS (DECEMBER 1973)

	Total number of doctors	*Per cent of Total*
Accra	380	36.8
Communities with population above 20,000	313	30.4
Communities below 20,000	338	32.8
Total	1,031	100.0

TABLE 4B

DISTRIBUTION OF DOCTORS IN THE PUBLIC SECTOR
(DECEMBER 1973)

	Total number of doctors	*Per cent of Total*
Accra	322	46.8
Communities with population above 20,000	242	35.2
Communities below 20,000	124	18.0
Total	688	100.0

In the same year, about 77 per cent of all pharmacists were in towns with population of 20,000 and above.

There exist also great variations in the regional distribution of doctors. This makes the national average doctor/population ratio of 1:10,000 rather meaningless since there are some regions with ratios as low as 1:100,000 (as in the Upper Region) and others with ratios as high as 1:6,000 (as in the Greater Accra Region). With regard to professional nurses, midwives and auxilliaries, the imbalances in distribution are not as marked but they are nevertheless significant.

9.3 Investment in the Health Sector

Between 1967/68 and 1974/75, Government budgetary allocations increased from 4.8 per cent to 8.0 per cent of the total national budget. These give *per capita* expenditures of ₵2.12 for 1967/68 and ₵8.45 for 1974/75. On the average 16 per cent of the health budget is devoted to capital projects and 84 per cent to recurrent expenditure. Of the allocations available for capital development about 88 per cent is spent on the curative services and about 12 per cent on the preventive services. In spite of the increases in budgetary allocations, the coverage of the health services is still inadequate. The modern health services appear to reach not more than a third of the total population. For a large segment of the population therefore the only health resource is still the traditional system. This is partly related to the poor allocation of resources within the health sector and partly to the nature of the settlement pattern. In 1970, about 50 per cent of the population lived in localities with population under 1,000 persons, another 24-28 per cent in villages of 1,000 to 5,000 population as indicated in Table 5. This therefore militates against the rational and economic distribution of health and other social facilities.

9.4 Review of the Health Situation

The health status of the people as measured by the expectation of life at birth, causes of morbidity and mortality and vital rates is very low compared to that of developed countries. Thus, the expectation of life at birth is 46 years (1974) compared with 75 years in Sweden. It is estimated that 30 per cent of recorded deaths in Ghana are due to infective and parasitic diseases such as malaria, measles, tetanus, respiratory and diarrhoeal diseases. Among children under 5 years, 70 per cent of deaths are due to infectious and parasitic diseases which are usually aggravated by malnutrition. Such is the death rate in these children that although they make up 20 per cent of the Ghanaian population, they contribute at least 50 per cent of all recorded deaths. Apart from communicable diseases, deaths due to prematurity and diseases of the newly born are also very common. In women of the fertile span (15–45 years) the major causes of death are related to the complications of pregnancy and child birth. These are attributable to the frequency of pregnancies, low nutritional status, poor midwifery coupled with the low level of health in the population in general.

The factors underlying the poor health status of the population are related to poor sanitary and housing conditions, poor water supplies, poor health knowledge, attitudes and practices, rapid population growth, inadequate supplies of good nutrients in the diet and the poor coverage of health services, especially in the rural areas.

In 1975 about 38.0 per cent of the population was served with pipe-borne water. Of settlements with populations of less than 5,000 persons only 6.5 per cent had pipe-borne water whereas 91 per cent of settlements with populations of 5,000 and above (i.e. urban settlements) had pipe-borne water. Such coverage indicates that a large percentage of the rural population have poorly protected surface water as their source of water supply, i.e. rivers and ponds, which are generally polluted and are responsible for the high incidence of water-borne diseases in the rural areas.

The housing situation in Ghana is characterised by overcrowding (particularly in the urban areas), poor quality housing and insanitary conditions. The disposal of refuse and human waste in our settlements is inadequate. Disposal sites are poorly maintained and therefore become breeding grounds for vermin and parasites. Toilet facilities are very inadequate and a large number of pit-latrines and bucket type latrines are poorly maintained. The poor housing and environmental conditions encourage a very high transmission rate of communicable diseases.

The nutrition problems of Ghana are immense, because the supply of protein and other nutrients is still inadequate. There are still seasonal variations in the availability and price of food throughout the country. Besides, the intra-family distribution of nutrients is not equitable. These factors lead to widespread malnutrition, which becomes aggravated during the seasons of scarcity and high prices. Malnutrition, therefore is an important health problem which takes many forms in Ghana. The most critical period for malnutrition is during the pre-school years, i.e. one to four years of age. This is the time when the child suffers from protein energy malnutrition especially the Kwashiokor type and is highly

susceptible to other illnesses, such as measles and whooping cough because of lowered resistance to infection. It is estimated that one in ten children passes through a stage when they can be described as clinically malnourished and four out of ten pass through a period when their nutritional status is borderline.

In the northern savannah zone of the country, there is a problem of undernutrition bordering on starvation especially during the dry season which has come to be known as the "hungry season". Nutritional marasmus is therefore very common. Another nutritional disease of significance in the Northern parts of the country is vitamin A deficiency which may be manifested in night blindness.

These nutritional problems are clearly related to agricultural production and distribution, low purchasing power of families and the poor knowledge families have of nutrition problems.

The characteristics of the population has health implications.

One feature of the population is its youthfulness; 20 per cent of the population was under five years of age and 47 per cent below 15 years in 1970. (*See* Table 6).

TABLE 5

POPULATION BY LOCALITY, 1970

Population Size	*Percentages*
Under-1,000	46.8
1,000–5,000	24.3
5,000–20,000	10.9
20,000–50,000	5.4
Over 50,000	12.6
All Communities	100.00

The total fertility is about seven in contrast to about two in developed countries. The birth rate is estimated at between 48 and 50 per 1,000 of the population, and with a crude death rate of 18 to 20 per 1,000 the rate of natural increase of the population is estimated at between 2.8 and 3.2 per cent. The infant mortality rate is estimated at 133 per 1,000 live births (1969), the pre-school (1–5 years) mortality rate at 25 per 1,000 and the maternal mortality rate at between 5 and 10 per 1,000 live births. These rates are extremely high compared to those of the developed countries.

TABLE 6

DISTRIBUTION OF THE POPULATION BY AGE AND SEX 1970

Age Groups	*Both sexes* (%)	*Male* (%)	*Female* (%)
Under 1 year	3.3	3.3	3.3
1–4	14.9	15.0	14.9
5–14	28.6	29.1	28.1
15–44	40.3	39.0	41.4
45–64	9.3	9.8	8.7
65 and over	3.6	3.7	3.6
All Ages	100.0	99.9	100.0

The early age at first pregnancy, short intervals between pregnancies due to anxiety over child survival which has resulted in a desire for many children, place an unnecessary health burden on adult women, increasing maternal death, premature births, poor child survival, and decreasing the economic productivity of women. Moreover, as the death rates have been falling, the inappropriately high fertility rates are leading to an increase in the natural rates of population growth.

Dental problems especially periodental diseases are widespread in the population. The dental caries rate is increasing on account of changing food habits particularly in the child population. In spite of the increasing rate of dental health problems, the distribution of the dental health services is grossly inadequate. There is still a large number of hospitals and health centres without dental facilities.

The labour force both on the farms and in the factories are not adequately protected against the health hazards of their occupations. Many accidents thus occur at work e.g. poisoning from insecticides and other farm chemicals and accidents from inadequately guarded machines.

9.5. Constraints on the Health Sector

The major constraints which have inhibited the extension and effectiveness of the health system include poor management, planning and evaluation of the health services, shortage of manpower, undue emphasis on hospital-based services, lack of supporting services, inadequate supporting research programmes and poor co-ordination with other agencies whose activities affect health.

The health sector depends probably more than any other sector of the Public Services on a large number of specifically-trained personnel. As has already been mentioned there is an acute shortage of all cadres of health workers. This has resulted from the lack of co-ordination between manpower development planning and the planning of physical facilities with the development of the latter outstripping the training of health personnel.

The second problem is the inefficient utilisation of manpower resources. Thirdly, there is little co-ordination among the various health training institutions. There is an emphasis on the training of high-level professional personnel who are invariably unwilling to work in the rural areas. The middle-level health workers who are trained in our local institutions perform single functions and although there is a great overlap of subject matter in their training programmes, they are usually trained in separate institutions. The development of such institutions with separate teachers and facilities is wasteful and works against the team spirit so necessary in health work.

Many regions are still not self-sufficient in the training of the basic cadres of health personnel both for curative and preventive work. This inevitably leads to an inordinately high transfer rate of staff from regions thus separating families and creating inefficiencies in the system. The lack of tutors has been a serious drawback in the rapid development of training institutions.

The health system has been very slow in either developing new cadres of local health aides and assistants or in encouraging community participation in a sustained way. There is also a tendency to displace lower trained personnel by highly trained personnel to do exactly the same type of work. This raises cost without increasing effectiveness.

The allocation of resources within the health services has favoured the curative programmes *vis-a-vis* health promotive and preventive programmes. Until quite recently, the system has been characterised by a concentration on hospital and clinic based services which have consumed the major portion of health resources. The emphasis on curative programmes has meant a relative neglect of programmes promoting health and preventing diseases as well as meaningfully integrating the system. Parasitic and infective diseases which are the major causes of morbidity and mortality can only be effectively controlled by devoting adequate resources to public health programmes, and to infrastructural development in the fields of water supplies, housing and a proper waste disposal system. The pattern of resource allocation has tended to favour the upper end of the institutional hierarchy thereby increasing the health resources that have been available to the urban few and denying resources to the rural people who form the majority of our population. The recent expansion of the basic health services in the attempt to extend the coverage of the health services has been constrained partly by the poor allocation of resources and partly by the manpower problem.

Transportation of stores, equipment, drugs and personnel to and from health posts, health centres and hospitals is vital to the efficient administration of the health services. The lack of adequate vehicular support and poor maintenance of the small fleet of vehicles have been major bottlenecks particularly in the rural health sector especially where rural clinics are located in remote areas and have to depend on regular supplies of drugs and other requirements from a regional centre or hospital.

The other pre-requisite for the adequate operation of the health services is proper communication among the various elements of the health care system. Poor communication as well as poor transport facilities has led to insufficient supervision of staff, lack of consultation, inadequate supplies of drugs and other health requirements.

9.6 Goals, Policy Objectives and Strategies

The long-term goal of the health sector is to raise the level of the health of Ghanaians through a network of health institutions which will provide both preventive and curative services. Within the plan period, however, the immediate goals will be to provide the most effective form of health care delivery systems which the limited manpower and financial resources will permit and to distribute health facilities as widely as possible.

The health problems facing the country and the ineffectiveness of the present hospital-oriented system has necessitated a change in the strategy for the development of a health care delivery system that will make it possible for the majority of Ghanaians to enjoy the benefits of good health. During the plan period, Government will pursue policies which will rapidly improve the low health status of the Ghanaian people (within the constraints imposed by the economic situation) so as to improve their well-being and productivity in the national economic effort. Government will therefore emphasise during the plan period the expansion of the primary health care segment by extending the distribution of health centres and health posts to as many settlements as possible and by developing the promotive and preventive services. Government will seek the involvement of the local communities in efforts to satisfy their own simple needs.

This will involve a re-appraisal of the administrative structure and functions of all types of health facilities. Regular courses in health administration and management will be organised for all senior staff to improve efficiency in the system. The Ministry of Health will be effectively decentralised. As part of the decentralisation policy, District Medical Officers will be appointed to co-ordinate and supervise all health programmes within each district. They will work under the Regional Medical Officers of Health as part of the Regional Health Administration. The Central Administration will be responsible for policy formulation, co-ordination, evaluation and international health relations. It will be assisted by a National Health Advisory Council which will include representatives from other health related agencies. The National Council will have various expert sub-committees.

The newly set-up National Health Planning Unit (NHPU) will be strengthened so as to play an essential role in the co-ordination of planning activities with responsibilities to include the examination and review of health policies, the preparation of long and medium range plans, the costing, monitoring, and evaluation of health programmes, and the collation, examination and preparation of the annual estimates. The system of collecting, analysing and disseminating health information will be improved so that data will be available on an on-going basis for planning and evaluation. There will also be regular on-the-spot evaluation of Regional and District Health Services.

The Centre for Health Statistics of the Ministry of Health which will serve as the statistical arm of the Planning Unit will set-up Health Statistics sub-units in each region as part of the Regional Health Administration. These units will be responsible for the collection of primary health data in the regions and for its initial processing.

Research into important endemic and other diseases, plant medicine, as well as into the functioning of the health system will be encouraged with a view to increasing the effectiveness and efficiency of the health services.

At the end of the plan period it is expected that 80 per cent of all local authority areas will be provided with some health facility. In order to achieve this target, the development of the primary health care system comprising health centres, health posts, etc., will be accelerated. This will be backed by district hospitals. Facilities will be located in areas where they are non-existent and where there is economic activity, and population size warrants it

The primary health system will render primary curative care, preventive and promotive services (i.e. MCH and Family Planning, Communicable Diseases Control, Environmental Health, Health Education) and will act as the foci for all health and health-related programmes within the community. The emphasis in all these activities will be on preventive and promotive services as an integral component of rural reconstruction.

The functions of the primary health care system will be so arranged as to ensure local participation in as many health programmes as possible and also the co-operation of the traditional system such as the Traditional Birth Attendants (T.B.A's). Outreach programmes will be carried out from many Health Centres and Health Posts. Relevant information from operational research in the primary health services such as the Danfa Comprehensive Rural Health and Family Planning Project and the W.H.O. Kintampo Community Health Project will be utilised in the development of these activities. It is expected that orientation courses and training programmes will be organised for health personnel by these projects.

The health posts will continue to be in the charge of Health Centre Superintendents whilst doctors will be appointed to run the Health Centres.

The manpower situation will permit the initiation of not more than three health posts/health centres per region per year over the plan period. It is envisaged that the 63 health posts currently under construction will be completed and properly staffed. In the past few years a lot of resources have gone into hospital construction and improvement programmes. This has hampered the development of the primary health care services. In view of the emphasis being placed on primary health care no new hospital construction will start during the plan period. The hospital modernisation programme will be curtailed until a detailed survey has been made of requirements. Only those improvement programmes already started will be allowed to continue. The construction of the two regional hospitals at Ho and Sunyani and the four district hospitals at Winneba, Sefwi-Wiawso, Ada and Bekwai will also continue.

Government is committed to developing Okomfo Anokye Hospital, as a teaching hospital for the second Medical School in Kumasi and also to the development of the new Medical Centre of the University of Ghana Medical School. The construction of these expensive teaching hospitals will not be allowed to affect adversely the development of the primary health care services.

Public health programmes will be directed towards three principal health problem areas of national importance. These are communicable diseases control, nutrition, maternal and child health (MCH and family planning).

The main objective in the area of epidemiology is to reduce the incidence of the major communicable diseases to levels where they will cease to be serious public health problems. The Division of Epidemiology will expand its capacity at the central, regional and district levels in terms of trained manpower, equipment and supplies to be able to maintain close surveillance and control of endemic diseases all over the country. It will collaborate closely with the Centre for Health Statistics of the Ministry of Health in the effort to standardise and establish a system for reporting on endemic diseases and immunisations carried out in the country.

The Division will monitor the work of agencies whose activities might change the ecological situation e.g. the Irrigation Division of the Ministry of Agriculture. It will also continue to work with external Agencies (e.g. W.H.O., S.I.D.A.) to develop on a pilot basis multiple antigen immunisation programmes so that by the end of the plan period, all vulnerable groups particularly, pre-school children and mothers in Ghanaian communities would have been protected against diseases such as measles, poliomyelitis, yellow fever, tuberculosis, smallpox, tetanus, pertusis and typhoid. By the end of the plan period, the Division will have the capacity to keep under regular immunisation at least 75 per cent of the vulnerable groups especially pre-school children.

A central base will be developed for the effective storage of vaccines and other perishable supplies and for the maintenance of field equipment. There will be sub-centres at vantage points in all regions.

Programmes for the treatment and control of major endemic diseases such as cerebrospinal meningitis, leprosy, trypanosomiasis, yaws, tuberculosis, onchocerciasis, and bilharzia will be intensified.

A school for the training of Medical Field Unit staff will start at Kintampo and will turn out 30 trained people a year. The medical field units are the main organ of the Epidemiological Division for the control of communicable diseases. (They are based at the health centres or health posts, and are under the supervision of the Senior Medical Officer in charge of communicable disease control in each region.)

The strengthening of health laboratory services is a prerequisite to the effective control of communicable diseases as well as clinical diagnosis. A central reference laboratory will be built in Korle Bu and some of the regional health laboratories will be expanded. Laboratory equipment and methods will be standardised. The expansion of the health laboratory services will require increased numbers of trained laboratory workers at all levels.

The Environmental Health Services have now become the responsibility of the District Councils. Ministry of Health staff in the Environmental Health Division have therefore been transferred to the councils. The role of the Ministry of Health will be in the fields of co-ordination and training. The Environmental Health Division of the Ministry of Health will collaborate with the councils in the following activities:

(1) designing and developing systems for waste and excreta disposal;
(2) developing vector control programmes; and
(3) expanding of training institutions for the training of staff.

It will also collaborate with the Water and Sewerage Corporation and the Department of Social Welfare and Community Development in the construction and maintenance of wells and other sources of water supply, latrines and protection of food from contamination.

In order to reduce maternal and child morbidity, maximum emphasis will be placed on the development of Maternal and Child Health Services, Family Planning and Nutrition. By the end of the plan period, 60 per cent of women during pregnancy and confinement will be attended to by trained midwives or trained traditional birth attendants. The latter will be identified and trained wherever their services are still being used so as to improve maternal health and child survival. Women, during pregnancy will be protected against malaria, tetanus, and anaemia.

Maximum attention will be devoted to the Family Planning Services as a means of promoting maternal health and well-being. Family Planning Clinics and Services will be integrated into all Ministry of Health services. All health workers will, therefore, be trained in Family Planning methods according to their level of expertise both during their formal training periods and during in-service training programmes. The Ministry of Health will co-operate with the National Family Planning Programme and will actively collaborate with and encourage voluntary agencies working in the fields of Maternal and Child Health and Family Planning to expand their services.

It is hoped that Midwifery and Family Planning Programmes will reduce maternal mortality by five to ten per cent.

The aim in child health will be to reduce infant and pre-school mortality by 25 per cent and also decrease chronic disabilities which arise out of child-hood illness like poliomyelitis. The strategies to be adopted towards this end will include:

(1) Health Education of mothers in child care and nutrition;
(2) Better Midwifery and Family Planning Services as already discussed;
(3) Immunisation programmes;
(4) Malaria protection programmes;
(5) Supervision of growth and development; and
(6) Treatment of common ailments.

By the end of the plan period, at least 75 per cent of pre-school children should be under regular health supervision through Public Health, and Community Health Nurses, Community Aides and Community Volunteers.

These children will be provided with the "Road-to Health" (Morley) Cards to help assess their growth and development. The Ministry of Health will ensure the adequate supply and maintenance of both the cards and weighing scales.

It is planned to pursue a vigorous school Health Policy in order to raise the level of health knowledge of school children and to ensure that their health status is maintained at an adequate level during their school years. Towards this end the Ministry of Health will co-ordinate programmes in health education with the Ghana Teaching Service. There will be both formal teaching of health subjects at Teacher Training Colleges and all schools. Teachers and pupils will be utilised in the provision of basic school health services in co-operation with local health workers. At the practical level, there will be health camps for students during vacations to encourage them assist in Community Health Projects as a means of increasing their health awareness.

The Nutrition Division in co-operation with other agencies will carry out programmes to reduce the prevalance and incidence of common nutritional diseases such as protein energy and vitamin deficiencies. Studies will be carried out in the epidemiology of these diseases through special surveys and other surveillance methods. Attention will be paid to the following:—

(1) Nutrition education of families;
(2) The encouragement of breast feeding;
(3) The use of locally produced weaning foods;
(4) Growth and development supervision;
(5) Nutrition rehabilitation; and
(6) Nutrition services.

The major targets will be pre-school children, pregnant and nursing mothers.

Health Education programmes will be greatly intensified so that a large section of the population will be able to have the right knowledge and attitudes to safeguard their health. Information will be provided both at the individual and at community levels, through posters and mass media campaign and through support of the school health education programmes. Another strategy will be to develop community leadership and participation in health programmes. Health work and study camps will be instituted on a pilot basis to involve youth groups to help in community health projects and at the same time learn about methods of first aid and caring for minor ailments in the home.

There will be full collaboration with organisations such as the Red Cross Society and National Youth Council.

Trainers for such programmes will be drawn from health workers who in co-operation with the Health Education Division will institute health work and study camps in their regions. The Health Education Division will act as a resource in the methods of motivation to all health programmes in clinics and in communities.

Mental health diseases are prevalent in the country due to the breaking down of the old social system and rapid population movements especially to the urban areas. Unfortunately, mental health facilities are limited to three psychiatric hospitals at Ankaful, Accra and Pantang Two of these hospitals are characterised by over-crowding and insanitary conditions. It is planned to extend and strengthen the mental health services. The main objectives during the plan period will be to integrate mental health services with the general hospital services by developing psychiatric units at the Regional hospitals, to train staff required for the provision of mental health services in the country. Existing mental health institutions will be improved upon.

A community mental health service which will be integrated with the general public health service and which will take mental health to the people will be developed. This will involve relations in the treatment of patients. The services will include occupational therapy and after-care services.

The strategy for dental health will be two-pronged. First, in the areas of caries prevention it will be necessary to explore the possibility of flouridating pipe-borne water supplies in as many parts of the country as possible.

Secondly, clinical dental services will be developed at the district hospital level during the plan period.

Training programmes in all health schools will feature knowledge which will enable dental health education to be carried out widely by all health workers.

The strategy in the area of training will be to improve, expand, and rationalise training programmes so that all regions will become self-sufficient in training institutions for turning out the various cadres of health personnel except for those requiring highly specialised training like doctors. Each region will develop a training complex to allow the rational use of health tutors and training resources and to enhance the idea of training for team work. Selected district centres will also be developed for training purposes.

One of the constraints of health manpower development has been the acute shortage of tutors. This will be tackled by the expansion of the Post Basic Nursing School at Legon and the development of health teacher training programmes at the University of Cape Coast. Kintampo will be developed into a multi-purpose training school for Health Centre Superintendents, Nutrition Technical Officers, and Medical Field Unit staff.

Another strategy will be collaboration with the traditional health system as is being done increasingly in many developing countries. It has been decided, for instance, to identify and to train traditional birth attendants in the communities where their services are still being used in order to raise the standards of maternal and child care.

The course contents and instructional objectives of all health training institutions will be reviewed and made even more relevant.

The Medical School at Korle Bu will increase its annual intake to 75 (including dental students) and will fully establish post-graduate training programmes in all major areas of specialisation. In keeping with the priorities for public health needs, there is need for emphasis on post-graduate training in public health. The University of Science and Technology will undertake under-graduate training. The Universities will assist in the preparation of training manuals, actual teaching, and in-service training for health workers.

The Ministry of Health is an intensive user of expensive plant, equipment and vehicles and one of the ways to cut down expenses will be the standardisation of such plant, equipment and vehicles and the development of maintenance services in the country. It is hoped that during the plan period every region will develop maintenance services to be able to handle most of the maintenance problems of the region as a whole.

Attempts are already being made to standardize vehicles, whilst endeavouring to purchase easily serviceable ones. With the rising costs of transportation, it will be necessary to maintain rigid controls over the use of vehicles.

9.7 Proposed Programmes for the Plan Period

An amount of approximately ₵120 million (at 1975/76 prices) will be required during the plan period for health programmes. Appendices 1–14 contain detailed information including supplementary explanation, on the programmes to be followed in the plan period.

(i) Health Centre/Health Post Programme

In the 1975/76 financial year, an amount of ₵2.8 million has been voted for the continuation of work on 63 health posts, 16 health centres and 7 polyclinics. A further amount of ₵6.14 million will be needed to complete work on these facilities. 64 new health posts and 13 new health centres will be constructed at a total cost of ₵11.6 million between 1976–77 and 1979–80. (*See* Appendices 1*A* and 1*B*.) Staff quarters will be provided at all new health posts and at existing health posts which have no such facilities.

Assistance will still be sought from UNICEF for the equipping of the health posts and health centres.

