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GHANA

PRIORITIES FOR PUBLIC EXPENDITURES, 1986-88

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Western Africa Country Programs 1

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GHANA: PRIORITIES FOR PUBLIC EXPENDITURES, 1986-88

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This report is based on the findings of a World Bank Mission which visited Ghana in April-May 1985. The mission members were Shahid A. Chaudhry (Chief of Mission), R. Anderson, T. Allen, G. Billington, F. Bauer, H. Boehm, J. Cole, A. Cilingiroglu, B. Carlson, S. Cruickshank, S. Hafeez, I. Menezes, S. Mathrani, T. Nayar, T. O'Connor, T. Pankaj, D. Reedy, M. Rasheed, H. Schulte and N. Tin. Tariq Husain, R. Hindle, S. Lateef and L. Fox visited the Mission in the field and contributed substantially to the mission's work. Sherry Keith, S. Brushett, B. Ateng and S. Snell also assisted in the completion of this report.

GHANA		- SOCIAL INDICATORS DATA SHEET				
GHANA		REFERENCE GROUPS (WEIGHTED AVERAGES) /a				
		MOST RECENT ESTIMATE /b			MIDDLE INCOME AFRICA S. OF SAHARA	
		1960 /b	1970 /b	ESTIMATE /b	LOW INCOME AFRICA SOUTH OF SAHARA	MIDDLE INCOME AFRICA S. OF SAHARA
EDUCATION						
ADJUSTED ENROLLMENT RATIOS						
PRIMARY:	TOTAL	38.0	64.0	76.0	67.8	95.7
	MALE	52.0	73.0	85.0	77.6	100.0
	FEMALE	25.0	54.0	66.0	54.9	83.2
SECONDARY:	TOTAL	5.0	14.0	34.0	13.5	17.3
	MALE	9.0	21.0	42.0	17.9	25.0
	FEMALE	3.0	8.0	26.0	9.1	14.8
VOCATIONAL (% OF SECONDARY)		3.3	23.3	1.9	13.2	5.9
PUPIL-TEACHER RATIO						
	PRIMARY	31.0	30.0	26.0 1/	44.9	41.1
	SECONDARY	16.0 /g	17.0	20.0 1/	27.4	25.5
CONSUMPTION						
PASSENGER CARS/THOUSAND POP		3.0	4.6	6.8 /c	3.8	20.8
RADIO RECEIVERS/THOUSAND POP		42.8	81.6	170.9 /c	55.8	107.8
TV RECEIVERS/THOUSAND POP		0.1 /h	1.9	5.9	2.6	20.8
NEWSPAPER ("DAILY GENERAL INTEREST") CIRCULATION PER THOUSAND POPULATION		29.9	58.0	30.9 /d	5.0	18.4
CINEMA ANNUAL ATTENDANCE/CAPITA		1.6	2.2	0.4 /d	0.5	0.4
LABOR FORCE						
TOTAL LABOR FORCE (THOUS)		2931.0	3424.0	4522.0	.	.
FEMALE (PERCENT)		42.6	42.1	41.3	34.2	36.2
AGRICULTURE (PERCENT)		64.0	58.0	53.0 /e	77.5	54.5
INDUSTRY (PERCENT)		14.0	17.0	20.0 /e	9.7	18.3
PARTICIPATION RATE (PERCENT)						
	TOTAL	42.9	39.7	35.6	39.3	36.8
	MALE	50.0	46.6	42.1	50.9	47.1
	FEMALE	36.0	33.0	29.4	28.1	27.2
ECONOMIC DEPENDENCY RATIO		1.1	1.2	1.4	1.3	1.3
INCOME DISTRIBUTION						
PERCENT OF PRIVATE INCOME RECEIVED BY						
HIGHEST 5% OF HOUSEHOLDS		..	..	..	..	..
HIGHEST 20% OF HOUSEHOLDS		..	..	..	..	..
LOWEST 20% OF HOUSEHOLDS		..	..	..	..	..
LOWEST 40% OF HOUSEHOLDS		..	..	..	..	..
POVERTY TARGET GROUPS						
ESTIMATED ABSOLUTE POVERTY INCOME LEVEL (US\$ PER CAPITA)						
URBAN		..	..	307.0 /i	165.5	590.7
RURAL		..	..	150.0 /i	95.0	275.3
ESTIMATED RELATIVE POVERTY INCOME LEVEL (US\$ PER CAPITA)						
URBAN		..	..	156.0 /i	113.1	545.6
RURAL		..	..	130.0 /i	67.6	201.1
ESTIMATED POP. BELOW ABSOLUTE POVERTY INCOME LEVEL (%)						
URBAN		..	..	..	36.6	..
RURAL		..	..	..	61.8	..

.. NOT AVAILABLE
 . NOT APPLICABLE

NOTES

/a The group averages for each indicator are population-weighted arithmetic means. Coverage of countries among the indicators depends on availability of data and is not uniform.

/b Unless otherwise noted, "Data for 1960" refer to any year between 1959 and 1961; "Data for 1970" between 1969 and 1971; and data for "Most Recent Estimate" between 1981 and 1983.

/c 1977; /d 1979; /e 1980; /f 1962; /g Public education only; /h 1964; /i 1978.

1/ 1984. Mission Estimates.

JUNE, 1985

DEFINITIONS OF SOCIAL INDICATORS

Notes: Although the data are drawn from sources generally judged the most authoritative and reliable, it should also be noted that they may not be internationally comparable because of the lack of standardized definitions and concepts used by different countries in collecting the data. The data are, nonetheless, useful to describe orders of magnitude, indicate trends, and characterize certain major differences between countries.

The reference groups are (1) the same country group of the subject country and (2) a country group with somewhat higher average income than the country group of the subject country (except for "High Income Oil Exporters" group where "Middle Income North Africa and Middle East" is chosen because of stronger socio-cultural affinities). In the reference group data the averages are population weighted arithmetic means for each indicator and shown only when majority of the countries in a group has data for that indicator. Since the coverage of countries among the indicators depends on the availability of data and is not uniform, caution must be exercised in relating averages of one indicator to another. These averages are only useful in comparing the value of one indicator at a time among the country and reference groups.

AREA (thousand sq.km.)

Total—Total surface area comprising land area and inland waters; 1960, 1970 and 1983 data.

Agricultural—Estimate of agricultural area used temporarily or permanently for crops, pastures, market and kitchen gardens or to lie fallow, 1960, 1970 and 1982 data.

GNP PER CAPITA (US\$)—GNP per capita estimates at current market prices, calculated by same conversion method as *World Bank Atlas* (1981-83 basis); 1983 data.

ENERGY CONSUMPTION PER CAPITA—Annual apparent consumption of commercial primary energy (coal and lignite, petroleum, natural gas and hydro-, nuclear and geothermal electricity) in kilograms of oil equivalent per capita; 1960, 1970, and 1982 data.

POPULATION AND VITAL STATISTICS

Total Population, Mid-Year (thousands)—As of July 1; 1960, 1970, and 1983 data.

Urban Population (percent of total)—Ratio of urban to total population; different definitions of urban areas may affect comparability of data among countries; 1960, 1970, and 1983 data.

Population Projections

Population in year 2000—The projection of population for 2000, made for each economy separately. Starting with information on total population by age and sex, fertility rates, mortality rates, and international migration in the base year 1980, these parameters were projected at five-year intervals on the basis of generalized assumptions until the population became stationary.

Stationary population—Is one in which age- and sex-specific mortality rates have not changed over a long period, while age-specific fertility rates have simultaneously remained at replacement level (net reproduction rate = 1). In such a population, the birth rate is constant and equal to the death rate, the age structure is also constant, and the growth rate is zero. The stationary population size was estimated on the basis of the projected characteristics of the population in the year 2000, and the rate of decline of fertility rate to replacement level.

Population Momentum—Is the tendency for population growth to continue beyond the time that replacement-level fertility has been achieved; that is, even after the net reproduction rate has reached unity. The momentum of a population in the year t is measured as a ratio of the ultimate stationary population to the population in the year t , given the assumption that fertility remains at replacement level from year t onward, 1985 data.

Population Density

Per sq.km.—Mid-year population per square kilometer (100 hectares) of total area; 1960, 1970, and 1983 data.

Per sq.km. agricultural land—Computed as above for agricultural land only, 1960, 1970, and 1982 data.

Population Age Structure (percent)—Children (0-14 years), working age (15-64 years), and retired (65 years and over) as percentage of mid-year population; 1960, 1970, and 1983 data.

Population Growth Rate (percent)—total—Annual growth rates of total mid-year population for 1950-60, 1960-70, and 1970-83.

Population Growth Rate (percent)—urban—Annual growth rates of urban population for 1950-60, 1960-70, and 1970-83 data.

Crude Birth Rate (per thousand)—Number of live births in the year per thousand of mid-year population; 1960, 1970, and 1983 data.

Crude Death Rate (per thousand)—Number of deaths in the year per thousand of mid-year population; 1960, 1970, and 1983 data.

Gross Reproduction Rate—Average number of daughters a woman will bear in her normal reproductive period if she experiences present age-specific fertility rates; usually five-year averages ending in 1960, 1970, and 1983.

Family Planning—Acceptors, Annual (thousands)—Annual number of acceptors of birth-control devices under auspices of national family planning program.

Family Planning—Users (percent of married women)—The percentage of married women of child-bearing age who are practicing or whose husbands are practicing any form of contraception. Women of child-bearing age are generally women aged 15-49, although for some countries contraceptive usage is measured for other age groups.

FOOD AND NUTRITION

Index of Food Production Per Capita (1969-71 = 100)—Index of per capita annual production of all food commodities. Production excludes animal feed and seed for agriculture. Food commodities include primary commodities (e.g. sugarcane instead of sugar) which are edible and contain nutrients (e.g. coffee and tea are excluded); they comprise cereals, root crops, pulses, oil seeds, vegetables, fruits, nuts, sugarcane and sugar beets, livestock, and livestock products. Aggregate production of each country is based on national average producer price weights; 1961-65, 1970, and 1982 data.

Per Capita Supply of Calories (percent of requirements)—Computed from calorie equivalent of net food supplies available in country per capita per day. Available supplies comprise domestic production, imports less exports, and changes in stock. Net supplies exclude animal feed, seeds for use in agriculture, quantities used in food processing, and losses in distribution. Requirements were estimated by FAO based on physiological needs for normal activity and health considering environmental temperature, body weights, age and sex distribution of population, and allowing 10 percent for waste at household level; 1961, 1970 and 1982 data.

Per Capita Supply of Protein (grams per day)—Protein content of per capita net supply of food per day. Net supply of food is defined as above. Requirements for all countries established by USDA provide for minimum allowances of 60 grams of total protein per day and 20 grams of animal and pulse protein, of which 10 grams should be animal protein. These standards are lower than those of 75 grams of total protein and 23 grams of animal protein as an average for the world, proposed by FAO in the Third World Food Supply; 1961, 1970 and 1982 data.

Per Capita Protein Supply From Animal and Pulse—Protein supply of food derived from animals and pulses in grams per day; 1961-65, 1970 and 1977 data.

Child (ages 1-4) Death Rate (per thousand)—Number of deaths of children aged 1-4 years per thousand children in the same age group in a given year. For most developing countries data derived from life tables; 1960, 1970 and 1983 data.

HEALTH

Life Expectancy at Birth (years)—Number of years a newborn infant would live if prevailing patterns of mortality for all people

at the time of its birth were to stay the same throughout its life; 1960, 1970 and 1983 data.

Infant Mortality Rate (per thousand)—Number of infants who die before reaching one year of age per thousand live births in a given year; 1960, 1970 and 1983 data.

Access to Safe Water (percent of population)—total, urban, and rural—Number of people (total, urban, and rural) with reasonable access to safe water supply (includes treated surface waters or untreated but uncontaminated water such as that from protected boreholes, springs and sanitary wells) as percentages of their respective populations. In an urban area a public fountain or standpost located not more than 200 meters from a house may be considered as being within reasonable access of that house. In rural areas reasonable access would imply that the housewife or members of the household do not have to spend a disproportionate part of the day in fetching the family's water needs.

Access to Excreta Disposal (percent of population)—total, urban, and rural—Number of people (total, urban, and rural) served by excreta disposal as percentages of their respective populations. Excreta disposal may include the collection and disposal, with or without treatment, of human excreta and waste-water by water-borne systems or the use of pit privies and similar installations.

Population per Physician—Population divided by number of practicing physicians qualified from a medical school at university level.

Population per Nursing Person—Population divided by number of practicing male and female graduate nurses, assistant nurses, practical nurses and nursing auxiliaries.

Population per Hospital Bed—total, urban, and rural—Population (total, urban, and rural) divided by their respective number of hospital beds available in public and private, general and specialized hospitals and rehabilitation centers. Hospitals are establishments permanently staffed by at least one physician. Establishments providing principally custodial care are not included. Rural hospitals, however, include health and medical centers not permanently staffed by a physician (but by a medical assistant, nurse, midwife, etc.) which offer in-patient accommodation and provide a limited range of medical facilities.

Admissions per Hospital Bed—Total number of admissions to or discharges from hospitals divided by the number of beds.

HOUSING

Average Size of Household (persons per household)—total, urban, and rural—A household consists of a group of individuals who share living quarters and their main meals. A boarder or lodger may or may not be included in the household for statistical purposes.

Average Number of Persons per Room—total, urban, and rural—Average number of persons per room in all urban, and rural occupied conventional dwellings, respectively. Dwellings exclude non-permanent structures and unoccupied parts.

Percentage of Dwellings with Electricity—total, urban, and rural—Conventional dwellings with electricity in living quarters as percentage of total, urban, and rural dwellings respectively.

EDUCATION

Adjusted Enrollment Ratios

Primary school - total, male and female—Gross total, male and female enrollment of all ages at the primary level as percentages of respective primary school-age populations. While many countries consider primary school age to be 6-11 years, others do not. The differences in country practices in the ages and duration of school are reflected in the ratios given. For some countries with universal education, gross enrollment may exceed 100 percent since some pupils are below or above the country's standard primary-school age.

Secondary school - total, male and female—Computed as above; secondary education requires at least four years of approved primary instruction; provides general, vocational, or teacher training instructions for pupils usually of 12 to 17 years of age; correspondence courses are generally excluded.

Vocational Enrollment (percent of secondary)—Vocational institutions include technical, industrial, or other programs which operate independently or as departments of secondary institutions.

Pupil-teacher Ratio - primary, and secondary—Total students enrolled in primary and secondary levels divided by numbers of teachers in the corresponding levels.

CONSUMPTION

Passenger Cars (per thousand population)—Passenger cars comprise motor cars seating less than eight persons; excludes ambulances, hearses and military vehicles.

Radio Receivers (per thousand population)—All types of receivers for radio broadcasts to general public per thousand of population; excludes un-licensed receivers in countries and in years when registration of radio sets was in effect; data for recent years may not be comparable since most countries abolished licensing.

TV Receivers (per thousand population)—TV receivers for broadcast to general public per thousand population; excludes unlicensed TV receivers in countries and in years when registration of TV sets was in effect.

Newspaper Circulation (per thousand population)—Shows the average circulation of "daily general interest newspaper," defined as a periodical publication devoted primarily to recording general news. It is considered to be "daily" if it appears at least four times a week.

Cinema Annual Attendance per Capita per Year—Based on the number of tickets sold during the year, including admissions to drive-in cinemas and mobile units.

LABOR FORCE

Total Labor Force (thousands)—Economically active persons, including armed forces and unemployed but excluding housewives, students, etc., covering population of all ages. Definitions in various countries are not comparable; 1960, 1970 and 1983 data.

Female (percent)—Female labor force as percentage of total labor force.

Agriculture (percent)—Labor force in farming, forestry, hunting and fishing as percentage of total labor force; 1960, 1970 and 1980 data.

Industry (percent)—Labor force in mining, construction, manufacturing and electricity, water and gas as percentage of total labor force; 1960, 1970 and 1980 data.

Participation Rate (percent)—total, male, and female—Participation or activity rates are computed as total, male, and female labor force as percentages of total, male and female population of all ages respectively; 1960, 1970, and 1983 data. These are based on ILO's participation rates reflecting age-sex structure of the population, and long time trend. A few estimates are from national sources.

Economic Dependency Ratio—Ratio of population under 15, and 65 and over, to the working age population (those aged 15-64).

INCOME DISTRIBUTION

Percentage of Total Disposable Income (both in cash and kind)—Accruing to percentile groups of households ranked by total household income.

POVERTY TARGET GROUPS

The following estimates are very approximate measures of poverty levels, and should be interpreted with considerable caution.

Estimated Absolute Poverty Income Level (US\$ per capita)—urban and rural—Absolute poverty income level is that income level below which a minimal nutritionally adequate diet plus essential non-food requirements is not affordable.

Estimated Relative Poverty Income Level (US\$ per capita)—urban and rural—Rural relative poverty income level is one-third of average per capita personal income of the country. Urban level is derived from the rural level with adjustment for higher cost of living in urban areas.

Estimated Population Below Absolute Poverty Income Level (percent)—urban and rural—Percent of population (urban and rural) who are "absolute poor."

GHANAECONOMIC INDICATORSGNP PER CAPITA IN 1983: US\$320 1/GROSS NATIONAL PRODUCT IN 1983 1/ANNUAL RATE OF GROWTH
(% Constant Prices)
1978-83

	<u>Cedis Mil.</u>	<u>%</u>	
GDP at Market Prices	191,934	100.0	-2.78
Gross Domestic Investment	12,476	6.5	-5.89
Gross National Saving	5,356	2.8	-19.72
Current Account Balance	7,120	3.7	—
Export of Goods, NFS	9,542	5.0	-7.12
Import of Goods, NFS	15,788	8.2	-11.63

OUTPUT AND LABOR FORCE

	<u>Output in 1983</u>		<u>Labor Force, 1983</u>	
	<u>Cedis Mil.</u>	<u>%</u>	<u>Mil.</u>	<u>%</u>
Agriculture	101,886	53.1	2.584	57.2
Industry	13,372	7.0	0.691	15.3
Services	76,671	39.9	1.242	27.5
Total	191,934	100.0	4.517	100.0

GOVERNMENT FINANCE

Central Government

	<u>Cedis Mil.</u>	<u>% of GDP in 1983 2/</u>	<u>Cedis Mil.</u>	<u>% of GDP in 1984 2/</u>
Total Revenue and Grants	10,241.0	4.8	22,641	6.9
Total Expenditure and Net Lending	15,177.5	7.0	27,485	8.4
Overall Deficit (-)	-4,936.5	-2.2	-4,844	-1.5

MONEY, CREDIT AND PRICES

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Money and Quasi-money	3,044	5,131	5,942	7,949	12,029	14,837	20,803	
Bank Credit to Public Sector	3,203	5,636	6,537	8,480	14,043	17,140	29,392	
Bank Credit to Private Sector	560	739	796	940	1,342	1,558	2,838	

(Percentages or Index Numbers)

Money and Quasi-money as % of GDP	27.3	24.4	21.1	19.4	15.7	16.7	9.8	
General Price Index (1977=100)	100.0	173.1	267.3	401.2	868.6	1062.4	2367.4	3,307.3

1/ Staff Estimates

2/ Estimated Actuals for 1983, budgeted for 1984.

GHANA : ECONOMIC INDICATORS (CONTD)

BALANCE OF PAYMENTS

	1983 (US\$ Million)	1984 1/ (US\$ Million)
<u>Trade Balance</u>	-131	-61
Exports f.o.b.	440	566
Imports c.i.f.	571	627
<u>Invisibles (Net)</u>	-284	-225
Services	-280	-227
Transfers	-4	2.0
<u>Current Balance</u>	-415	-286
<u>Capital Accounts</u>		
Grants	114	141
Official Capital (Net)	67	88
Private Capital (Net)	45	59
Arrears Payments	-34	-70.0
<u>Overall Balance 2/</u>	-243	-121
<u>Gross International Reserves (End of Period)</u>	214	391

February 1973 - June 18, 1978
US\$1 = ₵1.15

Since Aug. 26, 1978, US\$1 = ₵ 2.75
 Since April 21, 1983, US\$1 = ₵24.692
 Since Oct. 10, 1983, US\$1 = ₵30.00
 Since March 25, 1984, US\$1 = ₵35.00
 Since August 25, 1984, US\$1 = ₵38.50
 Since December 3, 1984, US\$1 = ₵50.00
 Since April 19, 1985, US\$1 = ₵53.00

MERCHANDISE EXPORTS (AVERAGE 1979-1983)

	US\$ Million	%
Cocoa Beans & Products	528.6	69.5
Gold	135.3	17.8
Residual Oil	31.5	4.1
Timber	28.7	3.8
Electricity	9.9	1.3
Manganese	8.1	1.1
Diamond	7.3	1.0
All Other Goods	10.7	1.4
<u>Total</u>	760.1	100.0

EXTERNAL DEBT, DECEMBER 1983

	US\$ Mil.
Total Outstanding and Disbursed M<	1,095.1
Total Outstanding and Disbursed inc. short-term	1,370.9

DEBT SERVICE RATIO FOR 1984 3/

	%
Total Outstanding and Disbursed M<	34.8
Total Outstanding and Disbursed inc. payment arrears	46.5

IBRD/IDA LENDING (December 31, 1984)

	IBRD	IDA
Outstanding & Disbursed	125.40	187.70
Undisbursed	8.39	194.37
Outstanding, incl. Undisbursed	133.79	382.07

1/ Provisional estimates subject to change.

2/ Includes errors and omissions.

3/ As % of exports of goods and non-factor services.

July 1985

Summary and Conclusions

Introduction

i. A World Bank Public Expenditure Review (PER) Mission visited Ghana between April 15-May 15, 1985 to provide support to the Government in its task of preparing a public expenditure program for 1986-88. During the mission's discussions with the Ministry of Finance it was indicated that the Government would prepare a formal Development Plan for the period which could be presented to the Consultative Group for Ghana in November 1985. It was accordingly agreed that the PER Mission would prepare appropriate draft documents in the field which would be transmitted to the Government by mid-May 1985. The PER Mission would then continue with further work at headquarters and through selective additional sector and program missions and transmit a more comprehensive report to the Government in August 1985. The Government on its part would constitute a formal working group in May 1985 to begin work on a draft 1986-88 Development Plan. This Development Plan was expected to be completed by end September 1985.

ii. An Aide-Memoire setting out the preliminary findings of the May 1985 PER Mission was presented to the Government in May 1985. Field reports prepared by sector specialists (essentially draft working papers of the mission) were also attached to this Aide-Memoire. These documents as well as further additional reports on Ghana prepared by Bank sector specialists form the basis for this more comprehensive report.

iii. The major issues in public expenditure policy for the period 1986-88 relate to: (a) The aggregate volume of resources likely to be available for public use (and particularly prospects for increased domestic resource mobilisation and increased foreign assistance); (b) Cocoa sector policies (primarily the percentage of cocoa export receipts to be passed on to farmers i.e., the effective export tax on cocoa and the appropriateness of activities being carried on by the Cocoa Board using the resources of the cocoa sector); (c) Inter and intra-sectoral choices for public expenditures which involve primarily judgements relating to the state of the education and health sectors and appropriateness of present levels of public expenditures in these areas; the public costs of an efficient administration system and the need for upgrading public sector salaries and maintaining a reasonable level of establishment costs; the level and rationality of subventions (grants) to local governments, Boards and Authorities and private agencies; and the level and composition of capital expenditures to be undertaken by the Government directly and by public corporations and agencies.

Methodology Used for the PER

iv. Macro-economic and sectoral strategy and resource availability issues were examined through alternative macro-economic projections made by an overlapping economic mission. The macro-economic and public finance projections used in this report are those developed as a possible

policy scenario for Ghana for the 1986-88 period by the economic mission 1/.

v. Cocoa sector analysis was based on a review of the Cocoa Board Budget for 1985 and projections for later years with a view to determining appropriate levels of cocoa producer prices and cocoa export taxes. The preliminary conclusion reached in this regard is that the recent increase in cocoa producer prices -- which increases the farmers share from 26-28 percent to 50 percent -- should be maintained. It may be possible also for the Government to retain its current share (about 35 percent) of cocoa export proceeds if the share being appropriated presently by the Cocoa Board could be reduced (from 36 to 15 percent) through streamlining and elimination of subsidy programs. A further detailed exercise needs to be carried out by the Government to examine the entire question of producer prices, farmers supply responses, appropriate levels of export tariffs and the requirements of a slimmed down Cocoa Board.

vi. The current expenditures options open to the Government were examined through an assessment of the requirements of the health and education sectors after increased cost recovery (with mission sectoral specialists balancing needs against possible absorptive capacity limitations), the need to upgrade public administration through a higher and more selective salary structure (analyzed through a review of Civil Service employment and incomes policy by the overlapping economic mission), and requirements for subventions (particularly of the health, education, local government and water supply sectors).

vii. Capital expenditure options were examined through an evaluation of sectoral strategies and an economic and financial analysis of almost all large programs and projects indicated to the mission (159 in number) including calculation of economic rates of return on capital investments in agriculture, mining, petroleum exploration, refining and distribution, roads and highways, railways and ports; domestic resource cost and financial analysis of public sector industrial activities to determine appropriateness of rehabilitation, modernisation and balancing investments; internal financial rate of return analysis for water supply projects and minimum supply cost and break-even energy analysis for electricity projects. In some cases, however, time and unavailability of data did not permit further detailed analysis and preliminary judgements were made by mission sector specialists on the economic viability of a program or project, pending further work.

viii. The possible "core" capital investment program resulting from the analysis of large programs and projects was made internally consistent through examination of both the public corporate and direct government

1/ "Structural Adjustment Issues in Ghana", World Bank Economic Mission, April/May 1985.

sector with regard to the need for and availability of financial resources (both domestic and from foreign capital). The financial surpluses (or deficits) of public corporations were taken into account in this regard and the options for increased cost recovery examined (particularly for the roads and highways, posts and telecommunications sectors).

Resources Likely To Be Available for Public Expenditures 1986-88

ix. Total resources likely to be available for public expenditures for the 1986-88 period are estimated at C254 billion (\$4.5 billion) ^{2/} compared to C70 billion (\$1.2 billion) likely to be available in 1985. Receipts from taxes on all transactions except cocoa are projected to increase by 35 percent in real terms for the period 1986-88. While this will require a substantial revenue mobilisation effort there does exist considerable scope for increasing revenues mobilisation - particularly customs duties (where the effective duty on non-oil imports averages about 13 percent), sales taxes, excise duties and income taxes on the self-employed. Government receipts from cocoa are projected to increase by 18 percent over the period 1986-88, primarily as a result of increased cocoa sales from an estimated 175,000 tons in 1985 to an expected 230,000 tons in 1988 (an increase of about 30 percent) and through a drastic slimming down of the Cocoa Board (presently under way). The increase in cocoa sales projected requires a substantial effort in cocoa procurement by the Cocoa Board (which should be assisted by the recent price increases which will reduce smuggling to CFA countries) as well as increased production through rehabilitation of cocoa farms. Foreign capital inflows (both loans and grants) over the 1986-88 period are assumed to be roughly at the same level in current terms as in 1985. The estimate of total gross inflows for the period is \$1640 million, current prices (or \$1470 million, constant 1985 prices). The gross foreign inflow in 1985 is estimated at \$550 million. Principal repayments on foreign debt are estimated at C31.18 billion (\$547 million) for the 1986-88 period. Total resources available for both current and capital expenditures over the 1986-88 period are therefore likely to be about C223 billion (\$3.91 billion) or about C74 billion (\$1.3 billion) per annum. This compares with the corresponding amount of C56.2 billion (\$986 million) in 1985. The increase in public resources likely to be available during 1986-88 is not very substantial and these resources would therefore have to be husbanded very carefully in order to attain the Government's growth and efficiency objectives for the economy.

The Possible Current Expenditure Program, 1986-88

x. An Overview: A possible current expenditure program for the period 1986-88 was derived by the mission (as mentioned earlier) through an

^{2/} Projections for resource availability and resource use throughout this report are in constant 1985 prices (exchange rate of \$1 = C57).

analysis of the wage and non-wage requirements of the Government (excluding corporate) sector, the need to enhance education and health facilities and the prospects for increased cost recovery in health and education.

xi. The overall level of current expenditures proposed for 1986-88 (¢128.6 billion) is 17 percent higher as an annual average than the 1985 level (¢36.5 billion). The non-discretionary items -- pension payments and interest payments - are estimated at ¢6 billion and ¢19.2 billion respectively (an increase of about 27 percent over 1985 levels). The wage bill (Item I in the Current Expenditure Budget) is proposed to increase in real terms by 35 percent to ¢43.2 billion in accordance with the recommendations of the May '85 Economic Mission and the findings of the PER Mission on wage requirements in the health and education sectors. The non-wage bill (Items 2-5 in the Current Expenditure Budget) is estimated at ¢43.6 billion for the period 1986-88, this is about 23 percent higher than 1985 budgeted levels. This non-wage bill is net of cost recovery in the health and education sectors (estimated at ¢3.025 billion). Given the fact, however, that the non-wage (Items 2-5) part of the Current Expenditure Budget has always been strictly controlled by the Government and actual expenditures in 1983 and 1984 on these items were about 25 percent of budgeted levels, the increases in expenditures envisaged will be substantial. Adequate provision has also been made to meet the wage and non-wage requirements of the health and education sectors.

xii. The current expenditure program places emphasis on health and education and the needs of the public administration system. Total expenditure on health are projected to increase to ¢16.12 billion (excluding cost recovery of ¢2.23 billion) -- an increase of 60 percent over the budgeted 1985 level of ¢3.35 billion. In education the increase is more modest. Total expenditures are projected at ¢23.78 billion (excluding cost recovery of ¢0.8 billion) -- an increase of 12 percent over the budgeted level of ¢7.05 billion. However, the 1985 budget (like earlier budgets during 1983 and 1984) is likely to be over-optimistic on the current expenditure side with regard to non-wage expenditure (Items 2-5 in the Budget) which amount to roughly 40 percent of the total. The amounts proposed therefore for health and education during 1986-88 represent a large increase in the volume of resources to be delivered to these sectors.

xiii. Another significant feature of the proposed current expenditure program is the emphasis on restoring the viability and efficiency of the public administration in Ghana. This would be accomplished by: (i) a complete freeze on all hiring in support category positions during 1986-88 and (ii) by appropriate wage increases to encourage productivity, particularly at the higher levels where wages have been severely eroded. Government wage costs are presently estimated at ¢10.6 billion. The number of Government employees is estimated at 291,000 (excluding defense personnel). The Government is actively considering a new grading structure which would increase the annual wage bill to ¢15.33 billion. The 1985 Budget has a provision of ¢11.5 billion for Item 1 (wages and salaries) so there is some doubt whether this reform can be implemented in the present year. The

PER mission suggests the new grading structure should be introduced with a Tax Relief Program which would widen the differential in take home salaries between the various categories of civil servants from the present 2:1 ratio between the highest and lowest grade to at least a 3:1 ratio. The total cost of the new structure is estimated at ₦15.5 billion. The Current Expenditures projections for Item I expenditures are based on these new costs and total ₦43.2 billion.

The Possible Capital Expenditure Program 1986-88

xiv. A possible "large project" capital expenditure program for the period 1986-88 was built from the "bottom-up" by reviewing sectoral strategies and programs and assembling information on all major programs and projects for the "economic" sectors (agriculture, mining, fuel and power, roads and highways, communications, water supply). Since the total program indicated was substantially larger than the volume of resources likely to be available for large projects in these sectors, the concept of a possible "core" program was used to bring capital expenditures into line with likely resource availability. Projects and programs were included in the "core" category on the basis of their economic viability. "Economically viable" projects or programs were defined as those having adequate economic rates of return (greater than 15 percent in most cases), DRCs' less than 1 for industrial projects, IRRs' greater than 15 percent for water supply projects. However, the mission's technical specialists applied practical judgements against these mechanical numbers, and projects/programs having a somewhat lower rate of return were included in the "core" program if in their view they had substantial non-quantifiable externalities.

xv. A total of 159 programs/projects were evaluated and of these 104 made the "core" category. This surprisingly high number of apparently viable projects/programs reflect the essential rehabilitation and maintenance requirements of the economy and the fact that most projects/programs proposed are geared towards this requirement. With high existing sunk costs, rates of return on incremental investment are accordingly high. The total capital expenditure program for large projects/programs amounted to ₦99.8 billion (\$1.75 billion). The possible "core" large project program indicated at this stage of the PER review amounts to ₦69.5 billion (\$1.22 billion) of which ₦42.8 billion (\$751 million) is in the Corporate Sector and ₦26.7 billion (\$468 million) is in the direct Government Sector. The total Government share of these capital expenditures (i.e. excluding self financing by public corporations estimated at about ₦12.4 billion - \$218 million) is financed through the Development Budget, direct net lending to public corporations and authorities, foreign capital onlent to Government ministries and foreign capital onlent to public corporations and authorities. The requirement for these funds is about ₦57 billion (\$1 billion) which is well within the amount available for the purpose. However, requirements of government direct lending to the public sector will exceed availability of local resources and untied foreign capital counterpart funds will have to be used

extensively to fill this gap. This also reflects the fact that many of the projects in the "core" program have yet to seek foreign capital financing.

xvi. The agricultural "core" expenditure program of C12.76 billion (\$223 million) involving 16 major programs/projects focuses on restructuring and rehabilitation of the agricultural sector. Ongoing high cost schemes -- particularly irrigation and the Northern Region Integrated Development Project -- are proposed to be rationalised as quickly as possible. The only major new projects coming on stream in this period in the presently identified "core" program will be aimed at reinforcing existing institutional structures in the agricultural (including the cocoa) sector. The associated policy frame-work focuses on adequate price incentives for farmers, agricultural research and privatisation of certain activities (e.g., fertilizer distribution).

xvii. In mining, the "core" investment program amounts to C10.5 billion (\$184 million) spread over the five major mining companies. Strictly speaking, all the projects are rehabilitation projects. Increases in capacity envisaged till the end of the programming period (1988), whilst substantial, would still leave Ghanaian production in all mining sectors well below levels achieved in the early 1970's. The associated policy frame-work focuses on encouraging modernization through technical assistance and where possible, collaboration with international mining companies. The two gold mines (Ashanti and SGMC) and the bauxite mine (GBC) will in fact be managed by international technical partners during this period. It is also proposed that measures be taken to encourage local private sector participation in gold and diamond mining beyond the limited levels currently permitted and to bring into the official system the vast quantities of gold and diamonds which are privately mined and smuggled out of Ghana.

xviii. The energy sector with 19 projects and a "core" investment program of C10.9 billion (\$191 million) is the only sector where major additions to capacity are envisaged. These occur in petroleum and primary electricity generation and distribution. In the petroleum sector it is proposed that this new capacity creation should, with the exception of the Tar Sands Development, be entirely undertaken in collaboration with international or other national oil companies -- with the Government either taking up an equity share or putting in "seed money". In primary electricity generation and transmission the new capacity is in combustion turbines (to supplement hydro-generation) and in putting in the third transmission circuit to CEB for electricity exports. In petroleum refining and distribution and in electricity distribution (which together accounts for about C4 billion or about 37 percent of the energy sector program) all investments are in rehabilitation of capacity.

xix. The public sector industry "core" program of C1.97 billion (\$334 million) over 19 projects is entirely rehabilitation. The associated policy frame-work emphasizes financial autonomy and support for viable enterprises and rationalisation of state involvement in economically and financially non-viable enterprises where no prospects exist for their being turned

around. The roads and highways, transport and communications and water supply "core" programs totalling C33.3 billion (\$584 million) focus on rehabilitation of existing systems (with marginal additions of feeder roads and rural water supply). The policy emphasis here is on enhanced cost recovery to enable the systems to be maintained in the future.

xx. While the "core" program of large projects in each sector is expected to comprise the bulk of new investments in the sector, it should not be considered to be the entire sectoral program. A small number of programs/projects have not been included in the "core" program for the sector concerned because of insufficient information, because the timing was uncertain, or because of doubt about the absorptive capacity of the sector to deal with them over the period 1986-88. These programs/projects covering almost all sectors need to be studied carefully and added to the "core" program if justified on economic grounds and if resources are determined to be available for the sector. This also applies to programs/projects which were not fully developed at the time of the mission.

Conclusions

xxi. The Government of Ghana's assessment that the present situation is appropriate to launch a Three Year Development Plan covering the 1986-88 period appears timely. While the Ghanaian authorities have been understandably preoccupied in the recent past with the stabilisation and rehabilitation needs of the economy (the Economy Recovery Program), it is now appropriate to look ahead to steady and disciplined growth in a medium-term perspective. Within this context it appears that high priority must be assigned to rebuilding the public administrative sector and arresting and reversing the apparent decline in the health and education sectors. While resources available for this purpose are limited, an appropriately focussed program in these sectors stressing efficiency, high standards of services and cost recovery should be feasible to implement over the next three years. With regard to the more traditionally defined capital investment program for the period 1986-88, Ghana is fortunate in having in hand a large number of economically attractive projects which should be financed with both domestic and foreign capital. However, a closer look than that undertaken in this PER Mission is warranted for all major projects and a pipeline of additional viable programs/projects needs to be developed. This is expected to be undertaken in the context of the Ghana Development Plan for 1986-88 currently under preparation.

PART I

MAJOR ISSUES IN PUBLIC EXPENDITURE POLICIES, 1986-88

The Issues

1.01 The major issues in public expenditure policy for the period 1986-88 relate to (a) The aggregate volume of resources likely to be available for public use (and particularly prospects for increased domestic resource mobilisation and increased foreign assistance); (b) Cocoa sector policies (primarily the percentage of cocoa export receipts to be passed on to farmers i.e. the effective export tax on cocoa and the appropriateness of activities being carried on by the Cocoa Board using the resources of the cocoa sector; (c) Inter and intra-sectoral choices for public expenditures which involve primarily judgements relating to the state of the education and health sectors and appropriateness of present levels of public expenditures in these areas; the public costs of an efficient administration system and the need for upgrading public sector salaries and maintaining a reasonable level of establishment costs; the level and rationale of subventions (grants) to local governments, Boards and Authorities and private agencies; and the level and composition of capital expenditures to be undertaken by the Government directly and by public corporations and agencies.

Methodology Used for the PER

1.02 Macro-economic and sectoral strategy and resource availability issues were examined through alternative macro-economic projections made by an overlapping economic mission. The macro-economic and public finance projections used in this report are those developed as a possible policy scenario for Ghana for the 1986-88 period by the economic mission 1/.

1.03 Cocoa sector analysis was based on a review of the Cocoa Board Budget for 1985 and projections for later years with a view towards determining appropriate levels of cocoa producer prices and cocoa export taxes. The preliminary conclusion reached in this regard is that the recent increase in cocoa producer prices - which increases the farmers share from 26-28 percent to 50 percent - should be maintained. It might be possible also for the Government to retain its current share (about 35 percent) of cocoa sale proceeds if the share being appropriated presently by the Cocoa Board could be reduced (from 36 to 15 percent) through streamlining and elimination of subsidy programs. A further detailed exercise needs to be carried out by the Government to examine the entire question of producer prices, farmers supply responses, appropriate levels of export tariffs and the requirements of a slimmed down Cocoa Board.

1/ "Structural Adjustment Issues in Ghana", World Bank Economic Mission, April/May 1985.

1.04 The current expenditures options open to the Government were examined through an assessment of the requirements of the health and education sectors after increased cost recovery (with mission sectoral specialists balancing needs against possible absorptive capacity limitations), the need to upgrade public administration through a higher and more selective salary structure (analyzed through a review of Civil Service employment and incomes policy by the overlapping economic mission), and requirements for subventions (particularly of the health, education and local government sectors).

1.05 Capital expenditure options were examined through an evaluation of sectoral strategies and an economic and financial analysis of all large programs and projects indicated to the mission (159 in number) including calculation of economic rates of return on capital investments in agriculture, mining, petroleum exploration, refining and distribution, roads and highways, railways and ports; domestic resource cost and financial analysis of public sector industrial activities to determine appropriateness of rehabilitation, modernisation and balancing investments; internal financial rate of return analysis for water supply projects and minimum supply cost and break-even energy analysis for electricity projects. In some cases, however, time and unavailability of data did not permit further detailed analysis and preliminary judgements were made by mission sectoral specialists on the economic viability of a program or project. These judgements need to be confirmed or denied by further work which is expected to be undertaken both in the Bank and in Ghana. While the "core" program of large projects in each sector is expected to comprise the bulk of new investment activities in the sector, it is of course, not the entire sectoral program. These comprehensive sectoral programs are expected to be developed in the context of the Ghana Development Plan for 1986-88 currently under preparation.

1.06 The possible "core" capital investment program resulting from the analysis of large programs and projects was made internally consistent through examination of both the public corporate and direct government sector with regard to the need for and availability of financial resources (both domestic and foreign). The financial surpluses (or deficits) of public corporations were taken into account in this regard and the options for increased cost recovery examined (particularly for the roads and highways, posts and telecommunications sectors).