FIVE-YEAR DEVELOPMENT PLAN PERIOD PROPOSALS

APPENDIX 1A

COMPLETION OF HEALTH CENTRES/HEALTH POSTS UNDER CONSTRUCTION

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
GREATER ACCRA REGION					
1. Teshie-Nungua Health Centre and Dental unit	20,000	60,000	100,000	100,000	80,000
2. Labadi Polyclinic (maternity block)	50,000	100,000	100,000	100,000	100,000
3. Kotobabi Polyclinic (maternity block)	20,000	100,000	100,000	100,000	100,000
4. Mamprobi Polyclinic	60,000	60,000	60,000	60,000	—
5. Damfa Health Centre	—	60,000	—	—	—
6. Ayalolo School Clinic	—	60,000	—	—	—
7. Completion of health posts at Dodowa, Obom, Prampram, Kasseh and Sege	100,000	80,000	60,000	60,000	—
Sub-total	250,000	520,000	420,000	420,000	280,000
VOLTA REGION					
1. Kpedze Health Centre	40,000	50,000	50,000	—	—
2. Denu-Aflao Health Centre	20,000	25,000	40,000	—	—
3. Completion of Health Posts	83,000	50,000	50,000	—	—
4. Jasikan Health Centre	30,000	—	—	—	—
Sub-total	173,000	125,000	140,000	—	—
EASTERN REGION					
1. Asamankese Health Centre	50,000	75,000	—	—	—
2. Somanya Health Centre	101,900	70,000	70,000	—	—
3. Improvement to and completion of health posts	100,000	50,000	50,000	50,000	50,000
Sub-total	251,900	195,000	120,000	50,000	50,000
CENTRAL REGION					
1. Urban Health Centre, Cape Coast	90,000	60,000	50,000	—	—
2. Completion of health posts	190,000	180,000	50,000	—	—
3. Improvements to Agona-Swedru Health Centre	40,000	60,000	100,000	100,000	60,000
Sub-total	320,000	300,000	200,000	100,000	60,000

APPENDIX 1A—contd.

COMPLETION OF HEALTH CENTRES/HEALTH POSTS UNDER CONSTRUCTION

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
WESTERN REGION					
1. Kwesimintsim Polyclinic	70,000	50,000	50,000	—	—
2. Completion of four Health Posts (Agona junction, Wassa-Akropong, Essem and Ainyinasi)	80,000	70,000	—	—	—
3. Up-grading of Mpohor, Sefwi-Anhiawso, Juabeso and Princess Town clinics	100,000	65,000	50,000	—	—
Sub-total	250,000	185,000	100,000	—	—
ASHANTI REGION					
1. Polyclinic (KAH)	100,000	100,000	100,000	—	—
2. Completion of Urban Health Centres at Chirapatre, Manhyia, Old Tafo	70,000	100,000	100,000	100,000	100,000
3. Improvements to Health Centres and Health Posts	380,000	50,000	50,000	—	—
4. Staff quarters for Doctors and Nurses	180,000	150,000	100,000	100,000	100,000
Sub-total	730,000	400,000	350,000	200,000	200 000

APPENDIX 1A—contd.

COMPLETION OF HEALTH CENTERS/HEALTH POSTS UNDER CONSTRUCTION

Project/Programme	1975–76	1976–77	1977–78	1978–79	1979–80
BRONG-AHAFO REGION	¢	¢	¢	¢	¢
Up-grading of Goaso, Atebubu, Kintampo, Sankore Health Centres	200,000	240,000	240,000	120,000	—
New Longoro HP (Staff quarters)	80,000	60,000	—	—	—
Forikrom, Tanoso, Wamfie, Djedu, Dadiesoaba, Nsoatre HPs (Quarters) ..	240,000	100,000	70,000	70,000	50,000
Sub-total	520,000	400,000	310,000	190,000	50,000
NORTHERN REGION					
Staff Accommodation at Health Posts (Gambaga, Kpasenkpe, Saboba, Tuna, Bunkpurugu, Bimbilla)	184,500	60,000	60,000	80,000	—
Sub-total	184,500	60,000	60,000	80,000	—
UPPER REGION					
Bolgatanga Urban Health Centre	—	—	50,000	90,000	90,000
Extensions to Tumu Health Centre	96,500	80,000	80,000	50,000	50,000
Completion of Health Posts	65,000	50,000	50,000	—	—
Sub-total	161,500	130,000	180,000	140,000	140,000
Grand Total	2,830,900	2,345,000	1,830,000	1,180,000	780,000

TABLE 1B

NEW HEALTH CENTRES/HEALTH POSTS TO BE CONSTRUCTED DURING THE PLAN PERIOD

Region	1976–77*	1977–78	1978–79	1979–80	*TOTAL Health Centre*	*TOTAL Health Post*
WESTERN	1. Daduso HP	1. Oppong Valley HP	1. Bonso HP	1. Huni Valley HP		
	2. Atiehu HP	2. Manso-Amenfi HP	2. Elubo HP	2. Bamienko HP	—	8
CENTRAL ..	1. Komenda HC	1. Moree HP	1. Nyakrom HP	1. Dominasi HC		
	2. Abirem Agona HP	—	2. Mankesim HC	2. Gomoa Buduata HP	3	4
GREATER-ACCRA	1. Weija HP	1. Dawhenya HP	1. Amasaman HC	1. Odorkor HP		
	2. Madina HP (including Dental Clinic)	2. Kpone HP	2. Kodiabe HP	2. Old Ningo HP	1	7
EASTERN ..	1. Adeiso HP	1. Brenase HP	1. Akropong HC	1. Anyinasi HP		
	2. Begoro HP	2. Gyakiti HP	2. Apradang HP	2. Mangoase HP	1	8
	3. Abetifi HP	—	—	—		
VOLTA	1. Osramani HP	1. Dambai HP	1. Nkonya Ahenkro HP	1. Borae HP		
	2. Agbozume HP	2. Vane HP	2. Akpafu-Mempeasem HP	2. Dzolokpuita HP	1	9
	3. Juapong HC	3. Wusuta HP	—	—		
ASHANTI ..	1. Ejisu HC	1. Nkawie HC	1. Sabronum HP	1. Drabomso HP		
	2. Agona HC	2. Ampanuasi HP	2. Adawso HP	2. Mpasaso HP	3	5
BRONG-AHAFO ..	1. Seikwa HP	1. Abease HP	1. Daduesoaba HP	1. Bomaa HP		
	2. Kwame Danso HC	2. New Drobo HC	2. Bui HP	2. Badu HP	2	8
	3. Nkrankwanta HP	—	3. Kajeji HP	—		
NORTHERN ..	1. Yapei HC	1. Zabzugu HP	1. Nakpaa HP	1. Kpandai HP		
	2. Tolon HP	2. Wulensi HP	2. Janga HP	2. Wangasitari HP	1	7
UPPER	1. Sehoti HP	1. Kundugu HP	1. Fumbisi HP	1. Zebila HC		
	2. Nangodi HP	2. Bulenga HP	2. Worikambo HP	2. Feilman HP	1	8
	3. Gwolu HP					
Total	6 HC 16 HP	2 HC 16 HP	3 HC 16 HP	2 HC 16 HP	13	64
Total Costs	4,000,000	2,400,000	2,800'000	2,400,000	5,200,000	6,400,000

HC: Health Centre HP: Health Post

N.B.—All Health Centres and Health Posts will include staff quarters.

*In view of the large numbers of Health Posts currently under construction and in view of the fact that these might not be completed before 1976-77, the Health Posts listed under 1976–77 may not be started until 1977–78 except for those which SSNIT may offer to finance.

(ii) Hospital Services

Appendix 2 shows the hospital construction and modernisation programme for the plan period. Under this programme, improvement works which have already started in a number of hospitals will be completed.

New hospital improvement programmes will be identified during the plan period after the survey of requirements has been undertaken. Construction of the two new regional hospitals at Ho and Sunyani and the new district hospitals at Winneba, Sefwi-Wiawso, Bekwai and Ada will continue. Government will also improve the Mission Hospitals at Wenchi and Dormaa.

A 30-bedded contagious diseases hospital will be constructed in Kumasi. Large-scale improvement works costing about ₵9.0 million will be carried out at the Okomfo Anokye Hospital to bring it up to the level of a teaching hospital. Accommodation for hospital staff will also be provided during the plan period.

A total amount of ₵32.0 million will be voted for all hospital programmes and an amount of ₵25.8 million will also be spent on hospital equipment and vehicles for all health institutions during the plan period.

APPENDIX 2

PROGRAMME FOR HOSPITAL SERVICES

Project/Programme	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
GREATER-ACCRA REGION					
Improvements to PML Hospital ..	60 000	200,000	200,000	150,000	—
Improvements to Tema and (Nurses flats)	70,000	180,000	100,000	100,000	—
Improvements to Ridge and (Nurses flats)	100,000	200,000	300,000	300,000	360,000
Improvements to Achimota and (Nurses flats)	60,000	100,000	50,000	—	—
New District Hospital—Ada	10,000	100,000	100,000	100,000	100,000
Hospital for Police	1,000,000	—	—	—	—
Sub-total	1,300,000	780,000	750,000	650,000	460,000
VOLTA REGION					
New Regional Hospital—Ho	100,000	600,000	600,000	600,000	600,000
Improvement to Worawora Hospital and staff quarters	150,000	100,000	100,000	50,000	—
Improvement to Keta Hospital ..	30,000	100,000	50,000	—	—
Improvement to Peki Hospital and blood bank	50,000	50,000	85,000	—	—
Improvement to Hohoe Hospital ..	83,000	50,000	100,000	—	—
Kete Krachi Hospital (Lab.)	15,000	45,000	—	—	—
Improvement to Ho Hospital and staff quarters	100,000	—	—	—	—
Sub-total	528,000	945,000	935,000	650,000	600,000
EASTERN REGION					
Improvement to Koforidua Hospital ..	479,095	100,000	100,000	—	—
Nsawam Hospital	101,160	150,000	150,000	100,000	—
Suhum (Maternity)	30,000	50,000	—	—	—
Improvements to New Tafo Hospital	34,500	70,000	70,00	—	—
Improvements to Kibi Hospital (Mortuary)	18,000	—	—	—	—
Akuse Hospital	30,000	—	—	—	—
Improvements to Atibie Hospital and 2 bungalows	90,000	60,000	60,000	—	—
Tetteh Quarshie Hospital Improvement (Laboratory)	82,500	20,000	—	—	—
Suhum Hospital Improvement (quarters)	20,000	50,000	50,000	—	—
Akim-Oda Hospital (OPD)	30,000	40,000	40,000	—	—
Rehabilitation of Takrowase Hospital	—	30,000	50,000	—	—
Sub-total	915,255	570,000	520,000	100,000	—

APPENDIX 2—contd.

PROGRAMME FOR HOSPITAL SERVICES

Project/Programme	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
CENTRAL REGION					
Patients dormitory and renovation—Ankaful Leprosarium	40,000	50,000	30,000	—	—
Improvements to Cape Coast Hospital and senior staff quarters	90,000	110,000	50,000	50,000	—
New District Hospital, Winneba ..	20,000	100,000	150,000	200,000	300,000
2 Blocks of flats, Winneba	50,000	70,000	80,000	100,000	—
Improvement to Dunkwa Hospital and junior staff quarters	50,000	150,000	50,000	—	—
5 Blocks of flats, Cape Coast	50,000	80,000	80,000	100,000	100,000
Improvements to Saltpond Hospital ..	80,000	35,000	50,000	—	—
Sub-total	380,000	595,000	490,000	450,000	400,000
WESTERN REGION					
Effia Nkwanta Phase II	50,000	150,000	150,000	100,000	100,000
New district hospital, Sefwi-Wiawso (to include Psychiatric Observation ward, and Dental Clinic)	60,000	330,000	300,000	500,000	500,000
Improvements to Sekondi-Takoradi Hospital (junior staff quarters) ..	50,000	50,000	60,000	—	—
Improvements to Enchi, Half-Assini Hospitals	100,000	50,000	50,000	60,000	—
Inprovements to Bibiani and Tarkwa Hospitals	150,000	75,000	80,000	80,000	50,000
Sub-total	410,000	655,000	640,000	740,000	650,000
ASHANTI REGION					
Staff Accommodation—Mampong Hospital	39,000	150,000	150,000	—	—
Improvements to Komfo Anokye Hospital	820,000	600,000	2,170,000	2.570,000	2,940,000
Accommodation for Nurses and Doctors Kumasi	100,000	100,000	100,000	100,000	100,000
Contagious Disease Hospital, Kumasi (30 beds)	—	100,000	100,000	50,000	—
Bekwai Hospital..	100,000	100,000	200,000	300,000	300,000
Sub-total	1,059,000	1,050,00	2,720,000	3,020,000	3,340,000
BRONG AHAFO REGION					
New Sunyani Hospital	150,000	600,000	600,000	600,000	600,000
Modernisation of Wenchi, and Dormaa	—	150,000	100,000	—	—
Sub-total	150,000	750,000	700,000	600,000	600,000

APPENDIX 2—contd.

PROGRAMME FOR HOSPITAL SERVICES

Project/Programme	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
NORTHERN REGION					
Construction of OPD, West Gonja Hospital	20,000	—	—	—	—
Conversion of Bole Health Centre to a hospital	50,000	150,000	100,000	100,000	—
Improvements to Salaga Hospital laundry	—	60,000	—	—	
Tamale Hospital	120,000	50,000	50,000	—	—
Staff quarters for Doctors and Nurses	200,000	180,000	100,000	80,000	80,000
Repairs and Redecoration, Yendi Hospital	10,000	20,000	—	—	—
Sub-total	400,000	460,000	250,000	180,000	80,000
UPPER REGION					
Improvements to Bolgatanga Hospital	160,000	50,000	50,000	—	—
Improvements to Lawra Hospital	150,000	50,000	50,000	—	—
Accommodation for nurses, Bolgatanga	80,000	100,000	70,000	—	—
Conversion of Tumu Health Centre to a hospital	96,500	70,000	70,000	—	—
Extensions to Bawku, Wa and Jirapa Hospitals	173,000	150,000	150,000	100,000	100,000
Sub-total	659,500	420,000	340,000	100,000	100,000
Grand-total	5,801,755	6,225,000	7,345,000	6,490,000	6,230,000
Hospital Equipment and Vehicles for all Departments of the Ministry of Health	5,812,000	5,000,000	5,000,000	5,000,000	5,000,000

(iii) PUBLIC HEALTH ROGRAMMES

It is expected that programmes in this area will have the greatest impact on the health status of the population. A relatively substantial investment will be made in public health programmes.

Programmes in M.C.H. Services are personnel intensive and do not require as much capital investment as the hospital services. For the supervision of the growth and development of pre-school children, 2,000,000 "Morley Road-to-Health" weight charts will be distributed and 2,000 weighing scales will be purchased. This programme exclusive of vehicle requirements will cost a total of about ₵1 million. Assistance will be sought from UNICEF for these items.

The cost of immunisation, malaria protection and family planning will be covered under the relevant programmes.

Additional rooms will be provided for M.C.H. work at 15 centres and the child welfare clinic in Cape Coast will be extended and renovated. The total cost for this programme will be ₵705,300 (*see* Appendix 3).

APPENDIX 3

MATERNAL AND CHILD HEALTH CLINICS

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
VOLTA REGION					
M.C.H. Centres at Kete-Krachi ..	—	42,000	—	—	—
Keta	—	—	40,000	—	—
Hohoe	—	—	38,000	38,000	—
Worawora	—	—	—	—	39,000
Sogakofe..	—	—	—	—	38,000
Sub-total	—	42,000	78,000	38,000	77,000
CENTRAL REGION					
Renovation and Extension of Child Welfare Clinic, Cape Coast	10,300	30,000	30,000	—	—
Sub-total	10,300	30,000	30,000	—	—
NORTHERN REGION					
M.C.H. Clinics at Yendi	40,000	40,000	—	—	—
Walewale	—	—	40,000	—	—
Salaga	—	—	—	20,000	—
Sub-total	40,000	40,000	40,000	20,000	—
UPPER REGION					
M.C.H. Centres	—	—	—	—	—
Bolgatanga	—	40,000	—	—	—
Bawku	—	40,000	—	—	—
Zuarungu	—	—	20,000	—	—
Sub- total	—	80,000	20,000	—	—

APPENDIX 3—*contd.*

MATERNAL AND CHILD HEALTH CLINICS

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
EASTERN REGION					
M.C.H Centres at Nsawam	—	25,000	25,000	—	—
Kibi	—	25,000	25,000	—	—
Mampong	—	25,000	25,000	—	—
Sub-total	—	75,000	75,000	—	—
BRONG-AHAFO REGION					
M.C.H. Centre at Techiman	—	10,000	—	—	—
Sub-total	—	10,000	—	—	—
Total Construction Programme ..	50,300	277,000	243,000	58,000	77,000
Purchase of Morley Cards	—	250,000	250,000	250,000	250,000
Grand Total	50,300	527,000	493,000	308,000	327,000

(iv) Programme for Communicable Diseases Control

About 75 per cent of all children under 5 years will be immunised against measles, tuberculosis, diphteria, pertussis, tetanus, poliomyelitis. The small-pox free situation will be maintained. The appropriate vaccines, will be given to other age groups depending on the epidemiological situation. These programmes will be based on the results of the W.H.O./ S.I.D.A. multiple antigen mass immunisation pilot projects in the Central and Upper Regions.

The endemic disease control programme will cover mainly malaria, onchocerciasis, schistosomiasis, tuberculosis, leprosy, cerebro-spinal meningitis, cholera and rabies. The international onchocerciasis programme which is being sponsored by WHO, IBRD, FAO and UNDP covers the endemic areas of Northern Ghana. The Ministry of Health control programme will be carried out outside the international project area.

During the plan period an amount of ₵1.5 million will be spent on vaccines for the mass multiple antigen immunisation programmes. ₵357,000 will be allocated for the procurement of ped-o-jet guns, refrigerators, deep-freezers, ice boxes, spares for ped-o-jet guns, etc. A central vaccine cold store will be constructed in Accra at a total cost of ₵300,000.

Within the plan period, about ₵2.5 million will be available for the control of the endemic diseases in all parts of the country.

It is expected that U.N.I.C.E.F. and USAID will continue to provide some of the equipment and vaccines required for communicable diseases control.

Appendix 4 gives a breakdown of expenditures for the plan period.

APPENDIX 4

COMMUNICABLE DISEASE CONTROL PROGRAMME

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
Vaccines and other supplies	—	347,090	375,882	287,435	488,732
Equipment for immunisation programme	283,250	154,000	102,200	35,200	65,000
Control of endemic diseases	—	585,000	610,000	660,000	685,000
Central Vaccine Cold Store		300,000	—	—	—
Total	283,250	1,386,090	1,088,085	982,635	1,238,732

APPENDIX 5A

ENVIRONMENTAL HEALTH PROGRAMME

Project Description	*Fiscal Year and Estimated Cost in Cedis*				
	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢
1. HEALTH OFFICES					
WESTERN REGION					
Enchi	—	40,000	—	—	40,000
Asankragwa	40,000	—	—	—	40,000
Sub-total	40,000	40,000	—	—	80,000
CENTRAL REGION					
Fosu	40,000	—	—	—	40,000
Breman Asikuma	—	—	40,000	—	40,000
Saltpond	—	40,000	—	—	40,000
Apam	—	—	—	40,000	40,000
Sub-total	40,000	40,000	40,000	40,000	160,000
EASTERN REGION					
Suhum	40,000	—	—	—	40,000
Mpraeso	—	40,000	—	—	40,000
Sub-total	40,000	40,000	—	—	80,000
VOLTA REGION					
Keta	40,000	—	—	—	40,000
Sub-total	40,000	—	—	—	40,000
ASHANTI REGION					
Offinso	40,000	—	—	—	40,000
Teppa	—	40,000	—	—	40,000
Obuasi	—	40,000	—	—	40,000
Sub-total	40,000	80,000	—	—	120,000
2. DISTRICT HEALTH OFFICES					
Sandema	15,000	20,000	—	—	35,000
Wa	15,000	20,000	—	—	35,000
Lawra	15,000	20,000	—	—	35,000
Sub-total	45,000	60,000	—	—	105,000
3. BORDER HEALTH OFFICES					
Paga	10,000	5,000	—	—	15,000
Misiga	10,000	5,000	—	—	15,000
Hamile	10,000	5,000	—	—	15,000
Dormaa	10,000	5,000	—	—	15,000
Sub-total	40,000	20,000	—	—	60,000
Grand Total	285,000	280,000	40,000	40,000	645,000

APPENDIX 5B

ENVIRONMENTAL HEALTH PROGRAMME

Project Description	*Fiscal Year and Estimated Cost in Cedis*				
	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢
TWO RURAL SANITATION PROJECTS PER REGION*					
Western Region	18,000	15,000	15,000	15,000	63,000
Central Region	18,000	15,000	15,000	15,000	63,000
Greater Accra Region	18,000	15,000	15,000	15,000	63,000
Eastern Region	18,000	15,000	15,000	15,000	63,000
Volta Region	18,000	15,000	15,000	15,000	63,000
Ashanti Region	18,000	15,000	15,000	15,000	63,000
Brong-Ahafo Region	18,000	15,000	15,000	15,000	63,000
Northern Region	20,000	15,000	15,000	15,000	65,000
Upper Region	20,000	15,000	15,000	15,000	65,000
Headquarters	15,000	10,000	10,000	10,000	45,000
Total	181,000	145,000	145,000	145,000	616,000

*Projects include the construction of latrines and the improvement of rural water supplies will be located in areas outside the UNDP Rural Water Supply and Environmental Health Programme. The projects will be undertaken through communal labour.

APPENDIX 6

NUTRITION PROGRAMME

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
Improvement to Cape Coast Rehabilitation Centre	—	5,000	—	—	—
Improvement to Kintampo Rehabilitation Centre	—	5,000	—	—	—
Improvement to Lawra Rehabilitation Centre	—	5,000	—	—	—
Improvement to Bawku Rehabilitation Centre	—	5,000	—	—	—
Improvement to Bolgatanga Rehabilitation Centre	—	5,000	—	—	—
Completion of Ho Rehabilitation Centre	10,000	5,000	—	—	—
Construction of Akim-Oda Rehabilitation Centre	10,000	10,000	5,000	5,000	—
Construction of Tamale Rehabilitation Centre	—	10,000	5,000	5,000	—
Construction of Sunyani Rehabilitation Centre	—	10,000	5,000	5,000	—
Construction of Sekondi-Takoradi Rehabilitation Centre	—	—	10,000	5,000	5,000
Construction of Yendi Rehabilitation Centre	—	—	10,000	5,000	5,000
Construction of Kumasi Rehabilitation Centre	—	—	10,000	5,000	5,000
Sub-Total	20,000	60,000	45,000	30,000	15,000
National Nutrition and other Surveys	12,850	50,000	50,000	—	—
Development of Nutrition Biochemistry Laboratory	—	—	25,000	25,000	25,000
Grand Total	32,850	110,000	120,000	55,000	40,000

(v) Nutrition Programme

₵150.000 will be provided for the construction and completion of 12 nutrition rehabilitation centres listed in Appendix 6.

Another national nutrition survey will be undertaken to update the 1961–62 results during the years 1976–77 and 1977–78. An amount of ₵100,000 will be voted for this purpose. A national nutrition biochemistry laboratory will be developed during the plan period.

(vi) Health Education Programme

The health education programme will consist mainly of seminars and workshops for specified groups as well as health propaganda for the public at large. The capital expenditure will be audio-visual aid and will cost a total of ₵100,000.

(vii) Centre for Public Health, Korle Bu

This will comprise the school of hygiene complex, an occupational health centre and most of the headquarters offices of the Public Health Divisions, that is, Nutrition, Epidemiology, Health Statistics, Environmental Health, M.C.H. and Health Education Divisions. An amount of ₵1.5 million will be provided for completing and equipping this centre.

(viii) Programme for Health Laboratory Services

The programme for the development and strengthening of an integrated regional health laboratory services will form part of the hospital modernisation or improvement programme. The National Reference Laboratory which will be built at the Korle Bu Teaching Hospital will house all the laboratory services including the public health reference laboratory. The expenditures for the National Reference Laboratory have been considered under the programme for the Korle Bu Teaching Hospital.

(ix) Mental Health Programme

Government has decided to increase the capacity of the New Accra Mental Hospital from 300 to 1,000 beds and to build Rehabilitation Wards at the Hospital. For these constructional works a total amount of ₵2.5 million has been allocated (*see* Appendix 7).

A further amount of about ₵2.3 million has also been voted for the provision of accommodation for the staff. This will include:—

9—12-unit block of flats
7—8-unit blocks of flats
23—3-bedroomed bungalows
100—2-roomed houses.

Construction of the new psychiatric hospital at Nsuta will start during the plan period but its completion will extend beyond the plan period. Psychiatric units will be developed at the regional hospitals as part of the hospital improvement programme.

(x) Dental Health Programme

It is expected that the Kotobabi and Kintampo dental clinics which are currently under construction will be completed at the end of the first year of the plan period. Between 1976–77 and 1979–80, 2 new urban dental clinics will be built at Madina and Saltpond and 9 rural dental clinics will be constructed at the areas listed in Appendix 8.