The Macro-Economic Framework

1.07 The macro-economic outlook for the 1986-88 period developed by the Economic Mission as a possible policy scenario is based upon a strategy of completing a major structural adjustment of the economy through the 1986-88 period largely by correcting the incentive framework for the productive sectors (through exchange rate, trade and tariff policy adjustments) and by mobilising additional resources for investment in the public and private sectors.

1.08 A sustained growth rate of about 5 percent per annum is envisaged for the period 1986-88. The impetus for this growth will come from both the private and public sector. Private sector investment (which comprises about 70 percent of the investment in the economy) is programmed to grow at 4.7 percent per annum. This will be a considerable achievement, and will require both a substantial further liberalization of the economy as well as ensuring that private sector savings are not diverted to the public sector (as has been the case in the past). A flow of funds exercise undertaken by the economic mission indicates that this objective is viable and that sufficient funds through domestic resource mobilization and external assistance would be available to meet the economically warranted expenditures of the public sector. Public sector investment expenditure would grow at 6.4 percent per annum.

1.09 Sectoral growth rates reflect the combined effects of both more appropriate incentive policies and the higher levels of investments planned. A growth rate of 4.4 percent per annum in agriculture is envisaged -- largely driven by increased production of cocoa and food and other tree crops. The cocoa strategy, discussed in greater detail below, is driven by restoring incentives to cocoa farmers and by giving consistent long term signals that a fair share (at least 50 percent) of the world price would be passed on to them. The program for the rest of agriculture is also based upon appropriate incentives to farmers (largely by doing away with erratic quantitative restrictions on imports and instead imposing a proposed 20-30 percent tariff on agricultural imports ^{2/} and by economic investments in the sector focussing on appropriate technological packages and delivery mechanisms. An industrial growth rate of 8.6 percent per annum is built upon a revitalisation of the large private sector (and rehabilitation and consolidation of the much smaller public sector) through appropriate incentive policies (largely trade policy reform and replacement of quantitative restrictions on industrial imports by a doubling of related tariffs from 30 to 60 percent) and provision of foreign exchange for current imports and rehabilitation of capacity. The transport and communications sector is expected to grow at about 5.0 percent per annum largely through expanded investments in infrastructure and transport equipment. This will in large part provide the under-pinning for the growth of the economy in general and the export sector in particular. Services are expected to grow at a relatively modest 4.5 percent per annum, reflecting economic discipline but also ensuring that the essential requirements of the economy, particularly in fuel, power, water supply, health and education are met. Exports are expected to show sustained growth (10.6 percent per annum), largely in cocoa, timber and mining -- the latter two being rehabilitated through appropriate investments. This, in conjunction with a more modest but appropriate import growth rate (5.4

^{2/} The exact exchange rates/tariffs required to provide appropriate incentives to agriculture are currently being studied.

percent per annum), should set the economy well on the way towards self-sustained growth.

TABLE I.1: THE MACRO-ECONOMIC FRAMEWORK

	<u>Actual</u>				<u>Est.</u>	<u>Projected</u>
	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986-88</u>
<u>Growth Rates (Constant 1975 Prices)</u>						
GDP at Market Prices	- 3.2	- 7.7	0.7	6.7	4.9	5.0
Agriculture	- 2.6	- 6.7	- 1.5	9.4	5.3	4.4
Industry	-14.5	-16.7	- 2.7	3.5	6.0	8.6
Transport and Communications	6.8	1.1	7.3	3.0	4.0	5.0
Services	0.6	- 6.7	5.5	3.7	4.1	4.5
Exports (GNFS)	-20.4	16.8	-15.0	17.8	26.4	10.6
Imports (GNFS)	10.9	-34.1	24.3	6.3	23.2	5.4

Other Indicators

Fixed Investment (% of GDP)	3.1	2.0	4.0	6.3	8.5	11.0
Public Investment (% of GDP)				2.7	3.8	6.4
Private Investment (% of GDP)				3.5	4.5	4.7
Current Account Balance (% of GDP)	- 1.9	- 0.6	- 3.3	- 3.5	- 4.3	- 5.0
Exports GNFS (% of GDP)	2.7	2.1	4.4	6.4	7.4	7.9
Imports GNFS (% of GDP)	4.2	2.2	6.5	8.6	9.7	9.5
Consumer Prices (rate of change (%))	116.5	22.3	122.8	35.0	25.0	15.0

Resources Likely To Be Available for Public Expenditures 1986-88

Total resources likely to be available for public expenditures for the 1986-88 period are estimated at C254 billion (\$4.5 billion) ^{3/} compared to C70 billion (\$1.2 billion) likely to be available in 1985 (Table I.2). Of these Government revenues are estimated to contribute about C161 billion (\$2.8 billion) divided between taxes on all transactions except cocoa (C133 billion) and taxes on cocoa (C28 billion). Other financing is estimated at C93.8 billion (\$1.65 billion) comprising foreign loans and grants C83.8 billion (\$1.47 billion) and net public sector borrowing from the banking system of C10 billion (\$0.18 billion).

^{3/} Projections for resource availability and resource use throughout this report are in constant 1985 prices (exchange rate of \$1 = C57).

TABLE I.2: PROJECTED PUBLIC SECTOR BUDGET

(1984 and 1985 Current Prices,
1986-88 Constant 1985 Prices

	Est.		1985 Budget		1986-88 Projected	
	1984 Mn	Actual (%)	Mn	(%)	Mn	(%)
<u>I. Total Resources Available</u> (II + III)	<u>38,083</u>	<u>100</u>	<u>69,916</u>	<u>100</u>	<u>254,317</u>	<u>100</u>
II. <u>Government Revenues</u>	<u>21,727</u>	<u>57</u>	<u>38,109</u>	<u>55</u>	<u>160,535</u>	<u>63</u>
1. Taxes non-cocoa	17,929	(47)	30,170	(43)	132,385	(52)
2. Tax on Cocoa sector	3,798	(10)	7,939	(12)	28,150	(11)
III. <u>Other Financing</u>	<u>16,356</u>	<u>43</u>	<u>31,807</u>	<u>45</u>	<u>93,782</u>	<u>37</u>
1. Foreign Loans	7,575	(20)	23,142	(33)	64,182	(25)
2. Bank Borrowing	3,028	(8)	3,250	(5)	10,000	(4)
3. Grants	5,078	(13)	5,415	(7)	19,600	(8)
4. Other	657	(2)	-	(-)	-	(-)
IV. <u>Total Expenditure</u>	<u>38,083</u>	<u>100</u>	<u>69,916</u>	<u>100</u>	<u>254,317</u>	<u>100</u>
1. <u>Current Expenditures</u>	<u>22,700</u>	<u>60</u>	<u>36,535</u>	<u>52</u>	<u>128,585</u>	<u>51</u>
(Wages - Item 1)	(5,055)	(13)	(11,459)	(16)	(43,239)	(17)
(Pension and Severance Payments)	(988)	(3)	(1,810)	(3)	(6,000)	(2)
(Non-Wages Items 2-5)	(10,447)	(27)	(11,856)	(17)	(43,546)	(17)
(Interest Payments)	(3,425)	(9)	(4,786)	(7)	(19,219)	(8)
(Subventions)	(2,785)	(7)	(6,624)	(9)	(16,581)	(7)
2. <u>Capital Expenditures</u>	<u>10,960</u>	<u>28</u>	<u>19,644</u>	<u>28</u>	<u>94,552</u>	<u>37</u>
Government Direct Dev. Expenditure	4,856	12	11,975	17	74,754	29
(Budget)	(3,994)	(10)	(8,025)	(11)	(45,535)	(18)
(Net Lending to Public Sector)	(862)	(2)	(3,950)	(6)	(29,219)	(11)
Project Aid	6,104	16	7,270	(10)	19,798	(8)
3. <u>Principal Repayments on Foreign Debt</u>	<u>4,423</u>	<u>12</u>	<u>13,737</u>	<u>20</u>	<u>31,180</u>	<u>12</u>
(From Budget)	(3,257)	(9)	(6,196)	(9)	(-)	(-)
(Direct Public Sector)	(1,166)	(3)	(7,541)	(11)	(-)	(-)

1.11 Receipts from taxes on all transactions except cocoa are projected to increase by about 40 percent in real terms for the period 1986-88. This will require a substantial revenue mobilisation effort. The report of the May '85 Bank Economic Mission indicates that scope for increased revenue mobilisation exists in several major areas - particularly customs duties (where the effective duty on non-oil imports averages about 13 percent), sales taxes, excise duties and income taxes on the self-employed. 4/

1.12 Government receipts from cocoa are projected to increase by 18 percent over the period 1986-88, primarily as a result of increased cocoa imports from an estimated 175,000 tons in 1985 to an expected 230,000 tons in 1988 (an increase of about 30 percent) and through a slimming down of the Cocoa Board (presently under way). The increase in cocoa sales projected requires a substantial effort in cocoa procurement by the Cocoa Board (which should be assisted by the recent price increases which will curb smuggling to CFA countries) as well as increased production through rehabilitation of cocoa farms. This is discussed further below.

1.13 Foreign capital inflows (both loans and grants) over 1986-88 period are assumed to be roughly at the same level in current terms as in 1985. The estimate of total gross inflows for the period is \$1640 million, current prices (or \$1470 million, constant 1985 prices). The gross foreign inflow in 1985 is estimated at \$550 million. Principal repayments on foreign debt are estimated at C\$31.18 billion (\$547 million) for the 1986-88 period.

1.14 Total resources available for current and capital expenditures together over the 1986-88 period are therefore likely to be about C\$223 billion (\$3.91 billion). This compares with the corresponding amount of C\$56.2 billion (\$986 million) in 1985. The increase in public resources likely to be available during 1986-88 is not very substantial and these resources would therefore have to be husbanded very carefully in order to attain the Government's growth and efficiency objectives for the economy.

Cocoa Sector Policies

1.15 Given the pre-eminence of the cocoa sector in Ghana (10 percent of GDP, 70 percent of merchandise exports), cocoa sector policies have important implications for the economy and for public expenditure. Three sets of policies are particularly important in this regard, viz: (i) cocoa producer price, i.e. the gross return to farmers; (ii) marketing margins, i.e. the gross return to the Cocoa Marketing Board; and (iii) cocoa export taxes, i.e. cocoa sector-related Government revenue.

4/ "Structural Adjustment Issues In Ghana", World Bank Economic Mission, April/May 1985.

1.16 Cocoa production in Ghana has dropped from an average level of about 400,000 tons per annum in the 1970-75 period to 254,000 tons in 1980 and an estimated 150,000 tons in 1984. The dramatic drop is almost entirely due to neglect of existing trees and non-replanting of aged and diseased trees which in turn appear to be a result of a substantial decline in real producer prices. Real producer prices of cocoa are estimated to have declined by the early 1980's to less than half of the level of the early 1970's (see Table I.3 below). International prices for cocoa do not appear to have been a factor behind the problem - in fact these rose in real terms over a substantial part of the period and even today are above the levels of the early 1970's.

TABLE I.3: COCOA PRODUCER PRICE

Year	Total GCMB Purchases '000 mt	Nominal Producer Prices (¢/mt)	Rural CPI (1970=100)	Real Producer Price Index (1970=100)	International Price Index (1970=100)
1970/71	413	293	100.00	100.00	100.00
1971/72	454	293	108.94	91.8	73.3
1972/73	407	366	118.97	105.0	80.0
1973/74	340	436	139.60	106.6	117.4
1974/75	376	560	164.29	116.3	129.7
1975/76	396	597	209.20	97.4	91.3
1976/77	323	747	330.77	77.1	146.7
1977/78	271	1,333	720.48	63.1	251.3
1978/79	265	2,667	1,258.68	72.3	191.8
1979/80	296	4,000	2,004.38	68.1	167.2
1980/81	258	4,000	3,229.19	42.3	122.1
1981/82	224	12,000	6,761.70	60.6	101.5
1982/83	179	12,000	8,283.36	49.4	86.2
1983/84	158	20,000	17,702.91	38.6	108.7
1984/85	160	30,000	23,898.93	42.8	110.0
1985/86		56,600	31,068.61	65.9	

Source: World Bank "Ghana Agriculture Sector Review", January 1985, and World Bank Report on "Price Prospects for Major Commodities", September 1984).

1.17 The decline in cocoa producer prices reflected itself more directly in terms of net returns to farmers' crops. The World Bank's Agriculture Sector Review (January 1985) estimated that in 1984 the net return per manday of family labor was the lowest in cocoa (when the producer price was ¢30,000/ton). Actual return per manday were ¢2,475 for oil palm, ¢722 for maize/plantain/cocoyam, ¢345 for improved maize/cassava, ¢241 for traditional maize/cassava, ¢260 for replanted cocoa and ¢118 for rehabilitated cocoa.

1.18 These price declines in the past have led to abandonment of cocoa farms, lack of proper maintenance and inadequate harvesting, and shrinking of productive capacity. Replanting to replace aged trees and trees infected with swollen shoot virus disease (SSVD) has fallen to very low levels (an average of 7,000 hectares a year newly planted with traditional hybrids in 1980-83 compared with 17,000 hectares a year in 1975-80). Neglect has accelerated the spread of capsid infestation and SSVD. At least half of the estimated current stock of productive trees is close to or over 30 years of age. Hybrids with a yield potential double that of the traditional variety account for less than 10 percent of the viable planted area, compared with 17 percent in Ivory Coast, 40 percent in Brazil and 100 percent in Malaysia. The present tree stock is capable of sustaining a production level of 210,000 to 230,000 metric tonnes in the period 1985-88. Until the early 1990's, the decline in productive area may be partially compensated for by increased yields from hybrids planted in the 1970's. However, the rate of planting and replanting in 1986-88 needs to be increased to 12-15 thousand hectares a year if output in the 1990's is to be maintained at the 230,000 metric tonnes level. This planting rate would need to be more than doubled to push production up to 300,000 metric tonnes.

1.19 The recent increase in cocoa producer prices to $\text{Q}56,600/\text{ton}$ for the 1985-86 crop season is a major step in the right direction and will encourage adequate maintenance, planting and replanting. It brings the producer price level up in real terms to about 66 percent of the 1970 prices and to about 50 percent of the current world price for cocoa. It is now recommended that as an operating principle the cocoa producer price (which is set at the beginning of the marketing season) should be set at 50 percent of the world producer price expected for the marketing year using weighted average exchange rates expected for the period. This policy would also increase the producer price somewhat in real terms from current levels if international prices for cocoa do not decline (since exchange rate changes in the short term would be of a greater magnitude than the rate of domestic inflation). Such a policy would allow Government revenues from cocoa to be maintained at recent levels (35 percent of the f.o.b. price) if the operations of the Cocoa Board could be streamlined to reduce its "marketing margin" or "overhead cost" to 15 percent of world prices. The Cocoa Board's support for rehabilitation and planting activities during 1986-88 is included under "capital expenditure" while its program of building feeder roads over the period would be financed separately under a budget allocation for this purpose from the Government (see discussion on the agricultural investment program in Part III of the report).

TABLE I.4: COCOA REVENUE PROJECTIONS
(Constant 1985 Prices)

		<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Cocoa Production (mt)		175,000	205,000	215,000	230,000
(Exported)		(145,000)	(175,000)	(185,000)	(200,000)
(Sold locally)		(30,000)	(30,000)	(30,000)	(30,000)
Revenue (Cm)					
(Exported)	<u>1/</u>	17,604	21,247	22,460	24,282
(Local)	<u>2/</u>	<u>1,821</u>	<u>3,642</u>	<u>3,642</u>	<u>3,642</u>
		19,425	24,889	26,102	27,924
Less Payment to Producers	<u>3/</u>	7,550	11,603	12,169	13,018
(15% OVH)		<u>2,736</u>	<u>3,773</u>	<u>3,915</u>	<u>4,188</u>
		10,286	15,376	16,084	17,206
Net Available		9,139	9,513	10,018	10,718
Capital Expenditures		1,200	700	700	700
Transfer to Government		7,939	8,813	9,318	10,018

1/ \$2,130/ton; exchange rate $\text{C}\text{\$}57=\text{\$}1$.

2/ \$1,065/ton in 1985 and \$2,130/ton from 1986 onwards.

3/ $\text{C}\text{\$}56,600/\text{ton}$, except for 1985 when the weighted average produce price for the year is estimated at $\text{C}\text{\$}43,140/\text{ton}$.

Inter and Intra Sectoral Choices for Public Expenditures

1.20 The PER focussed on the issue of inter and intra-sectoral choices by identifying important areas for public expenditures. In the area of current expenditures (Part II of this report) a minimum program of about $\text{C}\text{\$}129$ billion appeared to be required for the period 1986-88. Major areas requiring increased resources were the health, education and public administration sectors. The review indicated that because of the constraints imposed by Ghana's difficult economic circumstances in the past the health and education situation has deteriorated to a point where Ghana's most valuable asset - its talented and generally educated population -- was in danger of being incapable of reproducing itself at current health and skill levels. This situation needs to be urgently corrected and therefore the minimum resources required for this task were included as the prime claimant on public resources. The other major challenge was to ensure that the public administrative system was slimmed down and made more productive. The financial costs of public administration reform, without which Ghana cannot undertake a structural adjustment program during 1986-88, was also built into the exercise after providing for other essential current expenditures, the remaining public resources available ($\text{C}\text{\$}94.6$ billion) were then partially allocated between the various sectors for public investment.

TABLE I.5: COMPOSITION OF PUBLIC EXPENDITURES

(Constant 1985 Prices)

	1985		1986-88	
	ØMn	%	ØMn	%
<u>Recurrent</u>	<u>36.5</u>	<u>65.4</u>	<u>128.6</u>	<u>57.6</u>
Salaries	11.5	20.6	43.2	18.4
(Health)	(1.6)	(2.9)	(6.8)	(3.0)
(Education)	(3.8)	(6.8)	(13.4)	(6.0)
Items 2-5	11.9	21.3	43.6	19.5
(Health) <u>1/</u>	(1.6)	(2.9)	(8.1)	(3.6)
(Education) <u>1/</u>	(3.1)	(5.6)	(9.6)	(4.3)
Subventions	6.6	11.8	16.6	7.4
Interest-Pensions, etc.	6.5	11.6	25.2	11.3
<u>Capital</u>	<u>19.3</u>	<u>34.6</u>	<u>94.6</u>	<u>42.4</u>
Ministries - Development Budget	13.2	23.6	59.6	26.7
Public Sector - Net Lending	6.1	10.7	35.0	15.7
<u>Total Expenditures</u>	<u>55.8</u>	<u>100.0</u>	<u>113.2</u>	<u>100.0</u>

1/ Excluding cost recovery.

1.21 The "partial allocation" process for public capital expenditures resulted from both a limitation of the review to the "economic" sectors defined as agriculture, mining, energy, industry, roads and highways, transport and communications as well as a "large program/project" focus. This project focus (within the context of sectoral strategy programs) identified 104 large "core" projects involving a total cost of Ø69.5 billion (or Ø57 billion excluding self-financing) as being appropriate for investment in the 1986-88 period (Part III of this Report). The "unallocated amounts" for public capital expenditures therefore amount to Ø37.6 billion or about 40 percent of the total of Ø94.6 billion likely to be available for this purpose over the period. This remaining possible public sector expenditure program which relates to the "non-economic" sectors excluded from the review and some (mainly smaller) programs in the "economic sectors" still remains to be developed and work on this is expected to be completed during the ongoing preparation of Ghana's Development Plan for 1986-88.

1.22 The 104 large projects which emerged as the "core" of the public investment program for 1986-88 were part of some 159 large projects which were reviewed by the mission for the economic sectors. The methodology adopted was to review sectoral strategies and targets and then evaluate the proposed large projects/programs in the sector within the context of other

sectoral policies (incentive policies, privatisation issues, etc.). Projects and programs were included in the "core" category on the basis of their economic viability. "Economically viable" projects or programs were defined as those having adequate economic rates of return (greater than 15 percent in most cases), DRC's less than 1 for industrial projects, IRR's greater than 15 percent for water supply projects. However, the PER mission's technical specialists applied practical judgements against these mechanical numbers, and projects/programs having a somewhat lower rate of return were included in the "core" program if in their view they had substantial non-quantifiable externalities.

1.23 Most of the "core" projects which emerged were rehabilitation/modernisation projects. This result was not surprising given the fact that Ghana's substantial economic infrastructure has suffered varying degrees of deterioration. With high sunk costs, rates of return on incremental investment are accordingly high. The agriculture "core" expenditure program of 16 major programs/projects involving expenditures of C\$12.8 billion is largely concerned with the restructuring and rehabilitation of the sector. Ongoing, but relatively recent, high cost schemes (e.g., irrigation, integrated rural development) are proposed to be rationalised as early as possible. In mining, the "core" investment program amounts to C\$10.5 billion spread over the five major mining companies. All the projects are rehabilitation projects and increases in capacity envisaged till the end of the programming period, whilst substantial, still leave Ghanaian production in these sectors well below the levels achieved in the early 1970's. The public sector industry, roads and highways, transport and communications and water supply "core" programs totalling C\$35.3 billion again focus almost entirely on rehabilitation. It is only in the energy sector (where the "core" program amounts to C\$10.9 billion over 19 projects) that major additions to capacity are envisaged. These occur in petroleum and primary electricity generation and distribution. In the petroleum sector, it is proposed that this new capacity should (with one minor exception occasioned by lack of outside interest) be entirely undertaken in collaboration with international or other national oil companies - with the Government taking up an equity share and putting up "seed money". In primary electricity generation and transmission the new capacity is in combustion turbines (to supplement hydro-generation) and in putting in a (third) transmission circuit to CEB for electricity exports. In petroleum refining and distribution and in electricity distribution (which together account for about C\$4.2 billion or about 39 percent of the energy sector program) all investments are in rehabilitation of capacity.

1.24 The sectoral "core" programs which emerged show some degree of balance in the context of the sectors examined. Agriculture at C\$12.8 billion is 13.2 percent of the total of C\$96.4 billion. The other sectors "core" programs are: mining - C\$10.6 billion (11.2 percent); energy - C\$10.9 billion (11.5 percent); public industry - C\$1.97 billion (2 percent); roads and highways - C\$15.4 billion (16.2 percent); transport and communications - C\$15.7 billion (16.6 percent); and water supply - C\$2.1 billion (2.2 percent). While the "core" program of large projects in each sector is

expected to comprise the bulk of new investments in the sector, it will not be the entire sectoral program. A small number of programs/projects have not been included in the "core" program for the sector concerned because of insufficient information, because the timing was uncertain, or because of doubt about the absorptive capacity of the sector to deal with them over the period 1986-88. These programs/projects (covering almost all sectors and detailed in the relevant sectoral sections of this report) need to be studied carefully and added to the "core" program if justified on economic grounds and if resources are determined to be available for the sector. This also applies to programs/projects which were not fully developed at the time of the mission. The comprehensive sectoral programs are expected to be developed in the context of the Ghana Development Plan for 1986-88 currently under preparation.

PART II

PRIORITIES FOR CURRENT EXPENDITURES, 1986-88

THE POSSIBLE CURRENT EXPENDITURE PROGRAM, 1986-88

2.01 An Overview: A possible current expenditure program for the period 1986-88 was derived by the PER mission through an examination of the wage and non-wage requirements of the Government (excluding corporate) sector, the need to enhance education and health facilities and the prospects for increased cost recovery in health and education. The results are presented in Table II.1 below which should be read in conjunction with Table I.2.

2.02 The overall level of current expenditures proposed for 1986-88 (¢128.6 billion) is about 17 percent higher as an annual average than the 1985 level (¢36.5 billion). The non-discretionary items -- pension and severance payments and interest payments -- are estimated at ¢16.6 billion and ¢19.2 billion respectively (an increase of about 27 percent over 1985 levels). The wage bill (Item I in the Current Expenditure Budget) is proposed to increase in real terms by 35 percent to ¢43.2 billion in accordance with the recommendations of the May '85 Economic Mission and the findings of the PER Mission on wage requirements in the health and education sectors (this is discussed further below). The non-wage bill (Item Categories (2-5 in the Budget) is estimated at ¢43.6 billion for the period 1986-88, this is about 23 percent higher than 1985 Budget Levels. However, this non-wage bill is net of cost recovery in the health and education sectors (estimated at ¢2.85 billion). Adding this amount back in increases the total expenditure on non-wage items to ¢46.5 billion which is 31 percent higher than the levels budgeted for 1985.

2.03 The current expenditure program places emphasis on health and education and the needs of the public administration system. For the health and education sectors, these represent the best professional judgement of the mission's sectoral specialists, balancing needs against possible absorptive capacity limitations. Total expenditure on health are projected to increase to ¢16.12 billion (excluding cost recovery of ¢2.23 billion) -- an increase of 60 percent over the budgeted 1985 level of ¢3.35 billion. In education the increase is more modest. Total expenditures are projected at ¢23.78 billion (excluding cost recovery of ¢0.8 billion) -- an increase of 12 percent over the budgeted level of ¢7.05 billion. However, the 1985 budget (like earlier budgets during 1983 and 1984) is likely to be over-optimistic on the current expenditure side with regard to non-wage expenditure (Items 2-5 in the Budget) which amount to roughly 40 percent of the total. Due to constraints on available resources (and with ceilings on Government bank borrowings agreed to with the IMF), actual expenditures on non-wage items in all sectors (including health and education during 1983 and 1984) have been less than 25 percent of budgeted amounts. The amounts proposed therefore for health and education during 1986-88 represent a large increase in the volume of resources to be delivered to these sectors.

2.04 Another significant feature of the proposed current expenditure program is the emphasis on restoring the viability and efficiency of public administration in Ghana. This would be accomplished by: (i) a complete freeze on all hiring in support category positions during 1986-88 and (ii) by appropriate wage increases to encourage productivity, particularly at the higher levels where wages have been severely eroded. Government wage costs are presently estimated at C\$10.6 billion. The number of Government employees is estimated at 291,000 (excluding defense personnel). The Government is actively considering a new grading structure which would increase the wage bill to C\$15.33 billion. The 1985 Budget has a provision of C\$11.5 billion for Item 1 (wages and salaries) so there is some doubt whether this reform can be implemented in the present year. The PER mission felt the new grading structure should be introduced with a Tax Relief Program which would widen the differential in take home salaries between the various categories of civil servants from the present 2:1 ratio between the highest and lowest grade to at least a 3:1 ratio. The total cost of the new structure is estimated at C\$15.5 billion. The Current Expenditures projections for Item 1 expenditures are based on this new cost and total C\$43.2 billion.

2.05 The other major non-discretionary item in the current expenditure budget related to subventions (grants) to public and private agencies. The major subventions (grants) with regard to productive and social sectors relate to supporting the wage bills of non-government health institutions (church run) and the wage bills of local governments. The projections for the health and education sector subventions fully meet the requirements of these sectors. For local governments the Central Government has announced a policy of removing wage bill support by end 1985. An analysis of Local Government Finances shows that this will involve a quadrupling of local government revenues (through increased rates, fees, etc.) if present levels of services are to be maintained. Pending a further review of the possibility and impact of such an immediate increase in local government charges the PER Mission recommended maintenance of the present level of subventions from the budget to local government. The total amount for subventions in all sectors projected for the period 1986-88 is C\$16.6 billion or 15 percent below 1985 budgeted levels (but 80 percent higher than 1984 actual levels).

TABLE II.1: POSSIBLE CURRENT EXPENDITURE PROGRAM, 1986-88

(C Million, Constant 1985 Prices)

	1985	Budget	1986-88 Projected	
	CMn	%	CMn	%
<u>TOTAL CURRENT EXPENDITURE PROGRAM</u>	<u>36,535</u>	<u>100</u>	<u>128,585</u>	<u>100</u>
1. <u>Health</u>	<u>3,354</u>	<u>9</u>	<u>13,895</u>	<u>11</u>
Wages, Item 1	1,563		6,775	
Non-Wages, Net, Items 2-5	1,547		5,832	
(Total Non-Wages)	(1,572)		(8,057)	
(Cost Recovery Against Non-Wage Costs)	(- 25)		(2,225)	
Wage Subventions to Church Run Organizations	115		608	
Other Subventions	129		680	
2. <u>Education</u>	<u>7,050</u>	<u>19</u>	<u>22,980</u>	<u>18</u>
1st and 2nd Cycles	5,450		16,160	
Wages, Item 1	3,640		11,256	
Non-Wages, Net, Items 2-5	1,810		4,904	
(Total, Non-Wages)	(1,810)		(5,442)	
(Cost Recovery Against Non-Wage Costs)	(-)		(-538)	
Higher Education	1,350		6,070	
Wages, Item 1	358		2,157	
Non-Wages, Net, Items 2-5	992		3,913	
(Total Non-Wages)	(992)		(4,175)	
(Cost Recovery Against Non-Wage Costs)	(-)		(-262)	
Subventions	250		750	
3. <u>Local Government</u>	<u>1,518</u>	<u>4</u>	<u>4,500</u>	<u>3</u>
Wage Bill Subventions to Local Authorities	310		1,300	
Other Subventions	1,208		3,200	
4. <u>Other Government</u>	<u>24,613</u>	<u>68</u>	<u>87,210</u>	<u>68</u>
Wages, Item 1	6,193	17	23,051	18
Non-Wages, Items 2-5	7,212	20	28,897	22
Subventions	4,612	13	10,043	8
Pension and Severance Payments	1,810	5	6,000	5
Interest Payments	4,786	13	19,219	15

HEALTH SECTOR EXPENDITURES

Overview

2.06 The economic difficulties of the past two decades, particularly since the mid-seventies, has led to a marked reduction in health care services. The effect of this on health status was exacerbated in 1982 and 1983 by drought, bushfires, loss of real income, unavailable supplies, restricted imports, food shortages, and the exodus of health professionals, especially physicians. While the allocation for health expenditures has maintained its share of seven to ten percent of the current expenditure budget over the past decade, as a result of the decline in the budget itself (as a percentage of GDP), the per capita expenditure in the health sector has been reduced in current terms from about \$10 in 1974 to \$4 in 1984. In real terms the decline has been even greater. Since most of the funds are for recurrent expenditures, there is little left for expansion of services or capital expenditures. The result of these constraints has been a contraction of health services in which coverage is poor (30%), the population growth rate is high (3.1%), and health status is low.

2.07 The population and health statistics of Ghana reflect these constraints. Ghana has a population of 12.8 million (1984 census); a crude death rate of 10/1000; a crude birth rate of 49/1000; and a maternal mortality rate of 5-15/1000. The infant mortality rate is about 97/1000 and one half of all deaths are of children under age five. The population under 15 years is 47 percent and life expectancy is 59 years. The total fertility rate is 7.0, and the estimated contraceptive prevalence rate is 10 percent. The major causes of ill-health and death include infectious and parasitic diseases. In children under five years about 75 percent of all deaths are due to malaria, measles, diarrheal disease and respiratory infections. The major problems affecting the health of women in Ghana result from the interaction between infective and parasitic diseases, malnutrition, particularly during pregnancy, and the extremely high fertility rate.

2.08 Recent studies estimate that 50 percent of the children under five years of age suffer from mild or moderate malnutrition and that two to four percent suffer from forms of severe malnutrition. The situation appears to be worse in the savannah area where the seasonal effect is also extreme. Girls and boys are equally likely to be malnourished. Malnutrition, especially anemia, is prevalent among women. The causes of malnutrition relate to food availability and prices, incomes, food consumption patterns and exposure to infectious diseases. The decreased production of food crops, drought conditions, declining purchasing power and dramatic increases in food prices have adversely affected nutritional status in Ghana, particularly among pregnant and lactating mothers and pre-school children.

2.09 The four sub-sectors in health include the government, church-run hospitals and clinics, private practice and traditional medicine. The government health services include the Ministry of Health (MOH), the

military and quasi-government organizations, such as mines, VRA, etc. The government (MOH) maintains about 70 hospitals (mostly in the urban areas), 15 urban health centers and about 230 rural health centers (maternal child health centers and health posts). Its (1985) staff of about 460 doctors, 10,000 nurses and about 27,000 other health workers cover about three million people. The church-run hospitals and clinics also make a significant contribution with 30 hospitals and 4,300 hospital beds (compared to approximately 12,000 in the government) which provide care for about 1 million people. Private practice by doctors is common in the urban areas. Traditional healers predominate in rural areas.

Policy Issues

2.10 The major policy issues in the health sector relate to: (i) the balance between medical care and primary health care and between rural and urban areas; (ii) the present limited non-wage current expenditures and virtually no capital expenditures; (iii) manpower constraints - almost half the doctors and thousands of nurses have left government service to enter private practice or leave the country; (iv) cost recovery for services rendered by the public sector; and (v) coordination of government and foreign donor efforts in the health sector and the preparation of a medium term health sector plan.

2.11 In 1978, Ghana formulated a Primary Health Care (PHC) Policy. The goal was to provide PHC services to 80 percent of the population by 1990 and to focus on common health problems that account for the bulk of avoidable mortality and morbidity. The strategy was designed within the context of the WHO Alma Ata Declaration and was based on priorities established in an analysis of Ghana's major health problems. Considerable attention was given to the organizational framework necessary to implement the strategy. The result was a well-formulated proposal for an effective and efficient PHC system. In April 1982, the PNDC's National Health Committee advised the government to endorse the PHC system and to use the District as the basic administrative unit for the planning, management and evaluation of health care services. The PHC program has been initiated in 25 of 68 districts but with little success to date due to the constraints already identified.

2.12 Coordination of external assistance in the health sector and integrating it into the country's health program is also a policy issue of major importance. UNICEF has approved a five-year project (1986-1990) to support the development of immunization and diarrheal disease control nationwide and the PHC services in 15 districts out of 68. Similarly, the UNFPA has used its "Need Assessment" to develop and approve a four-year project (1984-87) which provides basic support to MCH/FP activities of the MOH, population and family life education, information and communications, and basic data collection and analysis. USAID has approved a three-year (1985-87) project to support the distribution of contraceptives via the MOH system and commercial sector. USAID would also support in-service family planning and managerial training for health personnel as well as fund improvement of the logistics system and information and education

activities. In 1984, CIDA approved a five-year project as part of its integrated development program in the Northern Region to strengthen the MOH and support PHC and immunization programs in rural areas. The MOH is discussing plans with the Saudi Arabian Fund and the African Development Bank to rehabilitate three regional hospitals and three to five district hospitals respectively. The Bank is also considering support for rehabilitation of MCH/nutrition facilities and the MOH infrastructure (cold chain for vaccines), radio communications system, transportation, studies of critical sectoral issues in preparation of a health sector plan, medium-term rural health and visitation, and financing of non-wage expenditures.

Sector Rehabilitation Strategy

2.13 The major goals of the government health strategy are: (a) to restructure health services and extend them to 80 percent of the population by 1990 and to reduce rates of morbidity and mortality due to conditions for which prevention, easy treatment and control exist; (b) to promote and develop health care services as an integral part of Ghana's multi-sectoral social and economic development, particularly in health, nutrition, and food supply, water supply, sanitation and education; and (c) to promote community self-reliance and make maximum use of community resources within the government's proposed decentralized system of administration.

2.14 The MOH plans to extend PHC and increase Medical Care (MC) by establishing a three-tier system in each district, comprising (a) the district (Level C), responsible for planning, monitoring, supervision, data collection, budgeting and finance headed by a District Health Management Team (DHMT); (b) health post and health center areas (Level B), responsible for the first level of referral and supervision of Level A workers, including one or more community nurse midwives, environmental health workers and auxiliaries; and (c) the community (Level A), comprised of community-based workers--i.e., community clinic attendant, traditional birth attendant and community environmental development worker, working with the volunteer Health Brigade overseen by the Local Health Committee. The MOH plans to develop the PHC Program in one half the districts (36 of 68) by 1988, extending it to other districts as community, government and international resources permit. The MOH will continue to support the mission hospitals and clinics through the Christian Health Association of Ghana because of their vital role in the delivery of MC and PHC in the rural areas. Health sector staff requirements to meet the Government objectives are summarized in Table II.2 below.

TABLE II.2: ESTIMATES OF DOCTORS, NURSES, OTHER STAFF
BY SECTOR FOR 1985 and 1988

	<u>1985</u>	<u>1988</u>
<u>Government</u>		
Doctors	460	520
Nurses	10,000	10,600
Other Staff	27,000	29,000
<u>Church-Run</u>		
Doctors (expat.)	75(45)	85(45)
Nurses	2,200	2,350
Other Staff	6,900	7,000
<u>Private/Corporate</u>		
Doctors	275	375
Nurses	8,000	8,350
Other Staff	n.a.	n.a.

2.15 The MOH program priorities for 1986-88 are MCH/FP, EPI/CDD, sanitation, health and nutrition education, sanitation, malaria control, and rehabilitation of hospitals and urban polyclinics. Emphasis will be on in-service training, logistics and transport, and development of a planning, monitoring and evaluation system. The MOH will rely on international assistance to strengthen its infrastructure and to provide technical assistance, equipment, vehicles, drug and contraceptive supplies, educational and training materials, and financing of rehabilitation projects.

Public Health Current Expenditure Program (1986-88)

2.16 The MOH's estimated recurrent expenditures for 1985 and projections for 1986-88 are found in Tables II.3. The total expenditures in constant 1985 prices almost double (96 percent) from 03,379 million in 1985 to 06,620 million in 1988. The major assumptions made and principal issues raised are discussed below.

TABLE II.3: HEALTH SECTOR RECURRENT EXPENDITURES
1985 - 1988

(million ¢, constant 1985 prices)

	<u>Budget</u>	<u>Program</u>		<u>Total</u>	
	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1986-88</u>	
Personal emoluments	1,563	1,875	2,250	2,650	6,775
Travel and transport	73	105	183	265	553
General Maintenance	82	105	182	265	552
repairs, renewals	29	60	100	137	297
Other (drugs, supplies, etc.)	1,388	1,735	2,170	2,750	6,655
Subventions	244	320	415	553	1,288
Total Recurrent	<u>3,379</u>	<u>4,200</u>	<u>5,300</u>	<u>6,620</u>	<u>16,120</u>

2.17 Primary Health Care. To extend health care services, especially to rural areas, the MOH must shift more of its total expenditures from hospital-oriented care to primary health care (PHC) and from urban to rural areas. The recommended strategy reflects this shift, with PHC increasing from 30 to 40 percent of total expenditures between 1985 and 1988 and MC declining from 55 to 45 percent. The urban/rural differential also changes with recurrent expenditures for "rural" increasing from 45 to 55 percent during the period.

2.18 Other (Drugs, dressing, food, etc.) Shortage of drugs, supplies, food provision, linens and materials for uniforms have undermined the delivery of health care services and contributed to the departure and/or low morale of health personnel. It is thus essential that the Government totally fund the budget allocation for 1985 (¢1,388 million) and double its support by 1988 (¢2,750 million). As the table below indicates, "direct health inputs" (42 percent) and "personal emoluments" (40 percent) comprise slightly more than four-fifths (82 percent) of the projected recurrent expenditures for 1985. Achieving and maintaining those levels will depend on the availability of foreign exchange and the success of the MOH's cost recovery efforts.

TABLE II.4: HEALTH SECTOR CURRENT EXPENDITURES

<u>Year</u>	<u>Total (C million)</u>	<u>Personal Emoluments</u>	<u>% of Total</u>	<u>Direct 1/ Health Inputs (C million)</u>	<u>% of Total</u>
1983	608.0	296.0	(49)	181.0	(30)
1984	1,954.0	535.0	(27)	1,196.0	(61)
1985	3,379.0	1,563.0	(46)	1,388.0	(41)
Target 1988	6,620.0	2,650.0	(40)	2,750.0	(42)

1/ Budgeted for drugs, dressings, food, etc. Actual expenditures in the 1983-84 period have been substantially less than budgeted.

2.19 Salaries. Low civil servant wages have contributed significantly to the exodus of Ghana's teachers and professional health provides. The 1985 health recurrent expenditure budget for "personal emoluments" is C1,563 million, or 46 percent of total health sector recurrent expenditures. This amount reflects the January 1985 increases in salary and allowances paid doctors and the anticipated increases for nurses and other MOH staff. Since this can only be considered a "temporary" solution, the 1988 projection for "personal emoluments" reflects an approximately 50 percent increase in salaries in constant 1985 prices plus additional personnel produced by the medical and nursing schools, etc. The 1988 projection for "personal emoluments" is 40 percent of total expenditures.

2.20 Travel and Transport. In 1984, the government declared an embargo on all budget categories except "personal emoluments." Expenditures for the other categories required a special request from each institution to the Ministry of Finance and Economic Planning (MFEP). During the year, the MOH headquarter was granted an exemption for drugs, dressings and food provisions ("unallocated stores" and "drugs and dressings"). The embargo on travel and transport continues, however, with obvious adverse effects. If the MOH is to provide basic support to health care services, supervise such activities, and extend beyond the static facilities to support PHC delivery at the community level, then mobility is absolutely essential. The alternative of expanding the number of Level "B" facilities (even if "modified") to increase coverage of the population in rural areas would be prohibitively high. Given the essential need for transport and the increased support anticipated from the donor community in vehicles, the recurrent expenditures for travel and transport are recommended to be increased 3.6 times to C265 million in 1988, or four percent of total expenditures.