APPENDIX 7

MENTAL HEALTH PROGRAMME

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	₵	₵	₵	₵	₵
New Accra Mental Hospital (extensions and Rehabilitation Wards)	500,000	500,000	500,000	500,000	500,000
Accommodation at New Mental Hospital	340,000	500,000	500,000	500,000	500,000
Old Mental Hospital	5,470	—	—	—	—
Renovation of Ankaful Psychiatric Hospital and junior staff quarters	190,000	130,000	90,000	50,000	—
Psychiatric hospital to serve Ashanti and Brong-Ahafo Regions at Nsuta ..	80,000	50,000	150,000	250,000	500,000
Total	1,115,470	1,180,000	1,240,000	1,300,000	1,500,000

APPENDIX 8

PROGRAMME FOR THE CONSTRUCTION OF DENTAL CLINICS

Region	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
GREATER ACCRA	Kotobabi UC	Madina UC	—	—	—	2
EASTERN ..	—	—	Asesewa RC	—	—	1
CENTRAL ..	—	Saltpond UC	—	Swedru	—	2
WESTERN ..	—	Half-Assini RC	—	—	—	1
ASHANTI ..	—	Juaso RC	—	Ejura	—	2
VOLTA ..	—	—	Worawora RC	—	—	1
BRONG-AHAFO ..	Kintampo	Dormaa-Ahenkro RC	—	Goaso RC	—	3
NORTHERN ..	—	Bole RC	Salaga RC	—	—	2
UPPER ..	—	Lawra RC	Tumu	—	—	2
Total Costs (including cost of equipment) ..	91,980	397,300	254,200	190,650	—	934,130

(xi) Programme for the Development of Workshops

The programme for the development of workshops for the maintenance and repair of vehicles and electro-medical equipment include (1) the construction of workshops in the 14 localities listed in Appendix 9 and the purchase of equipment for maintenance purposes. These workshops will cater for the maintenance needs of every region. An amount of ₵75,000 has been voted in 1975–76 to start the construction of three workshops at Tema, Kumasi and Kintampo. Eleven additional workshops will be started or improved during the plan period at a total cost of ₵940,000.

(2) The construction of workshops for the maintenance and repair of electro-medical equipment. The long-term plan will involve the construction of 9 such workshops in the country. During the plan period, however, 3 medical workshops will be built in Accra, Kumasi and Tamale. ₵80,000 has been made available in 1975–76 to start the construction of two workshops in Accra and Kumasi. These and the new Tamale workshop will be completed in 1979–80 at a total cost of ₵3,180,000.

APPENDIX 9

PROGRAMME FOR THE DEVELOPMENT OF WORKSHOPS FOR THE MAINTENANCE AND REPAIR OF VEHICLES AND ELECTRO-MEDICAL EQUIPMENT

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
ESTABLISHMENT AND IMPROVEMENT OF TRANSPORT WORKSHOPS					
Tema workshop	35,000	20,000	20,000	20,000	10,000
Korle Bu Hospital	—	50,000	20,000	20,000	10,000
Okomfo Anokye Hospital, Kumasi ..	20,000	50,000	20,000	20,000	10,000
Koforidua	—	40,000	20,000	20,000	20,000
Kintampo and Sunyani	20,000	70,000	30,000	30,000	10,000
Tamale	30,000	40,000	20,000	20,000	10,000
Bolgatanga and Wa	—	40,000	20,000	20,000	10,000
Ankaful and Sekondi-Takoradi ..	15,000	30,000	20,000	10,000	10,000
Wa	—	40,000	20,000	20,000	10,000
Kete-Krachi and Ho	—	40,000	20,000	20,000	10,000
Total	120,000	420,000	210,000	200,000	110,000
WORKSHOPS FOR THE MAINTENANCE AND REPAIR OF ELECTRO-MEDICAL EQUIPMENT					
Accra Medical workshop	50,000	400,000	300,000	300,000	300,000
Kumasi Medical workshop	—	400,000	200,000	200,000	100,000
Tamale Medical workshop	30,000	300,000	300,000	150,000	150,000
Total	80,000	1,100,000	800,000	650,000	550,000

(xii) Training Institutions

During the plan period, the following new training schools, will be constructed or started as indicated in Appendix 10A.

2 S.R.N. Schools
2 Community Health Nursing Schools
13 Enrolled Nursing Schools
1 Psychiatric S.R.N. School
1 Midwifery School
1 Laboratory Technologist School
1 School of Radiography
3 Schools of Hygiene at Tamale, Tarkwa and Ho.
1 Family Planning and In-service Training Centre, Korle Bu

Where appropriate these new schools, will form part of existing training complexes in each region. The distribution of these schools is shown in Appendix 10B.

Extensions will also be carried out at the following institutions:—

S.R.N. and Midwifery Training School, Korle Bu
Midwifery Training School, Hohoe
Midwifery School, Koforidua.
Midwifery Training School, Mampong NTC.
Post-basic Nurses Training School.
A new training complex to cater for 240 students will be developed at the Kintampo Rural Training Centre.

A total amount of ₵8 million will be set aside for the above training programmes.

Appendix 10A gives the output expected from all training institutions.

APPENDIX 10A

ANNUAL INTAKE OF INSTITUTIONS ADMINISTERED BY NURSING DIVISION

Category of School		1973	1974	1975	1976	1977	1978
S.R.N. Training Schools	No. of Schools ..	3	3	3	3	4	5
	Intake	150	150	150	150	170	190
Public Health N.T.S.	No. of Schools ..	1	1	1	1	1	1
	Intake	18	18	30	30	30	30
Community Health N.T.S. ..	No. of Schools ..	3	3	3	5	5	5
	Intake	73	75	75	135	135	135
Enrolled N.T.S.	No. of Schools ..	10	10	13	17	23	23
	Intake	410	410	500	640	840	840
Enrolled Psychiatric N.T.S. ..	No. of Schools ..	2	2	2	2	3	3
	Intake	100	100	100	100	150	200
Midwifery Training School ..	No. of Schools ..	5	5	5	6	6	6
	Intake	260	260	260	280	280	280
Psychiatric S.R.N.	No. of Schools ..	1	1	1	1	1	1
	Intake .. .	7	7	20	20	20	20

APPENDIX 10B

DISTRIBUTION OF TRAINING INSTITUTIONS

Type and Location	*Functioning*	*Planned*
S.R.N. TRINING SCHOOLS		
1. Korle Bu. Accra	+	—
2. Kumasi	+	—
3. Sekondi	+	—
4. Tamale	+	—
5. Agogo	+	—
6. Koforidua	—	+
7. Cape Coast	—	+
PUBLIC HEALTH NURSING SCHOOLS		
1. Korle Bu, Accra	+	—
COMMUNITY HEALTH NURSING SCHOOLS		
1. Akim Oda	+	—
2. Ho	+	—
3. Tamale	+	—
4. Tarkwa	—	+
5. Sunyani	—	+
ENROLLED NURSING SCHOOLS		
1. Korle Bu, Accra	+	—
2. Tema	+	—
3. Koforidua	+	—
4. Cape Coast	+	—
5. Sekondi	+	—
6. *Tamale	+	+
7. Bolgatanga	+	—
8. Worawora	+	—
9. Kumasi	+	—
10. Akim Oda	+	—
11. *Ho	+	+
12. *Winneba	+	+
13. *Military Hospital	+	—
14. *Atibie	+	+
15. *Agogo	+	+
16. Berekum	+	—
17. Bawku	+	—
18. *Jirapa	+	+
19. *Maase-Offinso	+	+
20. Akwatia —CAST	+	—

APPENDIX 10B—contd.

DISTRIBUTION OF TRAINING INSTITUTIONS

Type and Location	*Functioning*	*Planned*
21. Akwatia—St. Dominic	+	—
22. Kpandu	+	—
23. Apam	+	—
24. *Prestea	+	+
25. *Bibiani	+	+
ENROLLED NURSES (PSYCHIATRY)		
1. Accra Psychiatric Hospital	+	—
2. Ankaful	+	—
3. Tamale	—	+
S.R.N. (PSYCHIATRY)		
1. *Accra	+	+
MIDWIFERY		
1. Kumasi	+	—
2. Mampong-Ashanti	+	—
3. Jirapa	+	—
4. Atibie	+	—
5. Berekum	+	—
6. Maase-Offinso	+	—
7. Hohoe	+	+
8. Bolgatanga	—	—
LABORATORY TECHNOLOGY		
1. Accra	—	+
RADIOGRAPHY		
1. Accra	—	+
HYGIENE		
1. *Tamale	+	+
2. *Ho	+	+
3. Tarkwa	—	+

*Where it is indicated that the institution is functioning and at the same time planned, this means that courses have been started in temporary or rented buildings and permanent buildings will be constructed during the plan period.

APPENDIX 11

PROJECTIONS OF AVAILABLE TRAINED PERSONNEL OF VARIOUS CATEGORIES, 1975–80

Category of Personnel	1975	1976	1977	1978	1979	1980
	Total					
Doctors	1,000	60	60	60	60	60
Specialists	129	8	14	40	40	50
Dental Surgeons	30	—	—	—	—	—
Professional Nurses, S.R.N.	6,153	150	150	150	170	190
Midwifes	4,932	260	260	280	280	280
Enrolled Nurses (General)	—	410	500	640	840	840
Public Health Nurses	—	30	30	30	30	30
Community Health Nurses	—	75	75	135	135	135
Professional Nurses	7	7	20	20	20	20
Psychiatry/Enrolled Psychiatry	—	100	100	100	150	200
Pharmacists	538	50	50	50	50	50
Sanitary Engineers	1	—	1	—	4	4
Environmental Health Officers	—	20	20	80	80	80
Environmental Health Assistants	4	40	70	70	70	70
Laboratory Technologists	—	2	2	15	15	15
Laboratory Technical Officers	276	8	8	20	20	20
Laboratory Assistants	—	10	10	10	10	10
Radiographers	125	3	3	3	10	10
X-ray Operators	—	17	17	17	17	17
Health Educators	6	2	4	5	3	5
Physiotherapists	10	1	1	7	7	7
Occupational Therapists	—	1	1	1	5	5
Health Centre Superintendents	118	45	50	50	50	50

(xiii) Programme for Korle Bu Teaching Hospital

A number of projects have been started at the Korle Bu Teaching Hospital as a means of improving facilities at the Hospital. Additional to the 1975–76 budgetary allocation of ₵714,000 a sum of ₵5.4 million will be voted for the completion of these projects during the plan period.

Construction of the National Central Reference Laboratory, a new Orthopaedic and Urology Block and a Radiotherapy unit will start during the plan period.

An amount of ₵1.3 million will be spent on the purchasing of equipment for the Hospital. These will include a stand-by generating plant and 4 complete dental units which will be used for the training of Dental Surgeons at the University of Ghana Medical School.

The breakdown of expenditure is shown in Appendix 12.

(xiv) Research Centre for Plant Medicine

A Research Centre for Plant Medicine is being established at Akwapim-Mampong for research into local herbs for curative purposes. A sum of ₵53,000 has been allocated in 1975–76 to start work on the centre. An additional amount of ₵860,000 will be voted for its completion during the plan period.

(xv) Stores and Supplies

The programme for the completion of Stores and also vehicle requirements for the stores are shown in Appendix 13.

APPENDIX 12

PROGRAMME FOR KORLE BU TEACHING HOSPITAL

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	₵	₵	₵	₵	₵
1. Re-roofing of Korle Bu Hospital	40,000	50,000	50,000	50,000	50,000
2. Security Fencing	35,000	50,000	50,000	50,000	—
3. Security Lighting	100,000	50,000	—	—	—
4. New Central Reference Laboratory Building	50,000	100,000	350,000	400,000	400,000
5. Extensions to T.B. block	40,000	—	—	—	—
6. Four Blocks, Staff Nurses Quarters	100,000	210,000	220,000	250,000	—
7. Construction of Drains and Culverts	200,000	300,000	—	—	—
8. Construction of Mothers' Hostel at Children's Block	60,000	100,000	150,000	220,000	—
9. Six Blocks of Housemen's Flats	—	300,000	300,000	300,000	—
10. Modernisation of Gynaecology Theatre	50,000	—	—	—	—
11. New block for Orthopaedic and Urology Department	50,000	100,000	200,000	400,000	400,000
12. Accident Centre	13,000	—	—	—	—
13. Extensions to Blood Bank	20,000	30,000	—	—	—
14. Extensions to Administration Block	20,000	—	—	—	—
15. Radiotherapy Department	—	40,000	80,000	100,000	100,000
Total	778,000	1,330,000	1,400,000	1,770,000	950,000

APPENDIX 13

STORES AND SUPPLIES

	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
New Regional Medical Stores, Greater Accra ..	—	50,000	50,000	—	—
Completion of Volta Regional Stores	40,660	20,000	—	—	—
Construction of Central Regional Store	80,000	50,000	50,000	—	—
Construction of Upper Regional Store	—	50,000	50,000	—	—
Cold Stores for Eastern Regional Store	—	—	30,000	80,000	100,000
Improvement to Tema Medical Stores	70,000	80,000	—	—	—
Generator for Kintampo Medical Store	—	19,000	—	—	—
Vehicles for Regional Stores	141,000	200,000	200,000	200,000	—
New Limb Fitting Centre for Greater Accra ..	—	—	50,000	50,000	80,000
Total	331,660	469,000	430,000	330,000	180,000

APPENDIX 14A

OTHER PROJECTS

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
Permanent building for Budget and Planning Unit	200,000	50,000	50,000	—	—
Modification of dark rooms at X-ray Department, Korle Bu	13,610	—	—	—	—
Staff canteen, Effia Nkwanta	50,000	30,000	—	—	—
Canteen, Tamale Hospital	25,000	—	—	—	—
Office accommodation for R.M.O.H., Greater Accra	70,000	80,000	80,000	100,000	50,000
Total	358,610	160,000	130,000	100,000	50,000

APPENDIX 14B

SPECIAL PROJECTS

Project Description	*Fiscal Year and Estimated Capital Expenditure in Cedis*				
	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢
1. *Medical Education Technology Centre*					
1.1. Buildings and fittings	100,000	200,000	200,000	—	500,000
2. *Centre for Research into the Chemotherapy of Parasitic Diseases*					
2.1. Staff bungalows	75,000	—	—	—	75,000
2.2. Junior staff quarters	30,000	—	—	—	30,000
2.3. Rest-house	15,000	—	—	—	15,000
2.4. Extensions to Tamale Hospital	15,000	10,000	—	—	25,000
Sub-Total	135,000	10,000	—	—	145,000

CHAPTER 10

HOUSING

10.1 General

The provision of adequate housing is an important goal in both economic, and welfare terms. The fact that adequate housing is a basic human right and the fact that housing plays an important role in national economic development are recognised all over the world. Experience has shown, however, that the attainment of this goal is difficult and requires a clearly stated national policy and the continued. innovative and co-operative efforts of all institutions involved in the provision of housing. These institutions range from the financial, industrial and contructional sectors to local government and traditional institutions involved in land tenure.

A good housing programme provides substantial employment opportunities and builds up a reserve of skilled labour and artisans who would be available for other related constructional works. It also stimulates the development of natural resources which are basic to the housing and construction sectors and has a multiplier effect on the economy.

The social benefits of housing are also well recognised. In situations where there is adequate shelter with good water supplies, proper sanitary arrangements for the disposal of refuse in a well-planned environment, the health status of the people has been found to be markedly improved. Furthermore, a well-planned settlement provides recreational facilities and accessibility to schools, clinics, markets and other social and economic facilities.

Recognising the important role of housing and its related facilities to economic development, this chapter will focus on the existing machinery for housing development, with a view to identifying the constraints on the sector so as to devise policies, strategies and programmes which will stimulate housing activities during the plan period.

10.2 Organisation and Scope of the Housing Sector

The Public Sector.—The Ministry of Works and Housing is the main government agency responsible for housing in the country and has under its auspices the following organisations and bodies involved in housing development:

Architectural and Engineering Services Corporation
Public Works Department
Town and Country Planning Department
State Housing Corporation
Tema Development Corporation
Public Servants Housing Loans Scheme Board

The Water and Sewerage Corporation
Electricity Corporation
Rent Control Division
Pre-fabricated Large Panel Factory

There are other organisations in the housing sector which do not fall under the Ministry of Works and Housing but which have close ties with it by the nature of their functions. These agencies include the Department of Rural Development, the Social Security and National Insurance Trust, the Building and Roads Research Institute, the Department of Planning and Housing Research, the Bank for Housing and Construction and the First Ghana Building Society. However the main organisations involved in actual house-construction in the public sector are the State Housing Corporation, the Tema Development Corporation, the Department of Rural Development.

Infrastructural Services.—Infrastructural Services which form a vital aspect of housing development are provided by the Ghana Water and Sewerage Corporation, the Electricity Corporation and the Local Authorities. The Local Authorities are also responsible for general sanitation in the community, and for the construction of school buildings in some areas. Other ancilliary services such as markets, post offices, clinics are provided by the responsible organisations.

Housing Finance.—The main housing financing institutions in the country at the moment are:

The Bank for Housing and Construction
The First Ghana Building Society
The National Savings and Credit Bank
The Bank of Ghana

A Social Security and National Insurance Trust Bank has recently been established to augment among other things the facilities available for housing financing. In addition to these institutions, there are also the State Insurance Corporation, the Commercial Banks and the Public Servant's Housing Loan Scheme Board which have been giving out mortgage loans to both individuals and real estate developpers.

Land.—There are four categories of land ownership under the present land tenure system. These are:

Private land/family land
Stool/skin land vested in the state
Stool/skin land
Government land.

Government is in a position to programme effectively the use of land only in the last two categories. It can however, acquire land when necessary from the first two categories under the following Acts:

State Lands Act, 1962 (Act 125)
Administration of Lands Act 1962 (Act 123)
Public Conveyancy Act 1965 (Act 302)

Building Materials.—The existing building materials industry includes factories for the production of bricks and tile, prefabricated large panels iron rods, cement, aluminium roofing sheets, louvres, ceramics, etc. Most of the raw materials required by these factories as well as some of the basic building materials for housing programmes have had to be imported so far. It is estimated that about sixty per cent of the building materials are imported every year both directly and indirectly as inputs. The distribution of building materials is concentrated in the hands of a few agencies and individuals. A monopolistic situation therefore prevails in which middlemen control the distribution and the prices of building materials in the country.

The Private Sector.—There are a large number of private contractors in the country, a few of whom are expatriate firms. There are also private individuals who build houses for their own use or for rental purposes. It is important to note that since a large percentage of the housing stock in the country has been built through private initiative, it is unlikely that there will be significant changes in this trend over the plan period.

10.3 Performance of the Housing Sector

The performance of the sector on the whole has tended to fall below expectations. The public Housing Agencies in particular (i.e. the State Housing Corporation and Tema Development Corporation) have not made any appreciable impact on the housing situation. Until very recently, the annual output of the State Housing Corporation totalled only 500 houses per annum. However, the Corporation resorted to a crash programme in 1972/73 and was able to construct 1,264 housing units in that financial year, 1,528 in 1973/74 and 1,380 units in 1974/75. These figures still fall below the Corporation's declared target of 2,000 housing units annually. It's inadequate performance has been attributed to its heavy dependence on Government financing and also to management problems.

The performance of the Tema Development Corporation, whose main objective is to alleviate the housing shortage and to redevelop the slum areas in Tema has also not been very satisfactory. Over the twenty four (24) years of its establishment the Corporation has constructed a total of 16,779 houses. Out of this number 635 were high-income units; 665 middle-income units; 4,888 middle-low income units and 10,591 were low-income units. Over the first half of its existence, namely the period 1952–1964, the Corporation constructed 9,212 houses (a yearly average of 768 units). In the latter period 1964 to 1975 there was a reduction in the construction rate to 688 units per annum. Thus only a total of 7,567 houses were constructed over this latter period. Furthermore the declining trend has tended to accelerate in the seventies. Out-put reached 205 in 1974/75 and was expected to decline further in 1975/76.

The Corporation, on establishment, was expected to complete 19 communities by 1985. At the moment, ten (10) communities have been completed and the Corporation is in arrears by 4 Communities (6,000 houses). The basic problem has been lack of adequate financing which

has made it difficult for the corporation to meet its annual construction target of 2,000 units.

The Rural Housing programmes have not only had a chequered history but have also had limited scope of operation considering the size of the rural population being catered for.

The oldest programmes, the Roof Loans Scheme and the Wall Protection Loans Scheme have since their inceptions (in 1956 and 1972 respectively) catered for only 13,900 and 100 people respectively.

Furthermore a total of 400 houses have been completed and 600 are still being constructed under the recently initiated (1974/75) Rural Co-operative Housing Scheme. The number of houses constructed under this scheme is relatively small owing to the low capacity of the Department of Rural Development in terms of manpower, plant, equipment and vehicles.

Under the low-cost Housing Programme which was initiated by Government in 1972 as a crash programme to help solve the housing problem of low income workers, 5,532 housing units have been constructed at a total cost of ₵58.2 million. It is estimated that there are about 560 units at various stages of completion and a total amount of ₵15.0 million will be required to complete these units and to provide the necessary infrastructural facilities.

In order to ensure that the cost of the houses was within the economic reach of prospective owners a cost range of between ₵2,000 and ₵4,000 guided the choice of house design, specifications and nature of infrastructural development. The cost of the completed housing units has however increased tremendously to an average of ₵12,000 per unit. This is clearly beyond the means of the low-income group for whom this programme was originally designed. This may be attributed in part to the fact that the scope of the programme was broadened to include middle income earners like nurses, civil servants, displacees of redevelopment schemes and flood victims.

As indicated in the following section, it is estimated that the total annual output of houses for both the private and the public sectors between 1960 and 1971 was 26,000 units. The projected output required to substantially improve the housing situation is estimated at 70,000 units per annum. In terms of the required housing output it is quite clear that the performance of both the public and private sectors have had no marked impact on the housing problem.

10.4 Population Growth and Housing Conditions

It is estimated that between 1960 and 1971 the total population of the country rose from 6,632,990 to 8,992,560 (i.e. a 36 per cent increase) with the biggest Regional increase of 73 per cent being recorded in the Greater Accra Region. The number of urban settlements (i.e. settlements with populations of 5,000 and above) increased from 98 in 1960 to 135 in 1970. It has been shown, from the census data, that the proportion of total population growth absorbed into the urban areas has been increasing

systematically, resulting in almost half of the 1960-1970 population growth being absorbed by the urban population. This rapid urban population growth is attributable mainly to the rural-urban migration.

According to the 1960 Post Enumeration Survey and the 1971 provisional census data on housing, the housing stock increased from 701,360 houses to 959,240 houses, that is an increase of 37 per cent which is almost the same as the population increase. The occupancy rates for the country was 9.56 persons per house in 1960 as compared to 9.37 in 1971. In the urban areas, the occupancy rate changed from 12.94 in 1960 to 12.81 in 1971 whereas in the rural areas, the occupancy rate changed from 8.74 to 8.49 respectively (*see* Table 1). The figures indicate that there has been a slight change in the occupancy situation during the past decade.

In 1960, there were 1,525,060 households in the country. Out of this number, 21 per cent occupied houses with 5 or more people per room. The indications are that this situation has not changed substantially.

With regards to building materials, the majority of houses in the country in 1960 were built of mud-bricks (about 88.8 per cent). It was estimated that in 1971 as many as 78 per cent of the housing stock was still built of mud-bricks. The use of sandcrete and concrete blocks as walling material for housing has increased over the decade from 8.8 per cent in 1960 to 15 per cent in 1971. About 34 per cent of the houses were roofed with thatch and 61 per cent with metal asbestos sheets or concrete.

In 1971 8.3 per cent of all households had running water as compared to 4.8 per cent in 1960. 24.8 per cent relied on the public water stand pipe system in 1971 as against 20.6 per cent in 1960. About 47.7 per cent in 1960 and 44.3 per cent in 1971 got their water supplies from streams or rivers. This indicates a small improvement in the domestic water supply situation.

In spite of the slight improvement in occupancy rates, there are still problems of severe overcrowding and acute shortage of housing particularly for the low-income groups which have led to the development of slums and squatter settlements and other environmental problems. Although slums are lacking in basic amenities and the quality of housing is far from satisfactory, they have become the natural response to the requirement of shelter by low-income families since these areas provide them with the type of accommodation that they can readily afford.

Secondly, it is quite clear from the above figures that, generally housing conditions did not show much improvement over the decade. Although the provision of amenities particularly water to households improved over the decade, about 44.3 per cent of the total number of households was still without potable water supply. Housing sanitation and the disposal of solid and liquid waste are such that the majority of communities in this country are polluted with biological waste and are therefore exposed to health hazards.

TABLE 1

POPULATION AND HOUSING STOCK, 1960 AND 1971

	1960			1971		
	Total	*Urban*	*Rural*	*Total*	*Urban*	*Rural*
Houses	701,360	120,540	580,820	959,240	193,300	762,940
Households	1,525,060	433,250	1,091,810	1,910,560	603,080	1,303,480
Population	6,632,990	1,559,360	5,073,670	8,992,560	2,514,540	6,478,020
Occupancy rates ..	9.56	12.94	8.74	9.37	12.81	8.49

10.5 Constraints on the Housing Sector

The inability to satisfy the ever-increasing demand for housing has been due, among other things, to the high cost of house construction which in turn is a result of the high cost of building materials, whose distribution is highly monopolised as well as the low productivity of labour. Moreover, the generally low levels of incomes in the country make it difficult for many people in the urban centres, particularly, to provide good housing for themselves under current practices without Government assistance.

The lack of adequate investment funds has also contributed to the housing problem. The present system for mobilising the savings of individuals for investment into housing is inadequate and the majority of people particularly in the low income groups have no access to credit facilities.

Another factor which has aggravated the housing problem is the high cost of land, the inavailability of serviced plots, and the difficulties involved in securing title to land for private housing development.

Another major problem of the housing sector is the undeveloped state of our local building materials industry and our dependence on imported building materials. Because of this, the cost of building materials is excessively high, making it difficult to construct houses which are low-cost enough for middle and low income groups. It was estimated that in 1974, for instance, no less than ₵18 million was spent on the importation of 482,208 tons (502,052 tons) of clinker alone for the manufacture of cement.

The present role of physical planning does not permit its full impact to be felt in this sector as the Department of Town and Country Planning is not adequately equipped legally to enforce compliance to its programmes. The physical planning system is weakened by obsolete planning legislation and building codes, a defective urban planning machinery, ineffective land management system and a shortage of professional staff.

The limited data that are available on the number and distribution of construction workers indicate that there is a shortage, particularly

of middle-level artisans and technicians in the building industry. Local contractors are therefore compelled to employ artisans who have not had any training in building techniques and who cannot therefore adjust to the technological changes in the building industry.

With the exception of the efforts being made by the Department of Rural Development to set up village industries alongside housing development, the two activities of housing development and employment creation are not yet properly co-ordinated. Thus industries are sited haphazardly, making the housing and transportation problems of the low and middle income groups more difficult to solve. These problems include:—

(*a*) spatial imbalances in the location of people and jobs,
(*b*) increased number and size of squatter settlements which develop to fill in the gap between housing demand and output.

Apart from the above general problems and constraints, there are operational problems which limit the effectiveness of programmes for housing.

These include:

(*a*) lack of co-ordination between research institutions and housing agencies and the inavailability of research findings for practical application;
(*b*) lack of co-ordination among the various organizations involved in housing development with the result that houses are constructed without the necessary infrastructural facilities and social amenities;
(*c*) lack of an effective machinery for assessing national housing needs. Assessments have been based merely on the number of applications lodged with the Government housing agencies. This creates difficulties in housing planning;
(*d*) lack of re-orientation courses to improve management capabilities for carrying out housing programmes;
(*e*) poor evaluation procedures in the housing field.

Furthermore, there has been no consistent direction in housing programmes for many years and this may be due to the fact that there has been no comprehensive housing policy yet in operation.

10.6 Policies, Objectives and Strategies

The ultimate goal of the country's housing policy is to provide decent housing within a wholesome environment at a cost that most Ghanaian families can afford. The foundation to the achievement of this long-term goal lies in the creation of a sound basis for the stimulation and encouragement of private enterprise in house-building activities, since Government can satisfy only a fraction of the housing needs of the country.

Within the plan period therefore attention will be focussed on the achievement of the following major objectives:

(1) the reduction of building construction and infrastructural costs,

(2) the placing of emphasis on low income housing in both the rural and urban areas through sites and services schemes, slum up-grading programmes, rural and urban co-operative housing schemes and the utilisation of self-help methods in such schemes,
(3) the accelerated development of the local building materials industry as a means of reducing the country's dependence on foreign materials,
(4) the shifting of emphasis from Government involvement in direct house-construction to the development of the infrastructural base necessary for housing development,
(5) the improvement of the standard of housing in both the rural and urban areas by promoting the orderly growth of our human settlements through effective planning and control.

The strategies that will be adopted to meet the above objectives are presented below.

Housing Finance.—In view of the large investment requirement of the housing sector and the competing demands on Government resources from other sectors, the mobilisation of domestic savings from the private sector will constitute the most effective way of meeting the capital requirements of the housing sector. During the plan period, encouragement will therefore be given to the mobilisation of savings, and the effective utilisation of such resources for housing development. In order to achieve this objective, savings and housing co-operatives will be established in both urban and rural areas. Since much of the earnings of the rural people are seasonal, measures adopted to encourage savings will take this important factor into consideration. A Technical Services Organisation will be set up within the Ministry of Labour, Social Welfare and Co-operatives to organise and manage these co-operatives.

The National Savings and Credit Bank which administers a very wide branch system covering the rural areas where other banking facilities are lacking will constitute the main machinery for the mobilisation of savings and the provision of credit facilities at the local level.

Furthermore, all major firms and organisations would be encouraged to contribute towards the housing of their employees. To this end, an incentive scheme is being worked out and this will come into effect during the plan period.

As a further step in the effort to channel savings into the housing sector, Government has established by decree (S.M.C.D. 23) a National Mortgage, Financing and Guarantee Scheme in the Bank of Ghana which is aimed at:—

(1) promoting the financing of the construction of dwelling houses by private individuals for their personal occupation including the financing of extensions and renovations to dwelling houses;
(2) financing the construction of dwelling houses by organisations engaged in the business of building dwelling houses for sale or to let out to individuals for occupation;

(3) providing an indemnity, by the Bank of Ghana, in respect of losses incurred by financial institutions participating in the scheme arising out of defaults in payment of loans granted them under the scheme;
(4) establishing a second mortgage market with a view mainly to provide for the liquidity when required of any financial institution participating in the scheme.

It is envisaged that the mortgage scheme will encourage the flow of institutional savings into residential mortgage financing especially since it provides an insurance protection of up to 95 per cent of the loan amount to lending institutions. The financial institutions which will participate in the scheme are the following:—

(1) Ghana Commercial Bank Limited
(2) Barclays Bank of Ghana
(3) Standard Bank, Ghana Limited
(4) Bank for Housing and Construction
(5) National Savings and Credit Bank
(6) National Investment Bank
(7) Agricultural Development Bank
(8) Merchant Bank (Ghana) Ltd.
(9) First Ghana Building Society.

The National Mortgage Financing and Guarantee Scheme will not only cover middle and high income housing but will also cover low-income urban and rural housing programmes.

In the light of this new development, the proposal to set up a National Housing Fund to Finance the above programmes as contained in the Guidelines to the 5-year development plan will no longer be necessary.

Within the public sector, Government has recently established a Housing Loans Scheme to ease the increasing pressure of housing public officers. There are similar schemes in all the financial and other public corporations with varying rates of interest. Government will take steps to rationalise the system during the plan period.

Building materials.—Since most of the building materials required by the construction sector are imported, the foreign exchange expenditure on the importation of building materials may rise to levels which the economy cannot sustain if the present trend continues. During the plan period, therefore, Government will ensure that the potential of the domestic building materials industry is fully developed and an import substitution programme is actively pursued.

Fortunately, Ghana is rich in the raw materials that are necessary for the production of basic building materials such as brick and tiles, aluminium, cement, timber components, iron and steel. It is the aim of Government to reduce our dependence on foreign imports and also to reduce the high cost of construction in this country by systematically exploiting our resources.

The building materials that will be developed during the plan period are:

(*a*) Brick and tiles
(*b*) Steel products

(*c*) Cement products
(*d*) Timber products
(*e*) Lime products
(*f*) Pozzolana
(*g*) Roofing materials
(*h*) Fittings.

Government is currently encouraging the development of the brick and tile and timber industries because of the widespread distribution of the raw material resources. The utilisation of secondary species of wood as structural materials is being emphasised and Government has launched the first phase of a wooden housing programme as a means of encouraging Ghanaians to increase their use of wood as structural material. The Bank of Ghana, the Bank for Housing and Construction and the Regional Development Corporations have also embarked on the development of our clay deposits. Large-scale brick and tile factories will be established in Accra, Kumasi, Tamale, Prampram, Kibi and Sunyani and cottage industries for the production of bricks and tiles will be established in the rural areas.

A committee has been appointed to look into the building materials problem and to draw up comprehensive programmes for the development of local building material resources. This is to ensure that the basic building materials which will be produced locally will be of high quality and will be available in adequate quantities and quality and at reasonable prices to meet our housing requirements. The resources of the financial institutions will be mobilised for the financing of the programmes and the Bank of Ghana will also organise consortium financing of the development of some of these building materials where necessary.

Other measures which will be adopted will include the expansion and rehabilitation of existing building materials industry such as the GIHOC Brick and Tile Factory and the Prefabricated Large Panel factory, the setting up of training programmes in the fields of management and technology, the encouragement of research into new materials; the promotion of the use of local materials through demonstration projects. The dissemination of research findings through information centres, and the effective regulation of building materials distribution.

As the building materials industry will need help and encouragement at the initial stages, Government will provide the following incentives:

(1) tax concessions and other incentives as currently operated by the Capital Investment Board;
(2) development of industrial estates and infrastructural facilities necessary for the establishment of factories for building materials of varying capacities;
(3) technical advice to be given by the research bodies especially the Building and Road Research Institute and the Department for Housing and Planning Research;
(4) Special training facilities for technical and managerial cadres at the Polytechnics and the Universities.

Land and Infrastructure.—In order to forestall any difficulties that might arise as a result of the present land tenure system and the high price

of land, Government will take the necessary steps to acquire large tracts of land for immediate and future housing programmes. These tracts of land will be provided with the necessary infrastructural facilities. The public acquisition of land will ensure the judicious allocation of land for essential uses and will help control excessive land speculation.

The present system whereby serviced plots are leased to the high and middle-income groups to build their own houses on the payment of a development fee will continue. The fees charged and the present system of financing infrastructural facilities on these plots will be reviewed. The provision of serviced plots will be extended to the low-income groups in the urban areas through the sites and services scheme to ensure that the low-income groups also have easy access to adequately serviced land for housing.

Physical planning.—The policies and strategies that will be adopted during the plan period to streamline and strengthen the physical planning system in the country are:

(1) Overhauling of the physical planning machinery through legislative and organisational measures so as to ensure:—
   (*a*) the transfer of responsibility for physical planning from the Central Government to the District Councils;
   (*b*) the establishment within each District Council of a physical planning and development secretariat whose responsibilities will include the integration of housing, architectural and engineering services, land development and land-use planning;
   (*c*) the involvement of all the available professional and specialist skills in the country in the preparation of physical plans for our settlements by liaising with qualified consultants, university faculties and national research institutions;
   (*d*) the enforcement of land-use regulations so that an approved physical plan for an area is the only basis for all sub-division and allocation of land in that area, whether by a private land-lord or public agency.

(2) Revision of the national building code on the basis of realistic standards in order to allow for the use of local building materials in house-building activities and to bring it in line with new approaches to the solution of housing problems.

(3) Strengthening of the Survey Department in terms of equipment and staff to enable it undertake aerial surveys and to produce survey maps which are needed for physical planning purposes.

(4) Development of effective land use management and programming techniques to help plan and guide the growth of the country's settlements within the frame-work of national and regional development objectives and to help evaluate physical planning activities. In pursuance of this objective a

pilot project will be established in Tamale with assistance from United States Agency for International Development to test and monitor land use management and programming techniques. The lessons learnt from the pilot project will be applied to similar urban district programmes.

(5) Development of properly laid-out light industrial sites particularly for fitters in the Regional Capitals as demonstration projects to the Local Authorities which will be expected to develop other sites within their respective areas. This has become necessary because of the present indiscriminate development of fitters sites within residential areas which is a source of nuisance to the environment.

(6) Strengthening of the Department of Town and Country Planning in terms of staff and vehicular support particularly at the Regional and District levels to enable it to play an effective role in the development of our settlements.

Manpower.—In order to ensure that there is a continuous supply of artisans and technicians to support the housing programmes envisaged in the plan, there will be an expansion of the programmes for artisans and technicians offered at the polytechnics in Accra, Kumasi and Takoradi and at the joint Canada/Ghana Technical Institute in Accra as well as other technical institutes in the country. It is envisaged that five new technical institutes will be established at Cape Coast, Kumasi, Takoradi, Amankwakrom and Akwatia. Details of courses to be offered and projected intake for all technical schools have been covered in Chapter 7. In-service training programmes will be organised by the Building and Road Research Institute for employees of local contractors to improve their technical knowledge.

The University of Science and Technology will continue to train the high level manpower required in the building industry, such as engineers, building technologists, architects, planners and surveyors. The University will increase the intake of these professional categories during the plan period.

Research.—During the plan period, stock will be taken of all research findings with a view to making them available for practical application. To this end, it is envisaged that the proposed Housing Co-ordinating Committee will among other things co-ordinate research activities and bring about the necessary collaboration between the executive agencies and the research institutions.

The broad areas of research to which immediate attention will be given are:

(*a*) the evolution of sanitary systems suitable for rural and slum areas;

(*b*) the development of basic building materials;

(*c*) production of building materials for rural areas from clay, mud, lime, agricultural and mineral wastes with particular emphasis on roofing materials;

(*d*) the standardisation of construction practices especially standard self-help methods for rural areas using local materials;
(*e*) the evolution of prefabricated components for timber houses using non-exportable timbers;
(*f*) the evolution of improved techniques for the production of high-quality but inexpensive bricks.

In order to make the research findings available at minimum costs, building information centres will be established in the regional capitals with a Headquarters in Accra. The functions of the information centres will include the organisation of permanent as well as periodic exhibition of models of house-types, samples of building materials and equipment, the publication and dissemination of information on house-types, building codes and regulations for interested persons and the collection of data on the present state of the building and construction industry.

Executive Housing Agencies.—In order that the housing agencies would fulfil the aims and objectives for which they were set up, their roles and functions will be reviewed during the plan period so as to ensure higher efficiency and higher rates of house construction.

Government will continue to finance the smaller-type housing programmes of the Housing Agencies, until the Bank of Ghana's National Mortgage Financing and Guarantee Scheme becomes fully operational.

With regards to the provision of infrastructural services on the housing estates, particularly roads and drains, the government has, as from this plan period, adopted a new financing system whereby the housing agencies are given funds to purchase the necessary plant, equipment and materials so that the construction of roads and drains will be undertaken by them. This new system has been necessitated by the problems created when estates developed by the Housing Agencies have for long periods been without the necessary infrastructural facilities especially roads and drains which are the responsibility of the Local Authorities. The new system is intended to reduce the high cost of road construction and to ensure an integrated development of housing estates in the country, The provision of water and electricity, the construction of markets, clinics, schools and so on will continue to be the responsibility of the respective organisations as is the current practice.

Co-ordination of Housing activities.—Government will set up a National Housing Co-ordinating Committee to co-ordinate the planning and execution of all housing programmes. The Committee will also be responsible for the formulation and effective implementation of housing policies. The Housing Division of the Ministry of Works and Housing will be re-organised to service the Co-ordinating Committee which will be responsible for;

(*a*) ensuring the provision of good housing for low-income families in both the urban and rural areas.
(*b*) co-ordinating and supervising the implementation of housing programmes;
(*c*) ensuring that town plans are prepared on time to avoid haphazard and unauthorised development;
(*d*) Co-ordinating research activities with housing programmes;

(*e*) ensuring that the present building regulations are revised with the aim of laying down simple rules and minimum standards which will satisfy the requirements of good sanitation and good quality housing.

Rural Housing.—The aim of Government in the rural housing sector is to improve the quality of housing in terms of durability and strength without unduly increasing costs and to provide the social infrastructure which are currently lacking in the rural areas. An integrated approach will be adopted to the solution of the rural housing problem and self-help practices will be encouraged.

During the plan period therefore, Government will make the greatest use of the skills already acquired by the rural people to build houses for themselves by providing technical assistance through the Department of Rural Development to enable them build better houses. Government will continue to contribute to the Rural Housing Revolving Fund so as to enable the Department of Rural Development expand its rural housing programme made up of the following:

(*a*) *Roof Loans Scheme.*—Whereby materials are supplied to selected applicants of approved societies or individuals to roof their houses built to minimum standard specifications.

(*b*) *Wall Protection Scheme.*—Under this scheme building materials are supplied to individuals to plaster and paint their swish walls and to provide windows and doors to such houses.

(*c*) *Non-monetary Technical Assistance.*—Under this scheme, the Department provides village lay-outs free of charge to enable villagers set out their villages to the best advantage. The Department also makes available equipment such as block-making machines and concrete mixers to speed up building operations in the rural areas for nominal fees. Advice is also given on good house-building techniques and the use of local building materials.

(*d*) *Co-operative housing.*—This scheme is based on the principle of self-help and on the experience gained by the Department of Rural Development from a previous aided self-help scheme whereby building material loans were given to a group of applicants to build the core of a big house (usually applicants paid cash deposits of not less than ₵300 as well as contributing their own labour). The Department provided technical know-how and machinery free of charge. Under the new scheme, an integrated approach has been adopted to housing development activities. Small-scale cottage industries especially for the manufacture of farm implements and also handicrafts are being established alongside the rural housing programmes. A serviced-sites aspect will be incorporated into the scheme so as to encourage those who may not benefit directly from the main scheme to build their own houses in properly planned communities.

The average cost of the houses constructed under the co-operative housing scheme is estimated at ₵4,500 per house (at 1975 prices). This

is considered unsatisfactory in view of the low incomes of the majority of people in the rural areas. The Building and Road Research Institute and the Department of Housing and Planning Research have undertaken experiments into evolving wall renderings which are strong, water-proof and simple to apply. The work of these Research Bodies has indicated that with improved drying techniques and with soil-bitumen renderings, swish houses can be improved both in quality and in strength and can be built at costs which the rural people can afford. During the plan period, therefore, the Department of Rural Development will incorporate these research findings into its programmes and will also experiment with new construction and roofing materials such as adobe, treated thatch, wood and clay blocks in order to bring down the cost of housing.

Low-Cost Housing Programme.—As discussed in an earlier section of this chapter, the low-cost housing programme has not had the desired impact on the low-income housing problem and as a result, Government intends to bring this programme to an end as soon as the 560 housing units currently under construction have been completed. The National and Regional Low-Cost Housing Committees which were appointed to implement the programme will be dissolved accordingly. The sites and services approach to the solution of low-income housing problems will be adopted and given due emphasis.

10.7 Proposed Programmes for the Plan Period

During the plan period, it is proposed to make available a total amount of about ₵290.4 million (at 1975–76 prices) for housing programmes in the public sector. The principal agencies to which allocation of funds will be made are as follows:—

State Housing Corporation
Tema Development Corporation
Department of Rural Development
Department of Town and Country Planning
Ministry of Works and Housing and the
Research Institutions (Building and Roads Research Institute and Department of Planning and Housing Research).

The allocations to these agencies will be in the form of direct investments in low income housing, physical planning, research and infrastructure programmes as well as loans to the public housing agencies for housing development. In view of NRCD 23 establishing the Bank of Ghana's National Mortage, Financing and Guarantee Scheme, loans to the Housing Agencies as well as direct allocations to the Rural Housing Programmes will continue until such time that the Mortgage Scheme becomes fully operational, possibly during the 1976–77 fiscal year.

It is realised that these allocations will only cover a small percentage of estimated requirements. This is because of Government's policy of encouraging private enterprise in house-building activities. It is hoped that with the availability of serviced plots, cheaper building materials and better housing financing arrangements, the private sector will participate more fully in the provision of housing.

Programmes for building materials development have been discussed briefly and emphasis has been on those programmes which have not been fully covered in the industry chapter but are of vital importance to the housing sector. Feasibility studies are still being carried out on some of the building materials so as to determine their full potential. Consequently, it has not been possible to include detailed programmes on the development of such materials. It is expected that the Building Materials Committee will soon submit detailed proposals for the development of our building materials resources.

The attached tables contain detailed proposals and explanatory notes on housing programmes for the plan period.

1. Programmes of the Public Housing Agencies

(i) *State Housing Corporation.*—The State Housing Corporation will undertake during the plan period, the construction of about, 9,900 housing units of various designs in the Regional Capitals. The distribution of these housing units which is based on the demand for the Corporation's houses in the regions is shown in Table 4.

The total cost of the Corporation's construction programme is estimated at ₵104 million. It is envisaged that the Bank of Ghana's National Mortgage Financing and Guarantee Scheme will cover both the Corporation's high-income and low-income developments estimated at ₵43.2 million (1,950 houses) and ₵60.8 million (7,850 houses) respectively. In the interim however, the government will continue to finance the low-income developments whilst the high-income developments will be financed from loans obtained from the financial institutions by customers and customers' deposits.

Under the present financing scheme for infrastructural services, funds will be provided for the purchase of equipment and materials to enable the Corporation to construct the roads and drains on its estates. A total amount of about ₵14.6 million will be required for this purpose.

TABLE 2

STATE HOUSING CORPORATION

COST AND DISTRIBUTION OF PROJECTS DURING THE PLAN PERIOD, 1975/76—1979/80

House Type	*Projects*	*ESTIMATED FINANCIAL COMMITMENTS AND CONSTRUCTION COST*										*TOTAL ESTIMATED COST*	
		1975–76		1976–77		1977–78		1978–79		1979–80			
		No.	*Amount*	*No.*	*Amount*	*No.*	*Amount*	*No.*	*Amount*	*No.*	*Amount*	*No.*	*Amount*
Low-Income Development			₹		₹		₹		₹		₹		₹
S.H. 1	Residential Accommodation	222	1,332,000	230	1,380,000	250	1,500,000	200	1,200,000	200	1,200,000	1,102	6,612,000
S.H. 2		556	3,336,000	670	4,020,000	500	3,000,000	800	4,800,000	800	4,800,000	3,326	19,956,000
S.H. 3		422	4,220,000	800	8,000,000	800	8,000,000	600	6,000,000	800	8,000,000	3,422	34,220,000
	Total	1,300	8,888,000	1,700	13,400,000	1,500	12,500,000	1,600	12,000,000	800	14,000,000	7,950	60,788,000
S.H. 4 to 15 (High Income Development)	Residential Accommodation	500	6,000,000	300	7,500,000	300	7,500,000	350	8,750,000	500	12,500,000	1,950	43,250,000
	Total	1,800	14,888,000	2,000	20,900,000	1,850	20,000,000	1,950	20,750,000	2,300	26,500,000	9,900	104,038,000

TABLE 3

STATE HOUSING CORPORATION

INFRASTRUCTURAL SERVICES PROGRAMME

Financial Year	*ROADS AND DRAINS*		*Water*	*Electricity*	*Schools and markets*
	Equipment	*Materials*			
	¢	¢	¢	¢	¢
1975–76	727,837	1,455,675	1,069,400	1,069,400	534,700
1976–77	1,700,000	2,260,000	1,045,000	1,045,000	522,500
1977–78	800,000	2,300,000	1,000,000	1,000,000	500,000
1978–79	400,000	2,300,000	1,037,500	1,037,500	518,750
1979–80	200,000	2,500,000	1,325,000	1,325,000	662,500
Grand Total	3,827,837	10,815,675	5,476,900	5,476,900	2,738,450

Note.—Provision will be made for the construction of roads and drains only (i.e. equipment and materials). Water, electricity, schools and markets will be provided for by the respective agencies.

TABLE 4

STATE HOUSING CORPORATION

DISTRIBUTION OF HOUSES ON REGIONAL BASIS

Place	1975–76	1976–77	1977–78	1978–79	1979–80	*Grand Total*	*Estate or Site*
Accra	918	1,000	1,200	1,200	1,400	5,718	Adentan and mile 7, Nsawam road.
Kumasi ..	170	400	200	250	300	1,320	Buokrom Estate.
Takoradi ..	170	130	100	120..	150	670	To reclaim land from S.I.C.
Cape Coast ..	85	130	100	120	150	585	Abura road and 4th Ridge.
Ho	68	60	50	50	60	288	Mawuli Estate new area from Town Planning Department.
Koforidua ..	85	80	60	60	70	355	Stadium and existing estate.
Sunyani ..	68	60	40	40	50	258	Chiraa road site.
Bolgatanga ..	68	60	40	40	50	258	Zuarungu road site.
Tamale ..	68	80	60	70	70	348	Vintim site.
Total ..	1,800	2,000	1,850	1,950	2,300	9,900	

(ii) *Tema Development Corporation.*—The Corporation envisages constructing about 5,000 houses during the plan period at a total cost of ₵103.2 million as shown in Table 5. This programme is half the Corporation's estimated construction target of 2,000 houses per annum and is the outcome of the encouraging response the Corporation had from both public and private employers in the Tema Township to an appeal to help accommodate their employees. Employers in Tema will therefore construct 1,000 units per annum to make up the difference. Fifty per cent (50 per cent) of the Corporation's houses will be for the low-income group and the rest will be in the form of high-income development.

In line with government's recent housing financing policy, whereby only the low-income programmes of the housing agencies are financed from the Investment Fund, government's total commitments to the Corporation during the plan period will be about ₵39.7 million. However, as the Bank of Ghana's National Mortgage Financing and Guarantee Scheme becomes operational, the Corporation will negotiate with the financial institutions participating in the scheme for loans in respect of both its low-income and high-income developments. The investment requirements of the latter have been estimated at ₵62.5 million. Again, in line with government policy of financing infrastructural services on housing estates, an amount of ₵2.2 million will be required by the Corporation for the purchase of equipment and materials.

In order to ensure balanced development of Tema Township, the construction of houses will be integrated with the construction of shops, offices, kiosks, post offices, markets, schools and the servicing of industrial plots. A total amount of ₵830,500 which will be spent on these projects will come from the Corporation's own resources.