2.21 Government Subvention to Church-run Hospitals. As indicated above, the mission hospitals represent a critical element in the delivery of health care services in Ghana, particularly in rural areas. As indicated in Table II.3, government support to church-run hospitals between 1985 and 1988 is projected to more than double remaining at about one half of the total annual government subventions for the sector. The subventions to church-run hospitals and clinics are for "wages" only.

2.22 Cost Recovery. The MOH is exploring ways to generate revenues to cover operating costs. Without cost recovery, the system will grind to a functional halt. Plans have recently been implemented to charge more realistic user fees for hospital services. In-patient services account for the bulk of the MOH expenditures and are therefore the ideal area to raise revenue. Government hospitals are also referral points from all health care delivery sectors (public, private, church-run and traditional). They provide 100 percent of the tertiary care and most of the secondary care services. While provision must be made to ensure that those who can least afford to pay are able to obtain the necessary services, it is hoped that hospital fees can generate adequate revenue to offset operating costs and to allow the standard of care to be improved and maintained. The amounts in Table II.5 assume that "cost recovery" will begin generating about 15 percent of total recurrent expenditures in 1986 and remain at that level through 1988. It is expected that hospitals will generate 75 percent of total cost recovery and PHC 25 percent.

TABLE II.5: FINANCING OF HEALTH RECURRENT EXPENDITURES
1985 - 1988

(million ₵, constant 1985 prices)

	Budget	Program		Total	
	1985	1986	1987	1988	
Government and International Assistance	3,354	3,618	4,567	5,710	13,895
Cost Recovery	25	582	733	910	2,225
(PHC)	(-)	(162)	(194)	(233)	(589)
(Hospitals)	(-)	(420)	(539)	(677)	(1,636)
<u>Total Recurrent</u>	<u>3,379</u>	<u>4,200</u>	<u>5,300</u>	<u>6,620</u>	<u>16,120</u>

EDUCATION SECTOR EXPENDITURES

Overview

2.23 Ghana has been neglecting its educational system for over a decade. During the 1970's education expenditure as a proportion of Gross Domestic Product averaged 3.4 percent which was below the average of 5.2 percent for other Sub-Saharan anglophone countries. This situation has worsened in the 1980's - expenditures on education were estimated at 1 percent of GDP in 1983 and 1984 and are budgeted at 1.7 percent of GDP in 1985. While primary school enrollment ratios have been maintained at about 76% (85% for boys and 66% for girls) largely through the momentum of the past efforts, the impact of this reduced inflow of resources has manifested itself in various ways. First there is a very high drop-out rate at both primary and secondary levels and the number of place available at the upper end of the first (primary) and in the second (secondary) and third (college and university) cycles is limited. Thus less than 7% of Ghanaian children gain admission to secondary schools, only 1.1% get into sixth form and 0.8% into university. In addition, in the upper cycles, particularly in the sciences and technical course, equipment has gone un-repaired and unreplaced while chemicals and supplies are in extremely short supply. At the same time, teachers incomes have eroded leading to an exodus of trained teachers from the educational system. The unavoidable result of this situation has been a deterioration of the quality of education in Ghana from that achieved in the 1960's and 1970's.

2.24 Even within the limited resources available, the Ghanaian system of education is confronted with several serious financial problems. These include: (i) Budgetary allocations among different subsectors have been heavily skewed in favor of higher levels of education; (ii) The unit cost of second and third cycle education are high; (iii) Wages have risen to account for more than 90% of recurrent expenditure at first cycle; (iv) Local authorities have been unable to finance capital development of the first and second cycles; and (v) There is a lack of cost savings and cost recovery measures at all levels of the system, especially third and second cycles. The allocation of government expenditures to education is skewed in favor of higher levels of education. For example, about 1/3 of total education expenditure in 1984 was in primary schools where nearly 2/3 of the total students are enrolled, while university education with less than 1/2 of 1 percent accounted for over 17%. The high unit costs associated with second and third cycle education are due in large part to boarding costs and other government subsidies. Boarding subsidies to second cycle institutions are estimated at C410 million, more than the budgeted non-wage expenditures on primary education. The relatively low student/teacher ratios in all types of second and third cycle institutions also raise unit costs.

2.25 At present, cost recovery measures are negligible at all levels of the educational system, and cost savings measures have not been introduced. While nominal fees are charged for books and supplies at first and second cycles, these amount to less than 1% of actual costs. The

government subsidises 30 percent of boarding costs in the second cycle and completely subsidises boarding costs in the third cycle. Other subsidies to second and third cycle students include the complete absence of fees, scholarships and payment of government salaries in certain cases. As a result of these increased financial costs and the general squeeze in the budget, wages as a percentage of total expenditures in primary and middle schools have increased in the 1980's to over 90% and has resulted in shortages of textbooks and materials at all levels. In addition local authorities have been unable to live up to an earlier commitment to build new primary and secondary schools as well as maintain these schools. Under present fiscal arrangements, local authorities do not have the tax base to carry out these functions. This is both a short and longer term policy issue facing first cycle education in particular.

Policy Issues

2.26 - The major policy issues with regard to education include: (a) The importance of human resource development to the Government's overall rehabilitation and future development plans; (b) The lack of criteria for allocating resources among various subsectors within the system; (c) The Government's position with respect to cost savings and cost recovery policies for the sector; and (d) A short term policy for financing capital investment in first cycle education. Implicitly, through declining investment in education, the Government is pursuing a policy of divestment in human resource development. This is quite possibly a consequence of the lack of a policy framework for the sector and an analysis of how the educational system in its entirety and through specific subsectors, is related to development of the economy. For example, the importance of linking agricultural development to the educational system seems neglected, as does the importance of basic (first cycle) education. These gaps are reflected in skewed resource allocations as well as the declining resource pool for the educational system.

2.27 The major policy issues with regard to first cycle education are: (a) Should the Government pursue a policy of expanding access? The Government must choose between further universalizing the first cycle or place emphasis on rehabilitation during the coming three to five years; (b) How can additional sources of revenue be identified for first cycle education?; (c) Is the Government's policy of converting middle to junior secondary schools viable? If the Government chooses to embark on a major rehabilitation program for the sector it will quickly face the issue of whether to expand existing plant to include a larger proportion of the 6-14 age group and absorb the incremental population growth of approximately 3% per annum or invest in quality inputs for the existing system. Rehabilitating through providing a minimum level of essential inputs: books and supplies, upgrading untrained teachers and refurbishing existing facilities, is likely to attract more children into the system without incremental investment in facilities. Likewise, an initial injection of quality resources may serve as a stimulus to local councils in terms of provision of new facilities. With regard to financing, the policy of local finance for the development of first cycle education is not sustainable,

due to the extremely limited resource base at the local level, in the short term (next 3 - 5 years) even though it might be highly desirable. Alternative sources and mechanisms for financing both developmental and non-salary components of recurrent costs must be sought. There are several possibilities: (a) Reallocating cost savings/recovery from the second and third cycles to the first cycle; (b) Initiating a matching fund system for both maintenance and development costs between national government and local councils until the revenue base at the local level grows; and (c) Introduction of a gradual cost recovery for books and supplies.

2.28 The major policy issues with regard to second cycle education are: (a) Lack of textbooks and other essential teaching/learning materials; (b) Deterioration of facilities to the point of jeopardizing the substantial capital investment in second cycle infrastructure; (c) Serious administrative overload due to dual function of school as school and as residential facility; and (d) Overstaffing, particularly at the 6th form level. Secondary schools are dependent upon imported books for texts, library and reference use. The severe shortage of foreign exchange in the past four years has brought the supply to a near standstill. Additionally, supplies for science laboratories including chemicals and simple experimental materials are almost unavailable. Students are currently charged less than 1 percent of the total cost of providing textbooks for the more than 120,000 students enrolled in senior secondary schools. With regard to facilities, while first cycle institutions are largely accommodated in substandard facilities, second cycle facilities by and large are modern and reasonably well constructed. Due to lack of maintenance many of these facilities will soon reach the point of being beyond repair. Presently, 95% of the secondary schools throughout the country have 80% or more of their students in residential facilities. At present, the Government pays one third of the "specified subsidy" and the parents pay two-thirds. Because the specified subsidy is actually below the real cost per student, school administrators are faced with continuous problems: frequently schools are unable to provide enough food for the students. This has forced the administrators to spend considerable time and money solving immediate problems of food by using other scarce school funds for boarding expenses; by establishing school farms to produce crops for the school kitchen, and by raising additional funds from parents, community and the school's board to cover minimum costs. Meanwhile, the educational aspects of the school assume a secondary and often neglected status in school administration.

2.29 There are several non-mutually exclusive options which address the above issues: (a) Implementation of the long standing de-boardenization policy for the second cycle institutions; (b) Increasing the low student/teacher ratios of second cycle institutions; (c) Raising the fees for books and supplies at second cycle institutions; and (d) Shifting the first three forms of secondary school to the middle schools of the first cycle. Each of these options can help to reduce the high unit costs and relatively large proportion of the education sector budget absorbed by secondary schools. Each would have to be introduced gradually, but nonetheless systematically. De-boardenization, for example, would have to

be a phased process. To carry out this policy, additional investment in local secondary schools where few or none exist would probably be required. Cost savings from eliminating boarding would amount to an estimated C153 million per year. At the same time, other cost recovery options such as raising the book and supplies fees from less than 1% to 25% of the actual cost would increase revenue by an estimated C400 million per annum.

2.30 The major policy issues with regard to the university education system are two: (a) The highly disproportionate amount of funds allocated to it vis-a-vis other levels of education; and (b) The declining quality of inputs into the university system over the past 5 to 10 years. The university system absorbs approximately 17% of the total expenditure on the education sector and enrolls less than 1/2 of 1 percent of all students. Unit cost per university student is nearly 60 times greater than that per primary student and 6 times greater than that of a secondary student. The cost per student exceeds C570,000 per annum (\$10,000). Factors which account for this situation include the low student/faculty ratio of 12/1; the Government policy of subsidizing 100% of all student costs associated with university education including residential costs, books and supplies as well as tuition. In addition, many students receive a Government salary from their job while attending university full-time. Finally, the high non-wage operating costs of the university system due to excessive diversification of curriculum offerings also raises the system's cost. At the same time, the three universities have experienced a decline in real resources available from the Government since the mid-1970's. This has meant that salaries have not remained competitive with other West African countries and attrition of faculty has been substantial especially in the sciences, mathematics and medicine. Nor have the libraries been able to add to their holdings or maintain their periodical subscriptions. Essential teaching equipment and supplies in a variety of scientific and technical fields is also lacking. The decline in teaching staff, materials, books and supplies has undermined the quality of teaching at university level. In certain disciplines, particularly sciences, mathematics and medicine, staff shortages are severe. At the University of Ghana, for example, there are currently no qualified staff in the computer science department, only one person in statistics and two in mathematics. At the School of Medical Sciences of the University of Science and Technology in Kumasi 73 of 100 positions were listed as vacant at the beginning of the 1985 academic year.

2.31 The major challenge facing the university level is how to introduce cost-recovery measures at a time when economic stringency has already severely eroded the university system. Nonetheless, some costs of higher education need to be recovered. Student/faculty ratios could be raised to 20/1 without jeopardizing instructional quality, if salaries were raised moderately and bonus offered for qualified professors in priority areas: mathematics, sciences and medicine. Student subsidies need to be reduced beginning with the residential subsidy, books and supplies. Loans and a limited number of scholarships for the very needy and highly qualified students should be assured. However, the Government should move to reduce the residential subsidy by two-thirds immediately and eliminate it

altogether by the end of the decade. Books and supplies could be purchased at cost through the university bookshops by students.

Sector Rehabilitation Strategy

2.32 The Ghanaian educational system is in need of immediate rehabilitation to prevent non-recuperable losses of both capital and human resources, e.g. the deterioration beyond repair of school facilities and equipment and the under-educational of the current generation of students. The thrust of the rehabilitation program should be to revitalize deteriorating capital stock and to arrest the declining quality of inputs and outputs of the sector at all levels. Based on the analyses of subsectoral problems and policy issues above, the following priorities are recommended: (a) Rehabilitation of first cycle education through an improvement in the availability and quality of basic inputs: textbooks, supplies, trained teachers, furniture, equipment and school facilities; (b) Consolidation and first phase implementation of the government's second cycle de-boardenization policy by giving priority to the upgrading of existing day schools and providing incentives for boarding schools to convert to day schools voluntarily; (c) Introduction of a gradual policy of cost recovery into the university system coupled with an injection of selected inputs: periodicals, library books, textbooks, science equipment and supplies and computer facilities; and (d) Rehabilitating the system of management by revitalizing the planning and information system; providing training and equipment for MOE personnel in budget and planning; upgrading the inspectorate for first cycle schools; and strengthening the district level offices. Each element of the rehabilitation strategy is discussed below.

First and Second Cycles: Public Sector Education Expenditure Program 1986-88

2.33 Enrollments: The target is to increase first and second cycle enrollment from about 2.3 million in 1985 to about 2.6 million in 1988. This increase is only slightly higher than the population growth rate. Within this modest target, however, given the fact that approximately 70 percent of the population lives in rural areas according to the 1984 census, the increase in enrollments especially at primary and middle levels will favor the rural areas of Ghana. There will also be a conscious effort to reverse the trend in the growth in percentage of untrained teachers (Table II.6 below). It is assumed that all new additions to the stock of teachers will be trained at one of the teacher training institutions. For these reasons, the rate of growth in enrollment at the certificate awarding institutions is estimated to double over the period from 3.2 percent in 1985 to 6.4 percent in 1988 while at the diploma and specialists institution enrollment will increase similarly from 3.6 percent in 1985 to 7.0 percent in 1988.

TABLE II.6: ENROLLMENTS, TEACHERS AND SALARIES - FIRST & SECOND CYCLES
(1985-1988)

LEVEL	1985			1988		
	ENROLLMENTS	TEACHERS	SALARIES (₦ mn)	ENROLLMENTS	TEACHERS	SALARIES (₦ mn)
Primary	1,493,120	57,318	1,310.1	1,659,650	59,375	1,471.6
Middle	616,930	30,857	624.3	699,975	31,440	730.0
Secondary	152,736	7,935	427.5	188,160	9,410	484.3
Tech/Voc	24,570	1,264	69.0	30,490	1,525	78.1
Cert. Tchr. Tng.	13,305	4,050	86.5	15,520	1,195	76.4
Dip. Tcr. Tng.	1,600	180		1,890	1,200	
Total	2,302,261	98,604	2,517.4	2,593,685	103,145	2,840.4

2.34 Teachers. The growth in the number of teachers over the planning period (indicated in Table II.6 above) takes into account an increase in student/teacher ratios. These are programmed to rise from 26 to 28 at primary and 20 to 22 at middle by 1988. The ratio at secondary levels and certificate level teacher training institutions are currently 20 and 13 respectively which are held constant throughout the planning period, while the ratio of 8.8 at the diploma granting teacher training schools is allowed to increase to 9.45 by the end of the period. The moderate increases envisaged in some of these ratios can be tolerated, especially as the mix of trained to untrained teachers improves over the period. The aim of reducing the ratio of untrained teachers to trained is approached in two ways. First the addition to the stock of teachers each year will comprise trained teachers only. Secondly, an in-service training program will aim at the objective of bringing all untrained teachers up to trained status over a ten-year period. The goal is to give in-service training to 10 percent of the untrained primary teachers and 15 and 20 percent of the middle and secondary school untrained teachers respectively each year.

2.35 Salaries of Teachers 1986-88. The salaries for each year in the period have been held constant in real terms since teachers have recently been regraded with the exception of mathematics and sciences teachers in the secondary schools. An inducement allowance for teachers in this group has been added from 1986. The concern for this group of teachers is the result of the loss of considerable numbers of sciences and maths teachers to other occupations and to schools in other countries, notably, Nigeria. The loss of trained science and maths teachers in the secondary schools has most likely played a significant part in the poorer preparation of secondary students in the sciences.

TABLE II.7: PUBLIC RECURRENT EXPENDITURES FOR FIRST AND SECOND CYCLE EDUCATION
(₡ million, Constant 1985 Prices)

	ACTUAL	ACTUAL	BUDGET	Program		
	1983	1984	1985	1986	1987	1988
	Current	Current	Current	Constant 1985 Prices		
	Prices	Prices	Prices			
<u>PRIMARY</u>						
Salaries	624	1,002	1,566	1,514	1,566	1,622
(No. of Teachers)	(51,129)	(52,258)	(57,318)	(55,430)	(57,310)	(59,375)
(No. of Other Staff)	(n.a.)	(n.a.)	(1,929)	(1,900)	(1,900)	(1,900)
<u>MIDDLE</u>						
Salaries	346	601	970	910	948	989
(No. of Teachers)	(26,522)	(27,023)	(30,857)	(28,930)	(30,145)	(31,440)
<u>SECONDARY, VOC.</u>						
<u>TEACHER TRAINING</u>						
Salaries	271	513	904	968	1,033	1,106
(No. of Teachers)	(900)	(9,426)	(10,429)	(10,745)	(11,490)	(12,330)
(No. of Staff)	(n.a.)	(n.a.)	(20,354)	(20,971)	(20,425)	(24,064)
CES Administration	126	119	200	200	200	200
(No. of Staff)	(n.a.)	(n.a.)	(7,000)	(7,000)	(7,000)	(7,000)
<u>Total Salaries)</u>	<u>1,367</u>	<u>2,235</u>	<u>3,640</u>	<u>3,592</u>	<u>3,747</u>	<u>3,917</u>
<u>Total Other</u>	<u>363</u>	<u>936</u>	<u>1,810</u>	<u>2,822</u>	<u>1,306</u>	<u>1,314</u>
(Food Subsidies)	(n.a.)	(295)	(400)	(-)	(-)	(-)
(Textbooks)	(-)	(236)	(1,130)	(2,289)	(763)	(763)
(Educational Materials)	(17)	(15)	(n.a.)	(85)	(93)	(101)
(T&T, GE, R&M)	(n.a.)	(n.a.)	(280)	(448)	(450)	(450)
<u>Grand Total</u>	<u>1,730</u>	<u>3,171</u>	<u>5,450</u>	<u>6,414</u>	<u>5,053</u>	<u>5,231</u>

2.36 Textbooks. The goal regarding textbooks is to provide one textbook for every two students in both the first and second cycles for each of the subjects studied at each level. The budget calculations are based on an initial substantial expenditure to meet this target in 1986. It is further assumed that these books have a life of four years and so in the subsequent years of 1987 and 1988 funds are budgeted to replace one-quarter of the total stock each year.

2.37 Educational Materials and General Expenditures. The objective in regard to educational materials is to provide each student with the minimum stationery and other materials required. The same level of spending for educational materials is maintained in the subsequent years. The transport and travel and other general category of expenditures has experienced the greatest reduction over the past decade. As a result vehicles, buildings, and equipment have not been maintained. The objective in this period is to provide adequate materials and spare parts to carry out an adequate and scheduled program of repair and maintenance. At the same time many essential services have not been rendered to the schools (including

supervision visits) due to the lack of transport and allowances for staff and so this category of expenditure will be increased over the period.

Higher Education: Public Education Expenditures - 1986-88

2.38 Students and teachers. Total student enrollment to 1988 is programmed to increase at about 10 percent per annum, but the mix of students between the arts, science and medicine is to change with the proportion in arts becoming slightly smaller. Teachers in higher education in arts are held at the establishment levels of 1984 and vacancies are projected to be filled first in the sciences and medicine, which will allow for the projected growth in students in these areas of study. Students with superior academic achievements would be admitted to the universities and retained with continued high achievement. The public expenditure plan reflects this goal.

TABLE II.8 . HIGHER EDUCATION STRATEGY
(Number of Students and Faculty)

	1985			1988		
	<u>Arts</u>	<u>Medicine</u>	<u>Science</u>	<u>Arts</u>	<u>Medicine</u>	<u>Science</u>
Students	3,850	561	3,820	4,884	928	5,325
Faculty	770	170	475	770	170	475
(At Post)	(407)	(88)	(290)	(407)	(116)	(355)
(Vacancies)	(363)	(82)	(285)	(363)	(54)	(220)

2.39 Recurrent Expenditures Salaries. The high level of teacher vacancies throughout higher education has been primarily the consequence of very low real salaries. For this reason salaries throughout the system are projected to increase by 100 percent in 1986 (in the context of a national administrative regrading exercise - discussed later) with the exception of the teaching staff in medicine where the salaries are projected to increase over the three and one-half times in order to maintain and attract highly competent doctors on the teaching staff.

2.40 Other expenditure. Higher education has been starved of funds to carry out needed repairs and maintenance as well as to procure supplies, library books, equipment, and so on. For this reason, the other expenditure category is increased by 50 percent over the 1985 level in 1986 while in 1987 and 1988 the category receives 25 and 10 percent increases respectively over the previous year. Only through such an aggressive expenditure program can the support inputs be brought to acceptable levels after years of underfunding and deterioration.

TABLE II.9: RECURRENT PUBLIC EXPENDITURES FOR HIGHER EDUCATION
(Expenditures in ₵ Million)

	ACTUAL	ESTIMATE	BUDGET	PROJECTED		
	1983 Current Prices	1984 Current Prices	1985 Current Prices	1986 Constant 1985 Prices	1987 Constant 1985 Prices	1988 Constant 1985 Prices
1. University of Ghana	125	188	322	454	486	520
Teachers Salaries	10	13	24	48	48	48
(No. of Teachers)	(458)	(465)	(481) ^{1/}	(481)	(481)	(481)
Other Salaries	21	39	45	90	90	90
(No. of other staff)	(3427)	(2579)	(3026)	(3025)	(3025)	(3025)
Other Expenditures	94	136	253	316	384	382
2. University of Cape Coast	53	124	396	543	585	632
Teachers Salaries	7	10	12	28	28	28
(No. of Teachers)	(191)	()	(277) ^{1/}	(277)	(277)	(277)
Other Salaries	24	34	46	92	92	92
(No. of other Staff)	()	()	(3090)	(3090)	(3090)	(3090)
Other Expenditures	21	80	338	423	465	572
3. University of Science & Technology	109	188	364	559	591	512
Teachers Salaries	19	25	40	80	80	80
(No of Teachers)	()	()	(587) ^{1/}	(587)	(587)	(587)
Other Salaries	23	37	80	160	160	160
(No. of other staff)	()	()	(5380)	(5380)	(5380)	(5380)
Other Expenditures	67	126	244	319	351	386
4. Medical Schools	51	55	114	179	190	201
Teachers Salaries	3	3.3	4.7	17.5	19.5	19.5
(No. of Teachers)	(170)	(170)	(170) ^{1/}	(170)	(170)	(170)
Other Salaries	17	23.4	32.7	65.4	65.4	65.4
(No. of other staff)	(931)	(931)	(724)	(931)	(931)	(931)
Other Expenditures	31	28.3	76.6	96	105	116
5. Other Institutions	81	106	152	241.5	251.9	263.1
Salaries	23	26.3	68.6	137.2	137.2	137.2
Other Expenditures	58	79.7	83.4	104.3	114.7	126.1
6. Higher Education Sect.	1.0	1.1	2.0	2.9	3.0	3.3
Salaries	.2	.3	.5	1.0	1.0	1.0
Other Expenditures	.8	.8	1.5	1.9	2.0	2.3
Total	420	662	1350	1979	2107	2246

^{1/} Actual academic staff at post in October 1982 were 272 at the University of Ghana, 92 at the University of Cape Coast, 333 at University of Science and Technology and 88 at the medical schools. The Table shows total number of positions including vacancies (which is standard budgeting practice in Ghana).

2.41 Cost Recovery. Cost recovery measures envisaged to be introduced in 1986 include: (i) one hundred percent cost recovery for student exercise books in the first cycle (currently supposedly supplied but actually hardly ever supplied); (ii) twenty-five percent cost recovery for textbooks in the second cycle to be charged as a "book rental fee," (iii) one hundred percent cost recovery for textbooks in the third cycle; and (iv) elimination of boarding subsidies in the second and third cycles. Total revenues from cost recovery are estimated at Ø267 million per annum (see Table II.10 below).

TABLE II.10: FINANCING OF EDUCATION RECURRENT EXPENDITURE
1985-1988

	<u>(Ø Mn, Constant 1985 Prices)</u>				
	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>Total</u> <u>1986-88</u>
<u>Recurrent Expenditure</u>	<u>7,050</u>	<u>8,643</u>	<u>7,410</u>	<u>7,727</u>	<u>23,780</u>
(Recurrent 1st & 2nd cycle)	(5,450)	(6,414)	(5,053)	(5,231)	(16,698)
Recurrent Higher	(1,350)	(1,979)	(2,107)	(2,246)	(6,332)
Total Subventions	(250)	(250)	(250)	(250)	(750)
<u>Financed By</u>					
Government	7,050	8,376	7,143	7,460	22,980
Cost Recovery 1st & 2nd cycle	0	180	180	180	540
(Books)	(0)	(26)	(26)	(26)	(78)
(Boarding)	(0)	(154)	(154)	(154)	(462)
Cost Recovery Higher Education	0	87	87	87	261
(Books)	(0)	(23)	(23)	(23)	(69)
(Boarding)	(0)	(64)	(64)	(64)	(192)

THE GOVERNMENT WAGE BILL 5/

2.42 Overview and Issues. The Ghanaian Civil Service comprises 291,172 employees (1985) excluding public corporations and defense personnel. As the tasks of adjustment and economic management become increasingly complex, the weaknesses in Ghana's public administration have emerged as a major constraint to the implementation of a development strategy. The symptoms of the problem, which is well understood in Ghana, are evident throughout the civil service: (i) shortage of skilled professional and technical personnel; (ii) underutilization of existing senior personnel; (iii) low levels of output in basic functions (data collection, management, and analysis; accounting and cost control; sector planning; essential service delivery); (iv) shortage of essential supplies (paper, office machinery, pharmaceutical supplies, tools, etc.); (v) overstaffing at junior levels, a function of both excess labor absolutely and relative to available inputs; (vi) increasing reliance on expatriates for essential professional/management functions, at an extraordinary high cost. The multiplicity of symptoms is indicative of both the complexity of the disease and the long length of gestation. Contributing factors include inadequate remuneration, political instability, absence of positive reinforcement for meritorious performance, and the erosion of checks and balances which among other benefits, limit expansion in staff and improves discipline.

2.43 The severest problem is the low remuneration issue. From 1975-1982, total civil service employment grew at an average annual rate of 14 percent while expenditures on personal emoluments declined at an average of 15 percent per annum in real terms, and expenditures on goods and services declined 13 percent per annum in real terms. The real salary of a messenger is currently 48 percent of the 1977 levels, of a Permanent Secretary (or equivalent) 12 percent of 1977 levels. Government policy since 1977 has been to compress the wage structure, as well as to allow inflation to reduce absolutely real levels of compensation at all levels. Most of the reduction in absolute real levels of pay occurred between 1977 and 1980, when salaries were not adjusted even though the price level almost quadrupled. Since 1977, the policy of "rationalization" has been pursued aggressively to narrow the structure of pay substantially. Consequently, all civil servants, but especially higher level staff, have seen their living standards fall dramatically. Accentuating this trend is the fact that the level of cash fringe benefits has not been adjusted since 1980. Those civil servants who receive benefits in kind (notably housing) have, however, had some cushion against falling incomes. However, today most civil service salaries are wholly inadequate to provide a reasonable living standard and there is very little incentive for trained higher level personnel to remain in service.

5/ This section of the report is based on the work of the World Bank's April/May Economic Mission.

2.44 Exacerbating the remuneration and institutional issues is the sheer size of the civil service. Employment in the civil service since 1977 has grown at an annual rate equal to five times the estimated labor force growth rate. This suggests that productivity per worker has fallen dramatically since service delivery has most likely not increased at all. Civil service employment has been, in effect, a massive welfare program, poorly targeted. The current overstaffing poses a major constraint to efficient administration simply in terms of the costs of keeping track and paying workers. The overstaffing has a negative effect on work habits as well. Since there is clearly not enough equipment or tasks to keep everyone fully occupied, the incentive to do little is clear. The results of these trends have been declining morale, the collapse of the traditional pride in public services and bureaucratic inertia.

Sector Strategy

2.45 Several Committees have been set up to study and recommend action to address the related issues. The Manpower Utilization Committee (MUC) chaired by the PNDC Secretary of Labor, is charged with identifying excess labor in the public sector and developing means of redeploying them more productively. The Public Administration Restructuring and Decentralization Committee (PARDIC) has been organized to address the managerial and administrative problems of the civil service with a view to decentralization of ministries to improve regional service delivery and increase the responsiveness of the bureaucracy to local needs. The Ad-hoc Salary Committee, chaired by the head of State Enterprises Commission, has been formed to review : (a) the salaries of managing directors of public corporations; (b) levels of compensation of health professionals; and (c) overall civil service pay. A sub-committee of the Tripartite Committee has also been considering the questions of civil service pay and a mechanism for regular adjustment of civil service salaries.

2.46 Of the three committees, PARDIC has been the most ambitious. The Committee was formed to respond to the government's concerns with the adequacy of civil service machinery. In several reports, the major administrative problems of the civil service have been identified. These problems include: overstaffing, overcentralization, "red tapism", laxity in supervision, lack of managerial competence, and obsolete rules and regulations, (Report of the Seminar at Greenhill on the Restructuring of the Civil Service, August 1982). Since its founding in 1982, the Committee has been very active, consulting a wide range of expertise within and outside the Government, including the members of the staff of the Ghana Institute for Management and Public Administration. The level of activity seems to reflect the firm commitment of the government to civil service reform. PARDIC's recommended solution, which has been formulated in general terms with the details of implementation to be further defined, is to create a new administrative structure which would: (a) strengthen political control over the ministries; and (b) decentralize the ministries, making each region solely responsible for administering and implementing its own development programs. At the Federal level, ministries would be responsible for policy, performance monitoring, training and personnel

matters. Management and technical functions are to be strengthened in the reorganization exercise. A prototype organization chart has been developed, and this structure is being adapted to fit the needs of the individual ministries. A new Civil Service law, regulations and administrative handbook have been drafted, and are in the final stages of approval.

2.47 The approach of PARDIC thus far has been to try to address both the issue of centralization and the administrative issues of overstaffing, dearth of managerial skills, lack of motivation, lack of political control of ministries, and lack of supervision, in a major reform. While the ambitiousness of the committee is admirable, the approach is quite risky. There is a likelihood that no action will be taken on the sum total of the problems because of lack of agreement on the grand scheme. The regionalization exercise, as defined by PARDIC, is more than a restructuring. It represents a major change in the development administration. On the positive side, decentralization could bring about a major improvement in the quantity and quality of service delivered. On the other hand, the exercise could result in an even more inefficient, unwieldy and uncommunicative bureaucracy if additional layers clog the wheels. In any case, the exercise will be quite costly in terms of physical structures, equipment, etc, and will necessarily involve more staff than if existing levels of service were to be delivered efficiently. Consequently, implementation of the plan will likely be derailed by fiscal constraints unless a gradualist approach is adopted. The PER mission was not in a position to examine the public expenditure implications of the PARDIC's decentralization proposals. However, these need to be studied in detail by the Government.

2.48 The MUC has compiled an interim report on the redeployment exercise. Using ministerial level committees, the MUC attempted to identify the redundant labor in the civil service through identification of production targets. Not all committees have reported but the MUC has managed to identify 5,472 redundant positions in the civil service. The cost of redeployment and retraining has been estimated, which was then found to be too great under current fiscal constraints, and thus the exercise has been stalled. The general approach of the MUC is sound, but the results are unfortunately less than adequate to fully address the problem. The explosion of employment in the civil service in recent years relative to output suggests that a much higher number of positions could be declared redundant. Several steps could be contemplated at this time. First, a full audit of civil service employees by position and ministry should be undertaken. The audit should be performed by an impartial third party, based on a census of currently working employees. This would allow an elimination of any ghost workers from the rolls, as well as provide the information base necessary to identify where the overstaffing is concentrated. Second, a hiring freeze should be imposed, with exceptions provided only for those skills which are in extremely short supply, such as physicians or engineers. Voluntary resignation/early retirements can be encouraged, although depending on the size of termination benefits, this would not necessarily result in salary savings in the first year or so.

Finally, in those ministries and agencies where overstaffing is most severe, layoffs will need to be imposed for the most overstaffed positions.

2.49 The Ad-hoc Salary Committee was formed in response to the need to increase the salaries of managing directors of the state enterprise sector, which had been frozen for several years. Having addressed this problem, the Committee was then asked to recommend a response to the demands of the medical staff for increased compensation. Completion of this assignment brought an additional assignment: to examine compensation levels for the entire civil service. The Committee has not yet reached a final recommendation at this time.

Public Wage Bill Expenditure 1986-88

2.50 It is recommended that the government decompress the structure of civil service salaries back to the ratio which existed in 1977 and the public wage bill estimates for 1986-88 are predicated on this strategy and the recommendation that a hiring freeze in Government be imposed with exceptions for higher level, specialized skills only. A proposed new salary scale was drawn up as a result of meetings with the Ad-hoc Committee and is discussed further below. But it should be noted that this salary proposal does not begin to make up for the absolute decline in civil service salaries which occurred between 1977 and 1980. While at this point it is not possible to determine precisely what the level of civil service salaries should be, the following points can be noted. First, as the private sector expands, the government will face stiffer competition for trained personnel. Consequently, salaries and benefits for higher level technical/professional staff must remain adequate to attract and retain these skills. Thus, the wage compression of the past five years must be reversed and not repeated. Second, the government's ability to improve remuneration levels will be limited by overall fiscal resources and by the number of staff employed. In the simplest terms, the central government faces a tradeoff between employing a lot of people at low wages or a smaller number at a reasonable wage. Currently, the policy appears to be to do the former. Assuming fiscal resources for recurrent expenditures remain constrained, if pay levels are to increase, numbers employed must decrease.

2.51 With regard to civil service salaries, the mission met with the Ad-hoc committee and attempted to assist them with this exercise. Using data from the computerized payroll files on the civil and teaching services, the number of employees at various salary levels was estimated. A proposed new salary scale was drawn up, and the government's net cost (gross pay and allowances, less taxes, plus social security transfers) was estimated. The details of the exercise are shown in Table II.11. The first block shows the analysis under the current salary structure for the 291,172 employees in the civil and teaching services who received checks in March 1985 under the computerized system. In the first column, a representative job title is indicated for the grades shown in column 2. Column 3 shows the number of employees earning salaries in the grade range, column 4 the average salary for the grade range. Column 5 computes the taxes for the average taxable income (after deducting the employee's social

security contribution). Column 6 shows the average tax paid. In column 7 the employee's contribution to social security is computed, and in column 9, the housing allowance or rental deduction is computed. Column 10 shows the employee's take home pay exclusive of fixed rate allowances (such as car maintenance allowance). The sum of column 11 is the net cost to the budget of the current structure for the employees covered under the exercise.

2.52 In the second block, the exercise was repeated for a new salary structure shown in Column 3. Under this structure the basic salary of the top group is equal to the basic salary of the grade B state enterprise managing director. The ratio between the top and the minimum wage is 5.7:1. However, after current taxes this ratio lowers to 3.3:1. Accordingly, an income tax relief was applied. Under this relief the basic exemption is raised to the level of the minimum wage (Ø20,000 per annum). Graduated rates are imposed up to 60 percent for incomes over 130,000 cedis. Under this relief, the tax burden shifts up the scale to the middle salary ranges, and the after tax basic income ratio is now 4.1:1. The take home pay for the top group increases by 217 percent instead of 160 percent under the current tax structure, to roughly 6,000 cedis per month. The net cost to the government is, of course, higher. However, the incentive effect is also higher as well, as a promotion at the middle grades is immediately eaten by taxes under the current structure.

2.53 The total cost of the new structure is estimated at Ø15.5 billion (including defense sector salaries not shown in Table II.11). The Current Expenditures Category I projections for 1986-88 are based on this new salary structure and total Ø46.3 billion.

TABLE II.11: CURRENT AND PROPOSED CIVIL SERVICE SALARIES

Current Grade	Number Empl.	Current Salary (₹)	Less Taxes (₹)	Ave. Tax (%)	Social Security Employ. Share (₹)	Govt. Share (₹)	Rent or Housing Allow. (₹)	Take Home (₹)	Net Cost (₹)	
A. Current Structure										
Chief										
Director	85-122	517	53,161	9,816	19.4%	2,658	6,645	5,316	35,371	23.1
PS/Chief	75-85	1,400	39,329	5,049	13.5%	1,966	4,916	3,933	28,381	49.4
PAS/Admin I	67-74	3,158	35,423	4,003	11.9%	1,771	4,428	3,542	26,107	102.0
SAS/Admin II	58-66	8,680	32,543	3,319	10.7%	1,627	4,068	3,254	30,851	317.2
Officer/ Admin III	47-57	15,189	29,888	2,721	9.6%	1,494	3,736	2,989	28,662	514.8
Assistant Officer	22-35	38,222	27,638	2,251	8.6%	1,382	3,455	2,764	26,769	1,208.0
Executive Officer	22-35	44,504	25,703	1,884						
Steno II	16-21	36,446	24,425	1,661	7.2%	1,221	3,053	2,443	23,986	1,029.9
Clerical Officer	7-15	108,307	23,660	1,533	6.8%	1,183	2,958	2,366	23,310	2,973.0
Messenger/ Labourer	1-6	34,752	23,170	1,452	6.6%	1,159	2,896	2,317	22,876	935.9
Average			25,377	1,861		1,269	3,172	2,538	24,651	1,744
Total (billions)	291,172		7.39	0.54	7.7%	0.37	0.92	0.70	7.18	8.5
B. Proposed Increase With Tax Relief										
Chief										
Director	85-122	517	129,276	33,297	27.1%	6,464	16,160	12,928	76,588	51.3
PS/Chief	75-85	1,400	102,060	20,631	21.3%	5,103	12,758	10,206	66,120	117.6
PAS/Admin I	67-74	3,158	87,318	14,681	17.7%	4,366	10,915	8,732	59,539	236.3
SAS/Admin II	58-66	8,680	73,710	10,009	14.3%	3,686	9,214	7,371	67,387	696.9
Officer/ Admin III	47-57	15,189	62,370	6,813	11.5%	3,119	7,796	6,237	58,676	1,057.0
Assistant Officer	36-46	38,222	51,030	4,196	8.7%	2,552	6,379	5,103	49,386	2,229.0
Executive Officer	22-35	44,504	40,824	2,317	6.0%	2,041	5,103	4,082	40,548	2,122.5
Steno II	16-21	36,443	32,886	1,186	3.8%	1,644	4,111	3,289	33,344	1,424.9
Clerical Officer	7-15	108,307	26,351	503	2.0%	1,318	3,294	2,635	27,165	3,441.6
Messenger/ Labourer	1-6	34,752	23,170	201	0.9%	1,159	2,896	2,317	24,127	979.4
Average			36,740	2,236		1,837	4,592	3,674	36,007	2,272
Total (billions)	291,172		10.70	0.65	6.4%	0.53	1.34	0.97	10.48	12.4

SUBVENTIONS

2.54 The major subventions (grants) with regard to productive and social sectors relate to supporting the wage bills of non-government health institutions (church run) contributions to local and international institutions (WHO, UNICEF, etc.) and the wage bills of local governments. The projections for the health and education sector subventions fully meet the requirements of these sectors. For local governments the central government has announced a policy of removing wage bill support by end 1985. A brief analysis of local government finances shows that this will involve a quadrupling of local government revenues (through increased rates, fees, etc.) if present levels of service are to be maintained. Pending a further review of the possibility and impact of such an immediate increase in local government charges, the present level of subventions to local government was maintained. The total amount for subventions in all sectors projected for the period 1986-88 is C16.6 billion or 20 percent below 1985 budgeted levels.

TABLE II.12: SUBVENTIONS
(C million, Constant 1985 Prices)

	----- 1985 -----		----- 1986/88 -----	
	(C Mn)	(%)	(C Mn)	(%)
Total Current Expenditures	36,535	100	128,585	100
Total Subventions	6,624	18	16,581	13
(Health)	(224)	(1)	(1,288)	(1)
(Education)	(250)	(1)	(1,388)	(1)
(Local Govt. Wages)	(310)	(1)	(1,300)	(1)
(Local Govt.-Other)	(1,508)	(3)	(3,100)	(2)
(Water Supply)	(320)	(1)	(1,500)	(1)
(Other)	(4,191)	(12)	(8,443)	(7)

2.55 Local Governments. District Councils (covering local governments and municipalities) currently receive subventions to cover salary costs. The district councils have the authority to levy their own basic (head) tax, property tax and other license fees and dues. The rates vary widely between various councils. The district councils responsible for larger cities generally impose a higher unit tax than the smaller cities. The rates of the larger city councils were revised in the recent past but still do not reflect their full revenue raising potential. With the internal revenue generated the local district councils provide for basic public services like sanitation, sewerage disposal, garbage collection, street lighting, some funding for the capital costs of education up to the middle level and general upkeep of the city. All salaries of local government employees (except overtime payments) are currently paid by the central government.

2.56 The central government has recently announced that from July 1, 1985, the district councils will be liable for half of all salary costs of personnel recruited locally by the councils. Projections of the Ministry of Local Government (MLG) indicate that phasing out salary subventions by the central government will, however, result in large deficits in the local government budget.

TABLE II.13: LOCAL GOVERNMENT'S SALARY BILL
(C Million, Constant 1985 Prices)

	<u>1984</u>	<u>1985</u>	<u>1986</u> onwards
I. <u>Applications (Salaries)</u>			
(a) 9 Regional-Capitals District Councils	291.3	308.9	405.8
(b) <u>56 Other District Councils</u> 65 District Councils	<u>210.0</u> 501.3	<u>205.9</u> 514.8	<u>270.8</u> 676.6
II. <u>Sources</u>			
(a) Paid by District Councils	--	130.3	338.3
(b) Paid by the Central Govt.	501.3	384.1	338.3
<u>Total Bill:</u>	<u>501.3</u>	<u>514.8</u>	<u>676.6</u>

2.57 According to the data, reimbursement of salaries in all 65 district councils cost the government an estimated C501 million in 1984, of which C291 million or about 60 percent was for staff in the nine regional-capital district councils. Under the new policy local government's salary bill is expected to go from zero in 1984 to C338 million annually during the 1986-88 period. These figures imply an increase in the total annual district salaries bill for all councils from about C501 million in 1984 to C677 million in 1986. Of this, the government would be paying C338 million with the new policy and C677 million without. The total savings of C338 million that may come about as a result of the new policy approximate only about 3 percent of the present total government salary bill (C12 billion).

2.58 Moreover, MLG estimates of the nine regional-capital district councils revenues and expenditures (which constitutes about 60-70 percent of total local government finances) for the 1986-88 period further indicate (see Table II.14 below) that the internal revenue generated by these councils will cover only 40 percent of the expenditure to be financed locally. Furthermore, the annual internal revenue of C149 million is not even enough to pay the nine districts' share of the salary bill, much less pay for anything else. As is indicated in the table, with this scenario if the intended policy goes into effect, the district councils could be

expected to run fiscal deficits of the order of 74 percent of the total local government expenditures despite a substantial, projected (by MLG), annual growth rate of internal revenues of 28 percent for the 1986-88 period. A quadrupling of local taxes, immediately, would be required to balance the budget. But to attain a four-fold increase in internal revenues by 1986 will require a major effort in property revaluation and overhauling of municipal finance and budget procedures. Furthermore, requiring councils to use all internal resources on salaries would mean virtual cessation of municipal services and the effective elimination of taxpayer incentive to pay.

2.59 The optimal phasing of increasing the local tax base needs to be investigated further. Therefore while the Ministry of Finance's initiative to encourage local governments to increase their tax base is welcome, it would appear to be prudent to adopt a more phased approach towards elimination of government subventions to local governments to pay their wage bills. The level of subventions programmed for the 1986-88 period is based on this assumption.

TABLE II.14: REGIONAL CAPITAL DISTRICT COUNCILS REVENUES & EXPENDITURES

	1984		1985		Alternative 1 1986-88		Alternative 2 1986-88	
	(£mn)	(%)	(£mn)	(%)	(£mn)	(%)	(£mn)	(%)
<u>Total Expenditures</u>	<u>400.9</u>	<u>100</u>	<u>442.8</u>	<u>100</u>	<u>1746.0</u>	<u>100</u>	<u>1746.0</u>	<u>100</u>
<u>Paid by District Councils</u>	108.5	27	209.0	47	1102.3	63	1102.3	63
Salaries	-	-	78.2	18	608.7	35	608.7	35
Other Current	102.3	25	111.9	25	410.7	24	410.7	25
Capital	6.2	2	18.9	4	82.9	5	82.9	5
<u>Paid by Government</u>	292.4	73	233.8	53	643.7	37	643.7	37
Salaries	291.3	73	230.7	52	608.7	35	608.7	35
Capital	1.1	0.3	3.1	1	35.0	2	35.0	2
<u>Total Revenues</u>	<u>379.3</u>	<u>95</u>	<u>433.7</u>	<u>98</u>	<u>1693.9</u>	<u>97</u>	<u>1,746.0</u>	<u>100</u>
<u>Local Govt. Sources</u>	<u>94.2</u>	<u>23</u>	<u>116.5</u>	<u>26</u>	<u>448.6</u>	<u>26</u>	<u>1746.0</u>	<u>100</u>
Property Tax	19.6	5	23.7	5	96.2	6	374.4	21
Basic Rate	5.4	1	6.6	1	25.4	1	98.8	6
Licenses & Fees	41.8	10	54.9	12	206.9	12	805.4	46
Other	27.4	7	31.3	7	120.1	7	467.4	27
Govt. (Subvention)/ Deficit	<u>306.7</u>	<u>77</u>	<u>326.3</u>	<u>74</u>	<u>1297.4</u>	<u>74</u>	-	-

2.60 Water Supply. The Ghana Water and Sewerage Corporation is charged with the responsibility for development, operation, maintenance and water quality control of urban and rural water supplies and for sewerage and sewage disposal. Its urban schemes cover 132 of 135 towns e.g. 2.5 million people or about 20 percent of the population. Additionally the urban systems serve over 900 rural locations having a catchment of about one million people. Apart from the one million rural dwellers having access to the urban schemes a further 2.6 million are in receipt of a service making a total of 3.6 million rural dwellers or 28 percent of the rural population being served. At first sight, this appears to be a highly satisfactory situation at least in the urban areas. Unfortunately, this is not the case as many systems have insufficient installed capacity to meet current demands, and in most instances a lack of proper repair and maintenance has resulted in high system losses and frequent breakdowns. Shortage of foreign exchange to purchase spare parts, or even local currency where parts are available locally, has led to plant shutdown for extended periods. Similarly, fuel and chemical are often in short supply or the logistical support is not available to transport them to the regions. This leads to systems being operated intermittently, further reducing already insufficient per capita production as well as adversely affecting the quality of the water produced. Rehabilitation of many of the older systems is a high priority in future programmes as will be the necessity to augment production capacity in most places if the consumers are to be provided with an adequate level of service.

2.61 GWSC's finances can be put on a sounder footing only if a proposed 300 percent tariff increase is implemented. However, it is estimated that GWSC will need continued support from the Government in the 1986-88 period even after implementing this tariff increase early in 1986. Total Government recurrent subventions are programmed to be limited to C1,500 million over the 1986-88 period (or 20 percent of gross operating expenses). While this implies an increase of about 60 percent over current levels, this level of subvention is considered appropriate given the requirements of the system.

PART III

PRIORITIES FOR PUBLIC CAPITAL EXPENDITURES

THE POSSIBLE CAPITAL EXPENDITURE PROGRAM 1986-88

3.01 An Overview: The main elements of a possible capital expenditure program for 1986-88 was derived through examination of the essential rehabilitation needs of the economy and particularly the strategic economic sectors -- i.e. agriculture (including the cocoa and timber export sub-sectors), mining (for exports), and economic infrastructure (fuel and power, transport and communications). Both the immediate and medium-term needs of these sectors were identified and a strategy for maximizing the growth of these sectors within the resources available was developed. The basic methodology used after the sectoral strategies and inter-sectoral linkages were identified was to focus on the larger programs and projects within each sector. These were subjected to technical, financial and economic analysis and a "core" program of viable projects was identified. While this "core" program of large projects in each sector is expected to comprise the bulk of new investment activities in the sector, it is not the entire sectoral program for the economic sectors. The mission did not attempt an aggregate sectoral breakdown even though the "core" program which emerged from the above analysis would absorb (net of self-financing) about 60 percent of the total resources available for public capital investment for the entire economy. As mentioned earlier, this was because considerable further work needs to be undertaken to ensure inter-sectoral and intra-sectoral balance which can only be undertaken in the context of a fuller development planning exercise (currently under way in Ghana).

3.02 The possible "core" capital investment program resulting from the analysis of large programs and projects was made internally consistent through examination of both the public corporate and direct government sector with regard to the need for and availability of financial resources (both domestic and from foreign capital). The financial surpluses (or deficits) of public corporations were taken into account in this regard and the options for increased cost recovery examined (particularly for the roads and highways, posts and telecommunications sectors). Annexure III presents the result of this analysis.

3.03 The overall volume of resources likely to be available for public sector capital expenditures is estimated at C94.6 billion (\$1.66 billion) for the 1986-88 period. These are expected to be allocated as follows: (i) Government budget - C45.6 billion (an increase of 90 percent over the 1985 budget of C8.0 billion); (ii) Project Aid to government ministries - C14 billion (a decline of 10 percent over the 1985 amount of C5.2 billion); (iii) Direct lending (non-project) to public corporations of C29.1 billion (an increase of 250 percent over the 1985 level of cedis 3.8 billion) and (iv) Project aid to public corporations of C5.8 billion (a decrease of 16 percent over the 1985 level of C2.3 billion). The percentage change in

allocations is driven by the slight decline in project assistance and increased program assistance (which is in line with the requirements of Ghana) and the increased emphasis on channeling investments through the public corporations than through government ministries.

TABLE III.1: PUBLIC CAPITAL EXPENDITURES

(C\$ Billion, Constant 1985 Prices)

	<u>Est.</u> <u>1985</u>	<u>Projected</u> <u>1986</u>	<u>Projected</u> <u>1987</u>	<u>Projected</u> <u>1988</u>	<u>Total</u> <u>1986-88</u>
I. <u>Government Ministries</u>					
<u>Development Expenditures</u>	13.2	16.4	19.6	23.6	59.6
(i) Budget	8.0	12.0	15.0	18.6	45.6
(ii) Project Aid	5.2	4.4	4.6	5.0	14.0
II. <u>Net Lending to Public Corporations</u>	6.1	9.6	12.0	13.4	35.0
(i) Project Aid Financed	2.3	2.1	1.8	1.9	5.8
(ii) Other	3.8	7.5	10.2	11.5	29.1
I + II. <u>Total Capital Expenditures</u>	19.3	26.0	31.6	37.0	94.6

3.04 The methodology used for the PER was to treat the public sector as one entity i.e. aggregate both the Government Ministries and the Public Corporate Sector and then look at sectoral strategies and the public investment requirements of each major sector. The review focussed on the larger programs and projects. A possible "large project" capital expenditure program for the period 1986-88 was built from the "bottom up" by assembling information on all major programs and projects for the "economic" sectors (agriculture, mining, fuel and power, roads and highways, communications, water supply). Projects and programs were included in the "core" category on the basis of their economic viability. "Economically viable" projects or programs were defined as those having adequate economic rates of return (greater than 15 percent in most cases), DRC's less than 1 for industrial projects, IRR's greater than 15 percent for water supply projects. However, the mission's technical specialists applied practical judgements against these mechanical numbers, and projects/programs having a somewhat lower rate of return were included in the "core" program if in their view they had substantial non-quantifiable externalities.

3.05 A total of 159 programs/projects were evaluated for the economic sectors and of these 104 made the "core" category (See Table III.2). This surprisingly high number of apparently viable projects/programs reflects the essential rehabilitation and maintenance requirements of the economy and the fact that most projects/programs proposed are geared towards this requirement. With high existing sunk costs, rates of return on incremental investment are accordingly high. The total capital expenditure program for

large projects/programs amounted to 099.8 billion (\$1.75 billion). The total identified "large project" core program amounts to 069.5 billion (\$ 1.22 billion) of which 042.8 billion (\$751 million) were in the public corporate sector and 026.7 billion (\$468 million) were in the direct government sector. The total government share of these capital expenditures (i.e. excluding self financing by public corporations estimated at about 012.4 billion - \$ 218 million) amounts to 057 billion (\$1 billion). This is the amount which has to be financed through the Development Budget, direct net lending to public corporations and authorities, foreign capital onlent to government ministries and foreign capital onlent to public corporations and authorities. The requirement of government direct lending to the public sector will exceed availability of local resources and untied foreign capital counterpart funds will have to be used extensively to fill this gap. This reflects the fact that many of the projects in the "core" program have yet to seek foreign capital financing.

3.06 Other major issues in public capital expenditure strategy relate to: (i) the appropriate role of the public sector, i.e. are there activities which are currently being undertaken by the public sector which could be better undertaken by the private sector and, if so, what policy actions are required in this regard; (ii) the financial viability of public corporate entities, i.e. the requirements for re-valuation of assets, increase in equity if required and establishment of safe levels of borrowing, cost recovery issues and closing down of unviable enterprises, and (iii) the role for increasing technical cooperation to maximize efficiency of public sector institutions.

3.07 Privatization issues are particularly significant in the agriculture (including cocoa) and mining sectors; and to a lesser extent in the industry sector. Reform of the public corporate sector including financial viability and revaluation of assets is of general importance -- and is being addressed separately through an indepth study of the sector. However, certain public corporations examined in the course of the PER review require immediate action including rationalization/disinvestment of unprofitable operations (industry) and action on increased cost recovery (transport, communications and postal services). Technical cooperation issues are of major relevance in agriculture (including cocoa, fuel and power, mining and transport and communications. These issues are addressed in the course of the sectoral discussions which follow.

TABLE III.2: SUMMARY STATEMENT

SELECTED PUBLIC CAPITAL EXPENDITURES INDICATED FOR 1986-88 PERIOD

(Constant 1985 Prices)

	Expenditure Proposed 1986-88 (Qm)	Foreign Financing Committed/Under Negotiation 1986-88 (Qm)	Number Projects/ Programs
1. <u>Agriculture "Core"</u> (Agriculture Indicated)	<u>12,758</u> (15,329)	<u>2,834</u> (3,724)	<u>16</u> (23)
2. <u>Mining "Core"</u> (Mining Indicated)	<u>10,549</u> (11,499)	<u>4,788</u> (4,788)	<u>5</u> (7)
3. <u>Energy Sector "Core"</u> (Energy Sector Indicated)	<u>10,915</u> (25,650)	<u>3,507</u> (3,507)	<u>19</u> (29)
4. <u>Industry "Core"</u> (Industry Indicated)	<u>1,965</u> (3,695)	<u>848</u> (848)	<u>19</u> (42)
5. <u>Roads & Highways "Core"</u> (Roads & Highways Indicated)	<u>15,698</u> 19,288	<u>5,712</u> (5,712)	<u>17</u> (20)
6. <u>Transport & Comm. "Core"</u> (Transport & Comm. Indicated)	<u>15,445</u> 22,129	<u>8,321</u> (8,321)	<u>19</u> (29)
7. <u>Water Supply Sector "Core"</u> (Water Supply Sector Indicated)	<u>2,162</u> (2,162)	<u>236</u> (236)	<u>9</u> (9)
<u>TOTAL PROGRAMS INDICATED</u>	<u>99,752</u>	<u>27,136</u>	<u>159</u>
<u>TOTAL "CORE" PROGRAM</u>	<u>69,492</u>	<u>26,246</u>	<u>104</u>
<u>SELF FINANCED</u>	<u>12,491</u>	<u>-</u>	<u>-</u>
<u>TOTAL BUDGET OR OTHER RESOURCES REQUIRED</u>	<u>57,001</u>	<u>26,246</u>	<u>-</u>

AGRICULTURE SECTOR EXPENDITURES

Objectives.

3.08 The Government has stated the following objectives ^{1/} for the Agriculture Sector: (a) self sufficiency in the production of cereals, starchy staples and animal protein; (b) maintenance of maize and rice buffer stocks; (c) self sufficiency in industrial raw materials (i.e. cotton, oil palm, tobacco and groundnuts) to feed agro-based industries; (d) increased production of export crops including cocoa, pineapple, coffee, peanuts, citrus, avocado, ginger and kola; (e) promotion and provision of improved storage, processing and distribution systems to minimize post-harvest losses. Targets for 1984-86 include: (i) satisfying 80% of maize, 60% of rice and 100% of cassava requirements; (ii) satisfying 50% of fish and 53% of national meat requirements; and (iii) maintaining reasonable production levels in other food, cash and industrial crops.

3.09 The emphasis on food self-sufficiency and buffer stocks of grains reflects food shortages and high prices, particularly exacerbated by the droughts in 1982 and 1983, and a decline in food production per capita since 1972 (production in 1983 was 62% of the 1972 level). In 1974 production per capita recovered to 85% of the 1972 level. While the strategy of concentration on selected high potential areas is appropriate, the focus on achieving self sufficiency in maize and rice requires some modification. Maize import substitution (assuming a 25% improvement on present yields) is economic and considering that it is a major staple food, large areas are suitable for its cultivation and improved technological packages are available, a substantial increase in maize production (self-sufficiency had been reached in the mid 1970's) would appear to be economically feasible and should be pursued primarily through increase in yields. In contrast to maize, the economics of rice appear very unattractive. ^{2/} The priority emphasis on rice would shift away from what have proved to be uneconomic large scale, capital intensive schemes to small scale production in valley bottom areas. In the case of cassava, improved varieties introduced from Nigeria are under test and should form the basis for a substantial increase in production in the medium term. Continued support to extension services in cassava growing areas is warranted but attaining self sufficiency in cassava is not expected to require significant capital expenditures. The buffer stock objectives need to be further reviewed with emphasis to be placed on creation of food security reserve stocks for areas at risk (e.g. Upper and Northern Regions).

^{1/} Ghana Agricultural Policy; Action Plans and Strategies 1984-86; January 1984.

^{2/} Agricultural Sector Review; January 15, 1985. World Bank Report No. 5366-GH.

Sector Strategy and Production Targets.

3.10 In the short term, the foremost concern would be complete the rehabilitation of existing productive capacity in the major foodcrop and tree crop, including forestry, producing sub-sectors. For this the major short term actions required are: (a) provision of adequate incentives; (b) provision of inputs, tools, spare parts and essential rehabilitation of machinery and equipments; (c) provision of effective extension services. Direct incentives are required for export crops through price increases for cocoa, cotton and tobacco and indirect incentives for increasing production of all crops through speedy rehabilitation of transportation services and infrastructure to reduce transportation costs and marketing uncertainties. Increased quantities of inputs, tools, spare parts, equipment, etc. have been made available but further improvements in the system of identifying real needs and allocation of foreign exchange are needed. Sustained agricultural growth in the medium to long term would require continued price incentives and additional measures to overcome existing constraints, particularly the weak research base and poor extension research link and continued ineffectiveness in input distribution. The medium term strategy which should be initiated with the 1986-88 planning period would include four main lines of actions: (a) major institutional restructuring and investment to promote export/import substitution crops, particularly cocoa, rubber, forestry, cotton and tobacco; (b) reorganization and/or strengthening of input distribution, seed production and extension services and assistance for prevention of post-harvest losses and improved storage in support of food production (primarily maize, cassava and sorghum/millet (northern savannah); (c) consolidation of irrigation development; and (d) rationalization of central and regional government support to the sector, particularly in planning and resource allocation.

3.11 Foodcrops. The objective for foodcrop production should be food security through economically efficient means rather than self-sufficiency at all costs. Ghana should aim to achieve self sufficiency in maize, starchy staples (cassava, yam, sweet potatoes and plaintain) and legumes (cowpeas and groundnuts) and partial supply of rice requirements (probably 30% could be provided economically). Good rains in 1984 and a significant increase in area planted resulted in a considerable production increase of major foodcrops. Supply and demand estimates for 1984 show a considerable surplus in cassava, a 65,000 ton deficit in rice and more or less breakeven situation in maize. A combination of an exceptionally good main crop in the South and release of some 150,000 tons of imported grains resulted in a sharp fall in maize prices. As a result area planted is expected to be lower in 1985. In order to meet the above objectives and satisfy demand for grains and starchy staples which is expected to grow from about 2.4 million tons grain equivalent in 1984 to 2.7 million tons in 1988, emphasis for 1985-86 should be on (a) improved efficiency (raised yields) on existing areas; and (b) assuring farmers adequate price incentives. Any expansion in area of foodcrops cultivated would be expected to be relative to growth in rural population. Production targets would include: (a) maize production at over 500,000 tons in 1985 and move from 550,000 tons in 1986 to 581,000 tons in 1988; (b) obtain about 30% of rice needs

from domestic production, or about 80,000 tons paddy per year; (c) raise sorghum/millet production from 230,000 tons in 1984 to 271,000 tons in 1988; and (d) maintain supplies of marketable cassava at over 2.3 million tons. Increased attention should be given to improving village processing methods.

3.12 Cocoa. Objectives of the Cocoa Board should be to raise Ghana's cocoa output from 175,000 mt in 1985 to a minimum of 230,000 mt in 1988; and to continue to implement its strategy of restructuring and redeployment within the Cocoa Board itself. As a means to arrest the decline in output, the Cocoa Board would give attention to maintaining constant real prices received by farmers, to implementing a program of controlling swollen shoot (SSVD) and other disease and assist in rehabilitation of existing cocoa acreage. With the shift of cocoa producing areas increasingly to the West, the Cocoa Board will have to build up its capacities in the Western Region redeploying resources from elsewhere. The total area planted to cocoa will likely remain constant throughout the period with increased output coming from improved maintenance, disease control and higher prices relative to food crops. Control of SSVD would be concentrated on outbreaks outside the endemic area which would be sealed off by a cordon sanitaire. A larger medium term supply response could be anticipated on the basis of increased real returns to farmers being continued, significant efficiency gains by the Cocoa Board, disease control justifying fertilizer application on hybrids and continued research into pest resistant hybrids.

3.13 Oil Palm. Ghana's objectives should be to (a) satisfy national demand for palm oil for manufacturing purposes and cooking oil; (b) improve production and processing efficiency of large scale plantations; and (c) promote export of palm kernels. Total production from existing nucleus plantations and associated smallholders, wild groves and other smaller plantations is projected to rise from 28,500 tons palm oil in 1985 to about 64,200 tons in 1990 and 74,200 tons in 1995. Production from the four major producers 3/ should rise from 25% of total production in 1985 to 62% in 1995, and is expected to meet about 80% of demand for industrial purposes by 1990. Demand for palm oil for edible purposes is estimated at about 40,000 tons 4/ which added to industrial demand above would give total demand of about 73,000 tons in 1983 rising to about 90,000 tons in 1990 (assuming demand for edible oil rising at 3% per annum). With total production estimated at 64,000 tons for 1990 (when the four major producers

3/ National Oil Palm Plantation Ltd. (owned by State Farms Corporation), Benso Oil Palm Plantation Ltd. (Unilever), Ghana Oil Palm Development Corporation (to become a limited company) and Twifo Oil Palm Plantation Ltd. (major shareholder Central Region Development Corporation).

4/ Ghana Oil Palm Development Corporation, World Bank Staff Appraisal Report No. 3724-GH, May 22, 1984.

would be at peak production) there would still be a substantial supply deficit, which would be expected to persist in the absence of major new investment. However, while the potential for expanding production may appear good, over investment in large scale plantations leading to surplus production would have a serious effect on the financial viability of the industry. Local prices and production costs are about three times world levels at current exchange rates and Ghana could not compete selling on the world market. There is considerable interest in the private sector to invest in production in processing which should be encouraged to meet the supply gap rather than committing public resources to plantations. Support to the private sector should be provided through: (a) a line of credit for equipment and spare parts; and (b) production and sale of planting material by the Oil Palm Research Center and Ministry of Agriculture.

3.14 Rubber & Coconut. Rubber and coconut have very attractive DRCs (0.13 - 0.16) and are potentially important crops to diversify exports. An immediate objective in rubber should be rehabilitation of the existing GREL estate (Ghana's major rubber producer). Costs of rehabilitation are currently being reviewed by CCCE and would likely be financed by them. Until the review of GREL is completed it would be inappropriate to plan for additional expenditures for rubber, although in the medium term such expenditures would likely be warranted. Coconut presents a different case as, despite its comparative advantage, the primary objective is to maintain existing field trials to develop tolerant strains 5/. Until these are developed it is too early to say if additional investments would be warranted.

3.15 Fiber Crop objectives are to revive seed cotton production on small and medium scale farms to provide raw material for the local textile industry. This would entail initiatives to produce 15,000 tons seed cotton per year (previous peak 11,400 tons in 1977) by 1990. Production of seed cotton has slumped as a result of a fall in returns compared with alternative food crops and inability of the Cotton Development Board (CDB), which was responsible for extension services, input supply and marketing, to provide services in a timely fashion. Achievement of the above objectives will require adequate incentives for farmers (prices, access to inputs and extension advice, and timely marketing) to be provided by the Cotton Development Company which Government has announced will replace CDB. Cotton, with maize, would be a "motor" crop for promoting animal traction and improved farming systems in the northern savannah. For Bast Fibers the near term objective is to supply Bast Fiber (primarily kenaf) to the Kumasi sack factory (5,000 tons). Objective for 1986-88 would be to continue to support what is essentially a pilot operation on bast fiber production. The role of the Bast Fiber Board should be reviewed to assess whether or not it should remain an independent organization.

5/ Program designed by IRHO under test at World Bank's Volta Region Agricultural Development Project (VORADEP).

3.16 Revival of Tobacco production to meet needs of local manufacturers has been turned over to the private sector. The Ghana Tobacco Corporation has been wound up and efforts will be concentrated in three private sector companies: Pioneer Tobacco Corporation (PTC), International Tobacco Group (ITG) and the National Tobacco Rehandling Company (NTRC). Production is expected to increase from 930 tons dried leaf in 1984 to about 1,800 tons in 1986, and by 1988 could reach about 2,800 tons - compared with the peak of 3,300 tons achieved in 1974.

3.17 Sugar. Two reports have been produced on the rehabilitation of the GHASEL estates of Asutsuare and Komenda. One prepared by the National Investment Bank (NIB) in March 1982 gives a cost equivalent to US\$4 million (1985 prices) for an annual production of 17,000 tons sugar. The other prepared by Cuba experts (Tencnoazucar) in 1983 gives a rehabilitation cost of US\$37 million (probably US\$45 million in 1985 prices) for an annual production of 40,000 tons sugar by 1991. The Cubans recommend against any further processing until the factories are rehabilitated. In view of the lack of comparative advantage (DRC of 3.35), completely run down status of the two factories (one from Poland and one from Czechoslovakia) and high risk of further investment being as unproductive as in the past, rehabilitation of the sugar industry is not recommended at this stage.

3.18 Livestock and Fisheries. Government's short term (1984-86) Livestock policy paper focuses on: (a) production of sheep, goats, poultry and pigs; (b) support to veterinary services; and (c) reduction in importation of breeding stock. In view of the absence of a well developed improved technology or supply improved stock, assistance for increased production of sheep and goats should be confined to existing management advice (extension service). Assistance of ILCA should be sought for testing improved technology developed in Nigeria. With improved supply of feed grains, increased production of poultry (and pigs) justify support as does strengthening of veterinary services. National meat requirement is estimated at 195,000 tons in 1986 of which 53% is expected to be produced domestically. Government's short term Fisheries policy is to promote both inland and marine fishing and exploit specific species for export. National requirement is estimated at 655,000 tons in 1986 and domestic production is projected to supply 50% of needs. No major short term public investments are anticipated.

3.19 Forest Products. Government's objectives in the forestry sector are to: (a) reorganize government regulatory and marketing agencies; (b) provide service more efficiently; and (c) rehabilitate government owned timber products firms with the intention of returning them to private ownership. Regarding nationalisation of government agencies, Government has undertaken to abolish the Ghana Timber Marketing Board (GTMB), which previously handled external marketing of timber, and replace it with the Timber Export Development Board (TEDB), which would only be a market intelligence board. The Forest Products Inspection Board (FPIB) would handle inspection and government is pursuing rehabilitation of the two largest public sector firms, NIM and TVLC, under the World Bank's Export Rehabilitation Project. The Government's current strategy concentrates on

increasing short term foreign exchange earnings to the sector. Since the sector is overwhelmingly dominated by private sector firms (230 logging firms and mills), practical government actions have concentrated on assuring availability of foreign exchange to buy spares and new equipment, strengthening market information services and assuring quality standards of exports. Little attention is now given to reforestation, conservation and forest management. For the present sufficient funds are generated by specific forest products levies (2% of foreign exchange earnings plus 3% on local currency) to finance the activities of TEDB and FPIB. With the abolition of GTMB, laying off of its staff, and selling off its properties, timber stock levels could be reduced and government could earn a ₱40 million windfall gain. Although needed, forest management programs are not presently foreseen in the review period. If undertaken such programs would require a review of export and stumpage fees.

Policy Initiatives

3.20 Implementation of the above strategy (paras. 3.12-3.20) would depend upon a number of policy initiatives within the agriculture sector including: (a) promotion of private sector involvement in the sector and a reduction in direct government intervention (e.g. privatization of fertilizer distribution); (b) stronger producer price incentives; (c) improved cost recovery on irrigation schemes; (d) streamlining of extension services; and (d) a coherent research policy.

3.21 Reduction in direct intervention by Government. The Ministry of Agriculture (MOA) intends to hand over procurement and distribution of fertilizer to the private sector and is commissioning a study on the means to achieve this. Greater involvement of the private sector in agricultural development should be accompanied by a streamlining of government services, a reduction in junior levels where there is a serious overstaffing and a more attractive remuneration package to encourage suitably qualified and experienced staff to join the MOA. Staffing levels through MOA should be reviewed and a program of retrenchment worked out. Government has already initiated the process of cutting back cost intensive State Owned Enterprises (SOE's) with the winding up of GTC and CDB. Further rationalization can be expected when the results of the SOE study are available.

3.22 Pricing Policy and Incentives. Government has raised cocoa, cotton and tobacco prices for 1985-86 to provide stronger producer incentives and in early 1985 raised the official price for maize from ₱1,000 to ₱1,500 per ton. Although there is little direct intervention the latter helped to stabilize the sharp fall in price which had started in late 1984. In the case of cotton and tobacco, Government policy was to set producer prices based on mark-ups from the costs of production. In actual fact this has only served to depress prices and farmers' returns. Liberalization of these prices is recommended. This would also necessitate removal of end products - viz. textiles, cigarettes and other tobacco products - from the list of price controlled commodities. Pending liberalization, the minimum producer price should be about ₱60/kg for seed

cotton and ¢120/kg for tobacco in 1985 and these should be maintained in real terms in the future. Although the fall in maize price in 1984-85 has improved the relative profitability of cotton and tobacco, maize price would be expected to settle at a level about that at which the competitiveness of cotton and tobacco was assured. In the case of food crops there is clearly a need to address the question of reducing the violent fluctuations in maize prices. This would include consideration of management and financing options to exploit storage (about 200,000 tons capacity) expected to be constructed in major producing areas with donor assistance.

3.23 Cocoa producer prices have been discussed earlier in this report. However, detailed further exercises are warranted to examine the entire question of product prices, farmers supply response, appropriate levels of export tariffs and the requirements of a slimmed down Cocoa Board.

Investment Program 1986-88

3.24 Overview. Ghana is not in a position to do all it wishes in agriculture and must, in the near term, concentrate on selected areas of high priority rehabilitation, while beginning to lay the basis for longer term investments. Constraints to attacking problems across the board in agriculture have as much to do with institutional and manpower shortages as they do with financial shortfalls. Nevertheless, careful attention to a few key investment areas will provide overall control to short term agriculture development. In practical terms if the Government of Ghana efficiently manages maize, rice, cassava and cocoa production, promotes additional cash crops to improve farming systems and controls expenditures in irrigation and rural development, it would largely meet its food and cash crop production objectives and would have mastered the bulk of agriculture expenditures. Beyond the review period it should identify those high priority areas for future intensive development.

3.25 The investment program required to meet the above targets in maize, price and cassava and cash crop production would include inter alia support to: (a) assure adequate supplies of inputs including seed, fertilizer, chemicals and equipment; (b) support agricultural extension services; (c) provide agricultural credit where appropriate and assure crop collection, marketing and storage; and (d) strengthen research programs. Provision of adequate foreign exchange would be made for procurement of fertilizer (about 40,000 tons/year), insecticides, herbicides, and small tools (raw materials for local manufacture or finished product) by the private sector. Support to turn the Farmer Supply Companies (FASCOM) already established in Upper Volta Regions into commercial operations would be maintained. Arrangements for the supply of inputs for cotton production by the new Cotton Development Company in the savannah zone would be integrated with existing organizations operating in the sector, i.e. FASCOM, Ghana-German Ag. Dev. Project and private sector. Tobacco inputs would be supplied through PTC and ITC. The future role of the Ghana Seed Company (GSC) in the production and distribution of improved maize, rice and vegetable seeds has to be evaluated. The main initiative for

development of improved maize varieties and recommended technical package is presently provided by the Grains and Legumes Development Board 6/ which would be maintained. Inputs for cocoa production would be supplied by the private sector and COCOBOD (mistblowers and capsid protection chemicals).

3.26 Livestock and Fisheries investments would also center on provisions of inputs with priorities as follows. For Livestock: (i) veterinary services including imports of drugs and vaccines and provision of vehicles and operating costs in regions not served by externally funded projects; (ii) import of feed concentrates to mix with domestically produced grains for poultry and pigs; (iii) import poultry breeding stock. During the period new initiatives would be made to step up research and development of small stock programs. For Fisheries: (i) provision of foreign exchange for import of fishing gear (nets, outboard motors, etc.) for marine, brackish and freshwater capture fishing; and (ii) promotion of fish ponds through extension services. Several lines of Credit are available already for (i) through EEC, ADB and bilateral donors (Japan).

3.27 Agricultural Extension Services which are at present provided by a variety of organizations, would be gradually reorganized with the objective of disseminating relevant technology to farmers more effectively and at least cost. Overall staff numbers would be reduced. The priorities and main thrust during the plan period by major ecological zones and/or region would be as set out below.

3.28 Northern Savannah Zone (Upper East, Upper West and Northern Regions). Production priority sorghum/millet, maize, groundnuts/cowpeas, cotton and rice (in valley bottoms). Little new technology is available for sorghum/millet but improved varieties and some improved technology are available for the other crops. The development program would focus on reintroduction of cotton as a cash crop, increasing maize and legume production and promoting low cost rice production where feasible. New institutional arrangements, including the extension role of the World Bank's ongoing Upper Region Agricultural Development Project (URADEP) which provides all MOA services in the Upper East and Upper West), following the disbanding of the Cotton Development Board and creation of a Cotton Development Company will have to be worked out. One option would be URADEP to provide extension services on behalf of the cotton development/marketing organization. In Northern Region, where extension is handled by Ghana-German Ag. Dev. Project (future under evaluation by GTZ), MOA and CIDA's NORIPP (planned for two pilot areas), link between existing services and new cotton organization should be reviewed as matter of urgency.

6/ With donor support from CIDA which includes technical assistance from CIMMYT.

3.29 Forest and Transitional Zone (Brong Ahafo, Ashanti, Western and Eastern Regions, and parts of Central and Volta Regions). The Cocoa Board would continue extension works on capsid and SSVD control and new planting program. MOA's extension services, which are presently without operating costs or transport, would be strengthened in priority foodcrop producing areas, particularly the transitional zone, given to maize, rice and cassava (once new planting material available). MOA, and in the Volta Region, VORADEP, would also be responsible for assisting smallholders in obtaining oil palm seeding and advising on plantation development. Options for eventually merging the Cocoa Board and MOA extension services to be evaluated during plan period.

3.30 Southern Savannah Zone (parts of Central, Greater Accra and Volta Regions). The World Bank's ongoing Upper Volta Region Agriculture Development Project (VORADEP) under which the T and V system of extension organization and management is being tested, would continue to provide services throughout the Volta Region. In the Central and Greater Accra Regions, MOA would receive support in selected areas for promoting maize, rice and cassava under (b) above. The link between MOA and CARIPP, and future of the latter which has been supported by EEC, should be determined.

3.31 Agricultural Credit, Crop Collection and Marketing. Main priorities for agricultural credit would be: (a) medium term credit for smallholder oil palm plantations and small scale processing and mechanization (primarily animal traction linked to cotton production in northern savannah and maize and rice production for medium to larger farms; and (b) short term credit for cotton, maize and rice production. Smallholder credit would be made through group schemes and, in view of poor repayment records, further credit for grain production schemes would be subject to strict criteria. Main investments in the plan period for crop collection and marketing would be a system for seed cotton handling under the new Cotton Development Company and a system for handling food security reserves.

3.32 Agriculture Research Program. The key areas of a program for strengthening research necessary to provide the basis for development of the sector into the 1990's would be as follows:

- (a) Field Crop Research: The program for selection, introduction and testing new varieties of cereals and legumes to be continued: particularly selection composite maize, testing maize hybrids, development improved sorghums and millets for the north and improved rice varieties for bottomlands. Selection work to be undertaken by Crops Research Institute (CRI). Grains and Legumes Development Project under CRI would continue adaptive research program for maize and cowpeas and link with extension services while CRI Nyankpala would continue work on savannah crops and improvement of farming systems. CRI and VORADEP to continue program of selecting and testing suitability improved cassava varieties introduced from Nigeria. Improved material expected to

receive limited national distribution from 1987. National Root and Tuber Committee to be retained. MOA to initiate through CRI and the Soils Research Institute (SRI) a three year trial program to identify improved, concentrated fertilizer formulations to replace existing formulations from 1989. CRI to maintain weed, pest and disease control work in major crops (particularly maize and legumes) and work on improved storage of cereals. For cotton, relaunch cotton variety trials and development of agronomic practices, particularly improved spraying systems, by CRI Nyankpala and Cotton Development Company. CRI Nyankpala farming system work has tobacco focus.

- (b) Tree Crop Research: Cocoa research would continue to be undertaken by a strengthened Cocoa Research Institute of Ghana (CRIG). Additional investment to be made in research for improved field control methods of SSVD, selection SSVD resistant planting materials and further evaluation of capsid control chemicals. External technical assistance to be requested for five posts (virologist, senior plant breeder/agronomist, agronomist/field trials officer, entinologist (CSSV control) and entomologist (capsid control). Oil Palm Research Center (OPRC) to maintain (a) selection program and release improved seedling to farmers; (b) study agronomic practices; and (c) disease and pest control work. Coconut testing of varieties resistant to Cape St. Paul disease to be continued by VORADEP under the aegis of CRI in Volta Region and by MDA in Central Region. Rubber research to be linked to rehabilitation GREL with revival CRI station at Aiyinasi. CRI to continue crop diversification program.

3.33 Expenditure Recommendations for 1986-88. The major projects/programs proposed for the public expenditure program during 1986-88 (as indicated by the Ministry of Agriculture) are summarized in Table III.3. The projections which have been made for all major projects raise questions on the relative size of some projects which need to be addressed by the Government and other donors. Recommendations on the "core program" are as follows:

3.34 Cocoa. The cocoa industry has been historically and will continue to be in the medium term, the industry which is most critical in terms of farmer income, foreign exchange earnings and contribution to the budget. The short term objective must be maximize all three by (a) maintaining and then increasing the real return to farmers; (b) improving the efficiency of the Cocoa Board; (c) continuing rehabilitation of existing stands; and (d) beginning to establish the base for future replanting. Expenditures for the cocoa sector would be driven by continued rehabilitation and future replanting, financed in part by savings accruing from increased efficiency of the Cocoa Board. There is general agreement that the Cocoa Board has expanded far too much and entered ventures outside

its normal mandate. There is agreement, therefore, that in addition to the ongoing staff reduction programme, further streamlining is warranted. This would take the form of further staff cuts, spinning off some operations and contracting out for others. Government must also develop a much finer system of projecting, and then protecting, revenues from cocoa. This implies better internal financial control within the Cocoa Board and closer scrutiny by the Ministry of Finance. The capital expenditure program of C4.5 billion for the Cocoa Board proposed for the period 1986-88 is in line with these recommendations. The amount for rehabilitation and plantings (C2.1 billion) would be financed directly by the Cocoa Board from its own resources while the investment in feeder roads (C2.3 billion) would be made through a government allocation from the budget for this purpose.

3.35 Foodcrops and Associated Cash Crops. The core program in support of rainfed foodcrops (maize, rice, cassava and legumes) and cash crops (cotton and groundnuts) would comprise: (i) continuation of adaptive research and field trials (CRI - extension link) by GLDB to maintain flow of improved technology; (ii) relaunch of trials on cotton (organization to be determined) in northern savannah and other suitable areas; (iii) strengthening MOA extension services through increased technical supervision and provision of transport and operating budget in key areas particularly Brong Ahafo and Ashanti (45% of maize production) and Central and Eastern Regions (29% maize production); (iv) continuation of VORADEP for input supply and extension support in Volta Region and testing improved cassavas; (v) support to the new Cotton Development Company (Government to have 30% equity holding) for promotion, collection and ginning of seed cotton and marketing of lint and support for one extension service (cotton and foodcrops) in Upper East and West (i.e. URADEP) and one in Northern Region (i.e. GGADP). The amounts in the "core" program for these activities are indicated in Table II.3.