TABLE 5

FIVE-YEAR DEVELOPMENT PROGRAMME, 1975/76–1979/80

TEMA DEVELOPMENT CORPORATION

Year	(1) Total No. of houses (Target)	(2) No. of High and middle income houses	(3) Total Estimated costs of middle and high income houses	(4) No. of low income houses	(5) Total Estimated costs of low income houses	(6) Infrastructural service for all house types	(7)* Commercial projects	(8)* Industrial plots development	(9) Total Development costs	(10) Total Government Financing (5) and (6)
			¢		¢	¢	¢		¢	¢
1975–76 ..	1,000	500	12,500,000	500	7,500,000	1,000,000	208,500	200,000	21,408,500	8,500,000
1976–77 ..	1,000	500	12,500,000	500	7,500,000	1,000,000	110,000	—	21,110,000	8,500,000
1977–78 ..	1,000	500	12,500,000	500	7,500,000	100,000	235,000	—	20,335,000	7,600,000
1978–79 ..	1,000	500	12,500,000	500	7,500,000	50,000	132,000	—	20,182,000	7,550,000
1979–80 ..	1,000	500	12,500,000	500	7,500,000	50,000	145,000	—	20,195,000	7,550,000
Total ..	5,000	2,500	62,500,000	2,500	37,500,000	2,200,000	830,000	200,000	103,230,500	39,700,000

*To be financed from the Corporation's own resources.

2. Rural Housing Programmes

Over the plan period, the Department of Rural Development will construct a total of 10,740 houses under the self-help pilot co-operative housing scheme; an additional 5,000 rural houses will be upgraded through the wall-protection loans scheme and another 5,000 units will be completed under the roofing loans scheme as indicated in Table 6. The investment requirements for these schemes are ₵48.3 million for the co-operative housing scheme and ₵12.0 million for the wall-protection and roof loans schemes. An amount of about ₵2.5 million will be needed for the provision of communal "site facilities" such as sanitary facilities, public toilets and incinerators.

For the effective execution of the rural housing programmes, various items of plant and equipment will be required at a total cost of approximately ₵3.6 million. The total expenditure on the rural housing programme will therefore be ₵68.2 million for the plan period. Out of this amount, about ₵1.8 million will be needed for the establishment of cottage industries on the project sites.

The Bank of Ghana's new Mortgage Financing and Guarantee Scheme will cover rural housing programmes as well.

TABLE 6

RURAL HOUSING PROGRAMMES

Year	*ROOFING LOANS*		*WALL PROTECTION LOANS*		*SELF-HELP CO-OP. HOUSING*		*Site facilities*	*Plant, equipment and vehicles*	*Cottage industries*	*Total investment*
	No. of people	*Cost*	*No. of people*	*Cost*	*No. of people*	*Cost*				
		₡		₡		₡	₡	₡	₡	₡
1975–76 ..	1,000	1,200,000	1,000	1,200,000	888	4,000,000	—	400,000	100,000	6,900,000
1976–77 ..	1,000	1,200,000	1,000	1,200,000	1,458	6,561,000	1,000,000	635,000	200,000	10,796,000
1977–78 ..	1,000	1,200,000	1,000	1,200,000	2,128	9,576,000	500,000	750,000	500,000	13,726,000
1978–79 ..	1,000	1,200,000	1,000	1,200,000	2,778	12,591,000	500,000	820,000	500,000	16,811,000
1979–80 ..	1,000	1,200,000	1,000	1,200,000	3,468	15,606,000	500,000	985,000	500,000	19,991,000
Total ..	5,000	6,000,000	5,000	6,000,000	10,740	48,334,000	2,500,000	3,590,000	1,800,000	68,224,000

N.B.—The cost of each house is ₡4,500 based on 1975–76 prevailing prices. The value of roofing or wall protection loan is ₡1,200 per person

3. Programmes under the Ministry of Works and Housing

(i) *Sites and Services and Urban Up-grading Programmes.*—The object of these programmes is to demonstrate the feasibility of providing urban services and up-grading shelter for the low-income group at costs they can afford without the need for public subsidies. Through the up-grading of slum settlements and the development of sites and services, the scheme should improve the living conditions and health of at least 200,000 low income people, thereby increasing their productivity as well as their welfare.

In addition, the project should provide employment in the direct construction of both infrastructure and shelter.

The project consists of four integral parts:

(*a*) an urban improvement programme in Accra/Takoradi costing eight million cedis, and Tamale (Central) two million cedis involving extensions to and improvement of public utilities and community facilities. The Accra sites will include Nima-Maamobi and other locations to be selected during project preparation;

(*b*) development of 6,000 serviced lots (seven and a half million cedis) approximately half of which would be located in Accra, with the other half distributed among Kumasi, Tamale and Sekondi-Takoradi;

(*c*) materials loans to supplement the urban improvement programme and the serviced lots development scheme (four million cedis—₵4,000,000);

(*d*) a study of the administration and financial base of Accra and a survey of unauthorised development (five hundred thousand cedis); and

(*e*) a small-scale industries component which would probably emphasize building materials (five million cedis (₵5,000,000)).

The sites and services and slum up-grading programmes will be implemented with assistance from the World Bank. The estimated total project cost is ₵27.5 million. The world Bank will finance about 60 per cent of the project cost (i.e. about ₵16.5 million) and Government's contribution to the project during the plan period will be about ₵11 million. In addition to this, government will make an amount of ₵10 million available specially for the implementation of the Nima-Maamobi improvement scheme. This is because this project is already being executed by the Ministry of Works and Housing and certain aspects of the project like the completion of the Nima Highway and the channelling of the Nima stream will cost more than what the estimates of the proposed sites and services and urban improvement programme have indicated.

In general, the sites and services programme will place emphasis on the provision of infrastructural services such as basic sanitary cores; water and electricity connections; roads and drainage facilities as well as on the improvement of the houses. The programme will cater for households

earning between ₵600 and ₵2,500 a year. The built-in materials loans scheme and the small-scale industries scheme are to ensure that basic building materials are made available for the programme and that job opportunities are created for the beneficiaries. These industries will be sited on the projects and will be in the form of small-scale labour-intensive production units.

The government envisages incorporating a co-operative element in the sites and services programme so as to encourage the self-help spirit of participants.

(ii) *Nima (Maamobi) Improvement Scheme.*—This is a slum up-grading scheme which is already under execution. The project area covers some 427 acres of land with a population of about 51,000 people (about 12 per cent of the city's population) inhabiting roughly some 9,000 houses. The basic problem of the area is one of over crowding and poorly serviced and poor quality housing. Thus the area is characterised by sub-standard housing, lack of basic social facilities; public conveniences and basic services like potable water supplies, roads and proper drainage facilities: The neighbourhood is therefore one of the most sub-standard in the Accra City area.

The improvement scheme aims at preventing further deterioration of the area as well as improving the quality of housing by providing amenities such as water supply, solid waste and storm-water disposal, access roads and footpaths. Health-education and general community development programmes will also be mounted for the area. It is hoped that this project will provide a model for similar improvement programmes in other low-income areas such as Teshie-Nungua, Ashiaman and James Town.

Already, an amount of ₵1,032,675 has been invested in the first phase of the project which consists of ₵216,310 for a 10.3 mile network of road construction and ₵816,365 for payment of compensation.

The remaining phases will deal among other things with:

(*a*) the completion of the Nima Highway;
(*b*) the channelling of the Nima Stream;
(*c*) the provision of infrastructural services; and
(*d*) the re-housing of displaced people due to community and infrastructural works.

Displaced people from the improvement programme will be absorbed by the sites and services scheme.

(iii) *Urban Housing Co-operatives.*—Urban Housing Co-operatives are increasingly becoming an important means of solving the housing needs of low-income people. As far back as 1969, a pilot housing co-operative project was initiated in Tema by the Department of Planning and Housing Research. The main purpose of the programme was to demonstrate the feasibility of developing a housing programme carried out by the private sector as opposed to the more traditional programmes carried out by the State Housing Institutions. The UN/ECA/ICHDA Mission that visited

the project in 1971 selected it to form the basis of a pilot co-operative housing scheme for West Africa. 103 houses are to be built under this scheme for the co-operative members. So far, 21 houses have been completed and 31 units are under construction at a total cost of ₵146,500.

As a result of this project, about twenty housing co-operatives have already been formed or are in the process of being formed in various urban centres of the country. Government intends to institutionalise these co-operatives and to encourage their activities as a means of mobilising the resources of the low income groups for housing development. The Technical Services Organisation which will be set up during the plan period will organise and manage these co-operatives.

It is envisaged that about hundred (100) co-operatives will be initiated during the plan period at a cost of ₵1 million. This will form the seed capital of a revolving fund that will be established for the co-operative housing movement.

(iv) *Public Servants Housing Loans Scheme.*—The Public Servants home-ownerships cheme was established by S.M.C.D. 319 in 1975 to assist public servants to acquire residential property for their own use. In accordance with the Decree., the amount of loan granted should not exceed five times the gross annual salary of the applicant. Up to date, the Loans Board has received a total of ₵11.0 million in the form of loans from the Government.

It is estimated that a total amount of ₵25.7 million will be required by the scheme during the plan period. Out of this an amount of ₵682,510 will cover the purchase of equipment and vehicles to facilitate the operations of the Board.

(v) *National low-cost housing programme.*—In pursuance of government's policy of terminating its low-cost housing programme, the sum of ₵15 million will be needed between 1976–77 and 1979–80 for the completion of the (560) units which are still at various stages of completion as well as for the provision of necessary infrastructure. For the first year of the plan period a total amount of ₵11 million has been allocated for the programme.

(vi) *Public Assisted Housing.*—At the moment, bungalows and other types of accommodation are provided to public servants in the regional capitals and the districts on an *ad hoc* basis. In future, government intends to rationalise the system by making the Ministry of Works and Housing the co-ordinator of all accommodation requests from both the regions and the districts. It is estimated that a total of 1,200 housing units will be required over the plan period. An allocation of ₵20 million will be required to cover the cost of constructing the houses as well as for the provision of infrastructural facilities.

TABLE 7

PROGRAMMES UNDER THE MINISTRY OF WORKS AND HOUSING

	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
1. Sites, and Services and Urban Improvement Scheme						
(*a*) Sites and Services Scheme	—	1,000,000	2,000,000	4,000,000	4,000,000	11,000,000
(*b*) Nima-Maamobi Improvement Scheme ..	—	967,000	2,033,000	3,000,000	4,000,000	10,000,000
2. Urban Housing Co-operative	—	250,000	250,000	250,000	250,000	1,000,000
3. Public Servants Housing Loans Scheme	5,000,000	5,000,000	5,662,840	5,004,800	5,015,730	25,683,370
4. National Low-cost Housing Programme	11,000,000	10,000,000	5,000,000	—	—	26,000,000
5. Public Assisted Housing Programme	—	—	4,000,000	8,000,000	8,000,000	20,000,000
6. National Housing Exhibition	50,000	350,000	—	—	—	400,000
7. Afro-Asian Housing Conference	—	100,000	300,000	—	—	400,000
8. Implementation of Research Findings	—	250,000	250,000	250,000	250,000	1,000,000
Total	16,050,000	17,917,000	19,495,840	20,504,800	21,515,730	95,483,370

4. Physical Planning Programmes

In line with the Governments' policy of systematically planning and guiding the growth of the country's settlements, the Department of Town and Country Planning will undertake the following major programmes during the plan period:—

(i) *Preparation and demarcation of layouts in statutory planning areas.*—Under this programme, fifteen-year physical development plans as well as structural plans will be prepared for all statutory planning areas in the country in order to guide residential and infrastructural development. These planning areas include all the regional capitals, district capitals and other fast growing towns. Residential areas will be demarcated on the basis of the physical development plans in order to reduce the incidence of disorderly development. About ₵880,000 will be required for this programme.

(ii) *Development of fitters' and other light industrial sites.*—This is an on-going demonstration programme which aims at assisting way-side fitters and other allied artisans to get together, if possible on a co-operative basis, to establish efficient workshops in properly planned and serviced areas. The programme is estimated to cost about ₵493,000 and will cover the cost of clearing, levelling and layouts of the sites and also the provision of infrastructural services such as access roads, water and electricity.

(iii) *Other programmes.*—Other programmes which include the preparation of Accra City sector plans, the re-planning of the Accra-Tema Metropolitan Area (to be undertaken with a United Nations team) and the Tamale Pilot Land-use and Programming Study (which will be undertaken with assistance from USAID) will cost about ₵1.0 million.

Details of all physical planning programmes are given in Table 8.

TABLE 8

PHYSICAL PLANNING PROGRAMMES

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
1. Development of fitters' and other light industrial sites at:						
Ho	6,000	6,000	40,000	—	—	52,000
Koforidua	10,000	40,000	—	—	—	50,000
Cape Coast	6,000	10,000	—	—	—	16,000
Takoradi	35,000	35,000	—	—	—	70,000
Sunyani	15,000	—	50,000	—	—	65,000
Kumasi	—	30,000	50,000	—	—	80,000
Obuasi	40,000	—	20,000	—	—	60,000
Tamale	10,000	—	40,000	—	—	50,000
Bolgatanga	10,000	—	40,000	—	—	50,000
Sub-total	132,000	121,000	240,000	—	—	493,000
2. Preparation and Demarcation of layouts in all statutory planning areas:—						
Volta Region	6,000	6,000	40,000	40,000	50,000	142,000
Eastern Region	4,000	4,000	20,000	20,000	30,000	78,000
Central Region	6,000	6,000	20,000	30,000	30,000	92,000
Western Region	6,000	6,000	20,000	20,000	20,000	72,000
Ashanti Region	6,000	6,000	40,000	50,000	60,000	162,000
Brong-Ahafo Region	6,000	6,000	35,000	35,000	40,000	122,000
Northern Region	6,000	6,000	35,000	35,000	40,000	122,000
Upper Region	5,000	5,000	20,000	30,000	30,000	90,000
Sub-total	45,000	45,000	230,000	260,000	300,000	880,000

TABLE 8

PHYSICAL PLANNING PROGRAMME—*contd.*

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
3. Accra City Sector Plans	8,000	10,000	300,000	300,000	300,000	918,000
4. Replanning of Accra-Tema Metropolitan Area	—	200,000	300,000	—	—	500,000
5. Tamale Pilot Land-use and Programming Study	—	—	190,147	190,000	—	380,147
6. Office Accommodation:—						
(*a*) Office block for Koforidua Regional Office	27,000	—	—	—	—	27,000
(*b*) Office block, Cape Coast	80,000	80,000	—	—	—	160,000
(*c*) Office block, Kumasi	13,000	400	—	—	—	13,400
(*d*) Headquarters building	—	80,000	400,000	400,000	500,000	1,380,000
(*e*) Office block for Ho and Sunyani	—	—	150,000	150,000	—	300,000
(*f*) Office block for Tamale and Sekondi-Takoradi	—	—	—	—	150,000	150,000
7. Survey and design of relief roads, Takoradi	50,000	40,000	—	—	—	90,000
8. Equipment and furniture for District Offices	128,850	110,000	400,000	400,000	400,000	1,438,850
9. Vehicles	40,000	160,000	258,000	228,000	228,000	914,000
Sub-total	346,850	680,400	1,998,147	1,668,000	1,578,000	6,271,397
Total	523,850	846,400	2,468,147	1,928,000	1,878,000	7,644,397

5. Research Programmes

Areas of research have been detailed out in Table 9. Emphasis will be on the development of new building materials such as pozzolana and the improvement of production techniques of known materials. New house-designs which will facilitate the utilization of local materials will be developed and the cost and performance of different construction techniques will be analysed to determine areas where costs can be reduced or local building materials may be substituted. Standardisation of building components and the manufacture of low-cost roofing materials from rubber, saw dust and other agricultural wastes like rice husk and sugar-cane residue will be given due emphasis.

A total amount of about ₵4 million will be allocated to research projects in the housing sector. Out of this amount about ₵800,000 will be spent on the construction of building information centres in Accra and the other regional capitals.

An additional ₵1.0 million will also be required for the implementation of research findings such as the construction of prototypes and the demonstration of new and improved techniques.



TABLE 9

COST AND DISTRIBUTION OF RESEARCH PROJECTS DURING THE PLAN PERIOD, 1975/76–79/80*

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	₵	₵	₵	₵	₵	₵
1. Housing Statistics	5,126	7,000	7,000	7,000	7,000	33,126
2. Rural Housing	2,000	85,000	13,000	—	—	100,000
3. Low-cost Housing	—	35,500	10,000	10,000	10,000	65,500
4. Slum Rehabilitation Studies	—	21,140	—	—	—	21,140
5. Environmental Studies	—	4,700	4,700	4,700	—	14,100
6. Clay Bricks and Tiles	86,562	190,000	100,000	100,000	100,000	576,562
7. Fumesua Brick Kiln	168,945	—	—	—	—	168,945
8. Evaluation of mining wastes for building	—	5,000	—	—	—	5,000
9. Lime Project	4,035	5,000	—	—	—	9,035
10. Pozzolana Project	329	10,000	10,000	10,000	10,000	40,329
11. Building Information Centres	—	200,000	200,000	200,000	200,000	800,000
12. Equipment and materials	425,000	312,000	390,000	487,500	609,375	2,223,875
Total	691,997	875,340	734,700	819,200	936,375	4,057,612

*These are mostly the projects of the Building and Road Research Institute.

6. Building Materials Programmes

In line with government's policy and strategy of developing the local building materials industry, so as to conserve foreign exchange and to ensure that the housing and general construction plan is not unduly constrained by building materials supply, various rehabilitation, expansion and new development projects are being initiated in the building materials sector.

Brick and Tile.—Foreign exchange problems have made it necessary for government to encourage the accelerated development of a local brick and tile industry which would exploit clay deposits. A recent survey conducted by GIHOC confirms that the demand for bricks in the country has been greatly constrained by inadequate supplies.

In order to remedy this situation, the GIHOC factory at Weija will be rehabilitated to produce 10 million bricks annually and brick factories will be established in each of the regional capitals as discussed in the Industry Chapter. Two additional brick factories will be built in Accra by the Bank of Ghana each with a capacity of 6 million bricks. Other brick factories will be established such as the Bank for Housing and Construction's factory (at Kumasi) and the Regional Development Corporations' factories at Tamale, Prampram, Kibi and Sunyani.

The possibility of developing the Ashaeman clay deposits will be investigated during the plan period. Also small-scale cottage-type brick factories will be encouraged in the rural areas.

Pozzolana and Lime.—Feasibility studies are being carried out into the possibility of establishing a pozzolana factory based on bauxite wastes available at Awaso and Kibi. The production of lime on both medium and small-scale (cottage industry basis) will also be encouraged in areas with limestone deposits since the use of lime stabilised soil blocks are being encouraged as walling material.

GIHOC will also establish a sand-lime brick factory in the Accra-Tema Metropolitan area. The Bank for Housing and Construction is also working on a similar project and the cost of the latter project is estimated at ₵6 million.

Timber Products.—Ghana has considerable timber resources. As many as over 200 species of timber are available in the country. Out of this, only about twelve have been introduced to the world market. In spite of these vast timber resources, wooden houses have not been popular because of:

(*a*) the high cost of sawn timber in the country.
(*b*) fear of damage from fire hazards, and
(*c*) the general apathy towards wooden houses.

As part of the strategy to reduce the country's reliance on imported building materials, the lesser known species of timber most of which have been tested and found suitable will be exploited. Furthermore, wherever the resources are avilable, the Regional Development Corporations as well as other interested bodies will be encouraged to establish wood

processing factories. The uses of wood products which will be promoted will include:

Plywood as substitute for asbestos sheets.
Fibre-board for ceiling, partitioning and wooden panels as walling material.

In support of the promotion of timber use, the timber seasoning sheds in the regions will be geared towards processing the lesser known species. After the government's pilot wooden housing programme has been completed, the housing agencies will be expected to incorporate wooden designs in their housing programmes.

Other Programmes.—Details of other rehabilitation and expansion programmes for key building materials industry such as the GIHOC Steelworks, the joint GIHOC/Bank of Ghana foundry; the Ghana cement works; the CIMAO multi-national (Ghana-Togo-Ivory Coast) cement project; and the Prefabricated Large Panel Factory, and lastly the establishment of the Aluminium Rolling Mill Factory for the production of roofing sheets have been covered in the industry chapter of the plan.

TABLE 10

PLAN PERIOD PROPOSALS FOR THE HOUSING SECTOR (1975/76–1979/80)

GENERAL SUMMARY

Programme Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
1. State Housing Corporation	11,071,512	17,360,000	15,600,000	14,700,000	16,700,000	75,431,512
2. Tema Development Corporation	8,500,000	8,500,000	7,600,000	7,550,000	7,550,000	39,700,000
3. Rural Housing..	6,900,000	10,796,000	13,726,000	16,811,000	19,991,000	68,224,000
4. Programmes under Ministry of Works and Housing	16,050,000	17,917,000	19,495,840	20,504,800	21,515,730	95,483,370
5. Physical Planning Programme	523,850	846,400	2,468,147	1,928,000	1,878,000	7,644,397
6. Research Programme	691,997	875,340	734,700	819,200	936,375	4,057,612
Total	43,737,359	56,294,740	59,624,687	62,313,000	68,571,105	290,540,891

CHAPTER 11

SOCIAL WELFARE

11.1 General

The need for Social Welfare Services arises out of the recognition of the inability of the family to manage some of the social problems of its members. Government therefore has to share in this responsibility not merely out of charity but out of the awareness that social welfare is an important dimension in the stability and progress of nations.

Rapid population growth and the stresses of modern life are leading to a breakdown of traditional social systems which is most evident in rapidly urbanising settlements. The major social problems include unemployment, destitution, the neglect of children, delinquency and crime. The Government, therefore, through the Department of Social Welfare and Community Development makes provision for the assistance of individuals, families, groups or communities that are unable to cope unaided with the complexities of living in a modern society.

11.2 Organisation and Current Status of Social Welfare Services

The Department of Social Welfare and Community Development which is an operative arm of the Ministry of Labour, Social Welfare and Co-operatives, has three main programme divisions, namely—Social Welfare, Community Development and Rehabilitation. These Divisions are supported by three other divisions—Administration, Budget and Planning and Technical Services. There is also an Audio-Visual Aids Unit which produces teaching aids and materials for fieldwork and also for the training institutions of the Department.

The General Administration of the Department is manned at headquarters by a Director and a team of Deputy Directors, in charge of the three programme Divisions and the Planning Unit.

The Headquarters staff are generally responsible for policy formulation, inspection and supervision of projects, planning and budgeting and co-ordination of the activities of the various divisions of the department, as well as relevant activities of other agencies.

The department operates in all the nine regions of the country. The Regional Head is assisted by Sectional Heads of the various divisions of the department in the Region. The Regional Staff, working in Regional capitals and district council areas have responsibility for implementing departmental policies and programmes at the Regional and District levels.

Socail Welfare

Social Welfare services are concerned primarily with urban areas and include probation and delinquency services which relate to young offenders. These include case work and group work. All the nine regional

capitals and 23 other urban centres have been provided with facilities for court services including the probation system. Each region has a juvenile court as well as a remand home for juvenile offenders. There are three Central Probation Homes at Accra, Jacobu and Kusanaba and four Industrial Schools at Accra, Sekondi, Agona Swedru and Pong-Tamale. The Jacobu and Kusanaba Probation Homes have recently been converted into vocational training centres for boys (i.e. school leavers, drop-outs from secondary and technical schools and probationers).

The Social Welfare Division also runs Children's Home at Accra, Kumasi and Tamale for abandoned children and orphans. These children are cared for by the Division until they are claimed by near relations or adopted. As at 31st December, 1974, 124 children were in the three Children's Homes. The Division maintains relationships with four Orphanages run respectively by the Roman Catholic Mission at Jirapa and Akim Swedru, the Salvation Army at Anum and the Anglican Mission at Mampong, Ashanti. The Adoption Act of 1962 lays down the conditions under which the children may be adopted. It is the responsibility of the Division to provide training for the staff at the National Day Care Training Centre at Madina and to ensure that Day Care Centres are kept up to standard. In 1974 there were 357 Day Care Centres with over 35,000 children registered by the Department.

Departmental Officers, trained in hospital welfare and psychiatric social work, are attached to central hospitals in the country to attend to the welfare needs of patients. After-care officers are also attached to the central and security prisons but their work extends to the local prisons in the area. Prisoners who serve long term sentences undertake training in carpentry, masonry, shoe-repairing, mat-weaving, pottery, soap-making, and other trades. The Department assists in their rehabilitation on their discharge from the prisons. Group work agencies are established in all the nine regional capitals and some urban centres. These agencies assist voluntary organisations in the pursuit of their aims and objectives.

The Department supervises Girls Vocational Training Centres run by private individuals and it also runs refresher courses for the wardens of these centres. In 1974, there were 31 recognised Girls' Vocational Training Centres under the supervision of the department.

Rehabilitation

The main objective of the Division is to assist the handicapped to become both vocationally and socially responsible citizens leading independent lives within the limitations imposed by their handicap.

The national register for disabled persons was created in 1961 and the registration programme is aimed at identifying and registering the physically handicapped in the country and ascertaining their age, disability and geographical distribution so as to facilitate the planning of adequate services for all the regions. There were 35,454 disabled persons on the register as at the end of 1974.