3.36 Oil Palm. Core program to include: (a) completion of Twifo Oil Palm Plantation and second phase smallholder development assisted by EED (C2.4 billion); and (b) support of Oil Palm Research Center for variety testing and production improved planting material (IDA assisted) (C164 million). Rubber core program includes rehabilitation of the GREL estate subject to recommendations of the CCCE study (amounts not yet established).

3.37 Irrigation. The 1986-88 expenditure program put forward to the mission by the Irrigation Development Authority (IDA), covers primarily operation and maintenance of existing schemes, but includes completion of capital works or rehabilitation on three schemes, that is: (a) completion of land development works on Bontanga at about US\$10,300/ha; and (b) rehabilitation of Ashiaman and Dawhenya perimeters at about US\$3,900/ha (over whole scheme). Bontanga costs are high and the economic rate of return would be below 10%. At Ashiaman and Dawhenya the effect of rehabilitation would be to extend the cultivable area only marginally and returns would therefore be low. New investments may not be justified until new cropping patterns have been developed placing less emphasis on rice.

3.38 The remainder of the IDA proposals covers operation and maintenance of existing schemes covering about 7,000 ha of which 50% is in two schemes in the Upper East Region. Not all the command area is expected to be cultivated. Cropping patterns will focus on rice and vegetables and with limited markets for the latter overall returns are likely to be low. Cost of operation/maintenance are estimated at about US\$600/ha in 1986 rising to US\$875/ha in 1988 on all schemes apart from Weija, where costs of US\$4,000/ha in 1986 falling to US\$2,300/ha in 1988 are projected. It is assumed that the Weija figures include some items of capital expenditures. After allowance for recovery of part of the operating costs from beneficiaries, net expenditures could be reduced by 30-40% below current levels.

3.39 Major projects excluded from the "core" program at this stage are the Integrated Rural Development Program under MFEP in the Northern Region (NORRIP) which was programmed to spend C1.2 billion over 1986-88, and further construction and rehabilitation of Bontanga and Ashiaman/Dahwenya irrigation schemes (about C500 million over 1986-88). While NORRIP has an innovative approach to rural development, its cost is relatively high in relation to short term production gains. The construction and rehabilitation of irrigation schemes will be studied further by a Bank irrigation sector mission scheduled to visit Ghana in September 1985.

TABLE III.3: AGRICULTURE INVESTMENT PROGRAM

(C Million Constant 1985 Prices)

<u>Project/Program</u>	Total Program/ Project Cost (C Mn)	Expenditure Through December 1985 (C Mn)	Expenditure Proposed 1986-88 (C Mn)	Foreign Financing Committed/Under Negotiation 1986-88 (C Mn)	Economic Viability ERR/DRC/IRR
<u>COCOBOD</u>					
1. Rehabilitation & Planting *			2,100		Economic
2. Feeder Roads*	10,505)	1,348	2,400	-	Economic
<u>Ministry of Agriculture</u>					
3. Crop Services *	860		860		Economic
4. Vet. Services *	270		270		Economic
5. Other Services *	766		766		Economic
6. Grains Development (GCDB)*			under (16)	1,214	Economic
7. Volta Region ADP *	2,581	n.a.	1,037	1,007	16% ERR
8. Ghana-German ADP			n.a.	n.a.	n.a.
9. Cotton Development *	675		675	-	Economic
10. Maize Support and Others*	760		760	-	Economic
11. Irrigation Dev. Authority	132				Economic
Construction	332		132	-	Sub-Sector
Rehabilitation	208		332	211	mission to
Other			208	-	assess
12. (a) Institutional					
Strengthening *	260		260	200	
(b) Other	200		200	-	
<u>MFEP</u>					
13. NORRIP	1,193		1,193	668	Pilot Project
14. Others	300		300	n.a.	n.a.
<u>MRD</u>					
15. Cooperatives	206		206	-	n.a.
<u>CSIR</u>					
16. CRI etc. *	1,570		1,570	-	Economic
17. Oil Palm *	164		164	80	Economic
18. Cocoa Research *	225		225	-	Economic
<u>Oil Palm Plantations</u>					
19. Topp I*	1,100		1,100	158	9% ERR
20. Topp II*	1,902	n.a.	271	175	13% ERR
<u>Rubber</u>					
21. GREL*	300		300		Economic
<u>Forestry</u>					
22. Support Services			n.a.	n.a.	
23. Timber Companies			n.a.	n.a.	
<u>TOTAL AGRICULTURE SECTOR</u>	<u>24,509</u>		<u>15,329</u>	<u>3,724</u>	
<u>(Core Program*)</u>	<u>(21,938)</u>		<u>(12,758)</u>	<u>(2,834)</u>	

MINING SECTOR EXPENDITURES

3.40 Overview. The mining industry of Ghana accounts for approximately 2% of GDP and 2.1% of the country's labor force. After cocoa, the mining industry is the second largest export earner generating about US\$110 million or 15% of export earnings in 1982. The major mineral commodities are gold, diamonds, manganese and bauxite which are produced by six mining companies. In addition, the Volta Aluminium Company Ltd., the largest primary aluminium plant in Africa with a capacity of 200,000 tons, converts imported alumina to aluminium. The government-owned State Gold Mining Corporation (SGMC) and the Ashanti Goldfields Corporation Ltd. (AGC), which is 55% state-owned and 45% owned by Lonrho (U.K.), are the country's gold producers. Diamonds are officially mined by the government-owned Ghana Consolidated Diamonds Ltd. (GCD) and by a small number of private diamond miners. Their production must be sold to the state-owned Diamond Marketing Corporation which is the only institution authorized under the law to sell diamonds. In fact, however, both diamonds and gold are also produced by illicit diggers and smuggled out of the country in huge quantities. The manganese mine at Nsuta is operated by the government-owned Ghana National Manganese Corporation (GNMC). Finally, the Ghana Bauxite Company Ltd., 55% owned by the Government and 45% by Alcan Aluminium Ltd., mines and beneficiates bauxite at its Awaso mine.

3.41 Production of all minerals mined in Ghana has declined persistently over the last decade. Gold output declined at a 8.1% rate annually over the period 1972 to 1983, diamonds by an annual rate of 16.8%, manganese by 8.8%, bauxite by 13.4% and aluminium by 10.3%. From 1977 onward the reduction in the output accelerated even more - for gold produced by SGMC at an annual rate of 18.1%, diamonds at a rate of 25.3%, bauxite at a rate of 20.4% and aluminium at a rate of 19.3%. Only AGC's and GNMC's production decline moderated somewhat, at 5.5% and 6.9%, respectively. The following table depicts the historical production for all mining companies.

TABLE III.4: HISTORICAL MINERAL PRODUCTION

	1972	1980	1983
AGC (fine oz.)	533,000	232,000	243,000
SGMC (fine oz.)	187,000	110,152	42,314
GCD (carats)	2,540,622	693,790	336,307
GNMC (tonnes)	526,007	249,800	190,500
GCB (tonnes)	340,000	224,501	70,235
VALCO (tonnes)	140,000	191,195	42,453

3.42 The deterioration in the production capacity of the mining industry can be attributed to a host of constraints common to the entire sector as well as to problems attributable to the individual companies. The industry on a whole has suffered from the past overvalued exchange rate

and high inflation rates. This created an increasing shortage of foreign exchange and eroded the financial position of the mining companies. The lack of funds did not permit necessary replacement and rehabilitation of overaged equipment and facilities and frequently not even adequate provision of materials and supplies to continue production at normal levels. For the same reasons mine development had to be curtailed to the absolute minimum and exploration for new deposits came to a virtual standstill. As the situation worsened, foreign and Ghanaian specialists began to leave the country exacerbating the already weakened management talent of the companies. Training programs and facilities at every level within the companies had to be reduced drastically. Consequently morale of the work force and discipline started to go down coinciding with labor productivity decreases and growing theft problems.

3.43 At the State Gold Mining Company these conditions were further worsened by declining availability of ore reserves. Similarly, the rich Akwatia diamond field has been almost completely mined out and a new deposit had to be explored. The Ghana Consolidated Diamond Company was thus compelled to shut down more and more operations as the old field reached exhaustion. The same picture prevails at the Nsuta mine operated by the Ghana National Manganese Corporation. Over the years higher grade oxide ore systematically has been depleted leaving most of the reserves as carbonates. At the present time mining is therefore limited to the exploitation of the remaining pockets of oxides and lower value carbonates. In addition, a critical shortage of rolling stock for ore transportation and inadequate port handling facilities at Takoradi further impacted on GNMC's production performance. Because of the much further distance of the bauxite mine to the port and the low value of bauxite comparative to other bulk goods, such as timber and cocoa, the Ghana Bauxite Company has been severely constrained by the railroad bottleneck of the Western line despite its large ore reserves. While Valco's aluminium smelter at Tema did not suffer from foreign exchange shortage, the inflow of water in the Volta River dropped steadily between 1979 and 1984 and drought levels were reached in November 1982. Valco, which depends on hydro-electric power from Akosombo Dam on the Volta River, began to feel the power shortage to the point where it had to shut down its five pot lines terminating all operations in November 1983. These have only recently been restarted (with one pot line working at present) as a result of the improvement of water levels in the lake starting from early 1985.

Government Objectives and Strategy

3.44 The Government's objective regarding the mining sector is derived from the pressing need to arrest the secular decline in production. In order for the mining sector to contribute significantly to increases in GDP, the Government has formulated a strategy aimed at the full utilization of existing resources in the large mines through rehabilitation of existing capital equipment, improvements in management practices through technical collaboration with experienced mining companies, up-grading of infrastructure, the institution of training programs, up-grading of local skills, and the strengthening of support services. The government is also

seeking to curb the very large scale smuggling of gold and diamonds by illicit operators through increasing the number of legally licensed private operators in these areas. Both the overall strategy and privatization objectives of the government with regard to the smaller operators deserve to be supported.

3.45 The single most important objective of the Government's gold mining policy aims at halting the decline of production. To achieve this goal the Government sought an acceleration of the expansion program planned for Ashanti Goldfields Corporation as well as an improvement in the company's profitability without compromising public revenue objectives. The State Gold Mining Corporation was also expected to contribute to this goal by reorganizing its management through retention of an outside management contractor who was expected, in addition to the desired production expansion, to realize substantial productivity gains and revival of morale of the company's work force. To further restore SGM's creditability and creditworthiness, a rescheduling of its local debt was to be achieved. For the diamond sector the Government's objective is to raise production to the maximum rate consistent with the capacity of the existing washing plants and to commence production from the Ghana Consolidated Diamonds' new Birim project. The official diamond production would further be raised by seeking to increase the number of private small-scale diamond miners from the present 12 to 45. Regarding the Government's policy for manganese mining, marked production and export increases are emphasized through the rehabilitation of existing equipment and the commissioning of a nodulization plant which converts carbonate ore into marketable manganese oxide. For bauxite the Government sought to revert to pre-1982 levels of production and to achieve a reasonable level of operating efficiency by 1986. The successful realization of this objective, however, depends to an overriding degree on the rehabilitation of the Western Rail Line including the provision of adequate rail services. The Government's policy with respect to the Volta Aluminium Company is constrained by the volume of water into the Volta Lake behind Akosombo Dam and has to be balanced carefully with the alternative option of exporting excess power to neighboring countries at a much higher price than sold to Valco.

3.46 Production Targets. Despite the considerable policy measures taken over the last two years, the described constraints, primarily the lack of capital replacement, critical spares and materials combined with the persistent skilled manpower shortage, did not permit the desired production and revenue growth. As the economic recovery proceeds, supported by sufficient foreign currency assistance, progress in the mining sector is expected to accelerate markedly. The most likely scenario in terms of production and revenues for the larger companies is shown in Table III.5. The policy framework for the smaller operators is still being defined. The diamond sector in which they are presently active shows marginal levels of production (1984 production of a few thousand carats is a mere fraction of the level of production achieved in the 1970s). There is substantial potential for channelling increased amounts of both gold and diamond production by private producers through the official system if appropriate policies can be developed.

TABLE III.5: PRODUCTION ESTIMATES FOR MINING SECTOR

	<u>1980</u>	<u>1984</u>	<u>Est.</u> <u>1985</u>	<u>-----</u> <u>Target</u> <u>-----</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Ashanti Goldfields Corp. (AGC) 000 Fine Oz.	232	255	260		285	300	343
State Gold Mining Corp. (SGMC) 000 Fine Oz.	110	38	50		84	122	130
Ghana Bauxite Corp. (GBC) 000 Metric Tons	224	43	100		130	210	300
Ghana National Manganese Corp. (GNMC) (Nodulization Plant) 000 Metric Tons	262	243	300		350 (50)	350 (100)	350 (150)
Ghana Consolidated Diamonds (GCD) 000 Carats	694	341	600		1,000	1,000	1,000

Expenditure Program 1986-1988

3.47 Ashanti Goldfields Corporation (AGC). Gold has been extracted from the Ashanti District in South Central Ghana for the past three thousand years. The hills in the vicinity of AGC's operation at Obuasi are pocketed with hundreds of ancient addits which penetrate the gold reef outcrops. The AGC concession is a narrow rectangle running north to south. The steep, near vertical faults containing the gold bearing quartz and fault wall rock containing gold bearing pyrite stretch for seven miles within this concession and some mineralized zones have been traced down 5000 feet below surface. At some locations graphite between the quartz vein and the wall rock complicates mining and processing. Proven available reserves are about 6 million tonnes averaging about 7 grams of gold per tonne. The grade and reserves place Ashanti among the world's most attractive gold deposits.

3.48 AGC has a CF 8.89 billion (\$156 million) five and half year rehabilitation program which also will enable the company to increase gold production from about 260,000 oz. in 1985 to 400,000 in the nearly nineties. IFC has approved a principal loan investment of CF 3.14 billion (\$55 million) and assisted AGC to procure other external long term finance. Of the total capital cost estimate of CF 8.89 billion, about CF 5.53 billion has been designated for an increased production program and CF 3.36 billion for a reequipment program. The total program will require US\$135 million in foreign exchange. The internal rate of return for the project has been calculated at 36% with and 22% without the very profitable tailings

retreatment component. Even after modifying the IFC assumption of a US\$375/oz. gold price to present levels of about US\$325/oz., the financial return of the project remains impressive. The economic rate of return has been calculated at 53% and can be explained by the sunk-cost nature of the rehabilitation/expansion project and also reflects the high grade of the AGC ore reserves and their comparatively low operating cost.

3.49 To expand production capacity and the ore reserve situation, the investment program calls for the addition of two new access shafts and a major new hoisting shaft. To assist these shafts, a new ventilation shaft, additional water pumping facilities, extension of the compressed air system and increased ore handling facilities both underground and on surface are required. This significant expansion of AGC's operations will also mean a doubling of the inventory for consumables and spare parts from AGC's normal levels. The reequipment component of the investment program, which is expected to take about three years, consists of mine modernization and mechanization (compressors, pipes, raise borers, jumbo drilling rigs and load/haul/dump vehicles), replacement of existing equipment (locomotives, ore cars, drilling rigs), refurbishment of the South Shaft (repair, replacement of deteriorated parts, realignment and new steel guides), improvement of the treatment plant (process modifications, crushers, flotation cells, new roaster feed system, leaching tank agitators and improved plant water system) and improvement of mine infrastructure (mine vehicles, workshops, stores, security equipment, water supply and office accommodations).

3.50 The 1986-88 time-slice of this investment program is estimated to cost C6.95 billion (\$122 million) and is included in the "core" program. AGC is expected to show a net operating deficit in its cedi accounts over this period and will require an estimated C4.1 billion of borrowing from the banking system in addition to foreign loan of C3.1 billion (\$54 million).

3.51 State Gold Mining Corporation (SGMC). SGMC owns four gold bearing properties -- Dunkwa, Prestea, Tarkwa and Konongo -- which they acquired after private firms had abandoned the sites. Dunkwa, the northern most operation, is alluvial and about 150 km from Prestea, the southern most operation. Prestea and Tarkwa are underground veins. Konongo is open-pit but presently is on care and maintenance. The equipment in all operations is old and is a limiting factor in reaching production targets.

3.52 The Government had a plan at one time to increase the gold industry's output from 350,000 oz. to 2,800,000 oz. per year which required a US\$3 billion investment. This of course is not possible under present conditions. However, on a smaller scale, if SGMC is to survive, major rehabilitation is required. The managerial and financial state of SGMC is so weakened, outside assistance is required to plan, finance and implement any investment program. With the assistance of outside consultants, the present management has identified those areas where rehabilitation and expansion are most urgently needed. The Bank through an Export Rehabilitation Program has made about \$22 million available for hardware

and supplies and \$8 million for the cost of a management contractor to be brought in to assume full management responsibilities over the company.

3.53 The rehabilitation of SGMC's Prestea, Tarkwa and Dunkwa mines have been estimated by the consultants on a preliminary basis to require foreign exchange of \$80 million over a three year period. Further study, however, has shown that the company's absorptive capacity requires that the program be implemented over five years. Of the total cost of \$80 million about \$37 million has been allocated to replacement or rehabilitation of mine and plant structures and equipment and \$43 million to spare parts and materials. These allocations also include projects for improving workers' living conditions and mine vehicle replacement. The IRR for the rehabilitation project has been calculated at 18% with a management/technical assistance contract of \$ 13.2 million (¢752 million) over three years. The 1986-88 time-slice of this investment (including management assistance) is estimated at \$ 36.8 million (¢2.1 billion) and is included in the "core" program.

3.54 Ghana Bauxite Corporation (GBC). This bauxite mining operation has the misfortune of being located 165 rail miles north of Takoradi at Awaso. The combination of shipping a low value product (presently US\$20.50 per tonne) and poor rail service has brought GBC close to liquidation. The concession was originally held by British Aluminum and was first opened during World War II. In the early 1970's, the Government bought 55% interest and in November 1983 Alcan took over British Aluminum's 45% interest. The General Manager and Engineering Manager are on contract from British Alcan and sales and offshore procurement are still handled by British Alcan in England. The ore reserves located on hills near Awaso are extensive. GCB estimates they have 14.5 million tonnes proven and 5.0 million tonnes probable reserves in the present mining area and 24 million tonnes indicated on a nearby hill. They have in fact surrendered part of their original concession due to the low possibility that they would ever use it. These reserves are not metallurgical bauxite which is used to produce alumina for metallurgical production of aluminum, but are unique, low silica deposits which are better suited as chemical grade bauxite used to produce alumina containing chemicals such as the water purification agent alum (aluminum sulfite).

3.55 The future of the bauxite operation at Awaso is almost totally dependent on the railroad. GBC has the reserves, believes it has the market, and has investment plans for restoring the operation. However, any investor or lender, be it private shareholders or the Government, would have to be assured that the rail system can reliably transport a minimum of 200,000 tonnes per year of bauxite and that the mine, rail and port costs are low enough to make the sale of this low price product financially and economically viable. A comprehensive feasibility study should be prepared to decide on the long term rehabilitation of this operation.

3.56 The GBC four-year investment plan (1985-88) includes replacement of mining equipment (\$2.3 million), the shiploader at Takoradi (\$0.8 million), mine-site vehicles (\$0.5 million) and miscellaneous production

equipment (\$0.3 million), rehabilitation of the ropeway at Takoradi (\$0.2 million), and addition of a product stockpile conveyor and reclaimer (\$0.2 million) at Awaso. Including contingencies this would total about US\$5.5 million (C313 million) and enable their production to increase to 300,000 tonnes per year by 1988. Because of aging, the original plant capacity of 500,000 tonnes has been reduced to 300,000 tonnes unless a major rehabilitation effort is undertaken. Beyond 200,000 tonnes per year the operation would generate sufficient retention funds to cover its on-going maintenance and rehabilitation foreign exchange requirements. Bank staff believe their program is sound and it is accordingly included in the "core" program.

3.57 Ghana National Manganese Corporation (GNMC). The manganese and bauxite operations share one feature in common -- they ship low value, bulk commodities. This confronts them with major materials handling and transportation problems getting their product from mine to market. So in addition to the spare parts and rehabilitation problems confronting the gold and diamond sub-sectors, they are faced with deteriorating rail and port facilities. GNMC's mining operations are at Nsuta, about 60 km north of Takoradi port and are literally within sight of SGMC operations at Tarkwa. Again this is a totally state-owned operation which had been mined for many years. The easy to reach oxide ores had been depleted prior to state ownership.

3.58 GNMC's future depends heavily on further development of the large carbonate reserves. In addition to rehabilitating the existing mine washing plant and port equipment, their investment program includes in the near term commissioning are installed but not yet operational carbonate nodulization plant and exploration to better define reserves and improve mine planning, and in the long term developing an underground carbonate mining operation and off-concession exploration. To no small degree, the viability of this operation also depends on the rehabilitation of the railroad and port. The Bank through the existing credit for railroad rehabilitation and through the mining component of the Second Reconstruction Imports Credit is already committed to assist GNMC and the railroad; but GNMC requires far more financing if it is to survive in the long term as an economically viable entity.

3.59 GNMC has already initiated their rehabilitation program. With an ECU 6 million loan from the European Investment Bank, they have purchased new mining trucks and equipment for their maintenance shops, and are about to rehabilitate the two ore washing plants. Their full rehabilitation plan still requires financing for replacement of product stockpile locomotives (about \$0.3 million), rebuilding rail unloading and ship loading facilities at Takoradi (about \$1.5 million), refurbishing the mine-site electrical system including the addition of standby generators (about \$3.0 million) and adding two exploration drills to improve mine development planning (about \$0.5 million). In total, the completion of the mine, plant and port rehabilitation would require by GNMC's estimate an additional \$12 million of financing. The schedule for completion of the rehabilitation is dependent on the availability of this financing.

3.60 GNMC have in their near-term investment program two additional projects -- one is the establishment of a port site storage facility and the other the commissioning and start-up of the nodulization plant. GNMC has identified a site for the port storage facilities and estimated its cost at \$3.0 million. The project would include new rail unloading facilities, a stacker-reclaimer and storage-to-dock conveyor. The cost of the new port facility is likely to considerably exceed GNMC's estimate and it is necessary to prepare a feasibility study for this project and have preliminary engineering done by a consulting firm--only then will the full costs be known.

3.61 The manganese nodulization plant exists--the construction was completed in 1982 and, according to GNMC, the costs fully paid off. The only financing required is about \$6 million to pay the consultants to commission the facilities, to buy new refractories for the kiln, and to pay salaries of expatriates for the first year of operation. They also seek US\$4.1 million of external financing to procure the oil for the first year of operation. However, the viability of the nodulization plant is still being established.

3.62 Pending the completion of further studies on the nodulization plant, the "core" program for GNMC is based on the 1986-88 time slice of investments contemplated without the port storage facilities and the nodulization plant. These are estimated at 0393 million (\$6.9 million). In the longer-term investment program, GNMC includes exploration for oxide minerals on hills outside their present concession and, as mentioned, the development of underground mining for exploitation of carbonates. These are both well in the future and preliminary plans and cost estimates are not available. Should the carbonate nodulization prove economically unattractive, then the off-concession exploration will become a crash program in order to keep GNMC alive after the remaining oxides are depleted. Geomine (Romania) has offered assistance in exploring this Nta-Breta-Essikuma ore zone.

3.63 Ghana Consolidated Diamonds Ltd. (GCD). GCD and its predecessor, Consolidated African Selection Trust, have extracted diamonds from alluvial deposits in a 130 square kilometer concession area near Akwatia for more than 60 years. GCD, a state-owned operation, produced about 2.5 million carats of diamonds in 1972 but due to depletion of reserves in the original concession area and to the poor condition of mine, plant and equipment, has only produced a little over 0.3 million carats in 1983.

3.64 The depletion of the original Akwatia concession and opening of the Birim concession requires considerable investment. The initial exploration of the Birim area was financed by the UNDP (US\$2.3 million) and the Government (Cedi 5.64 million). It has defined the diamond reserves sufficiently well for GCD to proceed with project implementation of Block A and B. Nevertheless, GCD proposes a 10-year Phase II exploration program which will better define the concessions farther from Akwatia and permit longer range mine planning and development. GCD estimates that Phase II exploration will cost E 2.5 million in foreign exchange and Cedi 13.5

million in local costs. The mine development of Birim Block A and B, called the Phase I Program, cost US\$12 million over the last three years. Financing for part of this has been obtained and equipment purchased as follows. EIB provided E119,000 for metallurgical testing. Suppliers credits of \$3.58 million from India financed small draglines and trucks. Supplier credits of \$1.5 million from UK financed additional trucks. A E3.5 million loan was obtained against future sales to INADCO, a Swiss/Belgium diamond investment group. The Government's contribution amounted to \$1.23 million towards the purchase of the Indian equipment. Mining operations on Phase I started early in 1985.

3.65 The second phase of the development of the Birim field would require another US\$8 million and include two more draglines, further rehabilitation of the processing plants and a proposed a \$5 million investment in a 10 Kilometer conveyor system to transport the Birim diamond bearing gravel to the processing plants. With regard to the conveyer system it is not yet established that this is the optimum way to transport the material. Suggestions have been made that trucks or mine-site preconcentration plant plus trucks might be more cost effective. A study is therefore warranted prior to final selection and has been proposed for RIC II financing. Sufficient time is available, since the need for this transportation system comes at the end of the three-year mine development program. The "core" program proposed for GDC for the 1986-88 period of \$14.4 million (C820 million) covers the remaining requirements of Phase I and the new requirements for Phase II (excluding the conveyer system).

3.66 The 1986-88 Mining Investment Program. The capital expenditure program indicated to the PER Mission amounted to C11.5 billion comprising Ashanti Gold Corporation (C6.95 billion), State Gold Mining Corporation (C2.6 billion); Ghana Manganese Corporation (C826 million), Ghana Bauxite Corporation (C313 million) and the Ghana Diamond Corporation (C792 million). The mission's "possible core" program for the mining sector amounted to C10.5 billion with Ashanti at its original C6.9 billion, SGMC reduced (largely in line with an original Bank proposal) to C2.1 billion, GNMC reduced to C393 million, and GBC and GDC at their original C313 million and C792 million respectively.

TABLE III.6: MINING INVESTMENT PROGRAM

(Constant 1985 Prices)

	Total Program/ Project Cost (Cdn)	Expenditure Through December 1985 (Cdn)	Expenditure Proposed 1986-88 (Cdn)	Foreign Financing Committed/Under Negotiation 1986-88 (Cdn)	Economic Viability ERR/DRC/IFR
II. MINING					
1. Ashanti Gold Fields Corp. *	8,892	1,425	6,954	3,078	53% ERR (1984)
2. State Gold Mining Corp.					
- Alt. 1	6,669 ^{1/}		2,608 ^{1/}		5% ERR (1985)
- Alt. 2 *	5,312 ^{2/}		2,097 ^{2/}	1,710	18% ERR (1985)
3. Ghana Bauxite Corp. *	313		313	-	Economic
4. Ghana National Manganese Corp.					
- Alt. 1	826	46	826		
- Alt. 2 *	439	46	393	-	Economic
5. Ghana Consolidated Diamonds *	1,761	820	792	-	Economic
Sub-Total ("Core" Program)*	<u>18,461</u> (16,717)	<u>2,337</u> (2,337)	<u>11,499</u> (10,549)	<u>4,788</u> (4,788)	

^{1/} With external management/technical assistance contract of C\$1265 million over 3 years (\$37 million over 5 years).

^{2/} With external management/technical assistance contract of C\$752 million (\$13.2 million) over 3 years.

ENERGY SECTOR EXPENDITURES

Overview

3.67 Energy Supply and Demand. Domestic output of energy primarily consists of fuelwood and, to a minor extent, hydropower, crop residues, and petroleum. It is estimated at 4.2 million tons of oil equivalent (TOE) in 1984, at which level it covers nearly 88% of Ghana's energy requirements. The deficit is met by imported petroleum. There are electricity exports to Togo-Benin and Ivory Coast and re-exports of fuel oil. Estimated energy demand in 1984 of 4.8 million TOE (397 kg OE per capita) is relatively low in comparison to more advanced African countries. Fuelwood meets 79% of primary energy demand, petroleum 12%, hydropower 6%, and crop residues, 3%. Less than 1% is accounted for by domestically produced petroleum. Despite the economic decline, commercial energy demand increased by close to 5% p.a. during most of the 1970's and early 1980's, spurred by low prices of petroleum products and electricity. Scarcities of petroleum products and of hydropower resulted in a sharp fall of commercial energy consumption after 1982. The sectoral breakdown of final energy consumption in 1984 is estimated to be as follows: residential sector, 73%; industry and commerce, 12%, transport, 8%; and agriculture, 7%. The respective shares of industry and commerce and of transport have declined over recent years as these sectors have borne the brunt of petroleum and electricity shortages.

3.68 Ghana has substantial energy resources. Wood is plentiful in the high forest zones which cover 34% of the total land area (8.2 million hectares). Hydropower resources are also abundant, particularly in the Central and Western regions of the country. The economically useable potential is estimated at 2,000 MW, more than twice the presently installed capacity. Estimates of proven reserves of oil vary from 1 to 5 million barrels but the petroleum potential is considered to be larger. Recent drillings in the Tano basin confirm the existence of large quantities of oil and natural gas. There are no known coal, lignite or peat deposits. Solar energy abound, while the potential for wind energy is limited.

3.69 Commercial energy consumption in Ghana has behaved erratically over the past few years as petroleum imports have been determined by foreign exchange availability and electricity production fell sharply because of the prolonged drought.

TABLE III.7: GHANA - ENERGY CONSUMPTION 1980-84

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Petroleum products (000 tons)	778	786	638	702	606
Electricity (in GWh)	1372	1405	1269	1190	1000

3.70 Investment in the energy sector during the period 1980-84 amounted to \$220 million. Most of this investment was concentrated in electric power with the construction of Kpong power plant (160 MW) which was commissioned in 1982 at a total cost of US\$251 million. About US\$157 million of this was spent between 1980 and 1982. There were also some investments (US\$15 million) in subtransmission and distribution facilities to extend access to hydro based power under a Bank project that began in 1977. In the petroleum sector exploration was financed by private international oil corporations with the exception of the PETROCANADA (PCIAC) appraisal/exploration drilling in the offshore South Tano basin (\$30 million) which were funded by the Government of Canada and the activities financed by IDA and the Government of Ghana (GOG) under an energy project (\$11 million). In oil refinery and distribution sub-sector, the only investment initiated (and currently underway) was a US\$18 million refinery rehabilitation and technical assistance project (cofinanced by IDA).

3.71 Although Ghana is well endowed with energy resources it has not been in a position to develop them to the full benefit of the country. Despite substantial investment in hydro electric power much of the resulting benefits accrued to the aluminum smelting company, VALCO, which paid low prices for power for almost two decades. Even today, less than ten percent of the population is served with electricity. Similarly, although oil was being produced from the Saltpond field, Ghana until very recently receive any revenues from this either as taxes or royalties. The LPG that is produced at the local refinery is exported at depressed prices, because the lack of foreign exchange prevents import of stoves. As a result, the pressure on the agricultural and forestry sectors has increased to meet the needs for household energy. The principal reason for this situation were the poor contractual agreements entered into by Ghana. It is only in the recent past that the Government has been able to renegotiate the contracts and redress the imbalances in them.

3.72 With the contracts renegotiated and the drought situation expected to improve, the task of the Government in the energy sector is clear: How best can Ghana's abundant energy resources contribute to the economic recovery program of the Government. Given (a) the poor state of the power petroleum system and facilities; (b) a limited volume of managerial talent and manpower in the public sector; and (c) limited supply of investment resources, including foreign exchange resources, any successful strategy in the period 1986-88 will have to (with some exceptions) concentrate on rehabilitation followed by detailed feasibility studies of the options available for meeting the Government's longer term objectives for the energy sector.

Sector Objectives

3.73 The Government's objectives for the sector are: (a) reducing the country's vulnerability to short-term supply disruptions, particularly for power and petroleum production; (b) improving the availability and distribution of energy to meet the needs of the population at minimum cost;

(c) accelerating the development at least cost of indigenous energy resources to keep up with the growth in energy demand and to substitute for imported fuels; and (d) promoting more efficient uses of energy in all sectors of the economy through the application of appropriate pricing and demand management (conservation/fuel substitution) policies and strategies.

3.74 Since geological conditions exist in Ghana for the formation of oil and gas, the Government is keen on pressing ahead with exploration to help reduce the need for imports and help resolve the problems posed by droughts. However, given the risk involved and the resources and technological know-how needed, the Government's strategy is likely to be based on attracting international oil companies to develop its petroleum potential. The Government's approach to the development of the electric power sector is to maximize benefits to Ghana from its large hydro electric power system through a judicious mix of export sales and extensions to the domestic grid. For the refining and distribution sub-sectors, the Government is seeking to improve the performance and expand the capacity of the refinery, and to improve the reliability and extend the capacity of the national petroleum product storage and distribution system. Finally, the Government has decided to systematically examine the most promising options that exist in the renewable energy field.

3.75 While these objectives and strategies are clearly appropriate for the longer term, in the short run, the Government's efforts and investments will have to be directed to: (a) in the petroleum sector, to the rehabilitation of the refinery to improve performance, and to the rehabilitation of the petroleum production storage and distribution system; (b) in the power sector, to system rehabilitation to restore service reliability and maintain export capability, and institutional measures to assure financial autonomy of VRA and ECG. In addition a number of feasibility studies will have to be undertaken urgently to examine the following proposals among others: (i) thermal complementation of the existing hydro system; (ii) domestic gas development for power generation; (iii) extension of the transmission grid to cities in the north; (iv) extension of distribution network; (v) development of the Tano Tar Sands project and (vi) development of conservation and fuel substitution strategies etc.

Energy Investment Program

3.76 For the 1986-88 period as a whole, some C25.65 billion (\$450 million) was suggested for energy sector investments (see table III.8). On the basis of an economic evaluation of this investment program projects were divided between those that are "core" and those that are "non-core". Of the total investments devoted to energy, about half of the investments are of a priority or "core" nature. These "core" projects are estimated to cost C10.9 billion (\$190 million) and constitute about 11.5% of the total Government investments currently programmed for all sectors of the economy. They are mostly urgent rehabilitation projects and the very minimum needed to sustain the Government's economic recovery program, particularly since

there has been very little investment in the sector in the last 2 or 3 years.

TABLE III.8: ENERGY SECTOR INVESTMENT PROGRAM, 1986-88
(¢ Million Constant 1985 Prices)

<u>Sub-Sector</u>	<u>"Core"</u>	<u>"Non-Core"</u>	<u>Total</u>
1. Petroleum: Exploration and Production	2,907	4,674	7,581
2. Petroleum: Refining, Storage and Distribution	2,935	6,584	9,519
3. Electric Power: Volta River Authority (VRA)	3,420	1,767	5,187
4. Electric Power: Electricity Corporation of Ghana (ECG)	1,311	1,710	3,021
5. Renewable Energy: National Energy Board (NEB)	342	-	342
TOTAL	10,915	14,735	25,650
of which: Petroleum	5,842 (54%)	11,258 (76%)	17,100 (67%)
Electric Power	4,731 (43%)	3,477 (24%)	8,208 (32%)
Renewable Energy	342 (3%)	-	342 (1%)

3.77 It is important to note, however, that the project that have been labelled "non-core" in the energy sector do not mean that they are necessarily uneconomic. They are in that category either because of insufficient information, because the timing is uncertain, or because of doubt about the managerial capability or absorptive capacity of the sector to deal with them over the period 1986-88. In some cases projects have not been included in the "core" program because they could better be undertaken in the private sector. These cases are pointed out in the context of discussion of the projects. It is essential, however, in any case that during this "rehabilitation" phase, feasibility studies be undertaken on the "non-core" project proposals.

Petroleum

3.78 Ghana's economy is not petroleum consumption intensive. Consumption of petroleum products in 1984 was about 0.6 million M.T. down from its 1981 peak of 0.80 million MT. Consumption in 1982 declined steeply, mainly because of supply shortage in the wake of foreign exchange constraints. A partial recovery has since taken place. Although

consumption of petroleum products was limited through strict rationing, petroleum imports continue to claim a large share of foreign exchange earnings. In 1984, Ghana imported US\$209 million worth of crude and products and re-exported US\$26 million of products, mainly fuel oil - thus net petroleum imports claimed 34% of Ghana's non-petroleum export earnings. The breakdown of consumption by product in 1984 was as follows: gas oil, 40%; gasoline, 31%; kerosene, 15%; fuel oil, 10%; jet fuel, 3%; and LPG, less than 1%. Sectorally, the consumption breakdown is estimated at transportation 61%, industry and commerce combined, 22%; residential use, 13%, and agriculture, 4%. The 28,000 BPD refinery meets most of domestic requirements with the exception of gas oil (of which minor quantities need to be imported), and produces substantial surpluses of fuel oil for re-exports amounting to 0.12 million MT in 1984.

3.79 Exploration and Development. Although Ghana's hydrocarbon potential is considered to be significant, exploration efforts by foreign companies both on- and off-shore have resulted in few commercial discoveries. Only the marginally economic off-shore Saltpond field has been developed whose production has dropped to 650 B/D in 1985 from 4,000 B/D around 1980. The economic potential of several recent discoveries has yet to be appraised.

3.80 In view of the above development, and as a direct outcome of its strategy to reduce Ghana's heavy dependence on imported oil, the Government has since 1983 taken an active role to rekindle and accelerate hydrocarbon exploration. It has recently created the Ghana National Petroleum Corporation (GNPC) with responsibility for handling the operational aspects of exploration and development. The Government commissioned the Petro-Canada International Development Corporation (PCIDC) to drill two wells in the off-shore South Tano structure which identified oil and gas deposits. Assisted through the IDA Energy Project, additional efforts were launched to attract foreign companies to explore and develop hydrocarbon resources. The main features of this promotion efforts have been (a) the collection and processing of geological and geophysical data (by Teknika Resources Ltd. as the Government's exploration consultants) to better establish and promote Ghana's petroleum potential; (b) a 7,000 km speculative seismic survey (by Geophysical Services, Inc.); and (c) a review and revision of the petroleum legislation and the formulation of a draft model agreement which take account of the view of the petroleum industry.

3.81 These promotional efforts have generated a basically favorable response from the industry, which has shown interest in 17 offshore blocks offered by the Government. By June, 1985, the Government started to negotiate with three companies on their bids. The Government also reached an agreement with Primary Fuels, Inc., a US independent, on operating the Saltpond Field. PFI meanwhile has reinterpreted existing seismic data and has drilled two wells: the first well was dry while the second is being evaluated in the context of a production survey of all existing wells (which PFI plans to complete by September 1985). Dependent on the evaluation results, PFI might drill a third development well, as well as

one additional exploration well over and above their work commitment. GNPC on its part has to decide on whether it wants to exercise its option of an additional participation of up to 39% in the third well, above its carried interest of 10% (both recently negotiated). This is likely to involve an investment of C912 million (\$16 million) in the 1986-88 period. The rate of return on the incremental investments required (both from Government and PFI) is estimated at 25 percent. The Government's share is accordingly included in the 1986-88 "core" program for the sector (Table III.9).

3.82 Tano "Tar Sands" Development. In the extreme western part of Ghana and near the coast, adjacent to the border with Ivory Coast, tar sands and oil seepages have been identified. Though this has been known for almost a century, recent studies suggest that the "Tar Sands" may in fact be a near surface accumulation of oil. Further work is needed and will be financed under the World Bank's ongoing Energy Project. GNPC will carry out the work with the assistance of consultants. Should the results of this work be positive, some 600b/d of oil could be economically produced. The cost of such a program would not exceed \$4.0 million, and would include a three-phase evaluation which would attempt to reduce the risk of insufficient reserves or of their inability to be produced efficiently. The technology can be handled by GNPC with existing or easily supplied equipment, and since it is on shore, the logistics and costs are low. A rough economic analysis indicates that Phase One delineation costing \$1.3 million, followed by development of the seeps with pumps and wells, (assuming a success case), would cost a capital investment of \$5.0 million, including trucking/barging from Tano to Tema. Under these assumptions, half a million barrels of oil could be produced in six years with a cumulative net profits of \$6.0 million. Payout would be in 2.6 years at the rate of return about 60%. Investments required for the 1986-88 period of \$4 million (C228 million) are therefore included in the "core" program.

3.83 South Tano Development. The South Tano structure lies in the western part of Ghana in about 300 feet of water and 30 km from the shore. Recently (1984), the Government secured a grant from the Canadians that allowed PETROCANADA to drill 2 exploration/appraisal wells and shoot additional seismic at a cost of nearly US\$30 million. This work, although not yet completed, suggests the existence of almost 50 million barrels of oil and around one trillion cubic feet (TCF) of gas.