There are eight rehabilitation centres for vocational training in carpentry, joinery, tailoring and other trades of the disabled at Accra, Ho,

Somanya, Biriwa, Edwenase, Sunyani, Tamale and Bolgatanga. The combined intake of the eight centres is 300 per annum. So far, about 1,190 disabled persons have been trained at these centres.

The Biriwa Vocational Training and Rehabilitation Centre, a joint project with the Federal Democratic Republic of Germany, opened in January, 1975, trains both handicapped and non-handicapped youth as an experiment in integrating the disabled into society.

There is a Disabled Resettlement Service for selective placement of handicapped persons in employment. There are also after-care and follow-up activities to ensure that placement and resettlement are satisfactory.

For the self-employed, assistance may be given in the form of basic tools and materials. A small marketing organization assists in the marketing of products both in local and in foreign markets.

The Division also engages in an extensive and continuous social education programme to inform the public about the aims and possibilities of rehabilitation, since the active participation of the disabled in community activities depends to a large extent, on the social acceptance of the disabled by the community. Advantage is taken of existing social organizations such as universities, schools, colleges, church groups, youth and women's organisations. The programme culminates in an annual rehabilitation week and a national exhibition of crafts and other products of handicapped persons.

Community Development

The Community Development Division has the responsibility of raising the standard of living of the rural population as a means of bridging the gap between the rural and urban communities.

Programmes that are initiated include:—

(1) Home Science Extension (work among women)
(2) Self-help construction projects
(3) Adult Education and Functional Literacy
(4) Extension Services (closely linked with adult education and aimed at teaching people how to raise their standards of living through their own efforts)
(5) Rural Industries.

A two-year training course in vocational skills is being pursued in the Division's 14 Women's Training Institutes for illiterate and literate women and girls. The total enrolment of students in the Women's Training Institutes for 1974–75 was 2,170 and 708 students graduated at the end of the school year.

The Community Development Division also provides for the training of boys and young men between the ages of 14 and 25 years. There are at present, three trades institutes at Sunyani, Koforidua and Tamale and a fourth was started at Ho during 1975–76.

Government does not impose projects on any community. On the contrary, under the self-help programme, community development officers, through adult education and functional work, are able to guide members of a community to choose the type of public utilities and social amenities they most need.

Between 1969 and 1974 about 100 self-help projects were completed and these included school buildings, postal agencies, community centres and markets.

Through the Adult Education and Literacy programme a sustained effort is made to expose the rural people to new ideas, matters of civic interest as well as teach interested adult illiterates to read and write.

11.3 Constraints on the sector

There are several problems which affect the development of the sector and also lessen the impact of Social Welfare services on the community. Some of these are lack of effective co-ordination among the divisions of the department and between the department and other public and private agencies working in the same field. The Department is critically short of adequately trained personnel and supporting staff. There is also a shortage of offices and residential accommodation, equipment and transportation facilities.

The Social Welfare Division, in the delivery of its services, faces a number of problems such as the absence of legislation on the establishment, operation and management of day care centres which has led, for instance, to inadequate arrangements for medical care at the day care centres. There is an urgent need to renovate and expand the Bekwai infirmary for destitutes in order to cater for the increasing numbers of destitutes in the country. The maintenance of Children Act of 1965 does not fully benefit children who suffer from paternal neglect. The inadequacies of the Act have been a constraint on welfare services in this area. The Act has undergone revision for this reason and a new decree is expected soon.

There are not enough institutions to absorb the large number of delinquent children and the few available are lacking in facilities for training the children to become useful citizens upon their release.

Two main problems face the inmates of the industrial schools. These are (*a*) inadequate facilities and resources during training (*b*) inadequate job opportunities after training.

Discharged prisoners also face difficulties in resettlement due to the following factors:

(1) The technical level of training in prisons is generally low, creating difficulties upon discharge.

(2) Funds allocated for tools and materials for training purposes have been too small to enable the prison authorities to make any significant headway in trade training.

(3) Society's hostile attitude towards discharged prisoners.

The Rehabilitation Division does not get enough funds for the purchase of artificial aids and raw materials which are used in the trade training of the disabled. The division is also faced with the problems of finding sheltered employment for the few trained disabled. Employers do not generally fulfil their statutory obligation under the "Quota System" whereby one place in every two hundred vacancies is reserved for the handicapped. This is due to the ignorance and prejudice on the part of employers on the abilities and capabilities of the trained disabled. Owing to the accommodation inadequacy at the few rehabilitation centres and the shortage of trained personnel to teach, only 300 disabled persons out of 35,454 registered in 1974, were undergoing training.

The Community Development Division which runs vocational institutes for women finds it difficult to deploy the girls and young women who have been trained in its institutions. Other pressing problems facing the division include the high cost of adult literacy programmes in terms of personnel, literature and other technical requirements which result in the limited coverage of such programmes.

11.4 Policies Objectives and Strategies

The main policy objectives and strategies which will be adopted to solve the problems discussed above are given below.

In the area of social welfare, there will be co-ordination with the Ministry of Health to ensure that adequate medical services aremade available to the inmates of the children's homes, day-care centres and industrial schools. Emphasis will be placed on preventive care such as immunisation against infectious diseases. Government will legislate on the establishment, operation and management of day-care centres so as to give the Department of Social Welfare and Community Development supervisory control over them. A draft decree will soon be enacted to this effect. Minimum standards on sanitation, staff qualifications, equipment and activity programmes for the children will be set and where necessary day-care centre attendants already employed at these centres will be given in-service training at the joint UNICEF/Social Welfare Training Centre at Madina.

In view of the priority being given to agriculture in the national economy, the teaching of farming techniques will be incorporated into the curricula of the rural training institutes at Tamale, Sunyani, Koforidua and Ho. Furthermore, the Jacobu and Kusanaba Probation Homes which have recently been converted into vocational training centres for boys as a means of increasing the facilities available for such training will have an agricultural bias. To this end, facilities like workshops will be provided at the newly converted centres during the plan period.

A reconstruction programme will be carried out during the plan period to rehabilitate the department's institutions which were built with landcrete in the early 1960's. Three remand homes will be built at Cape Coast, Wa and Bolgatanga during the plan period in order to cater for the large number of deliquents in these urban centres.

Owing to the lack of accommodation for destitutes, the N.L.C. Decree of 1969 which made begging an offence has not been implemented. The Bekwai Infirmary, which is the only destitutes' home in the country, will be renovated and expanded and adequate provision will be made for medical care, staffing and recreational facilities. After the expansion programme, Government will organise a mass rehabilitation of destitutes and other groups like lepers, cripples, beggers, the homeless and the mentally retarded, especially in the urban centres. The participation of all benevolent societies will be sought in this exercise to make it effective.

The aftercare service of the Social Welfare Division will aim at effecting a satisfactory resettlement and re-integration of the discharged inmates of the Industrial Schools, the Borstal Institute and the Prisons into society as productive and law abiding citizens. As a long term objective attention will be focused on reform as against the present system which stresses the punitive aspect of the law. Adequate programmes will be developed and adequate resources and materials will be made available to prisoners so as to enable them earn a decent living after their release from prison.

Adequate funds will be provided for the purchase of artificial aids and raw materials which are used in the trade training of the disabled. Special promotional activities to educate the public on the capabilities of the disabled and to raise funds for the purchase of some of the equipment and raw materials that are urgently needed at the rehabilitation centres will be organised during the rehabilitation week.

Government will expand the existing rehabilitation centres by constructing workshops, gymnasia, sickbays, showrooms, staff quarters and additional domitories for the disabled. It is hoped that the expansion programme will enable each centre to increase its annual intake by 50. Two new rehabilitation centres will also be contructed at Madina and Sekondi to augment the training facilities available. Government will ensure that the necessary vehicular support is provided to make the rehabilitation programme effective.

In order to assist the self-employed disabled who find it financially difficult to put up workshop facilities, sheltered or co-operative workshops will be built during the plan period. Government will also expand the scope of protected employment to enable increasing numbers of the trained disabled to be employed.

In the area of community development, emphasis will be given to programmes in the following fields:—

(1) Home Science Extension
(2) Vocational Training for boys
(3) Self-help construction projects
(4) Adult Education and functional literacy
(5) Extension services
(6) Establishment of rural industries
(7) Volta River Resettlement Scheme.

The Home Science programme for the women's vocational training institutes will be revised to increase the range of subjects taught. In order to increase the intake at the existing training institutes, an expansion programme will be carried out and consideration will be given to the construction of new institutes. In view of the extreme lack of adequate facilities for the training of women particularly in the Upper Region, the Rural Training Centres at Wa and Navrongo will be converted into Women's Training Institutes during the plan period.

Government will provide facilities at a Community Development Centre to be established at Cape Coast for the training of community leaders. These facilities will be used for lectures, entertainment and the exhibition of articles produced by the groups to be trained at the Centre. It is the intention to sell on commercial basis the products of these groups as well as those of the training institutes.

Co-operative societies will be formed in the rural areas to assist women to set up home-based as well as agro-based industries. Furthermore, Government will take the necessary steps to establish small-scale labour-intensive projects on which the graduates of the vocational training institutes can be employed. Each Local Council will be expected to establish one such project. A committee for labour and vocational opportunities will be appointed to carry out a survey of vocational opportunities and labour-intensive projects.

Workshop facilities at the National Institute of Rural Industries for boys at Sunyani, Peki, and Koforidua will be expanded and brought up to standard. Staff accommodation for tutors/instructors will be provided at the training institutes. In order to provide the full range of workshop facilities at the Koforidua Rural Training Institute, a workshop for wood and ivory carving will be built at the Institute.

In an effort to increase the effectiveness of the self-help programme, the Department of Social Welfare and Community Development will co-ordinate its activities with the Town Development Committees in the selection and construction of self-help projects and will concentrate on the completion of all on-going projects in a particular locality before new ones are started.

As part of the Government's policy to reduce the high level of illiteracy in the country, the extension services programme which is closely linked with the adult education and adult literacy programmes will be given due emphasis. It is envisaged that graduates from secondary schools, technical institutes, polytechnics and universities will be engaged on some of these literacy programmes. With the production of more agricultural and fishing oriented literature, it is hoped that the coverage of the programme will be extended and the interest in learning new skills will be sustained. It is also envisaged that the number of groups covered by the programme will include social and religious groups. Government will increase the subventions for the literacy programmes during the plan period.

The rural industrialization programme, whereby the Department of Social Welfare and Community Development assists agricultural groups to expand their farms and to process their produce, will be intensified. Small-scale industries will be established in the regions for charcoal production, firewood, cassava processing, and so on. Village/Town Development Committees will be encouraged to initiate and implement economically viable projects to augment the Government's efforts in rural development. The Department will assist in finding markets for the products from these industries.

The Volta River Resettlement Scheme has been transferred to the Department of Social Welfare and Community Development which is now responsible for the construction of core houses for the inhabitants of those villages which were affected by the Volta River Project. The Scheme will continue during the plan period in the Volta, Eastern, Brong-Ahafo and Northern Regions.

Since 1971, the Department of Social Welfare and Community Development through the Technical Division has been involved in the supervision of the National Feeder Roads Programme. With the establishment of the Ghana Highway Authority by N.R.C.D. 298, the planning, development, maintenance and administration of all roads and related services are now the responsibility of the Highway Authority. The National Feeder Roads Programme has been discussed in Chapter 2.

11.5 Manpower Requirements

The effective implementation of the policy objectives for the plan period and the programmes identified to support these policy objectives will depend on the Department of Social Welfare and Community Development obtaining the full complement of staff. Projections for the various categories of staff are indicated in Table I.

Table 1

MANPOWER REQUIREMENTS

	1975–76	1976–77	1977–78	1978–79	1979–80
Professional	920	950	980	1,010	1,040
Technical and Supervisory	300	320	340	360	380
Skilled Intermediate ..	785	825	865	905	945
Daily Rated	1,500	1,600	1,700	1,800	2,000

The School of Social Welfare in Accra will continue to train the professional staff of the Department. An average of 30 persons with basic skills in professional social work will be turned out annually. This will enable the Department take care of its replacement and expansion needs. In order to achieve the above target, the school of Social Welfare will be rehoused at Madina to enable an expansion programme to be carried out.

Officers in the junior grades will upgrade their skills and qualifications through training programmes in Social Administration provided by the University of Ghana, Legon. In-service training programmes will be organised in the regions for the regional staff. Advantage will also be taken of overseas training programmes provided by outside institutions and agencies for all professional staff.

The Department does not have its own training facilities for the training of the technical and supervisory, skilled intermediate and daily-rated personnel. It will therefore continue to depend on those trained by other institutions.

11.6 Proposed Programmes for the Plan Period

During the Plan Period, a total amount of about ₵18.0 million (at 1975–76 prices) will be available for the development of Social Welfare Services in the country. Out of this allocation, an amount of ₵2.3 million will be spent on the provision of facilities for the rehabilitation of the disabled.

New Rehabilitation Centres will be built at Madina and Essipon, at a cost of ₵302,500. The Sekondi Rehabilitation Centre has already been started by the Rotary Club of Sekondi-Takoradi and Government's contribution towards this project is about ₵187,500. For the expansion programme of existing rehabilitation centres an amount of ₵1.3 million will be needed. This will cover the provision of facilities like sick-bays, show-rooms, etc., and accommodation for the staff who are required to be resident at the centres. New sheltered/co-operative workshops will be constructed at Denu, Yendi, Tarkwa, Begoro and Cape Coast at a cost of approximately ₵200,000.

Approximately ₵6.1 million and ₵2.0 million will be needed for Community Development and Welfare Programmes respectively during the Plan Period. An amount of ₵2.3 million will be spent on expansion programmes for Vocational Training Institutes for women, girls and boys. A new Institute will be constructed at Agona, Ashanti, to augment the training facilities for women in this Region. The National Women's Training Institute at Madina will be expanded to train an additional number of 100 students and for this purpose about ₵520,000 will be made available.

The self-help programme will be given emphasis and an amount of ₵2.6 million is expected to be spent on the construction of self-help projects throughout the country.

Work on the Remand Home for boys and girls in Bolgatanga will start during the plan period and two new remand homes for girls will be constructed at Cape Coast and Wa at an estimated cost of ₵270,000.

The conversion of the Jacobu and Kusanaba probation homes into vocational training centres has necessitated the provision of facilities like workshops. For this purpose an amount of ₵239,000 will be required. Again the Boys' Industrial School at Pong-Tamale which is built of mud-bricks will be reconstructed at a cost of ₵205,000.

An amount of about ₵2.6 million has been allocated for the Volta River Resettlement Scheme which will involve the construction of about 1,500 core-houses in the affected areas.

Details of the Plan proposals by Division are given in the attached tables.

TABLE 2

DEPARTMENT OF SOCIAL WELFARE AND COMMUNITY DEVELOPMENT

PLAN PERIOD PROPOSALS—GENERAL SUMMARY

Division	1975–76	1976–77	1977–78	1978–79	1979–80	*Grand Total*
	¢	¢	¢	¢	¢	¢
1. General Administration	42,000	229,000	665,750	601,000	654,000	2,261,750
2. Budget and Planning	32,000	44,600	245,000	272,300	304,800	898,700
3. Welfare Division	330,690	271,000	493,750	662,350	358,400	2,116,190
4. Rehabilitation Division	268,000	302,000	632,200	611,500	609,000	2,422,700
5. Community Development Division	728,980	615,100	1,812,500	1,579,000	1,328,000	6,063,580
6. Technical Services	710,000	584,100	1,102,700	906,300	876,900	4,180,000
Total	2,111,670	2,115,800	4,951,900	4,632,450	4,131,100	17,942,920

TABLE 3

GENERAL ADMINISTRATION

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
1. Extensions to two departmental bungalows and completion of regional office in Accra	—	110,000	200,000	—	—	310,000
2. Installation of reservoir at National Women's Training Institute and National Day Care Centre at Madina, Accra	—	28,000	—	—	—	28,000
3. School of Social Welfare, Madina	—	—	100,000	200,000	200,000	500,000
4. Equipment and furniture for Headquarters, Regional and District Offices	18,000	71,000	251,250	274,000	305,000	919,250
5. Vehicles for Head Office and Regional Offices	24,000	90,000	114,500	127,000	149,000	504,500
Total	42,000	299,000	665,750	601,000	654,000	2,261,750

TABLE 4

BUDGET AND PLANNING DIVISION

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
1. Six guest houses at Koforidua, Bolgatanga, Tamale, Ho, Cape Coast and Sunyani	—	—	140,000	180,000	200,000	520,000
2. Equipment and furniture for Head Office, Accra	17,270	12,600	20,000	22,300	24,800	96,970
3. Vehicles for Head Office, Accra	14,730	32,000	85,000	70,000	80,000	281,730
Total	32,000	44,600	245,000	272,300	304,800	898,700

TABLE 5

WELFARE PROGRAMME

SUMMARY

Region	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	₵	₵	₵	₵	₵	₵
CENTRAL ADMINISTRATION ..	—	—	20,000	21,000	45,000	86,000
GREATER-ACCRA REGION ..	88,400	6,000	—	63,150	50,000	207,550
VOLTA REGION	27,850	12,000	50,000	—	—	89,850
EASTERN REGION	—	20,000	—	6,000	—	26,000
CENTRAL REGION	4,400	—	67,075	50,000	25,000	146,475
WESTERN REGION	67,000	40,000	61,500	65,000	—	233,500
ASHANTI REGION	68,540	78,000	55,000	176,000	105,000	482,540
BRONG-AHAFO REGION ..	11,500	—	1,925	1,200	45,000	59,625
NORTHERN REGION	63,000	75,000	95,000	80,000	53,400	366,400
UPPER REGION	—	40,000	143,250	200,000	35,000	418,250
Grand Total	330,690	271,000	493,750	662,350	358,400	2.116,190

WELFARE PROGRAMME

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
CENTRAL ADMINISTRATION	¢	¢	¢	¢	¢
1. Madina Day-care Centre ..	—	—	20,000	21,000	—
2. Staff quarters at Accra	—	—	—	—	45,000
Sub-Total	—	—	20,000	21,000	45,000
GREATER ACCRA REGION					
1. Completion of quarters, G.I.S., Osu, Accra	30,000	6,000	—	45,000	—
2. Completion of zone office at Osu, Accra	45,000	—	—	—	—
3. Re-roofing of old building at Children's Home, Osu, Accra ..	10,000	—	—	—	—
4. District office at Tema	—	—	—	—	50,000
5. Equipment	3,400	—	—	18,150	—
Sub-Total	88,400	6,000	—	63,150	50,000
VOLTA REGION					
1. Remand Home, Ho	25,000	10,000	—	—	—
2. Welfare Zone Office, Ho	—	—	50,000	—	—
3. Equipment	2,850	2,000	—	—	—
Sub-Total	27,850	12,000	50,000	—	—
EASTERN REGION					
1. Water tank for Remand Home and Rural Industries Centre at Effiduase	—	20,000	—	—	—
2. Equipment	—	—	—	6,000	—
Sub-Total	—	20,000	—	6,000	—
CENTRAL REGION					
1. Girl's Remand Home and junior staff quarters at Cape Coast	—	—	45,000	—	25,000
2. Staff quarters at Boys' Industrial School, Agona Swedru	—	—	—	50,000	—
3. Equipment, furniture and vehicle for Cape Coast	4,400	—	22,075	—	—
Sub-Total	4,400	—	67,075	50,000	25,000

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
WESTERN REGION					
1. Staff quarters and Administration block at Junior Boy's Industrial School Essipon.	5,000	—	45,000	65,000	—
2. Boys and Girls' Remand Home at Essipon	60,000	40,000	—	—	—
3. Furniture for Takoradi and Tarkwa Zone Office..	2,000	—	—	—	—
4. Van for Sekondi Welfare Office	—	—	16,500	—	—
Sub-Total	67,000	40,000	61,500	65,000	—
ASHANTI REGION					
1. Dormitory blocks, Dining and Recreation Hall, C.D.I., Bekwai	42,000	55,000	—	55,000	50,000
2. Conversion of toilets to water closets at Remand Home—Kumasi	12,000	—	—	—	—
3. Construction of Trade Shops and Assembly hall and approach road, Boys' Vocational Training Centre at Jacobu ..	—	23,000	10,000	46,000	—
4. Staff quarters at Children's Home, Kumasi	—	—	45,000	—	—
5. Welfare Zone Office at Kumasi	—	—	—	50,000	—
6. Welfare Office for Zone 'C' at Kumasi ..	—	—	—	—	55,000
7. Kombi bus for Children's Home Kumasi..	12,000	—	—	—	—
8. Equipment, Furniture and Vehicles for Kumasi, district and zonal offices ..	2,540	—	—	25,000	—
Sub-Total	68,540	78,000	55,000	176,000	105,000
BRONG-AHAFO REGION					
1. Remand Home and Welfare Office at Sunyani	10,000	—	—	—	45,000
2. Equipment and Furniture for Sunyani and district offices	1,500	—	1,925	1,200	—
Sub-Total	11,500	—	1,925	1,200	45,000
NORTHERN REGION					
1. Boy's Industrial School, Pong-Tamale ..	60,000	40,000	50,000	50,000	5,000
2. Children's Home—Tamale	—	25,000	—	30,000	—
3. Rehabilitation of boy's dormitory block—Remand Home, Tamale	—	10,000	—	—	—
4. Welfare Office—Tamale	—	—	45,000	—	—
5. Furniture for Children's Home—Tamale	3,000	—	—	—	—
6. Furniture for Tamale, Salaga, Pong-Tamale and Gambaga	—	—	—	—	21,000
7. Equipment for Boy's Industrial School—Pong-Tamale	—	—	—	—	2,400
8. V.W. Kombi Bus—Tamale	—	—	—	—	25,000
Sub-Total	63,000	75,000	95,000	80,000	53,400

WELFARE PROGRAMME

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	₵	₵	₵	₵	₵
UPPER REGION					
1. Workshop and Staff quarters—Kusanaba	—	40,000	60,000	60,000	—
2. Remand Home for Boys and Girls—Bolgatanga	—	—	60,000	80,000	—
3. Girls Remand Home and Junior Staff quarters—Wa	—	—	—	60,000	—
4. Zone Office—Bolgatanga	—	—	—	—	35,000
5. Equipment and Vehicle for Kusanaba, Boys' Vocational Training Centre ..	—	—	23,250	—	—
Sub-Total	—	40,000	143,250	200,000	35,000
Grand Total	330,690	271,000	443,750	662,350	358,000

TABLE 6

REHABILITATION PROGRAMMES—SUMMARY

Region	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
CENTRAL ADMINISTRATION	49,500	18,000	36,000	25,000	20,000	148,500
GREATER ACCRA REGION	—	—	48,000	65,000	50,000	163,000
VOLTA REGION	17,000	40,000	74,500	55,000	45,000	231,500
EASTERN REGION	29,000	65,000	72,500	69,000	78,000	313,500
CENTRAL REGION	7,000	30,000	38,000	30,000	35,000	140,000
WESTERN REGION	1,000	30,000	80,000	92,500	75,000	278,500
ASHANTI REGION	60,000	25,000	90,000	128,000	140,000	443,000
BRONG-AHAFO REGION	16,500	34,000	72,500	50,000	—	173,000
NORTHERN REGION	13,000	30,000	85,000	39,000	110,000	277,000
UPPER REGION	75,000	30,000	35,600	58,000	56,000	254,600
Grand Total	268,000	302,000	632,100	611,500	609,000	2,422,600

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
CENTRAL ADMINISTRATION					
1. Equipment—Head Office—Accra.. ..	20,500	—	36,000	25,000	20,000
2. Furniture (20 wheel chairs) Accra ..	7,200	18,000	—	—	—
3. Vehicle—Accra	21,800	—	—	—	—
Sub-Total	49,500	18,000	36,000	25,000	20,000
GREATER ACCRA REGION					
1. Madina I.R.C.	—	—	40,000	35,000	40,000
2. Furniture—Madina	—	—	8,000	5,000	10,000
3. Vehicle—Madina I.R.C.	—	—	—	25,000	—
Sub-Total	—	—	48,000	65,000	50,000
VOLTA REGION					
1. Workshop, showroom and store—Denu Rehabilitation Centre	—	—		35,000	10,000
2. Constructional works at Ho Rehabilitation Centre	17,000	40,000	44,000	15,000	35,000
3. Furniture and telephone extension—Rehabilitation Centre—Ho	—	—	5,500	5,000	—
4. Vehicle—Ho Rehabilitation Centre ..	—	—	25,000	—	—
Sub-Total	17,000	40,000	74,500	55,000	45,000
EASTERN REGION					
1. Rural Rehabilitation Centre—Somanya ..	21,000	35,000	40,000	64,000	70,000
2. Sheltered workshop/Hostel/Offices—Begoro	—	—	30,000	—	—
3. Furniture, vehicles and telephones—Rehabilitation Centre—Somanya	5,000	30,000	2,500	5,000	8,000
4. Poultry keeping structure—Somanya ..	3,000	—	—	—	—
Sub-Total	29,000	65,000	72,500	69,000	78,000
WESTERN REGION					
1. Rehabilitation Centre—Esipon and Tarkwa	1,000	—	50,000	92,500	75,000
2. Generating Plant, Wassa Akropong ..	—	5,000	—	—	—
3. Vehicle for Wassa Akoropong and Esipon	—	25,000	25,000	—	—
4. Furniture for Esipon	—	—	5,000	—	—
Sub-Total	1,000	30,000	80,000	92,500	75,000

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
CENTRAL REGION	¢	¢	¢	¢	¢
1. Vocational and Rehabilitation Centre—Biriwa	—	30,000	20,000	25,000	—
2. Office, showroom and store—Cape Coast	—	—	—	—	30,000
3. Furniture—Regional and District Offices—Cape Coast and Biriwa	3,000	—	—	5,000	5,000
4. Vehicle—Biriwa Vocational Rehabilitation Centre	—	—	18,000	—	—
5. Poultry keeping and vegetable gardening—Biriwa R.R.C	4,000	—	—	—	—
Sub-Total	7,000	30,000	38,000	30,000	35,000
ASHANTI REGION					
1. Rehabilitation Centre—Edwenase	57,000	25,000	70,000	100,000	140,000
2. Furniture—District Offices—Edwenase	3,000	—	20,000	10,000	—
3. Vehicles—Edwenase	—	—	—	18,000	—
Sub-Total	60,000	25,000	90,000	128,000	140,000
BRONG-AHAFO REGION					
1. Rehabilitation Centre—Sunyani	3,000	34'000	45,000	40,000	—
2. Equipment and Furniture—Rehabilitation Centre, Sunyani	12,500	—	2,500	10,000	—
3. Poultry keeping—Rehabilitation Centre—Sunyani	1,000	—	—	—	—
4. Vehicle—Sunyani Rehabilitation Centre	—	—	25,000	—	—
Sub-Total	16,500	34,000	72,500	50,000	—
NORTHERN REGION					
1. Rehabilitation Centre, Tamale	9,000	30,000	85,000	29,000	40,000
2. Sheltered workshop, Yendi	—	—	—	—	60,000
3. Furniture, Rehabilitation Centre, Tamale and Yendi	3,000	—	—	10,000	10,000
4. Vegetable and poultry production, Rehabilitation Centre, Tamale	1,000	—	—	—	—
Sub-Total	13,000	30,000	85,000	39,000	110,000
UPPER REGION					
1. Electricity, water mains connection and levelling of ground, Wa sheltered workshop	2,000	—	—	—	—
2. Rehabilitation Centre, Bolgatanga	65,000	30,000	30,000	40,000	20,000
3. Vehicle R.R.C. (Bolga, Bawku and Wa)	—	—	—	18,000	36,000
4. Furniture—telephone extension, Bolgatanga R.R.C.	8,000	—	5,600	—	—
Sub-Total	75,000	30,000	35,600	58,000	56,000
Grand Total	268,000	302,000	632,100	611,500	609,000

TABLE 7

COMMUNITY DEVELOPMENT PROGRAMME

Region	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	¢	¢	¢	¢	¢	¢
CENTRAL ADMINISTRATION	82,500	24,000	222,000	200,000	115,000	643,500
GREATER ACCRA REGION	150,000	78,600	187,800	120,000	132,000	668,400
VOLTA REGION	43,000	69,300	236,500	199,000	269,000	816,800
EASTERN REGION	78,000	57,000	143,200	114,000	112,000	504,200
CENTRAL REGION	62,000	80,600	154,000	111,000	70,000	477,600
WESTERN REGION ..	53,000	49,000	143,000	149,000	152,000	546,000
ASHANTI REGION	133,480	93,600	196,000	222,000	131,000	776,080
BRONG-AHAFO REGION ..	32,000	62,000	130,000	125,000	90,000	439,000
NORTHERN REGION ..	73,000	50,000	170,000	132,000	42,000	467,000
UPPER REGION	22,000	51,000	230,000	207,000	215,000	725,000
Grand Total ..	728,980	615,100	1,812,500	1,579,000	1,328,000	6,163,280

COMMUNITY DEVELOPMENT PROGRAMME—*contd.*

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
CENTRAL ADMINISTRATION	₵	₵	₵	₵	₵
1. N.V.T.I., Madina	75,000	20,000	200,000	200,000	100,000
2. Wiring and plumbing of workshop and poultry house at N.I.R.I., Koforidua	1,500	—	—	—	—
3. Plant, machinery, furniture and vehicles for N.W.T.I., Madina	6,000	4,000	22,000	—	15,000
Sub-Total	82,500	24,000	222,000	200,000	115,000
GREATER ACCRA REGION					
1. W.T.I., Prampram	75,000	50,000	80,000	40,000	40,000
2. Self-help projects:					
(*a*) Quarshieman, Samsam and Ocansey-Kope	65,000	—	—	—	—
(*b*) Ofankor and Ablekuma	—	28,600	—	—	—
(*c*) Manhean, Kpone, Bawaleshie, Teshie, Aboma, Dormiabra	—	—	96,000	—	—
(*d*) Lower Dodowa, Bortianor, Kokodor-Ada	—	—	—	72,000	—
(*e*) Pokuase, Damfa, Gbawe	—	—	—	—	82,000
3. Plant, machinery, equipment, furniture, vehicles and poultry house—W.T.I., Prampram	10,000	—	11,800	8,000	10,000
Sub-Total	150,000	78,600	187,800	120,000	132,000

COMMUNITY DEVELOPMENT PROGRAMME—*contd.*

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
VOLTA REGION					
1. Dormitory block and kitchen/demonstration block for W.T.I., Kete-Krachi ..	—	15,000	50,000	35,000	—
2. National Institute of Rural Industries, Peki	—	—	50,000	50,000	80,000
3. Dormitory block and kitchen/demonstration block for W.T.I., Ho	—	—	—	—	85,000
4. Self-help projects:					
(*a*) Woe, Nkonya, Fodome-Amle, Agati, Taviefe and Adidome	38,000	—	—	—	—
(*b*) Kadjebi, Ve-Wudome and Agotime-Kpetoe..	—	54,300	—	—	—
(*c*) Mafi Devime, Taviefe Aviefe, Asiame	—	—	90,000	—	—
(*d*) Chindesi, Bowin, Avelopono, Avate Tedzi	—	—	—	104,000	—
(*e*) Kpandu Aziefe, Fesi, Gbedome, Tsibu	—	—	—	—	104,000
5. Plant machinery, equipment, furniture and vehicles—W.T.I., Ho and Kete-Krachi	5,000	—	26,500	10,000	—
6. Vehicle for N.I.R.I., Peki	—	—	20,000	—	—
Sub-Total	43,000	69,300	236,500	199,000	269,000
CENTRAL REGION					
1. Dormitory block, pipe borne and water supply for Women's Training Institute, Pamfokrom	30,000	49,000	48,000	30,000	40,000
2. Construction of Community Development Centre, Cape Coast	—	—	20,000	33,000	20,000
3. Self-help projects:					
(*a*) Abirem–Asiam, Assin, Edwa and Agona Port	30,000	—	—	—	—
(*b*) Mampong–Akwanta and Fransi	—	28,600	—	—	—
(*c*) Enyan Abaasa, Gomoa Wawa and Apenkro	—	—	74,000	—	—
(*d*) Mbradam and Ataabadze	—	—	—	44,000	—
4. Plant, machinery, furniture and vehicles	2,000	3,000	12,000	4,000	10,000
Sub-Total	62,000	80,600	154,000	111,000	70,000

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
EASTERN REGION					
1. Constructional Works—W.T.I., Suhum	20,000	—	30,000	20,000	—
2. Constructional Works—National Institute of Rural Industries, Koforidua	—	—	20,000	20,000	40,000
3. Self-help projects:					
(*a*) Saafi, Adjeikrom/Bosuso, Aboasa and Akropong-Akwapim	44,000	—	—	—	—
(*b*) Akropong, Abiriw and Akwamufie	—	50,000	—	—	—
(*c*) Akim Asafo, Ofankor and Amanokrom	—	—	88,000	—	—
(*d*) Kurakan, Nkwanteng, Achiase, Apapam	—	—	—	64,000	—
(*e*) Abiriw, Akim Awisa, Sakyikrom	—	—	—	—	44,000
4. Plant, machinery, furniture and vehicles	13,000	5,000	2,000	10,000	28,000
5. Equipment (Kibi, Suhum and Koforidua)	1,000	2,000	3,200	—	—
Sub-Total	78,000	57,000	143,200	114,000	112,000
WESTERN REGION					
1. Home Science block and classroom block for Women's Training Institute, Axim	—	—	37,000	35,000	50,000
2. Self-help projects:					
(*a*) Aboso and Kangbunli	50,000	—	—	—	—
(*b*) Asanta, Auto and Manso-Amanti	—	49,000	—	—	—
(*c*) Bawdie, Nien, Yamlrom, Potapim	—	—	104,000	—	—
(*d*) Kegyina, Asafo, Kumasi (Sekondi) Chechewere	—	—	—	112,000	—
(*e*) Abokyia, Asawinso/Sefwi, Datano and Nsuem	—	—	—	—	102,000
3. Equipment and furniture—W.T.I., Axim	3,000	—	2,000	2'000	—
Sub-Total	53,000	49,000	143,000	149,000	152,000

COMMUNITY DEVELOPMENT PROGRAMME—*contd.*

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
ASHANTI REGION					
1. Constructional Works—W.T.I. Bekwai	55,000	15,000	10,000	40,000	—
2. Dormitory, Classrooms, Kitchen/Dining hall—W.T.I. Agona Juaben	—	30,000	30,000	45,000	45,000
3. Renovation of buildings—R.T.C., Kwaso	—	—	30,000	—	—
4. Self-help projects:					
(*a*) Esuowin, Dampong, Bonwire, Hwidiem and Juaben	65,500	—	—	—	—
(*b*) Agogo and Wamaso	—	48,600	—	—	—
(*c*) Obuasi, Anyinawaso, Hwiediem, Afimatim	—	—	96,000	—	—
(*d*) Edadwan, Fawwoman, Mensasa, Tebeso No. 2	—	—	—	112,000	—
(*e*) Domakwai, Benkere, Baama	—	—	—	—	74,000
5. Equipment and Furniture (W.T.I.—Bekwai Agona)	980	—	5,000	—	12,000
6. Vehicles (Kwase, Bekwai, Agona)	12,000	—	25,000	25,000	—
Sub-Total	133,480	93,600	196,000	222,000	131,000
BRONG-AHAFO REGION					
1. Dormitory blocks—W.T.I. Bechem	—	25,000	35,000	—	40,000
2. Dormitory block—W.T.I., Nsuatre	—	—	—	—	50,000
3. Kitchen/Dining hall—N.I.R.I.,Sunyani	—	—	—	60,000	—
4. Self-help projects					
(*a*) Dormaa-Ahenkro	29,00		—		
(*b*) Zezeoa, Hwidiem	—	37,000	—	—	—
(*c*) Nsuatre, Koforidua/Sromani, Kofisua/Sromani	—	—	74,000	—	—
(*d*) Aboabo No. Japekrom	—	—	—	40,000	—
5. Equipment and Furniture—W.T.I., Bechem, Sunyani, Nsuatre	3,000	—	2,000	—	—
6. Vehicles (Peugeot pick-up—Japekrom, Combi bus—Sunyani)	—	—	16,000	25,000	—
7. Industrial raw material—(W.T.I., Nsuatre)	—	—	3,000	—	—
Sub-Total	32,000	62,000	130,000	125,000	90,000

COMMUNITY DEVELOPMENT PROGRAMME—*contd.*

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
NORTHERN REGION					
1. Constructional Works—W.T.I., Tamale	10,000	21,000	30,000	35,000	30,000
2. Warden's Quarters—R.T.C., Tamale	—	—	25,000	—	—
3. Self-help Projects:					
(*a*) Bole, Zole, Tamale	59,000	—	—	—	—
(*b*) Chereponi and Kayirigu	—	29,000	—	—	—
(*c*) Na Yakubu, Wulonsi, Sukuana	—	—	90,000	—	—
(*d*) Jilo, Gbongbondori, Balogu	—	—	—	90,000	—
4. Furniture and equipment —Tamale, W.T.I.	4,000	—	—	7,000	12,000
5. Vehicle (Kombi bus—R.T.C., Tamale)	—	—	25,000	—	—
Sub-Total	73,000	50,000	170,000	132,000	42,000
UPPER REGION					
1. Constructional Works—W.T.I., Bolgatanga	—	30,000	65,000	30,000	110,000
2. Self-help Projects:					
(*a*) Lawra	20,000	—	—	—	—
(*b*) Shia	—	21,000	—	—	—
(*c*) Bole, Dua	—	—	52,000	—	—
(*d*) Nayogenia, Sambo	—	—	—	52,000	—
3. W.T.I., Wa and Navrongo	—	—	100,000	100,000	100,000
4. Equipment, furniture and vehicle—W.T.I., Bolgatanga	2,000	—	13,000	25,000	5,000
Sub-Total	22,000	51,000	230,000	207,000	215,000
Grand Total	728,980	615,100	1,812,500	1,579,000	1,328,000

TABLE 8

PROGRAMME FOR TECHNICAL DIVISION

SUMMARY

Region	1975–76	1976–77	1977–78	1978–79	1979–80	*Total*
	₵	₵	₵	₵	₵	₵
CENTRAL ADMINISTRATION	121,500	138,100	270,700	206,300	187,400	924,000
GREATER ACCRA REGION	500	—	60,000	40,000	60,000	160,500
VOLTA REGION	66,000	87,000	208,000	152,000	162,000	675,000
EASTERN REGION	143,500	140,000	157,000	84,000	94,000	618,500
CENTRAL REGION ..	500	—	60,000	60,000	60,000	180,500
WESTERN REGION ..	9,900	—	55,000	45,000	—	109,900
ASHANTI REGION	10,000	10,000	—	—	—	20,000
BRONG-AHAFO REGION ..	80,600	66,000	77,000	84,000	58,500	366,100
NORTHERN REGION ..	260,500	123,000	155,000	145,000	165,000	848,500
UPPER REGION	17,000	20,000	60,000	90,000	90,000	277,000
Grand Total ..	710,000	584,100	1,102,700	906,300	876,900	**4,180,000**

PROGRAMME FOR TECHNICAL DIVISION

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
CENTRAL ADMINISTRATION					
1. Workshop and quarters at Madina	31,500	15,000	45,000	—	—
2. Rehabilitation of road plant and vehicles for entire country	50,000	50,000	60,000	60,000	60,000
3. Furniture, plant and machinery (six concrete mixers for entire country)	16,100	28,000	65,700	46,300	27,400
4. Furniture for Head Office and entire country	3,000	—	—	—	—
5. Vehicles for entire country (tippers and 5-tonners)	21,000	45,000	100,000	100,000	100,000
Sub-Total	121,500	138,100	270,700	206,300	187,400
GREATER ACCRA REGION					
1. Construction of Technical Services Unit at Ada	—	—	60,000	40,000	40,000
2. Furniture (District offices and Ada Unit)	500	—	—	—	20,000
Sub-Total	500	—	60,000	40,000	60,000
VOLTA REGION					
1. Construction of Technical Services Unit, Hohoe	—	—	60,000	40,000	40,000
2. Staff quarters, Technical Services, Ho	—	—	45,000	—	—
3. Volta Resettlement Scheme	66,000	87,000	103,000	112,000	122,000
Sub-Total	66,000	87,000	208,000	152,000	162,000
EASTERN REGION					
1. Regional unit and yard, Koforidua	44,500	30,000	35,000	—	—
2. Staff quarters (T.S.S.), Koforidua	—	—	45,000	—	—
3. Equipment (Koforidua workshop)	8,000	—	—	—	—
4 Volta Resettlement Scheme	91,000	110,000	77,000	84,000	94,000
Sub-Total	143,500	140,000	157,000	84,000	94,000

PROGRAMME FOR TECHNICAL DIVISION—*contd.*

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
CENTRAL REGION					
1. Regional works yard, furniture and staff quarters, Cape Coast	500	—	60,000	60,000	60,000
Sub-Total	500	—	60,000	60,000	60,000
WESTERN REGION					
1. Staff quarters and renovation of Bogoso and Axim units workshops and offices	9,300	—	55,000	45,000	—
2. Furniture (mechanical workshop), Sekondi	600	—	—	—	—
Sub-Total	9,900	—	55,000	45,000	—
ASHANTI REGION					
Central Mechanical Repair Depot. Kumasi	10,000	10,000	—	—	—
Sub-Total	10,000	10,000	—	—	—
BRONG-AHAFO REGION					
1. Completion of workshop and yard, Sunyani	4,000	—	—	—	—
2. Renovation and extension of workshop and yard, Atebubu	12,000	6,000	—	—	—
3. Furniture, Sunyani and Atebubu	2,000	—	—	—	—
4. Volta Resettlement Scheme	62,600	60,000	77,000	84,000	58,500
Sub-Total	80,600	66,000	77,000	84,000	58,500

PROGRAMME FOR TECHNICAL DIVISION—*contd.*

Project Description	1975–76	1976–77	1977–78	1978–79	1979–80
	¢	¢	¢	¢	¢
NORTHERN REGION					
1. Renovation of workshop and yard, Yendi and Damongo	6,000	2,000	—	—	—
2. Furniture and constructional works (quarters, workshop, canteen, etc.), Tamale	34,500	10,000	55,000	25,000	25,000
3. Volta Resettlement Scheme	220,000	111,000	120,000	120,000	140,000
Sub-Total	260,500	123,000	175,000	145,000	165,000
UPPER REGION					
1. Workshop, yard and tarring, Bolgatanga	17,000	20,000	—	—	—
2. Staff quarters, unit worksyard and workshop, Wa	—	—	60,000	90,000	90,000
Sub-Total	17,000	20,000	60,000	90,000	90,000
Grand Total	710,000	584,100	1,102,700	906,300	876,900

CHAPTER 12

UTILITIES

12.1 Power Sector

The contribution of electric power to the Gross Domestic Product (G.D.P.) for the past five years has averaged about 1 per cent. Until the completion of the Akosombo dam in 1965, power requirement was met from diesel generators operated by the erstwhile Electricity Department, the Mines and some private individuals.

The Akosombo source of power accounts for 99 per cent of total power consumed in Ghana. This power is generated by the Volta River Authority (V.R.A.) while the Electricity Corporation of Ghana (E.C.G.) distributes it to the general public. However the mines, Volta Aluminium Company (Valco), Akosombo Textiles and Township buy their power directly from the V.R.A. The V.R.A. also transmits power along a 320 kilometre 161 Kv line to Togo and Benin. Rural electrification has continued to receive serious attention of Government. Currently, it is estimated that 20 per cent to 22 per cent of the population enjoy electricity supply.

The rapid industrialization of the country with the attendant increase in demand for power has virtually stretched the Akosombo source to its limit. All the six generating units of the Dam with an installed capacity of 912 Mw or a continuous normal capacity of 792 Mw have been put into service. *Table* 1 shows the distribution of peak demand among V.R.A.'s customers, 60 per cent of which is consumed by Valco.

TABLE 1

DISTRIBUTION OF PEAK DEMAND AMONG V.R.A.'S CUSTOMERS (MEGAWATTS)

	HISTORICAL					*FORECAST*					
V.R.A. Bulk Consumer	**1970**	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**
Valco	250	244	295	315	315	315	316	400	400	400	400
Electricity Corp. of Ghana	106	117	126	135	146	172	189	208	228	250	273
Mines	34	37	38	38	40	40	42	44	46	48	50
Akosombo Textiles.. ..	3	3	5	4	4	4	4	4	5	5	5
Akosombo Township ..	2	2	2	2	2	2	2	2	2	3	3
Togo-Benin	—	—	1	20	25	26	43	50	50	50	50
Total	395	403	467	514	532	559	595	708	731	756	781

Source.—V.R.A. *Note.*—Minor losses not accounted for.

It is estimated that with the rapid industrialization and especially the diffusion of industries to the rural areas Ghana will by 1980 require supplementary source of power to Akosombo. For this reason it is necessary to take adequate measures to develop more hydro sources of power. It is planned to start construction of an additional hydro source of power at Kpong during the plan period while studies will be conducted into the feasibility of a dam project at Bui.

12.2 Constraints

The sector has faced several constraints in its operations. Some of these are:—

(1) lack of adequate resources for exploitation of additional hydro sources of power to meet increasing demand for power. The country has tended to depend on external sources in this field;
(2) the high cost of fossil fuel which makes diesel generation of electric power unprofitable. This has seriously affected the expansion of the rural electrification programme;
(3) the high cost of transmission and distribution materials;
(4) the high cost *per capita* of providing the rural areas with power as a result of the dispersion of the small rural communities;
(5) the shortage of skilled personnel to facilitate the planning and development of power schemes.

12.3 Objectives

In order that power might contribute fully towards the realisation of government's industrial and agricultural programmes the following policy objectives will be pursued during the plan period:—

(1) the V.R.A. and E.C.G. will expand existing electric supply facilities to connect large towns and areas of high industrial activities. In pursuance of this, new sources of hydro power will be developed;
(2) the E.C.G. will gradually phase out its high cost diesel generators in favour of hydro power;
(3) to reduce the cost *per capita* of providing the rural communities with power, Government will encourage small communities to form viable large communities. Under the rural electrification scheme priority will be given to areas where there are rural industries, health centres/posts, educational institutions and other projects which require power such as water supply and irrigation;
(4) the V.R.A. and the E.C.G. in association with the Universities and other institutions will set up a training programme with the view to developing technical skills;
(5) the maximum utilization of available resources in personnel and material. In pursuance of this, studies will be conducted into the benefits that may accrue from a merger of the E.C.G. and the V.R.A.

12.4 Programmes

To achieve these objectives the following programme will be implemented:—

(1) *Extension of the Grid to the Volta Region.*—This project involves the tapping of power from the Togo-Benin line at Asiakpe to supply Ho and the surrounding areas including Tsito, Anyirawasi, Peki, Anum, Boso, Asikuma and the Kpeve District Water Project. The scheme also covers sub-transmission lines from Ho to Kpandu, Hohoe and Jasikan areas;

(2) *Aflao Feeback from Lome.*—The scheme involves the construction of a 20 kv distribution line from Lome to supply power to Aflao and the other towns west of Aflao to Keta;

(3) *Power Supply to Sefwi-Wiawso and surrounding areas.*—This involves extension of Grid power to:

(*a*) Sefwi-Wiawso for the township and to the timber concerns in the area;

(*b*) Subin Valley for the Diamond Dredger operations and Dunkwa Goldfields;

(*c*) the Bibiani Metal Complex and Bibiani township;

(*d*) Awaso for the bauxite mining operation.

(4) *Hydro-electric Schemes.*—The following projects will be undertaken:

(*a*) *Kpong Hydro-electric Scheme.*—This is to supplement the power source at Akosombo. It is envisaged that the project will be commissioned by 1980 if Ghana is not to be short of power. It will have a capacity of 144,000 kw and a firm continuous energy output of 940×10^6 kw. hr./annum.

(*b*) *Bui Hydro-electric Scheme.*—Various studies have been made of this project. During the plan period these studies will be up-dated with the view to attracting financial assistance for implementation.

(*c*) *Numbiel/Koulbi Hydro-electric Scheme.*—In co-operation with the Upper Volta a study is going on at a site north of Bui for a possible joint hydro-electric project.

(5) *Rural Electrification.*—In pursuance of Government policy to better the conditions of the rural communities and to encourage rural industries, an intensive effort will be made to provide the rural areas with power.

(6) *Extension of the Grid to areas served by diesel generators.*—Due to the high cost of fossil fuel which makes diesel generation unprofitable, government will gradually phase out diesel generators from service and connect these areas to the Grid.

(7) *E.C.G. 3rd Phase Extension.*—The E.C.G. will in addition to the Sefwi-Wiawso project, undertake extensions:

(*a*) Aboso Glass Factory by 33 kv transmission line;

(*b*) supply to Weija Water Works and the proposed Irrigation Project by 33 kv transmission line;

(*c*) the development of Teshie/Nungua;
(*d*) supply to the Kumawu-Nsuta Area;
(*e*) reinforcement of the Kumasi supply;
(*f*) reinforcement and extension of supply to Tema Steelworks and Textiles;
(*g*) reinforcement and improvement of the Accra LV system.

(8) *Intertie with Ivory Coast.*—The project is intended to connect the electrical power systems of Ghana and the Ivory Coast in order to foster a closer regional co-operation. The feasibility studies of this scheme is being financed by a grant of 6 million Belgian francs and a local component of 459,000 Belgian francs to be shared between Ghana and Ivory Coast. Ghana's contribution is 129,000 Belgian francs.

12.5 Water and Sewerage

Water has many important uses notably for domestic, industrial and commercial purposes, power generation, irrigation, fishing, transportation and waste disposal. Some of these are depletive, thus it is essential that measures are adopted to conserve this resource and use it judiciously.

The Ghana Water and Sewerage Corporation (G.W.S.C.) is charged with the collection, treatment, transmission and distribution of potable water as well as the disposal of community sewerage. The Government, recognising the problems of inadequate potable water supply, especially the contribution it makes to the health of the people has for the past four years spent annually about 6 per cent of the total capital budget on the provision of potable water. In spite of the progress made in water supply since 1966, only about 38 per cent of the total population of the country is supplied with potable water. This is evidenced in *Table* 3.