3.84 The structure is obviously attractive, provided that the oil and gas are in place in the quantities which have been assumed, and that production at the assumed rates can be sustained over the life of the field. To reduce risks, a detailed reservoir study must be made, which would indicate what further works need to be done. There is a sufficiently detailed grid of seismic data over the structure and a total of six wells have been drilled. If indeed these reserves are confirmed, then the question is whether it is technically and economically feasible to develop the field given the depth of water and whether the Government should undertake the development or whether it would be best left to the private sector. On the first point, the Government hired consultants, who

together with PETROCANADA, should be able to obtain a fair ideas about the reserves. As to the development, both the technology needed and the cost (over US\$250 million) suggest that the Government look to the private sector to develop South Tano. It may, however, wish to retain a minor working interest without actually having to provide for any cash outlays. Promotion of the South Tano structure, however, will required continued commitment on the part of the Government. It would also require resources of up to US\$1 million a year from the Government for further studies and promotion. A rough economic analysis indicates extremely attractive returns. Reserves were assumed at 50 MMBO and 500 BCF; prices at US\$30/bbl and US\$0.30/MCF; initial production rates of 20,000 b/d and 200 MMCFPD, and capital investment cost of US\$250 million. Production would start at the beginning of the fourth year, and deplete in 14 years. Under such conditions, the US\$300 million investment would payout in 4.3 years and would yield a rate of return of over 50%. A Government investment of 10% of total estimated project cost amounting to \$25 million (€1.4 billion) is included in the "core" program. This is an indicative amount and the Government's equity share could be larger if external financing or a deferred payment program could be arranged.

3.85 North Tano Delineation and Development. The North Tano structure lies in 150' of water, 8 km from shore and has no obvious structural closure. Two wells were drilled on the structure and both produced oil and gas. Much more interpretation will be needed of the data available to evaluate the structure and, in all probability, a third well will need to be drilled to determine whether the structure is capable of commercial production. The structure could be promoted to the private sector prior to a well being drilled or aid assistance should be sought in drilling the well.

3.86 Cape Three Points Gas Discovery Exploitation. The Cape Three Points gas discovery by Phillips flowed 3.7 MMCFPD which was considered a sub-economic rate. In their relinquishment report, Phillips estimated the proven reserves to be 165 BCF, but indicated in a sketch map, that the reserves could be much larger. OXOCO and ARACA, two promoting companies, picked up the license on the block prospected by Phillips and got AGIP to drill a well in 1984. It is believed that while AGIP's well also encountered gas, it has, however, now relinquished its interest. This area should again be promoted to private oil companies.

3.87 Keta Onshore Exploration. In the Keta lagoon, near the Togo border, several wells have been drilled, and a moderate amount of seismic shot. An exploration license was granted to Texas Pacific Oil Company to drill a well in this area. Texas Pacific made considerable efforts to farm out the block, and contend that they would have been successful had it been possible to bring in a rig overland from Togo, which proved to be politically impossible in the last two years. The license has now been relinquished, and the large structure which has been mapped, remains undrilled, but still attractive. Several private oil companies are interested in the structure, and the Government should promote it in the 1986-88 period.

3.88 Petroleum Exploration in the Voltaic Basin. The Paleozoic Volta Basin cover a significant portion of onshore Northeast Ghana. Earlier work by the Soviets, and later by Shell, have not resulted in anything of interest, but probably more exploration in the Basin is justified. The Shell work was hurried, including the drilling of one well done just prior to the filling of the lake behind the Akosombo dam. Before promoting the area to the oil industry, what may be needed is the commissioning of an aeromagnetic survey over the Ghana portion of the Basin, working up of the landsat imagery and the carrying out of a photogeological study. This information, together with the past data, could be put out as a data package to interest oil companies. Alternatively, this work could be carried out by an oil company as part of their work obligation or by a geophysical company on a speculative basis.

TABLE III.9: PETROLEUM SECTOR INVESTMENT PROGRAM

	<u>Constant 1985 Prices)</u>					
	Total Program/ Project Cost	Expenditure Through December 1985	Expenditure Proposed 1986-88	Foreign Financing Committed/Under Negotiation 1986-88	Economic Viability ERR/DRC/IRR	
	(Mn)	(Mn)	(Mn)	(Mn)		
1. Saltpond *	1,140	228	912	912	25% IRR (1985)	
2. Tano Tar Sands *	228	-	228	228	60% IRR (1985)	
3. South Tano						
Government Costs *	14,250	-	1,425	-	50% IRR (1985)	
4. North Tano						
Government Costs	1,710	-	1,710	-	Priv. risk capital re	
5. Cape Three Points	1,710	-	1,710	-	Priv. risk capital re	
6. Exploration						
Promotion *	171	-	171	26		
7. Exploration Drilling	4,560				Priv. risk capital re	
Government Costs	-	-	-	-		
8. Keta off-shore Drilling	798	-	798	-	Priv. risk capital re	
9. Off-Shore Seismic						
Survey	342	-	342	-		
10. Voltaic Basin Studies	114	-	114	-	Priv. risk capital re	
11. GNPC Technical						
Assistance *	171	-	171	171		
<u>Sub-Total</u>	<u>25,194</u>	<u>228</u>	<u>7,581</u>	<u>1,337</u>		
(Possible "Core")*	(15,960)	(-)	(2,907)	(1,337)		

3.89 Petroleum Procurement, Refining and Marketing. Ghana has purchased crude oil from Nigeria at official prices on a

Government-to-Government contract whereas petroleum products have been acquired on the spot market. Also, fuel oil surpluses are re-exported on a spot basis, largely to the U.S. Eastern Seaboard. The Government-owned, GHAIIP operated Tema refinery, a simple hydroskimming plant with a capacity of 28,000 BSD, has deteriorated due to inadequate maintenance. Under the ongoing IDA Refinery Rehabilitation and Technical Assistance Project (\$18.3 million - with EIB co-financing) technical improvements have been carried out which have resulted in a significant improvement in refinery operations through cutting losses from 8% to 5-6% of throughput. The project is expected to be completed by the end of 1987 and should reduce Ghana's oil import bill by \$10 million per year.

3.90 One of the most important issues in the energy sector concerns the future of the refinery. The Government considers the continue operation of the refinery as essential for securing petroleum product supplies. It is envisaging a secondary conversion investment, with investment costs ranging between \$70 million (TC option) to \$107 million (FCC option), to: (a) increase refinery capacity to 34,000 BSD and (b) provide facilities for processing fuel oil surpluses into middle distillates, primarily gas oil, based on a technical report prepared by BEICIP under the IDA refinery project. However, review by Bank sectoral specialists indicates that this investment is not viable at current (May 1985) oil product prices. An in-depth evaluation is therefore required based on CIF import cost for crude and products and a realistic product-by-product demand forecast, with adequate allowance for risk as a result of changing relative prices between crude and products. Only when its viability is firmly established should any investment in secondary conversion be considered, giving due regard to alternatives such as toll refining of surplus fuel oil in regional refineries with excess secondary processing capacity (e.g. Abidjan). It is recommended, therefore, that the Government postpone any decision on this investment to allow a more in-depth evaluation in the light of petroleum market developments. The project is therefore not included in the sector's "core" program for 1986-88 (Table III.11)

3.92 BEICIP also studied the possibilities of having a bitumen plant included in the refinery scheme and estimated a cost of \$9.8 million (\$7.80 million in foreign exchange) for a 30,000 tons/year bitumen plant. Since special bituminous crude from Middle-East yielding lower distillate products is essential for bitumen production, the refinery's overall operating economics will be reduced considerably if the refinery produces bitumen. The investment therefore, is not economically viable. It will be cheaper for Ghana to import its relatively small requirement of bitumen.

3.93 A 24,000 tons per year lube blending plant which will suit Ghana's requirement costing about \$15.0 million (\$12.0 million foreign exchange) was found to be economically viable. Due to the attractive financial viability (20% IRR), the private companies engaged in the marketing of lubes should be interested in a joint venture. GOG should explore the possibilities for their collaboration. The project is

accordingly included in the public sector "core" program as a joint venture with government equity participation at an indicative ten percent.

3.94 Petroleum Product Storage and Distribution. Finished petroleum products from the refinery at Tema and those imported are distributed by five marketing companies. Four of these are private foreign companies (Mobil, BP, Texaco and Shell) and the fifth is the Government-owned, Ghana Oil Company Limited (GOIL). Products are transported mainly by road and ocean tankers to storage depots in Takoradi and Kumasi. All five companies maintain retail outlets throughout the country which are served by some 280 road tankers. The marketing shares and the number of retailing outlets are shown in the table below:

TABLE III.10

<u>Company</u>	<u>Market Shares (1983)</u>		<u>Retailing Outlets</u>	
	<u>Amount (000 Tons)</u>	<u>Percentage Share</u>	<u>Number</u>	<u>Percentage Share</u>
GOIL	185	33	352	41
MOBIL	97	17	119	14
BP	89	16	199	24
TEXACO	99	18	94	11
SHELL	94	17	84	10
TOTAL	564	100	848	100

3.95 Petroleum products are transported and stored at depots owned by the companies at Takoradi and Kumasi (38 tanks with a capacity of 67,000 m³). The oil depots at Takoradi and Kumasi as well as the 850 retail outlets of the marketing companies are in a dilapidated condition and in need of urgent repair or replacement. Some of the facilities are just very old, while others have not been maintained for lack of foreign exchange. In the interests of improving efficiency and safety, it is important that these facilities be repaired and rehabilitated. The depots at Takoradi and Kumasi would require an investment of about C114 million (\$2 million) while the cost of rehabilitating the retail outlets is estimated at about C570 million (\$10 million), which includes the retail outlets owned by private companies.

3.96 While the number of retailing outlets appear to be adequate to meet the needs of the populated areas in the near term, the Government attaches high priority to expanding the distribution of petroleum products in the rural areas, particularly in the north. The Government proposes to use simple mobile facilities to supply products in regions that are not readily accessible. The cost of these facilities are estimated to be about C342 million (\$6 million).

3.97 LPG Marketing Facilities. Finally, the refinery at Tema can at present produce about 12,000 tons of LPG. For lack of sufficient storage, bulk transportation, filling facilities, bottles and stoves, LPG sales have stagnated at about 6,000 tons per year. Marketing of additional 6,000 tons per year of LPG would enhance the refinery's operating economics. But more importantly, lead to a substitution of wood and charcoal, thereby reducing the pressure of household energy on the forestry and agriculture sectors. A program to provide the necessary LPG facilities is estimated to cost about C285 million (\$5 million) and would be a GOIL/GHAIP joint investment.

3.98 Transportation of petroleum products to the north over the Volta Lake from Akosombo is worth considering (C171 million). Small storage facilities at Akosombo and at the unloading points, and suitable loading and unloading facilities will be the main expenditure items on the petroleum marketing side.

TABLE III.11: PETROLEUM REFINING AND DISTRIBUTION INVESTMENT PROGRAM 1986-88

(Constant 1985 Prices)

	Total Program/ Project Cost	Expenditure Through December 1985	Expenditure Proposed 1986-88	Foreign Financing Committed/Under Negotiation 1986-88	Economic Viability ERR/DRC/IFR
	(Mn)	(Mn)	(Mn)	(Mn)	
1. Petroleum Refinery and Rehabilitation *	1,026	355	1,026	688	65% ERR (1984)
Phase I (ongoing)					
2. Petroleum Refinery and Rehabilitation *	342	-	342	342	Economic
Phase II					
3. Petroleum Refinery, Addition of Second Conversion					
a. 34000 BD with TC	4,275	-	3,135	-	-3.55% ERR
b. 34000 BD with FCC	6,555	-	5,244	-	Uneconomic
4. Bitumen Plant	570	-	570	-	Uneconomic
5. Lube Blending Plant	855	-	-	-	20% ERR (1984).
- Alt. 1	855	-	855	-	Recom. for Joint
- Alt. 2 *	855	-	85	-	Venture with
					Private Sector.
6. Oil Depots Rehab. *	114	-	114	-	Economic
7. Retail Outlets Rehab. *	570	-	570	-	Economic
8. Volta Lake Transpntn. *	171	-	171	-	Economic
9. LPG Marketing Facil.*	285	-	285	-	Economic
10. Rural Area Petroleum Product Outlets *	342	-	342	-	Economic
<u>Sub-Total</u>	<u>10,830</u>	<u>-</u>	<u>9,519</u>	<u>1,030</u>	
("Core" Program)*	(3,705)	(355)	(2,935)	(1,030)	

Electricity Subsector

3.99 The electricity subsector is faced with complex institutional, financial and technical issues. Among the two operating entities, VRA is well managed and efficiently operated, whereas ECG has been poorly managed and has provided unreliable service to its customers. ECG has been unable to provide for new connections and system reinforcement to maintain voltage levels. Distribution losses are estimated to be well above 15%. Differences in the performance of these two organizations are related to the complexity of their operations and to the intensity of their links with the domestic economy. ECG, as a distribution company, has to deal with a large number of domestic customers and has been seriously weakened in line

with the decline of the economy. VRA, a bulk supplier of electricity to seven large-volume customers, 7/ runs an enclave operation and has been able to largely insulate itself from Ghana's economic problems. It earns foreign exchange through sales to VALCO and neighboring countries which it can retain for importing equipment and materials for maintenance and expansion.

3.100 ECG has been considerably weakened in recent years because of financial deterioration in the wake of inadequate tariffs, lack of professional competence at all but the highest levels and simultaneous overstaffing at the semi- and unskilled levels. 8/ The entity has experienced serious difficulties in recruiting competent staff mainly because of low salaries and the lack of a career structure but also because of a general image problem. While VRA has remained the most competent institution by far in the public sector, it too is experiencing temporary financial difficulties which are largely related to depressed sales resulting from low generating capacity (VRA had to raise short term loans in 1984 to meet its debt service).

3.101 Rehabilitation Requirements. VRA's and ECG's primary need is for system rehabilitation. VRA's existing generation and transmission system needs to be strengthened, to enhance its reliability. The Authority is approaching this rehabilitation in two phases, i.e. initially the Akasombo power house and central dispatch station (at a cost of about \$6 million) to be followed by the rehabilitation of about 15 substations all along its transmission system costing around US\$8 million. ECG's rehabilitation needs are even more pressing. IDA is currently preparing a \$28 million Power System Rehabilitation Project for ECG and (to a minor degree) VRA, to be carried out between 1985-1989. The main components of this project, costing \$49 million (\$23 million for ECG alone) are spare parts, technical assistance, and staff training.

3.102 Medium-to Long-term Expansion. The recent severe drought made it apparent that hydroelectricity is a less secure source of energy than was earlier believed. An electricity investment study for the period 1983-2003 prepared by VRA's consultants, Acres, indicated that combustion turbines and coal-fired steam plants have a lower cost than available hydro options. On that basis, additional hydro would no longer be relevant to least-cost electricity investment planning during the period under consideration. Natural gas may also be a viable option for some base load generation depending on the size of gas discoveries and their distance from the coast. As part of the optimal sequence of generation investment, Acres recommend

7/ ECG, a mining company, Akosombo township, and the Akasombo textile plant as domestic customers; and VALCO, CEB of Togo/Benin and EECI of Ivory Coast as foreign customers paying in foreign currency.

8/ As an indication, ECG's staff since 1983 has declined by about 20% (from 6,000 to 4,900) without affecting the volume of operations.

(a) the immediate rehabilitation of ECG's 30 MW Tema diesel station, at a cost of about \$2.6 million, which would provide some 22 MW (effective capacity) of thermal back-up for about 10 years, and would postpone the need for expansion investment by about two years; and (b) thermal complementation of the existing hydro system through installation of two 25 MW combustion turbine units. In addition to increasing overall system reliability, the thermal back-up, according to Acres, would permit the Akosombo reservoir to be operated at lower water levels in normal years, which would avoid spillage and allow increase output of 20%, or nearly 1,100 Gwh/year in "wet" years. The reliability of these estimates are not known but the expected energy savings would be substantial.

3.103 As regards transmission, the extension of the national power grid to presently unconnected areas as far north as Bolgatanga was recommended in 1983, but changed economic conditions since then and improved cost estimates have reopened the question of overall economic viability of extending the grid. According to Acres, the cost of electricity supplies to the northern load centers is minimized if the grid is extended to Tamale as soon as possible and to Bolgatanga by 1991, even though the loads in these isolated centers are relatively small. While preliminary estimates indicate that the transmission of hydropower would be cheaper than an equivalent amount of thermal electricity generated in isolated diesel centers with little scope for expansion, the economic viability of such a scheme still needs to be established. This should include the evaluation of alternatives such as improving the supply of petroleum products to northern cities needed for electricity generation and the extension of the transmission network in stages. Also to be considered are the implications for VRA's finances of investing in thermal generating capacity to supply additional domestic customers, and the relatively lower revenues from sales in the domestic market compared to electricity exports.

3.104 VRA are also considering two additional regional interconnection schemes. One is to add a third circuit to the transmission line to CEB to allow for an increase in sales (from 520 GWh to a maximum of 780 GWh per year). The reduction in transmission losses is expected to pay for this investment (estimated at about \$10 million) within a relatively short period. The other is an interconnection with Burkina that might become feasible if (a) the grid were to be extended to northern Ghana, and (b) Burkina would absorb considerable volumes of energy. However, electricity demand of the Ouagadougou region by the mid-1990's is estimated to be in the order of 80-90 GWh p.a., which is insufficient to make the investment economic.

3.105 Electric Power: Generation and Transmission. VRA has identified four main investment priorities to start during the next three years. These are: (i) installation of a combustion turbine power plant; (ii) extension of the transmission grid to northern Ghana; (iii) reinforcement of the existing transmission network; and (iv) construction of an additional transmission circuit to Togo.

3.106 However, the sequence and timing of these projects have not yet been finally determined by VRA or the Government. Financial projections based on a return to normal operating conditions of the hydro system, but assuming a conservative level of export sales, show that VRA will be capable of financing this investment program predominantly through its own internally generated foreign exchange surpluses. In the past, VRA successfully financed its investments through a combination of internally granted resources and foreign borrowings, but it now faces an unprecedented period of uncertainty brought on by the drastic reduction in the level of the Volta Lake. The drought also forced it to deplete its cash reserves in 1983-84 to make up for a massive reduction in export sales. It had to seek short term commercial financing to help it meet its foreign debt service obligations in 1984-85 and will probably suffer a small foreign exchange deficit this year as well, despite an increase in export sales. Much now depends on the 1985 rainy season. Should the rains be normal or better, VRA's financial situation will recover rapidly and its ability to undertake major new investments would be restored. However, should the rains continue to be below normal, VRA will face a precarious future and will require assistance from the Government and/or abroad, simply to service its foreign debt. Its priorities are thus liable to change fundamentally between now and the end of 1985 according to the level of the Volta Lake at the end of the rainy season.

3.107 Installation of combustion turbines. A generation and transmission system planning study recently completed by consultants to VRA has established that thermal complementation of the existing hydro system, in conjunction with the greater flexibility allowed by the new contract with VALCO, would enable VRA to maximize the energy generation from its hydro plants by permitting it to operate the reservoir less conservatively ^{9/} and thus minimize possible energy loss through potential water spillage in very wet years. At the same time, adequate thermal back-up to meet domestic load (excluding VALCO) would also be available. They estimate that two 25 MW combustion turbine units need to be commissioned in 1989. The cost of such a plant is about 1.3 billion (\$23.0 million) in 1984 prices but this estimate may be on the high side. It would be designed to burn natural gas or diesel oil. The siting and choice of fuel for the plant would be determined when there is a firm data on gas availability at Saltpond, Tano, and Cape Three Points and on costs. VRA intends to commission a detailed feasibility study for such a plant in the very near future. Construction would take about two years. The project has a sound rationale but its role as plant to be used only in dry years could change fundamentally if proven gas reserves are found to be exploitable at a cost which would justify using it for base load instead. It is accordingly included in the 1986-88 "core" program for the sector (Table III.12).

^{9/} i.e., allow the lake level at the end of the dry season to be lower than it was formerly.

3.108 Extension of the transmission grid. VRA's eventual objective is to extend its transmission grid to major load centers north of Kumasi and to key productive regions of the country. This would be implemented in stages, starting with a line to Techniman/Sunyani and possibly on to Tamale immediately thereafter. The technical feasibility of this project has already been established and the first segment to the Brong Ahafo Region could be commissioned within three years. The cost would be about C1.77 billion (\$31 million) in 1984 prices. ^{10/} GOG is keen to start this project as soon as possible as growth in the region is perceived as being held back by lack of reliable power supply. These towns are currently experiencing irregular and inadequate power supply from ECG's isolated diesel stations, and there is significant degree of suppressed demand and private autogeneration. Extending the transmission line from the Techiman/Sunyani area to the Tamale area would require an additional C2.1 billion (\$37 million). This phase is unlikely to start in the next three years. At present levels of electricity consumption diesel savings alone cannot justify the investment in transmission lines to the north. Demand is likely to increase very rapidly once grid supply is available but further work needs to be done to estimate how long it will take for the load to exceed the break-even level with diesel based supply. The choice of the route for the transmission line to Tamale also requires further analysis because of the effect of possible large scale (over 40 MW) exports to Burkina.

3.109 Reinforcement of the existing grid. As demand in Ghana grows, both in areas already receiving grid supply and through grid extensions, the existing transmission system will have to be reinforced to assure system reliability. The estimated cost of reinforcing the line Akosombo-Tafo-Akwatia and extending it to Dunkwa is C855 million (\$15 million). This reinforcement is needed in 1988. The project is included in the "core" program.

3.110 Addition of a third circuit to supply CEB. The existing two-circuit line to Togo/Benin has a capacity limit of 520 GWh/year. As demand in these areas grows CEB will probably seek to increase its purchases from VRA. This would require an additional circuit at a cost to Ghana of about C513 million (\$9 million) in 1984 prices and would enable sales of up to 780 GWh. The system planning study has established that this project is economic even at the present tariff paid by CEB. The elimination of transmission losses on the existing lines through a third circuit would in itself pay for the investment in the additional circuit. The project would increase the foreign exchange earning capacity of the power sector and would also be consistent with efforts to promote greater exchanges of electricity amongst national utilities under a West African Regional System Interconnection. The project is therefore included in the 1986-88 "core" program.

^{10/} About US\$ 9 million of this for 33 kV lines would be borne by ECG.

TABLE III.12: POWER GENERATION AND TRANSMISSION (VRA) INVESTMENT PROGRAM

Constant 1985 Prices)

	Total Program/ Project Cost (Pn)	Expenditure Through December 1985 (Pn)	Expenditure Proposed 1986-88 (Pn)	Foreign Financing Committed/Under Negotiation 1986-88 (Pn)	Economic Viability ERR/DRC/IRR
1. Network Rehab. Phase II *	741	-	741	1/	Economic
2. Combustion Turbine Units *	1,311	-	1,311		Economic
3. Grid Reinforcement *	855	-	855		Economic
4. Grid extension to Techiman/Sunyani	1,767	-	1,767		Economic (completion delayed to 1990)
5. Third Circuit to CEB*	513	-	513		Economic
<u>Sub-Total</u> ("Core" Program)*	5,187 (3,420)	- (-)	5,187 (3,420)	-	

1/ Financing being arranged.

3.111 Electric Power: Submission and Distribution. Over the past few years the quality of service provided by ECG to its consumers deteriorated due to a lack of foreign exchange to buy spare parts and equipment, loss of skilled staff, an inability to recruit replacements and failure to obtain timely tariff increases to meet local funds requirements. In addition it has not been able to invest in extensions of service to new areas and now has a large backlog of request for consumer connections, including in rural and small towns.

3.112 ECG's system is in acute need of rehabilitation, principally because of inadequate resources in the past to maintain it adequately. The ECG system rehabilitation project appraised by IDA has been costed at about P1.3 billion (\$23 million). It consists of institutional and physical rehabilitation works to be carried out between 1985-88. The largest components are new distribution system equipment, spare part, vehicles, technical assistance and training. The project's local costs (20%) would be financed by ECG itself, while IDA would finance the foreign component. It is likely that this project will not meet all of ECG's rehabilitation

needs; these activities may thus have to be delayed to the period after 1988 unless additional external assistance becomes available for ECG.

3.113 System Expansion and Reinforcement. The IDA financed rehabilitation project is essential to restore reliable power supply to existing customers but it does not include funds for system expansion. At present, it is the sole firm component of ECG's investment program for 1986-88, but ECG is seeking to obtain funds for a complementary system expansion project. This would be based on relatively short 33 and 11 KV transmission links to displace isolated diesel generation stations either by hydro based supply from the VRA grid or through consolidation of diesel generation at a single center; ECG has identified 11 such line sections in different parts of Ghana costing about C969 million (\$17 million). This approach is consistent with a least cost program of expansion of electricity service but a proper economic analysis of the project needs to be carried out. In addition, there are doubts about capacity of ECG to carry out a system expansion program at the same time as the rehabilitation project. In the short term it may be of higher priority to use resources available for investment in system expansion for reinforcing overloaded portions of ECG's existing network in the main towns, for connecting up new customers in these areas and for extending service to currently unserved areas in these towns. In a normal operating environment it would be customary for a utility to finance this routine annual system expansion out of its own internally generated resources. It is expected that ECG's finances will improve to enable it to do so during the rehabilitation program, but ECG only earns revenue in Cedis so that a mechanism has to be established to ensure that it can purchase the necessary foreign exchange (\$3 million/year) for this activity after the end of the IDA financed project.

3.114 Government Rural/Small Town Electrification Program. At present, this program aims to electrify two towns/villages per region per year at an annual cost of \$2.0 million in foreign exchange and C40 million (\$0.70 million). However, it has suffered from intermittent government funding since it was started in 1972 and only about 20 centers have been electrified so far. Work, started on 15 others, had to be stopped through lack of funds and will resume shortly under a credit from India. In addition to funding the capital cost of this program, the Government is liable for the operating deficit incurred by ECG on uneconomic stations brought into service for social and other reasons. ECG currently selects towns and villages to be electrified on the following basis: (i) all district capitals in Ghana (not yet done); (ii) important industrial/economic centers; and (iii) towns, villages along the route of transmission lines. It maintains separate accounts for the program. The 1983 operating deficit was C19.1 million and the accumulated deficit at the end of 1982, was C41 million. GOG has indicated its interest in having the program and the selection criteria examined under the UNDP-World Bank Energy Assessment Program.

TABLE III.13: POWER DISTRIBUTION (ECG) INVESTMENT PROGRAM

	Constant 1985 Prices)				
	Total Program/ Project Cost (Qn)	Expenditure Through December 1985 (Qn)	Expenditure Proposed 1986-88 (Qn)	Foreign Financing Committed/Under Negotiation 1986-88 (Qn)	Economic Viability ERR/DRC/IRR
1. IDA System Rehab. Project I*	1,311	-	1,311	1,140 <u>1/</u>	Economic
2. Rural Electrifi- cation	570	-	570	-	n.a.
3. 33KV Exten- sions	570	-	570	-	Economic - could be delayed
4. Rehabilitation of secondary distribution network	570	-	570	-	n.a.
<u>Sub-Total</u> ("Core Program")*	<u>3,021</u> (1,311)	<u>-</u> (-)	<u>3,021</u> (1,311)	<u>1,140</u> (1,140)	

1/ Loan amount under negotiation with IDA.

INDUSTRY SECTOR EXPENDITURES

3.115 Overview. The wholly owned public industrial sector consists of 51 enterprises contributing about 13 percent of gross manufacturing output. The PER mission reviewed the ongoing operations of 42 of those enterprises (i.e. all except the timber, cocoa and textile companies) which comprise about 80 percent of the wholly owned manufacturing sector (defined in terms of gross value of output). These comprised of two independent operating companies (Tema Food Complex and Bonsa Tire Co.), 24 GIHOC companies, 9 NIC companies, 3 GHAMONT companies and 4 GEA companies.

TABLE III.14: MAJOR COMPANIES IN MANUFACTURING PUBLIC SECTOR

Large Companies/ Groups	Number of Companie 1984	Number of Employees 1984	Sales (Cedis 000) 1984	Profits (Cedis 000) 1984
Tema Food	1	5,000	336,000	15,700
Bonsa Tire	1	2,000	68,000	11,400
GIHOC	24	7,882	861,000	157,800
NIC	9	650	15,800	(1,700)
GEA	4	34	59	1,200 ^{1/}
GHAMOT	3	150	39,600	4,500

^{1/} Because of income from non-manufacturing involvement.

3.116 In order to pass some judgement on the viability of the current operations of these companies and their proposed investment programs, the following criteria were applied: (i) economic viability (as measured by DRC analysis); (ii) financial viability (as indicated by the outturn for 1984 and budgets for 1985); and (iii) needs for rehabilitation (as indicate by the appropriateness of present technology and the cost of rehabilitation, balancing and modernization). The results of the analysis indicated that of the forty-two companies, nineteen were either economically viable or could be made economically viable and twenty-three companies were financially and economically non-viable. Dis-investment by the state in these non-viable enterprises would probably be in order.

TABLE III. 15: PUBLIC SECTOR INDUSTRY-SUGGESTED PATTERN OF STATE INVOLVEMENT

<u>Major Rehabilitation To be Undertaken</u>	<u>Continued Operations with Minor Capital Investment</u>	<u>Rationalisation of State Involvement</u>
<u>GIHOC</u>	<u>GIHOC</u>	<u>GIHOC</u>
Pharmaceuticals	Bottling Co.	Brick and Tile Co.
Glass Manufacturing	Paints	Meat Products
Steel Works	Metal Industries	Vegetable Oil Mill
Foundry	Paper Conversion	Asiama Oil Mill
	Electronics	Marble Works
<u>BONSA TIRE</u>	Footwear	A & B Ind. Co.
<u>TEMA FOOD COMPLEX</u>	Ghana Manuf.	Mosquito Coil Co.
	Printing & Paper Prod.	<u>NIC Group</u> (9 companies)
	Refrigeration & Household Co.	<u>GEA Group</u> (4 companies)
	Distilleries Cannery	<u>GHAMOT GROUP</u> (3 companies)
	Boat Yards	
	Fibre Products Co.	
	Cannery	

3.117 The "core" program recommended suggested by the mission focussed on the requirements of the "big six" - Tema Food Complex, Bonsa Tire Co., Gihoc Pharmaceuticals, Gihoc Glass, Gihoc Steel and Gihoc Foundry - as well as thirteen other Gihoc companies which were deemed to be either viable or potentially viable under the above criteria. Major investments included in the "core" comprise C341 million (\$6 million) for the Tema Food Complex for flour milling and animal feed activities (and not for processing smoked fish or further investments in groundnut oil milling capabilities), C227 million (\$4 million) for Bonsa Tire Co. for rehabilitation of plant specifically aimed at a limited range of truck and heavy duty tires, C705 million (\$12.4 million) for Gihoc Pharmaceuticals present ongoing rehabilitation and expansion program ^{11/}, C126 million (\$2.2 million) for Gihoc Glass to complete installation and balancing of its equipment, C181 million (\$3.2 million) for Gihoc Steel (without continuous casting equipment) and C194 million (\$3.4 million) to complete the Gihoc Foundry. In addition C191 million was included in the possible core for 13 Gihoc companies also deemed to be presently or potentially economically viable (Bottling Co., Paints, Metal Industries, Paper Conversion, Electronics, Footwear, Ghana Manufacturing, Printing and Paper Production, Refrigeration, Boatyards, Fibre Products, Distilleries and Cannery). Projects excluded from the core include seven Gihoc companies (Brick and Tile, Meat Products, Vegetable Oil Co., Asiama Oil Co., Marble Works, A & B

^{11/} Being financed through a DM33 million credit from KFW.

Co., Ltd., Mosquito Coil Ltd.) and the entire NIC, GEA and GHAMOT Groups. With the exception of foreign loans already committed, the investment program envisaged is expected to be largely self-financed by the Corporations themselves (Table III.16).

3.118 Tema Food Complex Corporation (TFCC). The corporation has six food processing units within the complex. In addition, there are cold stores and livestock activities (poultry and pigs). The processing units consist of: (i) flour mill (capacity 75,000 tons, 1984 production 10,820 tons); (ii) animal feeds (capacity 5,500 tons, 1984 production 1,196 tons); (iii) oil mill (capacity 1,920 tons, 1984 production nil); (iv) fish cannery (capacity 29 m tins tuna/7.5 m tins sardine, 1984 production 58,000 tins); (v) fish smoking unit (capacity 400 tons, 1984 production 29 tons); and (vi) fish meal plant (capacity 600 tons, 1984 production 160 tons). Of the above, the most important units are the flour mill and the animal feeds mill. In 1984, these activities accounted for 75% of the total sales. The oil mill does not have a refining process and can only produce un-refined oil. Also with the current shortage of groundnuts available for processing, the unit cannot be operated economically. The shortage of fish for processing makes the fish processing units financially unviable. The productivity of the entire complex has deteriorated because of the old and poorly maintained equipment. Major rehabilitation is required in most sectors of the plants. The grain evacuation system in the flour mill is in urgent need of repair. The company's profit before tax was 8.2 percent of gross income. The low level of profitability is mainly because of losses of some divisions like oil mill and fish canning.

3.119 Domestic resource cost analysis indicates that the operations carried out by TFCC show comparative advantage. However, the present viability of the fish based operations is questionable given the raw material shortages. A feasibility study for the rehabilitation of the complex has been carried out by an Austrian team. The study recommended a programme to rehabilitate all units within the complex at a total cost of \$14 million of which \$8 million would be the foreign exchange element. In view of the shortage of inputs for the oil mill and fish processing units, it is recommended that rehabilitation should be restricted to the flour mill and animal feeds mill. This would reduce the investment required to \$6 million of which \$4 million would be in foreign exchange. A loan from the OPEC fund of \$6 million is said to be available.

3.120 Bonsa Tyre Company Ltd. The corporation is involved in the conversion of locally produced natural and imported synthetic rubber into vehicle tires. The rubber process involves compound mixing, bead and tread extrusion and tyre building and moulding. Management and technical expertise was provided by Firestone in a joint venture relationship until 1982 when Firestone pulled out and the Government purchased its share. Bonsa, however, has an agreement to use Firestone moulds till January 1989.

TABLE III.16: PUBLIC SECTOR INDUSTRY INVESTMENT PROGRAM
(Constant 1985 Prices)

	Total Program/ Project Cost	Expenditure Through December 1985	Expenditure Proposed 1986-88	Foreign Financing Committed/Under Negotiation 1986-88	Economic Viability ERR/DRC/IRR
	(Cdn)	(Cdn)	(Cdn)	(Cdn)	
1. Tema Food Complex - Indicated ("Core")	713 (341)	n.a. "	713 (341)	318 (318)	Economic with suggested invest- ment program
2. Bonsa Tire Co. Indicated ("Core")	506 (227)	" "	506 (227)	- -	Uneconomic as proposed Economic with suggested invest- ment program
3. GIHOC Pharmaceuticals Indicated ("Core")	763 (705)	" "	763 (705)	530 (530)	Economic Economic
4. GIHOC Glass - Indicated ("Core")	126 (126)	" "	126 (126)	- -	Potentially Eco- nomic Potentially Eco- nomic
5. GIHOC Steel-Indicated ("Core")	482 (181)	" "	482 (181)	- -	Potentially Eco- nomic Economic
6. GIHOC Foundry - Indicated ("Core")	337 (194)	" "	337 (194)	- -	Potentially Eco- nomic
7. Specified 13 GIHOC Co.'s Indicated 1/ ("Core")	238 (191)	" "	238 (191)	- -	Economic, treating previous investment as sunk costs
8. Remaining 7 GIHOC Co.'s Indicated 2/ ("Core")	159 (-)	" "	159 (-)	- -	Uneconomic or minor operations
9. NIC Group - Indicated 3/ ("Core")	371 (-)	" "	371 (-)	- -	Uneconomic
<u>Sub-Total</u> (Sub Total ("Core Program"))*	<u>3,695</u> (1,965)	<u>n.a.</u>	<u>3,695</u> (1,965)	<u>848</u> (848)	

1/ Bottling Co., Paints, Metal Industries, Paper Conversion, Electronics, Footwear, Ghana manufacturing, Printing and Paper Production, Refrigeration and Household Equipment, Boatyards, Fibre Products Co., Distilleries, Cannery

2/ Brick and Tile Co., Meat Products, Vegetable Oil Mills, Asiana Oil Mill, Marble Works, A & B Co.

3/ Replace 3 small textile mills (C265 Mn.), install Lamp Equipment (C53 Mn.), replace soap factory (C53 million)

3.121 Although the nominal capacity of the factory is rated at 450,000 tyres a year, the lack of spare parts and maintenance has reduced feasible capacity to 120,000 tyres. Production has been continually declining in recent years and in 1984 reached a low of units (20% capacity utilization). Production has been constrained by the shortage of foreign exchange to import needed raw materials, spare parts and replacement equipment. The bead making and tread extruders are incapable of producing to an acceptable standard and constitute the major bottleneck to increased production (although the tyre moulding presses, moulds and other production equipment have also deteriorated). Quality control is also poor. There is a lack of trained and skilled manpower and no expertise and facilities for mould manufacture (this used to come from Firestone). The product mix is too wide leading to uneconomic production and over the longer term a major constraint will be the lack of technology for tyre design. The total domestic tyre market is around 500,000 tyres a year. No tyre factory could produce economically the range of tyres constituting this market and there would thus be a need to import substantial quantities of new tyres for the foreseeable future. Profitability has been achieved over the last few years, with net profit before tax in 1984 representing 16% of gross income. Other measures of financial health reveal a satisfactory performance.

3.122 Prices of Bonsa's tyres are currently 16-45% higher than imported duty paid prices. Concentrating a smaller range of tyres, increasing capacity utilization and improving operating efficiencies could lead to significant cost reductions. Bonsa tyres could be competitive with imported tyres at the current levels of duty and an appropriate exchange rate. The domestic resource cost analysis suggests there is no comparative advantage for the production of tyres based on current operating practices even if full capacity production can be achieved. However, a combination of product range rationalization, rehabilitation of equipment and improved technical performance should result in economic viability being achieved.

3.123 A study undertaken by Medi Rubber Ltd of India and Continental Gummi Works of Germany recommended program of rehabilitation to increase the capacity of the factory to 553,000 tyres per annum by 1988. The capital costs of the rehabilitation were estimated to be C\$506 million, with a foreign exchange element of \$6.3 million. An additional C\$132 million was estimated to be required for working capital. The company is seriously considering implementing this program. The capacity proposed for the rehabilitated plan approximates the entire tyre market of Ghana. It is too optimistic to expect that one plant could produce economically the entire range of tyres. A less ambitious rehabilitation program should be embarked upon. As far as it is consistent with the maximum possible use of capacity, Bonsa should plan to produce largely a limited range of truck and heavy vehicle tyres and not try to expand its range of car tyres. The company should also take active steps to buy in a complete tyre design service as well as technical expertise in production. The aim should be to lift output of the limited range of tyres above 200,000 tyres per annum. To enable this to be achieved, a new bead line and a new tread extruder are urgently required, as well as spare parts for other machinery. New tyre moulding machinery will be required at a later date.

3.124 GIHOC Steelworks Co. The company is engaged in the production of mild steel iron reinforcing rods (mainly 1/2" and 3/4") and has a theoretical capacity of 30,000 tons per annum. It has two arc furnaces (one with capacity of 15 tonnes/hr and the other 10 tonnes/hr) for melting of scrap to cast billets, then reheated and rolled into reinforcing rods. Oxygen plant for producing oxygen for own use. New oxygen plant with capacity of 90m³/h soon to be commissioned. Locally available scrap is principal raw material. Imported inputs include refractories and other production consumables. Since establishment, capacity utilization has never been high. Peak production was reached in 1971 at 9,000 tonnes (30% capacity utilization) while the highest level achieved in recent years was 5,400 tonnes in 1980 (18% capacity). Production has been increasingly constrained by the lack of foreign exchange to purchase needed imports of production consumables, particularly refractories and spare parts for the aging equipment (some of the equipment was rehabilitated in 1975). Considerable production inefficiencies are also apparent, particularly in the areas of production planning, control and maintenance. However, the principal bottle-neck over the years has been the inability of the company to obtain and prepare sufficient scrap for charging the furnaces. The constraint on electrical power in recent years has also affected output. It is unlikely that the demand for reinforcing rods in Ghana in the medium term would exceed 15,000 tonnes. Thus, to achieve a capacity utilization in excess of 50%, the company would have to seek export markets in nearby countries, which is unlikely if it cannot reduce considerably its production costs. Profitability has been achieved in the last two years, with net profits before tax in 1984 representing 28% of gross income. Other measures of financial health also reveal a reasonable performance given the country's current economic conditions.

3.125 Prices of steel have been set so as to ensure profitability even at low levels of capacity utilization. The present price for 1/2" rods, for example, is currently the equivalent of US\$750 compared with a CIF price of imported rods of US\$300. Increased capacity utilization and improved operating efficiencies could lead to significant cost reductions, although it is doubtful whether prices could be brought down to world price levels at current exchange rates. The domestic resource cost analysis for steel production in Ghana leads to inconclusive results, although when its capital costs are treated as "sunk costs" a favorable domestic resource cost measure is apparent. With improved operating practices and increased capacity utilization, it is likely that financial viability would continue to be achieved by GIHOC Steel Works with a moderate level of protection and an appropriate exchange rate. However, the commissioning of the continuous casting machinery would serve to worsen the economic viability of the operation (this is discussed further below).

3.126 The company aims to achieve an output of at least 10,000 tonnes per annum of reinforcing rods by 1986 (33% capacity utilization). In 1979, the company purchased a continuous casting machine with a rated capacity of 50 tonnes per hour and intends to commission the plant in 1986. A foundry has also been planned on land adjoining the Steelworks. To date \$4 million on foundry equipment and \$420,000 on a factory building have been spent.

The company plans to spend C18.8 million (of which \$2.3 million is on foreign exchange) during 1986-88. The diversion of majority of the capital expenditures in 1986-88 towards improved scrap collection and preparation is desirable, although consideration should also be given to the creation of scrap depots in key areas of the country. However, the commissioning of the continuous casting machinery is open to question: (i) scrap collection has not been able to be organized efficiently in the past and even with the planned expenditure in this area, it is unlikely that sufficient scrap will be available to charge a continuous casting operation at any where near a reasonable capacity level; (ii) in any case, it is improbable that the current market exceeds 15,000 tonnes of reinforcing rods a year and even if this was met the continuous casting furnace would only be operating at under 10% of rated capacity; (iii) the process controls, monitoring system and maintenance requirements of such an operation, are extremely complex and the company has neither the facilities nor the trained staff to meet such requirements; and (iv) the feasibility of the foundry would be placed in jeopardy since the financial justification of the project assumed 30% of foundry capacity would be utilized in supplying the steel works with ingot moulds -- the continuous casting process eliminates the need for ingot moulds. The overall program is also limited in that it does not make allowance for the provision of technical assistance to improve operating practices.

3.127 The strategy should be to improve the performance of company to achieve a 10,000 tonne output target (33 1/3 capacity utilization). This will require immediate action to improve scrap preparation by obtaining suitable equipment or the cutting, baling and transport of scrap. In the medium term, scrap collection will need to be improved and for this purpose consideration should be given to the establishment of depots in Takoradi and Kumasi, so that scrap from these areas can be collected, selected, cut and baled prior to onward transportation to Tema. The continuous casting machine should be abandoned and the equipment sold. Effort should instead be concentrated on the establishment of the GIHOC Foundry. It is estimated that a further \$1.5 million is required to import the balance of the foundry machinery and equipment and \$0.5 million will be required for training during commissioning. GIHOC, in addition to the costs outlined above, have to find some C80 million to finance the civil works required. The foundry should be capable of producing quality ferrous and non-ferrous castings for industry in general and for the requirements of the agricultural machinery manufacturers. The development expenditures over the 1985-88 period proposed by the company should be maintained although (i) the commissioning of the continuous casting should not be proceeded with (this will also eliminate the necessity for the melting shop extension) and (ii) the expenditures on workshop equipment, vehicles and spare parts should be scaled down. Provision should also be made in the program for technical assistance in process control, maintenance and cost control.

3.128 GIHOC Pharmaceuticals. The company produces drugs (49 types) -- tablets, capsules, ampules and syrups. Its installed capacity is 650 million units (excluding syrups). Processing essentially involves

formulation and packaging of active ingredients from imported chemicals. It presently has no technical agreements. Previous agreements were with Abott Laboratories (USA) and then Calbiochem (USA). Its 1984 production was: Tablets 190.7 million; Capsules 10.1 million; and Syrups 71,549 litres (around 31% capacity utilization)

3.129 Severe water problems contributed to production reaching only around one-third of feasible capacity in 1984. The technical and operating performance of the Company has been satisfactory. The Company is one of the most profitable in the GIHOC group. Its profit in 1984 of 452 million was around 33% of gross income. Other measures of financial health reveal a highly satisfactory performance given the country's economic conditions. Pharmaceuticals also appear to have a favorable domestic resource cost ratio. For certain products such as antiparalyzies and antimalarial drugs, there are substantial savings in producing them locally. The potential also exists for exports to nearby countries as well as increased local material content.

3.130 The Company plans to produce 225 million units in 1985, resulting in a capacity utilization of 35%. Overall sales are expected to be in the region of 400 million with a profit of 100 million. The Company plans a major investment program over the 1985-88 involving the construction of a new factory premises and the importation of new equipment. The Company has obtained a loan of DM 33 million from Kredit Anstalt fur Wiederaufbau of Germany to supplement its own funds for this investment. In 1985, capital expenditure foreseen out of the Company's own funds amounts to 45 million, of which around 7 million represents foreign currency requirements. In addition about 53 million is expected to be drawn from the KFW credit. The capacity after the expansion program is calculated to be 1.4 billion units. The investment program for 1986-88 is estimated at 175 million (of which 10 million is in foreign exchange). The program appears to be reasonable. No changes are proposed at this time to the company's planned development program.

3.131 GIHOC Glass Manufacturing Company Ltd. The company produces glass bottles. Its current capacity is 15 tonnes per day (original planned capacity was 90 tonnes). Processing essentially involves that raw material be prepared, batched and charged to the furnace. Molten glass is drawn off into the moulding machine. Prime inputs are silica sand and energy (electricity). The plant was not operating from 1976 until the end of 1983. In 1976, GIHOC established that it was cheaper to shut the factory and pay the workers rather than continue production. However, a major re-equipment of the hollow ware glass factory was embarked upon but this was not completed since the Government did not fulfill its obligation of providing some \$3.2 million out of the total capital costs of \$9.2 million (the African Development Bank funded \$6 million). A new 60 tonne furnace and one moulding machine were purchased but another (planned) 30 tonne furnace and further moulding machines were never commissioned. The raw material preparation and finishing packaging equipment was also not to be purchased, leaving the installed and operating equipment out of balance. The current capacity of the plant is limited to approximately 15 tonnes a

day (against a planned capacity of 90 tonnes a day). In order for production to be raised to a potentially viable level, it would be necessary to complete the installation and ensure the balancing of equipment. If the necessary steps were taken to complete the installation of the plant and equipment and to improve operations efficiencies, the manufacture of glass products - bottles, white glassware - should be economically viable.

3.132 Subject to verification of the economics of the operation, the completion of the installation of the plant and equipment is required so that a full capacity output of around 90 tonnes per day can be achieved. In order to achieve the above investment, the Company will need to be financially restructured. The outstanding debt due to the AFDB should be rescheduled either through direct talks with the Bank or an arrangement could be reached with the government to take over debt repayments and agree an acceptable repayment schedule from the company. Technical assistance should also be sought to ensure skill and technical development and to enable the company to meet planned output targets. The following need to be undertaken: (i) completion of installing and commissioning 30 tonnes furnace; (ii) completion of installation and commission of moulding machines; (iii) purchase, installation and commission of raw material preparation plant; and (iv) purchase, installation and commissioning of finishing equipment. This will require approximately \$2 million of additional investment in foreign exchange and £14 million in local currency during 1986-88.

3.133 Rationalization of State Involvement. The companies which are presently financially and economically unviable and for which virtually no projects presently exist for turning them around (the NIC, Ghamot and GEA groups and 7 GIHOC companies) should be studied carefully with a view to determining government policy regarding their future. The management of the NIC group of companies has worked extremely hard and to reasonable effect to make the best use of the limited resources that were available. They have shown initiative in getting a number of the manufacturing units operational with only local resources available. They have used the trading units to earn money to finance the operations and they must be given credit for their efforts. However, the group is not a logical grouping, with a farm, trading units, operational and non-operational manufacturing units and a vehicle servicing facility. Accordingly, rationalization is necessary. The trading units and the vehicle servicing unit should be separated from the group. The textile division could be amalgamated with one of the major government textile companies (depending on a Textile Sector Study). The soap factory should be sold off to private enterprise and the metal and paints units could be transferred to GIHOC. The senior management could be used to strengthen the management of GIHOC and other state enterprises which are short of good quality management. The GEA and Ghamot Groups are, to all intent and purposes, virtually non-existent. The only Ghamot company operating is the vehicle servicing unit (Ghamot Company Ltd). Consideration should be given to rationalization of the operation and possible amalgamation with the Government owned vehicle servicing group, Automotive Technical Services Ltd. The remaining companies in the

group are non-operational as the company does not have the financial ability to re-equip new factories. The GEA Group is in a similar situation to the Ghamot Group except that it has no significant operation. The possible ownership problem must be solved and the company assets realized. One aspect that could be investigated is that, although a number of the factories have ceased operation, the buildings exist. It is possible that the empty factories, and the factories that could be cleared of redundant equipment, could be utilized as a pool of industrial units. These units could be offered to potential new businesses at a suitable level of rent to enable them to start business without the expense of new buildings. With regard to the 7 GIHOC companies, GIHOC Brick and Tile is bankrupt - the government should accept the current situation and liquidate the company. However, as brick manufacture could be an economic activity, a study should be undertaken to examine the possibilities of setting up a new brick works, perhaps with private partners. The GIHOC Vegetable Oil Mills cannot be operated at economic levels of activity until suitable yields of produce are available for processing. GIHOC themselves have suggested that they should be handed over to the Regional Development Corporations so that they can provide a limited local service to the farmers. No new investment can be justified until raw materials are available in sufficient quantity. The GIHOC Meat Products Division is primarily not an industrial activity. Its main operation is batching. The corned beef factory at Bolgatanga cannot be run economically until there are sufficient cattle available in the area to operate the factory at an acceptable capacity utilization. GIHOC have suggested that the division be handed over to the Meat Development Board. The Marble Works Division of GIHOC is a small unit and is not of strategic importance to the government. There are two possibilities that could be considered. The first is to sell the business to private enterprise and the second would be for GIHOC to retain control and use the small company to train future management. GIHOC plan to use A&B Industries as a central vehicle workshop for their divisions in the Accra/Tema area. They hope to close all divisional workshops and concentrate all efforts at A&B. While apparently logical, especially for standard servicing, the condition of many of the vehicles means the breakdowns occur frequently at the plants. How the new system would function if no mechanics are available at the division level is not clear. This plan must be re-assessed and all implications of the move examined.

ROADS AND HIGHWAYS EXPENDITURES

Overview

3.134 Ghana has a relatively well developed transport system comprising: (a) a network of about 14,100 km of trunk and urban arterial roads, and about an equal length of feeder roads; (b) a railway system of 947 km of main and branch lines linking the country's three major cities (Accra, Kumasi and Takoradi) in the southern half of the country; (c) two major deep-water ports of Tema and Takoradi and several fishing ports; (d) a small inland water transport system on the Volta Lake; (e) a national maritime shipping company, the Black Star Line (BSL); and (f) one international airport at Accra and three main domestic airports, and a national airline, Ghana Airways (GA), providing international, regional and domestic air transport services.

3.135 The present capacity of virtually all transport modes in Ghana is inadequate to meet even the current reduced level of demand, due to lack of regular maintenance and upkeep for several years. Ghana's transport system has nearly broken down over the past few years and remains a serious constraint to economic recovery. The Government's transport strategy emphasizes maintenance and rehabilitation rather than creation of new capacity. About 85% of road transport, which is the dominant part of the transport system, is operated by the private sector. The public sector, on the other hand, controls ports, lake transport, railways and domestic civil aviation. Though state intervention was a major feature of policy in the past, the present Government has clearly announced itself in favor of encouraging the private sector, reorganizing public sector organizations on more efficient lines, and privatizing some of them if justified.

3.136 Ghana's road network comprises about 28,300 km of classified roads, of which about 6,000 km are paved, and the remainder are gravel or earth surfaced. The road system is further classified as about 14,130 km of trunk roads (including 3,780 km of primary roads, 9,580 km of secondary roads, and 770 km of town roads) and about 14,160 km of feeder roads. Additionally, there are 6,000 km of village tracks and private mining and timber company roads. About 70% of trunk roads and 80% of feeder roads are located in the southern half of the country where population and economic activities are concentrated.

3.137 Traffic volumes are heaviest near the Accra-Tema area (the country's capital and main port). Traffic on the major arterial roads radiating from Accra is about 3,000 vehicles per day (vpd) near the city, and about 1,500-2,000 vpd towards Takoradi and Kumasi. Most other trunk roads carry between 200-750 vpd, while traffic volumes in the northern half of the country are much lower than in the south. Feeder roads have generally from 10 to 100 vpd. In general, traffic volumes have declined recently due to the fall in production levels and the poor condition of roads and shortage of vehicles. Fuel consumption data show an almost steady growth of 3% per annum on average from 1970 to 1981, and a 40% decline from 1981 to 1983. With the expected availability of larger fuel

imports, vehicle spare parts and an upturn in economic activity, traffic levels should rise again in the near future.

3.138 The Ghana Highways Authority (GHA), the agency responsible for the country's highways is beset with many problems. In addition to inadequate funds, it has 47 or about 65% of its engineering positions vacant, and a surplus of unskilled staff. Despite Government's efforts under the Bank Group's Second and Third Highway Projects, only about 20-25% of actual maintenance needs of the road system have been met during the past 10-12 years, the percentages being even less recently. As a result, road conditions in Ghana have deteriorated to such an extent that some important road sections have become practically impassable, and road transport costs are high all over the country. According to data compiled by GHA, the approximate condition of trunk roads (paved and gravel) is 15% good, 40% fair, and 45% poor (moderate to severe failure). Average vehicle operating costs are estimated to be about 15% higher for "fair", 40% higher for "moderate failure", and 65% higher for "severe failure", compared to "good" roads. This condition will continue to worsen unless measures are taken immediately to arrest further deterioration. The main factors responsible for GHA's poor road maintenance performance have been: (i) insufficient foreign and local inputs and related shortages of fuel, materials and spare parts due to the critical financial situation of Government; (ii) delays in payment to contractors and, more recently, in adjusting contractor rates after the 1,000% devaluation in 1983; (iii) inefficient management of GHA particularly of its workshops and stores; and (iv) less-than-living wages for Government workers, resulting in lack of incentives, high absenteeism (50% in some units), low productivity, widespread demoralization and a virtual breakdown of the routine maintenance which is dependent on GHA's work force.

Issues

3.139 A major issue relates to investment priorities and allocation of adequate resources for rehabilitating the transport sector. Investment planning has been weak and needs strengthening. It is important that: (i) rehabilitation of the transport sector should receive high priority in allocation of resources in view of the dilapidated condition of the basic transport infrastructure and its key role in facilitating economic recovery; (ii) funding for high priority projects should be adequate, while funding for non-priority projects should be excluded; and (iii) there should be proper monitoring of progress in project execution and financing. A second issue which is due to be addressed through new government policy measures concerns the inadequacy of road user charges. Users make practically no contribution to road maintenance and rehabilitation costs which is one reason why government is unable to provide adequate funding for road maintenance. The road maintenance budget during 1981-84 could meet only about 15 to 10 percent of the actual annual maintenance requirements. Gasoline and diesel prices in Ghana are currently only slightly above international prices at the current exchange rate, thus yielding no significant fuel tax revenue from road users.

Roads and Highways Expenditure Program for 1986-88

3.140 The expenditure program for roads and highways for 1986-88 is summarized in Table III.17. It is based on the recent World Bank financed Fourth Highway Rehabilitation and Maintenance Project and a program of bridge and trunk road projects prepared by GHA for 1985-89. The major elements of the program are as follows.

3.141 Road Maintenance (Fourth Highway Project). With respect to the trunk road system, the main operation in 1986-88 will be the execution of the World Bank's Fourth Highway Project at a cost of C4.9 billion (Item A of Table III.17). The project comprises: (i) a three-year time-slice of the Government's core periodic maintenance program for trunk roads, (ii) rehabilitation of 14 bridges, (iii) a pilot feeder road program in the Western, Ashanti and Brong Ahafo regions, and (iv) rehabilitation of the Anynam-Kumasi section of the Accra-Kumasi road. Financing for this project has been arranged as follows: IDA 31%, ADB 16%, WFP 6%, Saudi Arabia 8%, Government 27%, others 12%. The project has been carefully evaluated and its expected economic rate of return (ERR) is in excess of 50%. The ERR on the maintenance component is about 70%.

3.142 A special feature of the above project is the setting up of a Road Fund to mobilize domestic resources for a more sustained effort in regular road maintenance. In order to help finance road maintenance operations (mainly the periodic maintenance of trunk, urban and feeder roads) on a planned basis the Government has embarked upon the following strategy: (i) to levy a special fuel tax of 5 cedis per gallon of diesel and petrol from about August 1985, (ii) to set up a Road Fund from the proceeds of this tax and revenue from a new vehicle user tax and existing tolls on roads and bridges (initial annual fund size will be about US\$12 million equivalent); (iii) to maintain the value of the tax against possible cedi depreciation; and (iv) to increase the coverage of road maintenance as a percentage of estimated needs, from about 30% average under the above project, 50% from 1991 onwards. During 1986-88, the Road Fund should generate about \$36 million equivalent. This will help meet the entire Government contribution of about \$25 million equivalent (excluding taxes) for the above project during the 1986-88 period, and also partly finance (i) additional trunk road period maintenance above the project's 30% coverage level, and (ii) country-wide periodic maintenance of feeder roads which is not included in the Fourth Highway Project.

3.143 Other Trunk Road Projects: In addition, GHA has proposed a total of 14 rehabilitation/construction works projects which would add up to C7.84 billion (\$137.7 million) over the 1986-88 period (items B and C of Table III.17). Of these, the 7 projects listed under item B are ongoing, most of them about 50% to 85% completed, and generally assisted with foreign funding. They involve a total investment of C2.15 billion (\$37.7 million) and are included in the core program since it is estimated that the completion of these works would yield a high incremental rate of return (greater than 50 percent). Item C comprises 7 relatively new or recently

started projects costing C5.68 billion (\$100 million), described below, of which 3 deserve priority.

- (i) Rehabilitation of Tema-Aflao road - total cost of C2.4 billion (US\$42.7 million) of which C485 million (\$8.5 million) are planned each for 1987 and 1988. According to a 1981 consultant's study the project would have an ERR of 30%. Present traffic is estimated at about 1,400 vehicles per day and this is likely to lower the ERR substantially. EEC is likely to commission a new feasibility study and may consider financing the project which is part of the Trans-West African Highway Scheme. Until this feasibility study is completed, it is not included in the core program.
- (ii) Rehabilitation of Yamaronsa-Anwiankwanta road. This is an important connection between Takoradi and Kumasi through a rich agricultural and timber area. The paved road, which was built in the early 1970s, has broken down by now to the level of a "land-rover" road, and may deteriorate further. The GHA has prepared a feasibility study in February 1985 which shows an ERR of about 16% based on savings in vehicle operating costs. This excludes other development benefits to the area served by the road in improving the economic prospects of a large area which now lacks a good road connection to Kumasi or Takoradi. This project deserves high priority and is accordingly included in the core program.
- (iii) Rehabilitation of the Yepi-Morno road and bridge approaches total cost C1.45 billion (\$25.5 million). This is part of Ghana's main link to the Northern regions, and to neighboring Burkina Faso. A major component is repairing 12 km of road approaches to the two bridges at Yapei and Morno which are eroded and nearly collapsing. A 1981 consultant's study showed only 10% ERR, based on vehicle operating costs. But with impending collapse of the bridge approach traffic would have to divert through a longer route and a ferry crossing at Yeji. A revised rate of at least 15% is likely. Work on this project has already started: Work was awarded to a contractor in September 1984. The project is included in the core program.
- (iv) Kintampo-Morno road. One section of this road (Kintampo-Soronuasi) was studied by consultants in 1981 and yielded 20% ERR. However until a feasibility study for the whole road is undertaken, the project is not included in the core program.
- (v) Reconstruction of Tapa-Junction-Sunyani. This project is in progress, and is 10% completed. This is an important road connecting two major towns and production centers. Based on

a 1981 consultant's study, the rate of return is about 28%. A revised rate should be above 20%. The project is accordingly included in the core program.

- (vi) Rehabilitation of Nsawan-Anynam road. This was originally appraised as part of the Fourth Highway project, but was excluded because of funding problem and lower priority. The project is not included in the core program.

3.144 Feeder Roads. Concerning the planned capital expenditure programme of the Department of Feeder Roads (DFR), it was not possible to estimate rates of return of projects under the development/new construction program. As a general rule, a minimum rate of return of 15% should be aimed at as agreed for trunk roads works in connection with the Fourth Highway Project. As to the periodic maintenance programme, it should be noted that the rate of return on the pilot feeder road programme included in the Fourth Highway Project was estimated at 24%. It is to be expected that for the remainder of the maintenance programme a similar rate of return can be achieved. During 1984, DFR spent ₵635 million (\$18 million) on new construction and about ₵137 million (\$2.4 million) on maintenance. During 1986-88, they propose to spend about ₵627 million (\$11.0 million) on new construction and about ₵325 million (\$5.7 million) on maintenance. Since a large amount of backlog in feeder road maintenance remains, DFR should reduce construction expenditure and increase maintenance.

3.145 The urban expenditure programme comprises three main items: (i) rehabilitation of Accra City Roads, assisted under the IDA Accra District Rehabilitation Project which will cover the foreign exchange cost of works. The Bank's appraisal report demonstrated a return of over 70% on these works; (ii) rehabilitation of Kumasi City Roads for which assistance is to be provided under a bilateral agreement with the German Democratic Republic. As road conditions in Kumasi are worse than those in Accra (though traffic level is lower), similarly high ERRs (at least 30%) are to be expected; (iii) reconstruction of Kaneshie-Mallam, the urban section of the Accra-Takoradi road link. The project was studied in connection with the IDA Accra District project. Given the high traffic volumes and the poor present condition of the road, a high ERR (above 30%) is to be expected.

TABLE III.17: ROADS AND HIGHWAYS INVESTMENT PROGRAM
(Constant 1985 Prices)

	Total Program/ Project Cost (Cdn)	Expenditure Through December 1985 (Cdn)	Expenditure Proposed 1986-88 (Cdn)	Foreign Financing Committed/Under Negotiation 1986-88 (Cdn)	Economic Viability ERR/DRC/IRR
<u>Ghana Highway Authority</u>					
A. <u>Trunk Road System</u>					
1. Road Rehab. and Maintenance Project (IDA sponsored)*	4,907	n.a.	4,907	3,463	50% ERR (1985)
B. <u>Ongoing Rehab. and Construction Project (50%-85% completed)</u>	2,153	n.a.	2,153	302	ERR estimated at more than 50% on investment required for completion of project.
2. Reconstruction of Axim-Mpataba-Elubo*	325	n.a.	325	211	"
3. Assemby bridge Program*	102	"	102	91	"
4. Reconstruction of Daboase Junction To Takoradi*	900	"	900	-	"
5. Construction of Several Bridges*	40	"	40	-	"
6. Construction of Asukawkaw Bridge*	107	"	107	-	"
7. Reconstruction of Yamoransa Assim Preaso Road*	91	"	91	-	"
8. Reconstruction of Begoso-Ayanfuri Road*	587	"	587	-	"
C. <u>Other Rehabilitation (construction Projects)</u>	8,226	n.a.	5,682	-	
9. Rehabilitation of Tema Aflao Road	2,434	"	969	-	30% ERR (1981). Outdated study.
10. Rehab. of Yanarona-Anwankwanta*	992	"	992	-	16% ERR (1985)
11. Reconstruction of Yepi-Morno Road and Bridge Approaches*	1,454	"	376	-	10% ERR (1981)

TABLE III.11: ROADS AND HIGHWAYS INVESTMENT PROGRAM (CONID.)

	Total Program/ Project Cost	Expenditure Through December 1985	Expenditure Proposed 1986-88	Foreign Financing Committed/Under Negotiation 1986-88	Economic Viability ERR/DRC/IRR
	(Cdn)	(Cdn)	(Cdn)	(Cdn)	
12. Rehab. of Kintampo-Morno Road	1,140	n.a.	1,140	-	20% ERR (1981). Outdated study.
13. Reconstruction of Tepa Junction-Sunyani*	724	"	724	-	20% ERR (1985)
14. Rehab. of Nsawan-Anyman Road	1,038	"	1,038	-	Lower Priority (1985)
15. Construction of Nsawan - Bypass	444	"	444	-	10% ERR (1985)
<u>Department of Feeder Roads</u>	<u>2,904</u>	<u>n.a.</u>	<u>2,904</u>	<u>-</u>	
1. Development/Recons.*	1,936	"	1,936	-	15% ERR (Rule)
2. Periodic maintenance*	968	"	968	1,947	24% ERR (1985)
<u>Urban Roads</u>	<u>3,642</u>	<u>n.a.</u>	<u>3,642</u>	<u>1,947</u>	
1. Rehab. of Accra City Roads*	1,026	"	1,026	807	70% ERR (1985)
2. Rehab. of Kumasi City Roads*	2,228	"	2,228	1,140	30% ERR (1985)
3. Reconstruction of Kaneshie- Mallam Road*	387	"	387	-	30% ERR (1985)
Sub-Total ("Core Program")*	<u>21,832</u>	<u>n.a.</u>	<u>19,288</u> (15,698)	<u>5,712</u> (5,712)	

PUBLIC TRANSPORT EXPENDITURES

Overview

3.146 The rest of the public transport sector (i.e. excluding roads) comprises the railway system, ports, civil aviation, shipping, lake transport and some surface transport companies

3.147 Ghana's railway system, operated by the government-owned Ghana Railway Corporation (GRC), has played a major role in carrying four of Ghana's most important export products to the ports: bauxite, manganese and timber to Takoradi and cocoa to both Takoradi and Tema. Those four commodities constituted over 90 percent of total rail traffic which amounted to about 1.6 million tons per year in the early seventies. In addition, it transported close to 8 million passengers per year in 1972-74. However, in 1984, traffic was down to 376,000 tons and 2 million people. This decline was due to the overall slump in economic activity, increased competitiveness of the road transport industry, and steadily deteriorating efficiency of the railway system. An ongoing World Bank's Railway Rehabilitation Project supports the reorganization and physical rehabilitation of the system. It gave priority to rehabilitating the crucial Western Line. Work on track and sleeper renewal was speeded up dramatically when the export retention scheme was made applicable to sawmill supplies of sleepers to the project. A major part of overhaul work on locomotives and rolling stock as well as track work is expected to be completed by end-1985.

3.148 Ghana's two major ports at Tema and Takoradi were built with ample capacity but their present effective capacity is limited. Port operations have become increasingly inefficient in recent years due to the lack of handling equipment in working condition, general deterioration of installations, lack of maintenance and dredging for many years, and inefficient organization of the port agencies. This has resulted in extremely low loading and unloading rates, excessive ship time at berth, and high demurrage and freight charges. Total port cargo throughout was about 5.5 million tons in 1970 compared to 2.5 million tons in 1983. The port sub-sector is currently receiving emergency assistance from IDA for spare parts and equipment, technical assistance and studies for the reorganization of port sector management. It is expected that a medium-term rehabilitation plan for the ports will be finalized by mid-1985, which may well be the basis for an IDA-supported ports rehabilitation project.

3.149 Lake Transport. Transport on the Volta lake is operated by the Volta Lake Transport Company Ltd. (VLTC), whose sole shareholder is the Volta River Authority. The lake transport facilities are currently being expanded with the help of a bilateral credit from the Federal Republic of Germany.

3.150 Concerning civil aviation, Ghana has one international airport at Accra and domestic airports at Kumasi, Sunyani, and Tamale, maintained and

operated by MOTC's Department of Civil Aviation. Available infrastructure appears to be sufficient for present low traffic volumes. Annual traffic at the Accra airport in the last few years have averaged 2,205 aircraft movements, 114,000 passengers, and 2,220 tons of freight. Accra is served by a number of major international carriers and by Ghana Airways Corporation (GH), the country's national airline, established in 1958. GH, which owns a small fleet of four aircraft, operates flights to Europe and the West African coast and provides domestic services. The company has been financially troubled for many years. Government has indicated that GH is now working as a commercial entity, and no subsidy was given to it during 1983 and 1984. Government view is that GH's problems, which are partly a reflection of Ghana's economic problems which curtailed international travel, would ease in the near future. In the meantime, a technical assistance and training program financed by UNDP is gradually improving GH's operational efficiency and punctuality, and, as a result, its traffic volume.

3.151 The state-owned shipping corporation, Black Star Line, is going through a process of total restructuring after years of loss-making operations. Half of BSL non-sea going staff were made redundant in the last three months of 1984. The company also plans to reduce its fleet from thirteen to eight vessels by mid-1986, including four new container ships acquired under a joint venture agreement. Foreign operations are being reduced to one office only, in London. The company expects that the government will apply the UNCTAD code of conduct in 1986 which would enable BSL to carry at least 40 percent of all Ghana's foreign trade. Gross revenue is expected to rise from C1.03 billion (\$18 million) in 1985 to C3.6 billion (\$63 million) in 1988. Although 1985 will still end in a net loss, 1986 should show a C285 million (\$5 million) profit, which is expected to double by 1988.

3.152 Rail/road competition for cocoa and timber traffic has been strong in the past but there are indications that as a result of lack of capacity in both modes, competition has lessened recently. Railway capacity shortage has prevented it handling even the limited amount of non-mineral traffic on offer, and has restricted the volume of captive mineral traffic transported. Railway freight traffic is concentrated on the Western line, between Kumasi/Awaso and Takoradi and comprises mainly bulk manganese and bauxite, timber from the four state-owned timber companies (two of which have no road access) and cocoa. Increasing shortage of road transport capacity has recently led the Government to direct that cocoa should be rail carried wherever possible but GRC has as yet been unable to supply the necessary capacity. GRC carries a substantial volume of passenger traffic, which falls into two broad categories, long distance passengers who prefer the luggage space advantage of rail travel to the relative speed of road, and short-distance passengers between villages inadequately linked to the road system. Rail and river/lake transport does not compete, and road and river/lake only marginally.

Railways

3.153 The Ghana railway system (947 km) is in the form of a letter A, with the apex at Kumasi and the two "feet" at Takoradi and Accra/Tema. Except for completion of the Central line, only minor developments have taken place since 1944. The system lies entirely in the most heavily populated southern half of the country and distances are short, about 320 km maximum, constraining the railway's ability to compete with road transport. The terrain through which the railway passes is generally hilly, particularly between Kumasi and Takoradi (the Western line) and thus high average speeds are not possible.

3.154 The Ghana Railway is a 1,069 mm (3'6") gauge single line system with the exception of 30 km of double track between Takoradi and Manso. The three main lines are the Western (Takoradi/Sekondi-Kumasi), the Eastern (Accra-Kumasi) and the Central (Huni Valley-Kotoku Junction) lines. There are four branch lines (to Prestea, Awaso, Kade and Tema). The axle load is 12.5 tons on the Prestea and Kade Branch, 13.5 tons on the Eastern line and 16 tons on all other lines. The motive power fleet consists of 29 steam mainline locomotives, 68 diesel locomotives and 31 diesel shunters. GRC has 237 coaches of which about 65% (153) are more than 25 years old. The wagon fleet consists of 3,308 wagons; of these about 20% (675) are more than 25 years old, while another 1,833 wagons are equipped only with plain bearings.

3.155 Track maintenance and removal on the western line and locomotive and rolling stock rehabilitation is being carried out under the ongoing World Bank Project. The project provides for: (i) materials needed for renewal of weak sections of the Western Line (excluding rails, which GRC has recently acquired under an OPEC loan), (ii) establishment of facilities for producing their own sleepers and ballast, and (iii) maintenance equipment. The project also provides for rehabilitation of GRC's sawmill which produces wooden sleepers. Adequate track fastening for 85 km of track is being provided. The Western line and the Awaso branch line lack sufficient ballast for efficient track maintenance and the project includes equipment for two existing quarries which GRC has leased from the gold mines to provide ample, good quality ballast. For track maintenance, GRC needed railcars, trollies, spare parts for existing machinery and tools, all of which have been provided by the project. Some tipper trucks and vehicles needed to transport ballast from the quarry and along the line have also been provided.

3.156 Locomotive and Rolling Stock Rehabilitation. The project provides for procurement of four new shunters and spare parts for the rehabilitation and overhaul of 37 mainline diesel locomotives. GRC obtained 10 new locomotives in 1978 but could get only a portion of the spare parts required for their maintenance due to foreign exchange constraints. These spare parts are now included in the project. The total number of freight cars available with GRC is sufficient but many of them are in need of repairs. Under the project about 200 cars are being

equipped with roller bearings and an additional 40 cars, recently converted from wooden boxes to steel boxes, supplied with new bogies.

3.157 Telecommunications. Telecommunications equipment, and block instruments are in extremely run-down condition. The project is financing an over-head insulated cable connection on the Western Line, replacing the old uninsulated conductors which were subject to frequent line faults caused by various external factors, like inclement weather, theft of copper wire, etc., and hence were difficult to maintain. The capacity of the cable will be sufficient for (a) station-to-station telephone connections; (b) administrative trunk connections between the Central Traffic Control unit in Takoradi and Kumasi; (c) connections between the Railway headquarters in Takoradi and major Western Line junctions; (d) the block/token instruments.

3.158 Traffic Study. Most of GRC's freight and half its passenger traffic are carried on the Western line. The Eastern and Central lines and the various branch lines carry much less traffic and it is doubtful if they are economically or financially viable. The project included a study to analyze and assess the operational and financial consequences of discontinuing certain unremunerative services on these lines. This will cover examination of all traffic on the Eastern and Central Lines and passenger traffic on the Western Line, their economic costs and benefits and, inter alia, the cost of alternative services, and the possibility of coordination of road and rail services. The study is scheduled for completion by August 1985.

Ghana Railways Expenditure Program 1986-88

3.159 Ghana Railway Corporation (GRC) has recently submitted a complete capital expenditure and financing plan for the 1986-88 period which is shown in Table III.18 and which totals C6.2 billion (\$108.5 million). New projects are broken down into "core" and "non-core" items. An evaluation of this proposed GRC program indicates the following:

- (i) Completion of the ongoing Railway Rehabilitation Project, (Item 1. Table III.18) co-financed by IDA and ADB, in 1985 and 1986 at a cost of C941 million is justified as this focusses on the improvement of the Western line of the GRC system. This includes the supplemental items for most of which financing has so far been assured. Recent analyses by GRC have shown that the incremental ERR on completing the project is of the order of 30%.
- (ii) With respect to Item 2 of GRC's Capital Expenditure Program (repairs to wagons and coaches, Eastern and Central Lines) for C285 million (\$5.0 million), little can be said at this stage as the ongoing studies on the viability of these lines are still not completed. The same comment applies to Items 3, 4 and 5 (i.e. replacement of 130

passenger coaches, telecommunication for the central line and track for the central line).

(iii) There would appear to be a good prima facie justification for the smaller items Items 6-12 viz: (i) accident relief trains and one crane (C228 million); (ii) 150 wagon replacements (C428 million, which would be essentially for mineral traffic on the Western Line); (iii) workshop facilities (C126 million); (iv) training school (phase II) (C228 million); (v) three new locomotives (C240 million); (vi) rehabilitation of buildings (C102 million); (vii) technical assistance (C188 million).

(iv) With respect to the new projects (Items 13-15 in Table III.18), no economic justification has so far been provided.

3.159 In summary, GRC's proposed capital expenditure program for the 1986-88 period can be presented as follows: (i) C1.1 billion (\$19.4 million) for completion of the ongoing rehabilitation project; (ii) C1.5 billion (\$27.0 million) for investments for which there appears to be a good prima facie justification; (iii) C2.45 billion (\$43.0 million) for investments whose justification can only be assessed once the ongoing feasibility studies are completed; and (iv) C969 million (\$17.0 million) for "non-core" investments whose economic justification remains to be demonstrated. With respect to GRC's financial performance it is to be noted that the company expects its recurrent expenditures to be increasingly covered by its revenues. Government subsidies to cover GRC's operating losses are forecast to develop as follows: (i) 1986: C348 million (\$6.1 million); (ii) 1987: C103 (\$1.8 million); (iii) 1988: nil.

Ports

3.160 Lack of regular maintenance over many years has led to considerable erosion of port capacity in Ghana's two ports of Tema and Takorad. Port operations have become extremely inefficient in recent years due to the lack of handling equipment in working condition, general deterioration of installations, lack of dredging of the harbor basins and approaches and consequent draft limitations on ships, and inefficient organization of the port agencies. This has resulted in extremely low loading and unloading rates, excessive ship time at berths, and high demurrage and freight charges. Even though traffic declined from about 5 millions in 1975 to about 2.5 million tons in 1983, there was considerable congestion and ship-waiting in 1983 and 1984 due to the port's limited capacity. Though the situation has slightly improved due to some emergency measures recently taken (bringing spare parts and some equipment, provision of food for workers under a World Food Program, etc.) port capacity will remain an effective constraint in handling Ghana's increasing port traffic in exports and imports, unless the port installations and facilities are rehabilitated urgently.

3.161 IDA's Export Rehabilitation Project and Export Rehabilitation Technical Assistance Projects (ERP and ERTAP) provided about US\$5.0 million worth of assistance in spare parts, several equipment, technical assistance and studies for the ports. While these inputs have provided short-term emergency assistance, a medium-term rehabilitation plan for the ports was recently prepared by consultants employed by the Government. As a result of these studies the Bank has recently appraised a C4.2 billion (\$73 million) project to rehabilitate both Tema and Takoradi ports. The project will include for both ports: (i) repair and rehabilitation of civil engineering infrastructure, (ii) removal of wrecks in the harbor, (iii) rehabilitation of existing equipment and harbor craft, (iv) purchase of new equipment and craft, (v) creation of a new container handling yard behind existing berths in Tema, (vi) technical assistance for project supervision and for improving port organization and operational and financial management. Estimates by the consultants (Halcrow) shows an economic return in excess of 40% from the overall project, and from investments in each of the two ports. Major individual components have been separately evaluated and were found justified on both technical and economic criteria. The main project benefits would consist of savings in ship handling costs, compared with the present level of costs and the higher costs that would result if the present situation were allowed to deteriorate further.

Ghana Airways Corporation

3.162 Ghana Airways (GH) at present appears financially viable and its management seem confident that they will be able to maintain this viability in the future provided their plans for the future materializes. These plans include traffic growth of 15.5% through 1988, purchase of two new MD-82 aircrafts at a total cost of US\$60 million during 1986 and 1987 and sale of one old DC9 aircraft at about US\$8 million. Ghana Airways also plans to open new routes to Dusseldorf, New York, Jeddah, and between the land locked countries of Mali, Burkina Faso, Chad and Sudan.

3.163 GH is facing the following constraints: (i) Finalizing the financing of the purchase of two new aircraft. GH has reached agreement in principle to borrow US\$48 million (spare parts will be self-financed) from American banks. The remaining \$12 million will be financed from the sale of the DC9 for \$8m and own generated funds of \$4m. GH, however, needs Government guarantees for obtaining the foreign exchange loans. GH maintains that only 30% of its revenues are in foreign currency whereas about 70% of operating costs are incurred in foreign currency; (ii) GH also needs Government's help in foreign exchange to meet debt service charges. The loan of \$48 million will be secured for a 10 year period, payable quarterly, and at 12-5% interest rate; (iii) GH's program for capital expenditure includes rehabilitation of its flight kitchen, stop-over restaurant, modern ground equipment to handle bigger aircraft, computerization of information system network and a housing project for GH office staff. Although some of the above activities, e.g. stop-over restaurants will boost GH's foreign exchange earning, GH would still need foreign exchange assistance from the Government.

3.164 GH has capable staff and its aircraft crew (particularly the pilots) are well trained. The reliability of flights and quality of service has improved substantially in the past 8 to 10 months. It appears that GH is a good organization and therefore its capital expenditure plan for 1986-88 is including tentatively in the core program subject to further economic evaluation of the proposed aircraft purchases. Acquisition of both (or one) of the aircraft proposed must yield a rate of return of at least 15 percent for it to justify continued inclusion in the "core" program. If GH experiences financial difficulties in future years, the items of the capital expenditure that should be cancelled or postponed till later could be: (i) office and residential equipment and furniture C211 million (\$3.7 million); (ii) housing (Head office building and staff houses) C952 million (\$16.7 million).

State Shipping Corporation Black Star Line (BSL)

3.165 The State Shipping Corporation's (BSL) financial situation is difficult. In 1984, BSL started with a deficit of C435 million (\$7.6 million) carried over from the previous year, occurred net loss of C10 million and did not pay the net installment for the four vessels bought in 1980. In addition, BSL owes to various local creditors about C137 million (\$2.4 million). At the end of 1984, BSL needed financial assistance of C890 million (\$15.6million). This situation should not be allowed to continue especially since BSL has the potential to play an important role in the import/export trade of Ghana. The Government should: (i) establish by early 1986 the UNCTAD code of shipping conduct (40-40-20) which will enable BSL to carry at least 40% of all imports and exports which result in a tremendous boost in BSL's earnings (presently much less than 40% is carried); (ii) examine the economic feasibility (with an ERR of at least 15 percent) of BSL's disposing of three old vessels by early 1986 and possibly buying four combo type 12000 tons dwt, vessels with a container capacity of 500 TEU at an estimated cost of \$7 million each in a joint venture with another organization which would mean that from 1986 onwards BSL will operate with a fleet of eight good vessels. BSL has successfully reduced a substantial number of its non-seagoing staff (thus reducing its total staff from 982 upto September 1984 to 487 after September 1985).