TABLE 3

STATUS OF WATER SUPPLY IN GHANA, 1975

(FOR ALL REGIONS)

Size of Locality	Number of Communities	Population (1975)	COMMUNITIES WITH PIPE-BORNE WATER SUPPLY		COMMUNITIES WITHOUT PIPE-BORNE WATER SUPPLY	
			Numoer	Population	Number	Population
Over 100,000	2	903,067	2	903,067	—	—
30,000 — 100,000	4	287,539	4	287,539	—	—
5,000 — 50,000	130	1,565,910	106	1,356,611	24	209,299
2,000 — 5,000	322	1,084,671	166	604,070	156	480,601
500 — 2,000	2,554	2,634,715	576	437,362	1,978	2,197,353
300 — 500	2,077	904,791	172	67,859	1,905	836,932
Below 300	42,690	2,299,890	400	39,098	42,290	2,260,792
Total	47,779	9,680,583	1,426	3,695,606	46,353	5,984,977

Source: G.W.S.C.

Defining the rural area as any area with a population of up to 5,000 it can be seen from Table 1 that the rural population of 6.5 million comprises 71.5 per cent of the total population, however, only 16.5 per cent of this is provided with water. Whereas out of about 3 million urban population forming only 21.5 per cent of the total population, 91.0 per cent has access to potable water. This imbalance in the distribution of potable water is undesirable and government is determined to correct this imbalance.

As an initial measure towards this all the rural areas surrounding an urban supply will be connected. Thus schemes for the urban areas will always be planned to cover a district.

12.6 Sewerage

The situation in the provision of sewerage facilities is far from satisfactory. Apart from Tema which is centrally sewered, the only other system is that of Accra which is limited to the city centre. All other centres use the septic tanks, pit latrines, bucket system, etc. These in the modern world are a high cost means of waste disposal. During the plan period it is intended to complete detailed designs for Kumasi and start a feasibility study for a system for Sekondi-Takoradi. The G.W.S.C. will also study the possibility of installing a simple but efficient system of waste disposal in other centres.

12.7 Problems

Apart from the major problem of correcting the imbalance in the production and distribution of water in favour of the urban areas and the inadequacy of sewerage facilities in the cities, the G.W.S.C. faces other problems. Some of these are:—

(1) high cost *per capita* of supplying potable water to the rural areas as a result of a large number of small dispersed communities;

(2) inadequacy of existing urban water supply to meet the industrial growth;

(3) shortage of trained professional staff.

12.8 Policies

To resolve these problems and to be able to achieve the objective to increase the total coverage of water from 38 per cent to 50 per cent during the plan period the following policies will be implemented:

(1) to minimize the imbalance between urban and the rural areas in the provision of water, vicinities contiguous to urban areas will be connected with water. Where areas lie far away from urban areas an intensified programme of rural water supply will be pursued. Initially emphasis will be given to communties with populations between 500 and 2,000;

(2) to reduce the high *per capita* cost of production, efforts will be made to group people into viable communities of 2,000 to be supplied with pipe borne water supply while those with population below 2,000 will be supplied with wells equipped with mechanised or hand pumps. However, communities which lie near existing pipeline irrespective of their size will be connected;

(3) existing urban water supply schemes will be expanded to meet the rapid increase in economic activity in these areas;

(4) a comprehensive training programme aimed at developing the requisite skills for water supply and waste disposal will be carried out to ensure less dependence on foreign expertise.

The programme to support these objectives will be found in the attached appendix.

(2) to reduce the high *per capita* cost of production, efforts will be made to group people into viable communities of 2,000 to be supplied with pipe borne water supply while those with population below 2,000 will be supplied with wells equipped with mechanised or hand pumps. However, communities which lie near existing pipeline irrespective of their size will be connected;

(3) existing urban water supply schemes will be expanded to meet the rapid increase in economic activity in these areas;

(4) a comprehensive training programme aimed at developing the requisite skills for water supply and waste disposal will be carried out to ensure less dependence on foreign expertise.

The programme to support these objectives will be found in the attached appendix.

FIVE YEAR DEVELOPMENT ESTIMATES, 1975-76—1979-80

GHANA WATER AND SEWERAGE CORPORATION

REGIONAL SUMMARY (EXCLUDING A.T.M.A. AND KUMASI)

¢'000

	ESTIMATED COST AND WORK TO BE DONE			1975–76			1976–77			1977–78			1978–79			1979–80		
	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
Upper	16,965	4,947.4	12,017.8	6,608.8	3,285.4	3,323.4	2,858.8	215	2,638.8	1,634	623.8	996	1,650	250	1,400	1,845.8	424	1,421.8
Northern	13,866.5	3,140	10,726.5	1,126.5	308	818.5	1,600	482	1,118	2,500	1,100	1,400	2,640	300	2,340	2,600	300	2,300
Brong-Ahafo	15,501.6	4,980.6	10,521	3,851.6	400.6	3,451	2,950	1,030	1,920	3,550	1,250	2,300	3,650	2,000	1,650	1,600	300	1,300
Ashanti	47,006	11,480	35,526	6,190	2,630	3,580	4,770	1,150	3,620	2,446	200	2,246	3,700	1,000	2,700	3,000	1,000	2,000
Eastern	11,911.1	2,881	8,130.1	3,700	900	2,800	1,500	1,300	1,250	1,806.1	311.1	1,495	1,355	170	1,185	500	—	500
Central	31,424.6	9,633.4	21,791.2	8,293.3	2,864	5,449.3	10,209.8	4,956.5	5,248.3	5,360.8	1,461.9	3,892.9	3,400	—	3,000	2,500	—	2,500
Western	23,369.6	7,210	16,359.6	5,009.6	741	4,268.6	2,600	869	1,231	4,100	1,800	2,300	4,100	1,200	2,700	3,100	100	3,000
Volta	39,731.7	14,218.2	25,513.5	5,597	2,878	2,719	8,369	4,688.9	3,681	6,418.9	2,261.1	4,157.8	2,200	400	1,800	1,300	400	900
Greater Accra	5,000	800	4,200	800	—	800	800	—	800	800	—	800	800	—	800	800	—	800
Supporting Services	53,660	31,000	22,660	5,900	2,600	3,300	16,060	10,100	5,960	14,900	9,600	5,300	8,900	4,600	4,300	7,900	4,100	3,800
Grand Total	259,736.1	90,290.6	167,445.7	47,976.8	16,607	30,509.8	52,963.5	24,991.4	27,467	43,305.9	18,618.1	24,887.7	32,395	9,920	21,875	25,145.8	6,624	18,521.8

FIVE-YEAR DEVELOPMENT PLAN (ACCRA-TEMA METROPOLITAN AREA—A.T.M.A.)

GHANA WATER AND SEWERAGE CORPORATION

¢'000

Description of Project	ESTIMATED COST OF WORK TO BE DONE			1975–76			1976–77			1977–78			1978–79			1979–80		
	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
1. Water supply improvement and extension*	52,719	24,156	28,563	13,020	4,542	8,478	13,108	5,352	7,757	9,334	4,435	4,899	13,179	7,701	5,478	4,077	2,126	1,951
2. Sewerage extension	8,400	—	8,400	1,472	—	1,472	2,170	—	2,170	1,257	—	1,257	1,408	—	1,408	2,093	—	2,093
Total	61,119	24,156	36,963	14,492	4,542	9,950	15,279	5,352	9,927	10,591	4,435	6,156	14,587	7,701	6,887	6,170	2,126	4,044

The foreign currency component is financed from (a) IDA loan;
(b) Loan from C.I.D.A. and
(c) African Development Bank Loan.

FIVE-YEAR DEVELOPMENT PLAN (KUMASI CITY)

¢'000

Description of Project	ESTIMATED COST OF WORK TO BE DONE			1975–1976			1976–77			1977–78			1978–79			1979–80		
	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
ater Supply improvements and extensions	5,600	2,000	3,600	800	—	800	1,000	500	500	1,500	800	700	1,000	700	300	1,300	—	1,300
ovision of pipe-borne—(Sewerage system)—Phase I	6,900	1,500	5,400	600	—	600	1,600	500	1,100	2,100	1,000	1,100	1,100	—	1,100	1,500	—	1,500
otal	12,500	3,500	9,000	1,400	—	1,400	2,600	1,000	1,600	3,600	1,800	1,800	2,100	700	1,400	2,800	—	2,800

FIVE-YEAR DEVELOPMENT PLAN (WESTERN REGION)

GHANA WATER AND SEWERAGE CORPORATION

...of Project	ESTIMATED COST OF WORK TO BE DONE			1975–76			1976–77			1977–78			1978–79			1979–80		
	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
...District Water Supply Project ..	1,000	300	700	2,000	—	200	500	300	200	300	—	300	—	—	—	—	—	—
...wso District Water Supply	1,560	400	1,160	300	—	300	500	200	300	500	200	300	260	—	260	—	—	—
... District Water Supply Project ..	2,000	400	1,600	2,000	400	1,660	—	—	—	—	—	—	—	—	—	—	—	—
...Takoradi District Water Supply ...—West German Aid Pro...	3,856·18	1,581	2,275·18	800	500	300	1,500	1,000	500	656·18	81·18	575	—	—	—	—	—	—
...ment to Axim Water Supply ..	100	30	70	—	—	—	—	—	—	100	30	70	—	—	—	—	—	—
...Supply to Simpa from Dompim	195	40	155	—	—	—	—	—	—	—	—	—	195	40	155	—	—	—
...sions to Asankrangwa Water	150	30	120	—	—	—	—	—	—	—	—	—	150	30	120	—	—	—
...tion of Master Plans for District ...r Supply Projects (South Western ...ntal District and Asankrangwa ...rict)	500	—	500	—	—	—	—	—	—	—	—	—	150	—	250	150	—	250
...ase District Water Supply—Replacing package plant with conventional	500	100	400	—	—	—	—	—	—	—	—	—	250	100	150	250	—	250
Preparation of a Master Plan for Sewerage and drainage facilities—Sekondi-Takoradi (UNDP/Ghana, joint Project)	1,150	—	1,150	400	—	400	250	—	250	250	—	250	250	—	250	—	—	—
Total	11,011·18	2,881	8,130·18	3,700	900	2,800	2,750	1,500	1,250	1,806·18	311·18	1,495	1,355	170	1,185	500		500

*Off-shores cost is not met from Development Estimates. This is to be financed from a West German Government Loan.

FIVE-YEAR DEVELOPMENT PLAN (CENTRAL REGION)

GHANA WATER AND SEWERAGE CORPORATION

¢'000

Project Description	ESTIMATED COST OF WORK TO BE DONE			1975–76			1976–77			1977–78			1978–79			1979–80		
	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
1. Cape Coast District Water Supply Project, West German Aid Programme* ..	9,735.1	5,338.4	4,396.7	1,940	1,380	560	5,249.3	3,599.5	1,644.8	1,630.8	413.9	1,216.9	—	—	—	—	—	—
2. Swedru District Water Supply Project ..	4,030	723	3,307	3,235.3	600	2,635.3	795	123	672	—	—	—	—	—	—	—	—	—
3. Foso District Water Supply Project ..	8,600	1,000	7,600	1,500	500	1,000	2,000	500	1,500	2,000	—	2,000	2,000	—	2,000	1,100	—	1,100
4. Winneba Water Supply (improvement and pipe extensions)	500	80	460	100	40	60	440	40	400	—	—	—	—	—	—	—	—	—
5. Ekumfi District Water Supply Project ..	2,282	176	2,106	908	140	768	628	36	592	—	—	—	—	—	—	—	—	—
6. Elmina Fishing Harbour (extension from Abrem-Agona)	832.5	122	710.5	435	64	371	397.5	58	339.5	—	—	—	—	—	—	—	—	—
7. Denkwa Water Supply Improvements ..	230	54	176	—	—	—	—	—	—	230.00	54.00	176.00	—	—	—	—	—	—
8. Winneba–Swedru District Water Supply, West German Aid Programme* ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9. Immediate measures	175	140	335	175	140	35	—	—	—	—	—	—	—	—	—	—	—	—
10. Long-term measures	5,000	2,000	3,000	—	—	—	700	600	100	1,500	1,000	500	1,400	400	1,000	1,400	—	1,400
Total	31,424.6	9,633.4	21,791.2	8,293.3	2,864	5,449.3	10,209.8	4,956.5	5,248.3	5,360.8	1,467.9	3,892.9	3,400	400	3,000	2,500	—	2,500

* Off-shore cost is not met from development estimate. This is to be met from a West German Government Loan.

FIVE YEAR DEVELOPMENT PLAN

GHANA WATER AND SEWERAGE CORPORATION

EASTERN REGION

¢'000

Description of Project	ESTIMATED COST OF WORK TO BE DONE			1976-77			1977-78			1978-79			1979-80			1980-81		
	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
Kwahu Ridge district water supply project	8,660	2,500	6,160	3,500	—	3,500	500	—	500									
Anum Boso district water supply project	107	10	97	107	10	97	—	—	—	—	—	—	—	—	—	—	—	—
Provision of pipe-borne water supply to Apedwa/Asafo	57.2	—	57.2	57.2	—	57.2	—	—	—	—	—	—	—	—	—	—	—	—
Provision of pipe-borne water supply, Osenase	31.9	10	21.9	31.9	10	21.9	—	—	—	—	—	—	—	—	—	—	—	—
Provision of pipe-borne water supply to Aperade	27.5	10	17.5	27.5	10	17.5	—	—	—	—	—	—	—	—	—	—	—	—
Akwapim Ridge district water supply project	126	10	116	126	10	116	—	—	—	—	—	—	—	—	—	—	—	—
Improvements to Koforidua water supply	600	100	500	200	31	169	400	69	331	—	—	—	—	—	—	—	—	—
Provision of pipe-borne water supply to Nankese/Akwadu	10		10	10	-	10				—	—	—	—	—	—	—	—	—
Extension of Kwahu Ridge district water supply to other areas below the Ridge	1,500	300	1,200	—	-	—	500	100	400									
Improvement to Nsawam water supply and extension to other areas, including improvement to source	2,000	200	1,800	—	—	—	—	—	—	500	100	400	500	100	400	—	—	—
Koforidua district water supply stage II										500	100	400	500	100	400	1,000	—	1,000
Planning and detailed design	500	—	500	—	—	—	—	—	—	100	—	100	200	—	200	200	—	200
Pipe-borne water to communities with population over 2,000	2,000	400	1,600	—	—	—	500	100	400	500	100	400	500	100	400	500	100	400
Akim-Oda/Akim-Swedru district water supply project—West German Aid Programme—																		
Immediate measures	950	670	280	950	670	280	—	—	—	—	—	—	—	—	—	—	—	—
Long-term measures	7,000	3,000	4,000	—	—	—	700	600	100	– 2,500	1,500	1,000	2,400	900	1,500	1,400	—	1,400
Total	23,569.6	7,210	16,359.6	5,009.6	741	4,268.6	2,600	869	1,231	4,100	1,800	2,300	4,100	1,200	2,700	3,100	100	3,000

FIVE-YEAR DEVELOPMENT PLAN (VOLTA REGION)

GHANA WATER AND SEWERAGE CORPORATION

¢'000

Item	Project Description	ESTIMATED COST OF WORK TO BE DONE			1975–76			1976–77			1977–78			1978–79			1979–80		
		Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
		¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
1.	Ho District Water Supply Project ..	7,612.8	4,716	2,896.8	2,210	1,450	760	3,657.9	2,568.9	1,089	1,744.9	697.1	1,047.8	—	—	—	—	—	—
2.	Hohoe District Water Supply Project ..	2,839	926	1,913	1,041	409	632	1,081	455	626	717	72	645	—	—	—	—	—	—
3.	Sogakope-Ada-Keta District Water Supply	17,950.9	4,405.2	13,545.7	1,015	425	590	950	310	640	100	20	80	*To be continued after plan period*					
4.	Kpandu District Water Supply Project ..	2,839	926	1,913	1,041	409	632	1,081	455	626	717	72	645	—	—	—	—	—	—
5.	Provision of pipe-borne water to communities with population over 2,000 ..	4,000	1,600	2,400	—	—	—	1,000	400	600	1,000	400	600	1,000	400	600	1,000	400	600
6.	Dambai Water Supply Project	70	45	25	70	45	25	—	—	—	—	—	—	—	—	—	—	—	—
7.	Planning and detailed design of district project (Worawora-Jasikan District, Dzodze District, Damba District and Kete-Krachi District)	740	—	740	—	—	—	—	—	—	140	—	140	300	—	300	300	—	300
8.	Kpedze District Water Supply (West German Aid Programme)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9.	Immediate measures	180	100	80	220	140	80	—	—	—	—	—	—	—	—	—	—	—	—
10.	Long-term measures	3,500	1,500	2,000	—	—	—	—	—	2,000	2,000	1,000	1,000	900	—	900	—	—	—
	Total	39,731.7	14,218.2	25,513.5	5,597	2,878	2,719	8,369.9	4,688.9	3,681	6,418.9	2,261.1	4,157.8	2,200	400	1,800	1,300	400	900

GHANA WATER AND SEWERAGE CORPORATION (GREATER ACCRA REGION)

¢'000

Description of project	ESTIMATED COST OF WORK TO BE DONE			1975–76			1976–77			1977–78			1978–79			1979–80		
	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
1. Provision of pipe-borne water supply to Accra rural areas .. .. .. (I.D.A./Ghana Government Programme)	5,000	800	4,200	800		800	800	—	800	800	—	800	800	—	800	800	—	800

FIVE-YEAR DEVELOPMENT PLAN (SUPPORTING SERVICES)

GHANA WATER AND SEWERAGE CORPORATION

¢'000

Item	Description of Project	ESTIMATED COST OF WORK TO BE DONE			1975–76			1976–77			1977–78			1978–79			1979–80		
		Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
		¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
1.	Weija Training School of water supply and sewerage	960	—	960	300	—	300	660	—	600	—	—	—	—	—	—	—	—	—
2.	Purchase of water meters	1,000	1,000	—	500	500	—	500	500	—	—	—	—	—	—	—	—	—	—
3.	Shallow well drilling programme*	35,000	23,000	12,000	1,500	1,000	500	11,000	8,000	3,000	11,000	8,000	3,000	6,000	3,000	3,000	5,500	3,000	2,500
4.	Minor improvement to existing systems	2,500	1,000	1,500	500	200	200	500	200	300	500	200	300	500	200	300	500	200	300
5.	Rehabilitation of L/C systems	2,500	1,000	1,500	500	200	300	500	200	300	500	200	300	500	200	300	500	200	300
6.	Formation of District Maintenance Centres	2,500	1,000	1,500	500	200	300	500	200	300	500	200	300	500	200	300	500	200	300
7.	Mile 18 Workshop/Store—Building and equipment	2,000	1,500	500	500	—	500	500	500	—	500	500	—	500	500	—	—	—	—
8.	Equipment for drilling	1,000	1,000	—	500	500	—	500	500	—	—	—	—	—	—	—	—	—	—
9.	UNDP/WHO—Rural water supply and environmental Health Project	2,700	—	2,700	700	—	700	1,000	—	1,000	1,000	1,000	—	—	—	—	—	—	—
10.	Purchase of water tankers	1,500	1,500	—	—	—	—	—	—	—	500	500	—	500	500	—	500	500	—
11.	Mains extension to Ghana Housing Corporation and Tema Development Corporation Estates	1,250		1,250	250		250	250		250	250		250	250		250	250		250
12.	Preparation of Master Plan, Planning Studies and River Basin Studies	750		750	150		150	150		150	150	—	150	150		150	150	—	150
	Total	53,660	31,000	22,660	5,900	2,600	3,300	16,060	10,100	5,960	15,900	10,600	5,300	8,900	2,700	4,300	7,900	4,100	3,800

*The Off-shore expenditure is not met from development estimates. This is to be met from a West German Government Loan.

FIVE-YEAR DEVELOPMENT PLAN (BRONG-AHAFO REGION)

GHANA WATER AND SEWERAGE CORPORATION

¢'000

Item	Project Description	ESTIMATED COST OF WORK TO BE DONE			1975–76			1976–77			1977–78			1978–79			1979–80		
		Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
		¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
1.	Sunyani District Water Supply, extension to Nsuatre and Chiraa (K2 mgd.)	364	150	214	364	150	214	—	—	—	—	—		—	—	—	—	—	—
2.	Duayaw-Nkwanta District Water Supply Project	74.1	—	74.1	74.1	—	74.1	—	—	—	—	—		—	—	—	—	—	—
3.	Acherensua District Water Supply Project	47.9	—	47.9	47.9	—	47.9	—	—	—	—	—		—	—	—	—	—	—
4.	Dormaa-Ahenkro District Water Supply Project	4,358	110	4,248	2,958	110	2,848	1,400	—	1,400	—	—		—	—	—	—	—	—
5.	Provision of pipe-borne water supply to Kwame Danso	60.2	20.2	40	60.2	20.2	40	—	—	—	—	—		—	—	—	—	—	—
6.	Provision of pipe-borne water to Odumase-Nkwaben	126	100	26	126	100	26	—	—	—	—	—		—	—	—	—	—	—
7.	Provision of pipe-borne water to Offuman	26.4	20.4	6	26.4	20.4	6.0	—	—	—	—	—		—	—	—	—	—	—
8.	Techiman District Water Supply Project	6,950	4,000	2,950	100	—	100	1,000	1,000	1,000	2,950	1,000	1,950	3,000	2,000	1,000	—	—	—
9.	*Sunyani District Water Supply, Stage II* (planning and detailed design)	370	—	370	70	—	70	300	—	300	—	—	—	—	—	—	—	—	—
10.	Planning studies, detailed design of Wenchi District, and Goaso District Water Supply Projects	750	—	750	—	—	—	—	—	—	—	—	—	150	—	150	600	—	600
11.	Extension of water supply from Berekum	1,000	250	750	—	—	—	—	—	—	500	250	250	500	—	500	—	—	—
12.	Preparation of Master Plan for use of Black Volta River at Bamboi and Volta Lake at Prang as source of raw water in various district projects in the region	210	—	210	10	—	10	109	—	100	100	—	100	—	—	—	—	—	—
13.	Water supply to communities with population over 2,000	1,000	300	700	—	—	—	—	—	—	—	—	—	—	—	—	1,000	300	700
14.	Sewerage tipping station for Sunyani	165	30	135	15	—	15	150	30	120	—	—	—	—	—	—	—	—	—
	Total	15,501.6	4,980.6	10,521	3,851.6	400.6	3,451	2,950	1,030	1,920	3,550	1,250	2,300	3,650	2,000	1,650	1,600	300	1,300

FIVE-YEAR DE[illegible]LAN (ASHANTI REGION)

GHANA WA[illegible]ERAGE CORPORATION

¢'000

Item	Description of Project	ESTIMATED COST OF WORK TO BE DONE			1975-76			[illegible]77		1977–78			1978–79			1979–80		
		Total	Off-shore	Local	Total	Off-shore	Local	[illegible]ore	Local	Total	Off-shore	Local	Total	Off-shore	Local	Total	Off-shore	Local
		¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
1.	Kumasi District Water Supply—extension to the North and East	5,200	1,000	4,200	1,500	300	1,200	[illegible]00	1,000	1,500	200	1,300	700	—	700	—	—	—
2.	Kumasi District Water Supply—extension to West	1,446	300	1,146	500	100	400	[illegible]00	300	446	—	446.7	—	—	—	—	—	—
3.	Kumasi District Water Supply—Ehwiase-Hwidiem extension	225	—	225	225	—	225	[illegible]—	—	—	—	—	—	—	—	—	—	—
4.	Kumasi District Water Supply—extension to Offinso area	225	—	225	225	—	225	[illegible]—	—	—	—	—	—	—	—	—	—	—
5.	Kumasi District Water Supply—extension within five miles radius of Kumasi	1,400	300	1,100	500	100	400	[illegible]200	200	500	—	500	—	—	—	—	—	—
6.	Kumasi District Water Supply—extension within 20 miles radius of Kumasi*	28,000	5,000	22,000	—	—	—	[illegible]—	—	—	—	—	1,500	500	1,000	1,500	500	1,000
7.	Konongo-Odumase District Water Supply Project	6,500	3,700	2,800	3,000	2,000	1,000	[illegible]00	1,800	—	—	—	—	—	—	—	—	—
8.	Improvement to Kumawu Water Supply	244	80	164	140	80	60	[illegible]—	104	—	—	—	—	—	—	—	—	—
9.	Improvement to Mampong Water Supply	216	50	116	100	50	50	[illegible]—	116	—	—	—	—	—	—	—	—	—
10.	Improvement to Bekwai Water Supply	550	50	500	—	—	—	[illegible]—	100	—	—	—	—	—	—	—	—	—
11.	Provision of pipe-borne water to communities with population over 2,000	3,000	1,000	2,000	—	—	—	[illegible]—	—	—	—	—	1,500	500	1,000	1,500	500	1,000
	Total	47,006	11,480	35,526	6,190	2,630	3,580	[illegible]—	3,620	2,446	200	2,246.7	3,700	1,000	2,700	3,000	1,000	2,000

*Programme continues beyond 1980