Road Transport Companies

3.166 The Public Sector Road Transport companies (STC, OSA, City Express) were reviewed in a preliminary manner by the PER mission. Since these are independent financial entities presently obtaining no Government subsidies their capital expenditure programs were included tentatively in the "possible core". However, a more complete review of the performance and future of these public sector transport agencies should be undertaken as a matter of urgency and their capital expenditures only undertaken if they are found to be economically justified (i.e. having an ERR of at least 15 percent).

Financing of Capital Expenditures

3.167 Financing for the capital expenditures of the above entities for the 1986-88 period is expected to be as follows: (i) GRC's program of C2418 million will be financed through onlent foreign capital (C485 million) and direct lending from the Government of C2,414 million (this includes a subsidy to cover operating losses of C418 million); (ii) The Ghana Ports Project of C4,255 million is expected to be almost entirely financed through onlent foreign capital (C4,002 million), the Government direct lending for this purpose is estimated at only C253 million; (iii) The Public Transport Companies expect to fund their capital expenditures through government guaranteed foreign loans C2,736 million for Ghana Airways to purchase two new aircrafts and C1,098 million for the BSL to buy four new vessels) and through self-financing. Annexure III provides details in this regard.

TABLE III.18: TRANSPORT SECTOR INVESTMENT PROGRAM

(Constant 1985 Prices)

	Total Program/ Project Cost	Expenditure Through December 1985	Expenditure Proposed 1986-88	Foreign Financing Committed/Under Negotiation 1986-88	Economic Viability ERR/DRC/IRR
	(Cdn)	(Cdn)	(Cdn)	(Cdn)	
A. Ghana Railways					
1. Ongoing inc. Suppl. Project*	941	3,648	941	485	ERR 30% (1985)
2. Repairs to Wagons & Coaches (1986 E & C Lines)	285	-	285	-	N.A. Wait for feasibility studies
3. Replacement of 130 coaches 1/	1,026	-	1,026	-	"
4. Telecom (C Line and Accra to Koforidua)	684	-	684	-	"
5. Truck (C Line and Accra to Koforidua)	741	-	741	-	"
6. Two Accident Relief Trains and 1 Crane *	228	-	228	-	Primaefacie justifi.
7. 150 Wagon Replacement*	428	-	428	-	"
8. Workshop Facilities*	126	-	126	-	"
9. Training School Phase II *	228	-	228	-	"
10. 3 Locomotives *	240	-	240	-	"
11. Rehabilitation of Buildings *	102	-	102	-	"
12. Technical Assistance *	188	-	188	-	"
13. Micro-wave communication (Western Line)	171	-	171	-	Uneconomic
14. Motorisation of Points of Selected Stations	114	-	114	-	"
15. Doubling of Track Monso and Humivalley (36 km)	684	-	684	-	"
<u>Sub-Total Indicated</u>	<u>6,186</u>	<u>3,648</u>	<u>6,186</u>	<u>485</u>	
(Core Program)*	(2,481)		(2,481)	(485)	

1/ May have to be moved to "Core" if passenger traffic conditions deteriorate further.

TABLE III.18: TRANSPORT SECTOR INVESTMENT PROGRAM
(Constant 1985 Prices)

	Total Program/ Project Cost	Expenditure Through December 1985	Expenditure Proposed 1986-88	Foreign Financing Committed/Under Negotiation 1986-88	Economic Viability ERR/DRC/IRR
	(Mn)	(Mn)	(Mn)	(Mn)	
B. Ports					
1. Ongoing Project ERS*	95	264	95	95	Economically viable
2. Proposed Rehab. Project, Tema & Takoradi Ports	4,160	264	4,160	3,907	20% ERR (1985)
<u>Sub-Total Indicated</u>	<u>4,255</u>	<u>264</u>	<u>4,255</u>	<u>4,002</u>	
("Core Program")*	(4,255)	(264)	(4,255)	(4,002)	
C. Ghana Airways					
1. Aircraft Purchases * (2 MD-82)	3,078	-	3,078	2,736	15% ERR (Rule)
2. Housing (Head Office Building & Staff Housing)	952	-	952	-	n.a.
3. Office & Residential Eq. & Furniture	211	-	211	-	n.a.
<u>Sub-Total Indicated</u>	<u>4,241</u>	<u>-</u>	<u>4,241</u>	<u>2,736</u>	
("Core Program")*	(3,078)	-	(3,078)	(2,736)	
D. Black Star Line					
1. 4 New Vessels *	1,098	-	1,098	1,098	15% ERR (Rule)
<u>Sub-Total Indicated</u>	<u>1,098</u>	<u>-</u>	<u>1,098</u>	<u>-</u>	
("Core Program")*	(1,098)	-	(1,098)	(1,098)	
E. State Transport Corporation					
1. Purchase of 240 new buses 40 new trucks and 37 new tankers as replacement and expansion *	1,405	41	1,405	-	15% ERR (Rule)
<u>Sub-Total Indicated</u>	<u>1,405</u>	<u>41</u>	<u>1,405</u>	<u>-</u>	
("Core Program")*	(1,405)	(41)	(1,405)	-	
F. Omni Bus Service					
1. New Buses *	546	-	546	-	15% ERR (Rule)
<u>Sub-Total Indicated</u>	<u>546</u>	<u>-</u>	<u>546</u>	<u>-</u>	
("Core Program")*	(546)	-	(546)	-	
G. City Express Transport					
1. New Buses *	201	-	201	-	15% ERR (Rule)
<u>Sub-Total Indicated</u>	<u>201</u>	<u>-</u>	<u>201</u>	<u>-</u>	
("Core Program")	(201)	(-)	(201)	-	
Total Transport Sector (Transport "Core Program")	<u>17,932</u> (13,064)	<u>3,953</u>	<u>17,932</u> (13,064)	<u>8,321</u> (8,321)	

TELECOMMUNICATIONS AND POSTS

Telecommunications

3.168 The telecommunications system in Ghana is inadequate and in a state of extreme disrepair. In 1984 it was estimated that the total number of telephones connected were 35,000 -- a telephone density of 0.28 per 100 (compared to an average of 0.80 per 100 for Africa, 2.80 for developing countries as a whole and 83.7 for the USA). Of these, 45 percent were out of order. The country has only about 800 internal long distance circuits and 28 external (international) circuits. The only telex exchange in the country is at Accra and has a capacity of 784 with 300 telex subscribers and an estimated waiting list of 674.

3.169 This dismal state of affairs would be even worse if it was not for earlier external donor assistance in the sector in the mid-seventies. The three ongoing external donor assisted projects in the telecommunication sector (expected to be completed in 1985-86) were started as part of the 1976-80 Telecommunications Sector Rehabilitation and Development Program. The World Bank project of US\$29.0 million consisted of rehabilitation and expansion of existing local automatic telephone exchange equipment and associated cable network and is expected to be completed in 1985. The financing for provision of a microwave link between Ghana, Ivory Coast and Togo, under the Telecommunications Sector development program was secured by the African Development Bank in 1977. The project called the Pan-Aftel project is also expected to be completed in 1985. The Japanese Overseas Economic Corporation Fund (OECF) initiated a project to provide a link between the southern part of Ghana with its busy industrial and market centers to the main primary commodity producing areas of the Ashanti, Brong-Ahafo, Northern and Upper Regions. Whereas the OECF project together with the IBRD and the Panaftel project provided a basic microwave (VHF/SHF) network linking regional capitals and their important neighboring towns in Ghana, limited foreign exchange was devoted to the upkeep of the existing electronic and manual exchanges, underground cables and overhead wire connections, telephone and telex equipment and general maintenance of the system. Since imported spares were not forthcoming, the level of services and associated revenues declined substantially and this important sector, which could easily have been potentially self-financing, was allowed to relapse into a spiral of poor service, low revenues and stagnant investment.

Telecommunications Sector Strategy

3.170 To fully support the ongoing economic recovery program, the Government of Ghana should adopt a strategy of focussing on strengthening communication links throughout the country. The post and telecommunications, railways, roads and highways, and other transport sectors are integral parts of a unified communications system, and their rehabilitation is expected to bring swift and substantial benefits in terms of enhanced economic activity and increased flow of exports and imports. A viable postal and telecommunication network is expected to generate

substantial savings in terms of time, fuel, maintenance and vehicle costs as more subscribers are able to use telecommunication services instead. The short-term strategy for the telecom sector should be as follows: (i) Rehabilitate all existing malfunctioning segments of telecom facilities in the 'network', and (ii) Expand telecommunications facilities, where necessary, in main cities and/or towns in keeping with the projected demand for telephone (both business and residential) telex and telegraph services.

Telecommunications Public Expenditure Program 1986-88

3.171 The telecommunications sector investment plan proposed for 1986-88 consists of: (i) A rehabilitation component (Category I); (ii) New investment component (Category II). The total investment required for both Category I (rehabilitation) and Category II (expansion) of the inland telephone, telegraph and telex services is C\$3.1 billion of which the foreign exchange requirement is C\$2.3 billion or \$40.3 million for the 1986-88 period. The total outlay required for the investment in the international telephone services for both Category I (core) and Category II (non-core) is C\$461 million with a foreign exchange component of C\$401 million or \$ 7 million.

3.172 The investment proposed for the Internal Telecommunications Services provides for automatic exchanges, radio links, underground cables and overhead wires, both for rehabilitation of broken down segments within the network and for replacing existing old and obsolete equipment where capacity is considered to be less than the demand. Both Category I and Category II components are described below.

3.173 Rehabilitation: These comprise of the following: (i) Switching; (ii) Transmission; (iii) Local networks; and (iv) Subscribers equipment. Within switching, the rehabilitation component provides for rehabilitation (and extension) of either saturated or old and worn out automatic exchanges in Accra North (Accra Region), Kumasi (Ashanti Region) and Cape Coast (Central Region) to provide for effective service and increase in subscriber demand. The city of Accra has a multi-exchange system of three exchanges: Accra North, Accra Central and Accra Cantonments. Besides being an old as well as saturated Philips type exchange the Accra North exchange is unable to handle the increase in demand with its existing capacity of 10,000 lines which cannot be expanded for lack of space. The proposal is to replace Accra North with a digital automatic exchange of 15000 lines to cater for increasing demand. The Accra North exchange areas are continuing to expand and to cater for new demand in Achimota and Dansoman areas, it is proposed to provide remote subscriber line concentrators in these areas and parent them on the proposed new Accra North digital exchange which will have an adequate capacity to handle high telephone traffic and this feature would be made use of in satisfying any future additional demand. It may be mentioned that the exchanges in Accra Cantonments and Accra Central have already been rehabilitated under the existing IBRD project. Following the same general principle a second digital automatic exchange is proposed for Kumasi I. Kumasi is expanding towards south as a town (called Kumasi II area) and it is costly and

difficult to maintain cable and overhead routes from the existing exchange in Kumasi I across to the expanding Kumasi II area with the present worn out exchange with an existing capacity of 4,600 lines. A digital exchange is expected to provide additional 5,000 lines for Kumasi; which would as a parent exchange with high traffic capacity, provide an additional 3,000 lines by the use of remote subscriber line concentrators as for Kumasi II. In addition to replacement of exchanges at Accra North, Kumasi I and Cape Coast, other existing exchanges which are not functioning properly due to lack of spares, in various areas, are proposed to be provided with the necessary spare parts and other equipment due for replacement.

3.174 Transmission. While the three ongoing IBRD, OECF and Pan-Aftel projects have created the backbone of a national trunk network, some of the existing microwave and UHF links between existing towns are old and either non-functioning, or not functioning satisfactorily. It is therefore, proposed to rehabilitate existing SHF and UHF links between: (i) Koforidua (Regional capital of Eastern region) and Ho (Regional Capital of Volta Region) through Akosombo; (ii) Sunyani (Regional capital of Brong Ahafo) through Pokukrom to Kumasi (Regional capital of Ashanti Region); (iii) Tamale (Regional Capital of the Northern Region) to its neighboring town of Yendi through Sand; (iv) Gambaga to Bawku (Upper Region); (v) Bolgatanga (Regional Capital of Upper Region) to Wa through Navrongo, Nakom, Tumu, Han, Lawra, and Nadoli.

3.175 Local Network and Subscribers Equipment. Underground cables in Accra and other areas are in very bad shape. Lack of spares and materials have contributed to inadequate maintenance and frequently arising faults on existing obsolete paper insulated cables (as opposed to more improved cables such as the jelly-filled type) is one of the primary reasons for the non-functioning of telephones throughout the country. According to one estimate, 80% of all faults are due to faulty cables. Notwithstanding investment in microwave and UHF links throughout the country, good quality of service remains dependent on proper functioning of underground cables. The investment package proposed provides for \$15.2 million in foreign exchange and \$291 million (\$5.1 million) in local costs for replacement of underground cables in Accra not covered under IBRD project.

3.176 Category II: Replacement/Extension. The replacement/extension component of the investment plan proposes expansion of automatic exchanges and related power supply equipment (power generators, rectifiers, batteries) as follows: (1) Madina, Dansoman and Achimota to be equipped with remote subscriber line concentrators and shall primarily be parented on the proposed main digital exchanges in Accra Cantonments and Accra North areas respectively; (2) Oda, an important timber producing area in the Eastern region is proposed to be linked up through a new automatic exchange to either Swedru or Nsawam; (3) Saltpond, another important industrial activity area is proposed to be linked to Cape Coast through an automatic exchange of a capacity of 250.

3.177 Transmission: (i) to connect the new exchanges at Oda to Nsawam or Swedru and Saltpond to Cape Coast respectively, UHF links are required.

(ii) Existing Junction-cable links in Accra multi-exchange area between: Accra North--Accra Cantonments, Accra Cantonments--Accra Central, Accra Central--Accra North, are old and prone to frequent faults. The proposed investment seeks to provide microwave links between these three points for more efficient, less fault prone, therefore less costly maintenance. (iii) To provide for PCM junctions to link the proposed dependent remote subscriber line concentrator exchanges in Madina, Achimota and Dansoman, Kumasi II and the main exchanges at Accra and Kumasi respectively.

3.178 Local Networks. (i) More extensive underground cable networks are proposed used to reduce extensive open-wire (overhead) subscriber routes in all towns where new automatic exchange equipment has been proposed in the investment plan. (ii) Where replacement is necessary overhead open-wire routes shall be substituted by jelly filled underground cables for connections from exchanges to subscribers.

TABLE III.19: TELECOMMUNICATIONS SECTOR - EXPECTED INVESTMENT PLAN BENEFITS 1986-88

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
<u>a. Internal Telecommunications</u>					
Exchange Line Capacity	46,800	48,919	71,300	71,300	93,000
Lines Connected	37,000	43,800	46,222	49,184	59,430
Waiting List	30,503	23,700	22,000	19,068	12,000
Lines out of order (%)	45	27	12	8	5
Number of local exchanges (Auto)	18	25	25	25	25
Number of local exchanges (Manual)	297	291	291	291	270
Percentage of automatic	86	86	87	89	91
<u>b. External Telecommunications</u>					
Telex Line Capacity	784	784	1,000	1,000	1,000
Numbers of Telex Subscribers	300	450	700	760	800

External Telecommunications Sub-Sector

3.179 The Proposed Expansion Program. The investment plan for the External Telecommunication Sector Services calls for a total outlay of ₵704.5 million (US\$13.3 million) of which the foreign exchange component is US\$11.6 million or 87% of the total external telecommunication sector investment requirements. Categories I and II of the External Telecommunications Sector 1986-88 investment plan are as follows:

3.180 Category I. (i) Payment for international telephone switch for international direct dialling; (ii) Provision of 200 telex machines and 100 teleprinters annually; (iii) Expansion of international telex gateway; (iv) Maintenance vehicles for earth station and telex maintenance; (v) Completion of Takoradi and Tema Coast Station; (vi) Provision of Junction cables.

3.181 Category II. (i) Expansion of Earth Station to link Kenya, Ivory Coast, Nigeria and Holland; (ii) Expansion of VFT Equipment; (iii) Establishment of Electronic Data Processing Center (EDP); (iv) Feasibility study for Accra-Lagos Submarine cable.

The "Core" Program for the Telecommunications Sector

3.182 While the entire proposed investment program is economically viable, it is unlikely that internal telecommunication sector has the implementation capacity to undertake the program in a three year period. The program is accordingly proposed to be carried out over 5 years - with the "core" program for 1986-88 confined to rehabilitation expenditures only. The entire external communications investment program proposed is included in the 1986-88 "core" program. The phasing of the program is accordingly as follows:

- (a) Phase I (1986-88) with an estimated cost of C1.79 billion (\$31 million of which \$27 million in foreign exchange) would concentrate on: (i) network rehabilitation, including studies, technical assistance and training, necessary for the establishment of an effective operations and maintenance organization, (ii) completion of the basic long distance transmission network linking major economic centers, (iii) replacement and expansion of automatic exchanges in Accra North, Kumasi and Cape Coast, and (iv) consolidation of Bank and OECF funded improvements in financial management;
- (b) Phase II (1988-90) with an estimated cost of C1.82 billion (\$32 million of which \$26 in foreign exchange) would concentrate on: (i) further exchange expansion in Accra and Kumasi to meet full demand in these centers, (ii) automatization of exchanges in all key regional centers, (iii) local network development to support higher telephone penetration in all these centers, and (iv) continued institutional development support as necessary after the execution of the Phase I project.

Financing of Capital Expenditure

3.183 It is estimated that internal cost recovery will completely finance the cedi counterpart requirements of the program.

TABLE III.20: TELECOMMUNICATIONS AND POSTS SECTOR

(Constant 1985 Prices)

	Total Program/ Project Cost (Q/n)	Expenditure Through December 1985 (Q/n)	Expenditure Proposed 1986-88 (Q/n)	Foreign Financing Committed/Under Negotiation 1986-88 (Q/n)	Economic Viability ERR/DRC/IRR
<u>A. Internal Telecom. Service</u>					
1. Ongoing *	24	452	24	-	Economically viable
2. Rehabilitation*	1,307	-	1,307	-	"
3. New	1,816	-	1,816	-	"
<u>Sub-Total Indicated</u>	<u>3,147</u>	<u>452</u>	<u>3,147</u>	-	
(Sub-Total - Possible "Core")	(1,331)		(1,331)	(-)	
<u>B. External Telecomm.</u>					
<u>Service Indicated *</u>	<u>461</u>	-	<u>461</u>	-	Economically viable
Sub-Total - Possible "Core"	(461)	(-)	(461)	(-)	
<u>C. Postal Services - Indicated *</u>	<u>589</u>	-	<u>589</u>	-	Economically viable
Sub-Total - "Core"	(589)	(-)	(589)	(-)	
<u>Total Telecommunications and Posts</u> ("Core Program")*	<u>4,197</u> (2,381)	<u>452</u>	<u>4,197</u> (2,381)	- (-)	

POSTAL SECTOR

Overview

3.184 The postal services in Ghana have been undergoing serious decline due to a severe liquidity problem. Lack of funds for provision of facilities for housing, storing and sorting of mails, postal stamps and supplies, spares for vehicles for transportation of mails have all added up to a lag time of 1-3 weeks or more for a letter from Accra to reach, say Bolgatanga in the North. The service encounters further delays if the destination is in even remoter areas of the country. Accra handled 62% of all mail in 1984 with four post offices, each post office handled 1.5 million units of mail in a year or 5,704 mail units a day. Each postman handled on average 565 units of mail each working day of the year and each serviceable vehicle was engaged in transportation of 17,988 units of mail each day. In other regions the mail traffic handled may be less; but so are the resources. In the Central Region, the only existing vehicle is responsible for a mail traffic volume of 20,269 per day. In the Accra Region each working vehicle is supposed to deliver 17,988 units of mail each day. In the Volta Region there exists one vehicle for transportation of 115 mail units per day to each of the 123 postal agencies in the greater Volta region.

The Postal Sector Investment Plan 1985-88

3.185 Table III.20 also gives the postal sector investment plan for the period 1986-88. The total capital outlay calls for a gross investment of C586.5 million (\$11.1 million). A substantial portion of funds are intended for the construction of a mail distribution center in Accra and setting up a national security printing press. Other works include investment in establishing post offices, postal agencies, purchase of pillar and private letter boxes.

3.186 The Mail Distribution Centre, Accra. The mail traffic handled in the Accra GPO has increased considerably in recent years. Of the 97.7 million units of mail handled in 1985, 62% passed through the GPO averaging 375,770 items every work day of the year. In Accra, all operations are performed manually. The present sorting office has been in use for the past 30 years without extension even though traffic has increased over ten-fold during the period, consequently it is faced with traffic volume far beyond its capacity. Due to overcrowding the existing layout cannot be improved upon. Equipment is inadequate and there is no room to put in more provision of a sorting office with suitable mechanical equipment which is urgently required for a speedy and efficient sorting and delivery of mail. Mechanization in this case implies the use of simple aids for indoor conveyance or correspondence from point to point, loading and unloading operations and outdoor conveyance. It is intended that the mail distribution center be provided with basic equipment such as moving belt conveyors and date-stamping machines etc. and then employ postmen to do the sorting. The proposed center when complete is expected to generate

substantial savings in time and considerably improve the efficient management and handling of mails throughout the country.

3.187 National Security and Printing Press. Ghana at present, expends substantial foreign exchange for the printing of stamps, air letter forms, postal orders, money orders and other security items. A national security and printing press was proposed a few years back with the original completion date December 1983. However, the contract has not yet been awarded and despite repeated budget allocations, no funds have been disbursed for commencement of the project. The total project cost over the 1986-88 period is expected to be C85 million. When complete the printing press is expected to generate substantial foreign exchange savings by printing stamps, air letter forms, postal and money orders, check books, passports, airline tickets, identity cards and other items locally.

3.188 Post Office Buildings. The 1986-88 investment plan calls for construction of 17 small post offices in various regions across the country.

3.189 Plant and Equipment. Since door to door delivery of mails in Ghana is practically non-existent because of a lack of street and house numbering system, private letter boxes are relied upon by almost everyone for delivery of their post. The long waiting list for private letter box rentals testifies to the importance of providing sufficient letter boxes to satisfy a greater portion of the demand. The plan proposes to double the existing capacity with the number of letter boxes (large, medium and small) reaching 153,088 people throughout the country. The plan also calls for establishment of 132 postal agencies and upgrading of 38 existing postal agencies to the status of a full departmental post office to meet enhanced demand over the 1986-88 period. In addition to the above, provision has been made to increase the number of pillar post boxes in major cities and towns for greater convenience to the public and general improvement in the quality of service provided. Stamping machines, specie boxes and other small machine items have been included to facilitate handling of mails in major post offices in the nine regional capitals. The plan calls for provision of 78 new vehicles for collection and delivery of mails within the nine regional capitals. It was considered advisable that postal departmental vehicles be used for only in-city transportation of mails thereby reducing the costs of maintaining the vehicles. All other routes be negotiated with the State Transport Corporation, Ghana Airways and Ghana Railways for transportation of mails within the country. It is expected that between Accra, Kumasi and Takoradi, the bulk of the mails be transported through the Ghana Railways; between Accra and Tamali and Accra, and to all other towns where Ghana Airways has scheduled flights, use be made of the airlift facilities provided by the Ghana Airways. For all other areas, (including the remote areas) the mails be transported under a contract with the State Transport Corporation.

3.189 Project Benefits from the Postal Sector Investment Plan 1985-88. The number of private letter boxes are expected to be doubled by 1988. The import of new vehicles and spares for existing vehicles are expected to

increase the number of functioning vehicles in the regional capitals by 275% of the existing number. These, together with other supporting investments proposed will have a swift and substantial effect in the collection and delivery of mail within the main cities and it consequently expected that the average lag time for a local letter will decrease from between two days -- 2.5 weeks to between 2-5 days.

Financing of the Postal Sector Investment Program

3.190 In order to finance the cedi costs of the proposed investment program it is proposed that the cost of a stamp currently valued at ¢1 be raised to ¢3.5 in 1986, ¢4.5 in 1987 and further ¢5.0 in 1988. Basic airmail costs be increased from a flat rate of ¢2 to 10¢ in 1986 and further ¢15 in 1987. Based on the revenue and expenditure estimates for the 1985-88 period, with increased stamp value and sales, internal cost recovery is more than sufficient to cover both the capital and recurrent costs of the postal sector for the programming period.

WATER SUPPLY CAPITAL EXPENDITURES

Elements of the Investment Program

3.191 In the context of current economic and financial conditions, GWSC's proposed capital investment programme for the period 1985-89 embodies three major activities; rehabilitating and maintaining existing facilities, completing works in progress and providing more rural water supply schemes. These categories of works were identified as priority investments which were selected in order to put scarce resources to their best use. Notably, the investment programme does not include any expansions of urban systems; these were determined to be of relatively low priority, although they do require reasonably early attention because of the high population growth in the urban areas.

3.192 The rehabilitation and maintenance schemes cover 128 systems at a cost of C2.25 billion. The components of these are: (i) Replacement, repair or overhaul of electromechanical equipment, treatment facilities, storage tanks, pipes, fittings, etc., 250 shallow wells, rehabilitation of wells and installation of hand-pumps (C1,796 million); (ii) Materials and equipment for leak detection and repair (C5.7 million); (iii) Purchase of meters, equipment for meter reading, billing and collection staff, construction of neighborhood collection kiosks, meter validation and connection regularization activities (C7.64 million); (iv) Adequate support services including technical assistance, engineering, vehicles, buildings and training facilities (C437 million). The completion of ongoing schemes in the urban areas cover several major urban areas at a cost of C5.08 billion. These are: (i) Completion of existing project and other works in Greater Accra according to master plan (C.075 million); (ii) Completion of projects with current foreign aids involvement in Techiman Cape Coast, Sekondi-Takoradi, completion of projects in Kumasi, Kwahu Ridge, Koforidua, Ho (C979 million); (iii) Adequate design, implementation and maintenance support (C1026 million). The rural water supply schemes have a total cost of C1.1 billion. These cover: (i) About 1,700 new rural water schemes of which about 200 are hand dug wells and about 1,500 are shallow boreholes with hand pumps (C883 million); (ii) Adequate design, implementation and maintenance support (C218 million).

3.193 As a guide in ranking among the investment categories, internal financial rates of return (IRR's) were calculated by comparing quantifiable projects costs and project benefits. Project costs consist of capital costs, including design and support services, plus incremental operations and maintenance costs attributable to the investment; these costs have been assumed to be 2% of total capital costs. A minimum estimate of project benefits is obtained by valuing incremental consumption attributable to the investment at the average prevailing tariff. For FY84, the average tariff was about C20/1000 gallons. For comparison, a second calculation has been made for each project using an average tariff of C60/1000 gallons.

3.194 Ongoing schemes have been broken into two groups: those in six secondary cities and other (principally ATWA). Although only rough production estimates were available for the six cities projects, IRR's were estimated with the understanding that the IRRs would only be indicative due to the imprecise nature of the production estimates. The IRR's are also not estimating economic returns to the projects and are therefore not comparable to the rate of return displayed in other sectors. The calculated aggregate IRR at the C20 tariff is negative; that calculated with the C60 tariff is 3%. However, IFRs calculated for each of the six cities individually range from negative values to over 40%. The IRR for ATWA was estimated to be in excess of 50 percent. Further study of the benefits related to each of the ongoing schemes including those in ATWA is warranted prior to finalizing the investment program.

3.195 The proposed Rural Schemes consist of wells and boreholes with relatively low yields. They produce benefits of improved access and improved health to about one-half million people, however, those benefits cannot be quantified. The IRR's calculated using production valued at average tariffs of C20 and C60 are negative and 6%, respectively. Although the IRR's are marginal, unquantifiable benefits and other considerations, such as rural development objectives, help justify the rural schemes.

TOTAL III.21: WATER SUPPLY INVESTMENT PROGRAM

(Constant 1985 Prices)

	Total Program/ Project Cost (Cm)	Expenditure Through December 1985 (Cm)	Expenditure Proposed 1986-88 (Cm)	Foreign Financing Committed/Under Negotiation 1986-88 (Cm)	Economic Viability ERR/DRC/IRR
1. Rehabilitation Programs (128 Systems) *	2,247		645		69% IRR (1985)
2. Completion of ongoing schemes: Total	5,080	4,036	1,044	236	
(- Accra)*	(3,075)				IRR 50% (1985)
(- 6 other cities)*	(979)				IRR Neg. to 48% (1985)
(- Technical Asst)*	(1026)				
3. Rural Water Supply : Total	1,101		473		6% IRR (1985)
- 1700 Schemes *	883				
- Tech. Asst. *	218				
<u>Sub-Total Indicated</u>	<u>8,428</u>	<u>4,036</u>	<u>2,162</u>	<u>236</u>	
("Core Program")*	8,428		2,162	(236)	

THE "CORE" DEVELOPMENT EXPENDITURE PROGRAM - AN OVERVIEW

3.196 A total of 159 programs/projects were evaluated for the economic sectors and of these 102 made the "core" category (see Annexure Table I for a summary statement and Annexure II for a detailed listing of these "core" projects). This surprisingly high number of apparently viable projects/programs reflects the essential rehabilitation and maintenance requirements of the economy and the fact that most projects/programs proposed are geared towards this requirement. With high existing sunk costs, rates of return on incremental investment are accordingly high.

3.197 The agricultural "core" expenditure program of C12.76 billion involving 16 major programs/projects focuses on restructuring and rehabilitation of the agricultural sector. Ongoing high cost schemes - particularly irrigation and the Northern Region Integrated Development Project - are proposed to be rationalised as quickly as possible. The only major new projects to come on stream in the period in the presently identified "core" program will be aimed at reinforcing existing institutional structures in the agricultural (including the cocoa) sector. The associated policy frame - work focuses on adequate price incentives for farmers, agricultural research and privatization of certain activities (e.g. fertilizer distribution).

3.198 In mining the "core" investment program amounts to C10.5 billion spread over the five major mining companies. Technically, all the projects are rehabilitation projects. Increases in capacity envisaged till the end of the programming period (1988), whilst substantially would still be leaving Ghanaian production in all these sectors well below levels achieved in the early 1970's. The policy frame-work focuses on encouraging modernisation through technical assistance and where possible collaboration with international mining corporations. Ashanti, SAMC, and GBC will in fact be managed by international technical partners during this period. Measures should also be taken to encourage local private sector participation in gold and diamond mining beyond the limited levels currently permitted and to bring into the official system the vast quantities of gold and diamonds which are privately mined and smuggled overseas.

3.199 The energy sector with 19 projects and a "core" investment program of C10.9 billion is the only sector where major additions to capacity are envisaged. These occur in petroleum and primary electricity generation and distribution. In the petroleum sector this new capacity creation should, with the exception of the Tar Sands Development, be entirely undertaken by private international or other national oil companies - with the government either taking up an equity share or putting in "seed money". In primary electricity generation and transmission the new capacity is in combustion turbines (to supplement hydro-generation) and in putting in the third transmission circuit to CEB for electricity exports. In petroleum refining and distribution and in electricity distribution (which together accounts for about C4 billion or about 37

percent of the energy sector program), all investments are in rehabilitation capacity.

3.200 The public sector industry "core" program of C1.97 billion over 19 projects is entirely rehabilitation. The policy frame-work emphasis financial autonomy and support for viable enterprises and disinvestment of state involvement in economically and financially non-viable enterprises where no prospects exist for their being turned around. The roads and highways, transport and communications and water supply "core" programs totalling C33.3 billion focus on rehabilitation of existing systems (with marginal additions of feeder roads and rural water supply). The policy emphasis here is on enhanced cost recovery to enable the systems to be maintained in the future.

3.201 While the "core" program of large projects in each sector is expected to comprise the bulk of new investments in the sector, it should not be considered the entire sectoral program. A small number of programs/projects have not been included in the "core" program for the sectors concerned because of insufficient information, because the timing was uncertain, or because of doubt about the absorptive capacity of the sector to deal with them over the period 1986-88. The programs projects (covering about all sectors and detailed in the relevant sectoral sections) need to be studied carefully and added to the "core" program if justified on economic grounds and if resources are determined to be available for the sector. This also applies to programs/projects which were not fully developed at the time of the mission.

THE FINANCING OF THE "CORE" DEVELOPMENT PROGRAM

3.202 The project review also allowed insights into the possible financing of the "core" development program. The "core" large program amounts to C69.5 billion of which C42.8 billion is in the Corporate Sector and C26.7 billion is in direct Government Sector. The total Government share of these capital expenditures (i.e. excluding self financing by public corporations estimated at about C12.4 billion is financed through the Development Budget, direct net lending to public corporations and authorities, foreign capital onlent to Government ministries and foreign capital onlent to public corporations and authorities (see Annexure III). The requirement for these funds is about C57 billion which is well within the amount available for the purpose. However, the requirements of government direct lending to the public sector will exceed availability of local resources and untied foreign capital counterpart funds will have to be used extensively to fill this gap. This also reflects the fact that many of the projects in the "core" program have yet to seek foreign capital financing.

CONCLUSIONS

3.203 The Government of Ghana's assessment that the present situation is appropriate to launch a Three Year Development Program covering the

1986-88 period appears timely. While the Ghanaian authorities have been understandably pre-occupied in the recent past with the stabilization and rehabilitation needs of the economy (the Economic Recovery Program), it is now appropriate to look ahead to steady and disciplined growth in a medium-term perspective. Within this context it appears that high priority must be assigned to rebuilding the public administrative sector and arresting and reversing the apparent decline in the health and education sectors. While resources available for this purpose are limited, an appropriately focused program in these sectors stressing efficiency, high standards of services and cost recovery should be feasibly to implement over the next three years. With regard to the more traditionally defined capital investment program for the period 1986-88, Ghana is fortunate in having in hand a large number of economically attractive projects which should be financed with both domestic and foreign capital. However, a closer look than that undertaken in this PER Mission is warranted for all major projects and a pipeline of additional viable programs/projects needs to be developed. This should be possible in the context of the Ghana Development Plan for 1986-88 currently under preparation.



SUMMARY STATEMENTLARGE PROJECT "CORE" PUBLIC CAPITAL EXPENDITURES INDICATED FOR 1986-88 PERIOD

(Constant 1985 Prices)

	Expenditure Proposed 1986-88 (Qn)	Foreign Financing Committed/Under Negotiation 1986-88 (Qn)	Number Projects/ Programs
1. Agriculture "Core"	12,758	2,834	16
2. Mining "Core"	10,549	4,788	5
3. Energy Sector "Core"	10,915	3,507	19
4. Industry "Core"	1,965	848	19
5. Roads & Highways "Core"	15,698	5,712	17
6. Transport & Comm. "Core"	15,445	8,321	19
7. Water Supply Sector "Core"	2,162	236	9
<u>TOTAL 1-7 "CORE" PROGRAM</u>	<u>69,492</u>	<u>26,246</u>	<u>104</u>
<u>SELF FINANCED 1/</u>	<u>12,491</u>	<u>-</u>	<u>-</u>
<u>TOTAL PUBLIC RESOURCES REQUIRED</u>	<u>57,001</u>	<u>26,246</u>	<u>-</u>

1/ From Annexure III.

"CORE" CAPITAL EXPENDITURE PROGRAM - PROJECT DETAIL

(Million Constant 1985 Prices)

<u>Project/Program</u>	Total Program/ Project Cost (Mn)	Expenditure Through December 1985 (Mn)	Expenditure Proposed 1986-88 (Mn)	Foreign Financing Commit/Under Negotiation 1986-88 (Mn)	Economic Viability ERR/DRC/IRR
<u>I. AGRICULTURE</u>					
<u>Cocobod</u>					
1. Rehabilitation & Planting)			2,100	-	Economic
2. Feeder Roads)	10,505	1,348	2,400	-	Economic
<u>Ministry of Agriculture</u>					
3. Crop Services	860		860	-	Economic
4. Vet. Services	270		270	-	Economic
5. Other Services	766		766	-	Economic
6. Grains Development (GCDB)			under (11)	1,214	Economic
7. Volta Region ADP	2,581	n.a.	1,037	1,007	16%ERR(1982)
8. Cotton Development	675		675	-	Economic
9. Maize support and Others	760		760	-	Economic
10. Institutional Strengthening	260		260	200	Economic
<u>CSIR</u>					
11. CRI etc.	1,570		1,570	-	Economic
12. Oil Palm	164		164	80	Economic
13. Cocoa Research	225		225	-	Economic
<u>Oil Palm Plantations</u>					
14. Topp I	1,100		1,100	158	9%ERR(1980)
15. Topp II	1,902	n.a.	271	175	13%ERR(1983)
<u>Rubber</u>					
16. Grel	300		300	-	Economic
<u>TOTAL AGRICULTURE SECTOR</u>	<u>21,938</u>		<u>12,758</u>	<u>2,834</u>	
<u>II. MINING</u>					
17. Ashanti Gold Fields Corp.	8,892	1,425	6,954	3,078	53%ERR(1984)
18. State Gold Mining Corp.	5,312	-	2,097	1,710	18%ERR(1985)
19. Ghana Bauxite Corp.	313	-	313	-	Economic
20. Ghana National Manganese Corp.	439	46	393	-	Economic
21. Ghana Consolidated Diamonds	1,761	820	792	-	Economic
Sub-Total	<u>16,717</u>	<u>2,337</u>	<u>10,549</u>	<u>4,788</u>	

"CORE" CAPITAL EXPENDITURE PROGRAM - PROJECT DETAIL

(\$ Million, Constant 1985 Prices)

	Total Program/ Project Cost ((\$Mn)	Expenditure Through December 1985 ((\$Mn)	Expenditure Proposed 1986-88 ((\$Mn)	Foreign Financing Committed/Under Negotiation 1986-88 ((\$Mn)	Economic Viability ERR/DRC/IFR
III. Energy Sector					
A. Petroleum Sector					
22. Saltpond	1,140	228	912	848	25% IRR (1985)
23. Tano Tar Sands	228	-	228	196	60% IRR (1985)
24. South Tano Government Costs	14,250	-	1,425	-	50% IRR (1985)
25. Exploration Promotion	171	-	171		
26. GNPC Technical Assistance	171	-	171	171	
<u>Sub-Total</u>	<u>15,960</u>	<u>228</u>	<u>2,907</u>	<u>1,337</u>	
B. Petroleum Refining and Distribution					
27. Petroleum Refinery and Rehabilitation Phase I (ongoing)	1,026	355	1,026	688	65% ERR (1984)
28. Petroleum Refinery and Rehabilitation Phase II	342	-	342	342	Economic
29. Lube Blending Plant	855	-	85	-	Economic
30. Oil Depots Rehab.	114	-	114	-	Economic
31. Retail Outlets Rehab.	570	-	570	-	Economic
32. LPG Marketing Facil.	285	-	285	-	Economic
33. Rural Area Petroleum Product Outlets	342	-	342	-	Economic
34. Volta Lake Transportation	171	-	171	-	Economic
<u>Sub-Total</u>	<u>3,705</u>	<u>355</u>	<u>2,935</u>	<u>1,030</u>	
C. VRA					
<u>Power Generation Transmission</u>					
35. Network Rehab. Phase II	741		741	-	Economic
36. Grid Reinforcement	855		855	-	Economic
37. Combustion Turbine Units	1,311		1,311	-	Economic
38. Third Circuit to CEB	513		513	-	Economic
<u>Sub-Total</u>	<u>3,420</u>	<u>-</u>	<u>3,420</u>	<u>-</u>	

"CORE" CAPITAL EXPENDITURE PROGRAM - PROJECT DETAIL

(£ Million, Constant 1985 Prices)

	Total Program/ Project Cost (£Mn)	Expenditure Through December 1985 (£Mn)	Expenditure Proposed 1986-88 (£Mn)	Foreign Financing Committed/Under Negotiation 1986-88 (£Mn)	Economic Viability ERR/DRC/IRR
D. EGG: Power					
<u>Distribution</u>					
39. IDA System Rehab. Project I	1,311	-	1,311	1,140	Economic
<u>Sub-Total</u>	<u>1,311</u>	<u>-</u>	<u>1,311</u>	<u>1,140</u>	
40. E. NEB Renewable Energy	<u>342</u>	-	<u>342</u>	-	Economic
<u>Sub-Total</u>	<u>342</u>	-	<u>342</u>	-	
IV. Industry					
41. Tema Food Complex	341	n.a	341	318	Economic with suggested invest- ment program
42. Bona Tire Co.	227	n.a	227	-	Economic with suggested invest- ment program
43. GIHOC Pharmaceuticals	705	n.a	705	530	Economic
44. GIHOC Glass	126	n.a	126	-	Potentially Economic
45. GIHOC Steel	181	n.a	181	-	Potentially Economic
46. GIHOC Foundry	194	n.a	194	-	Potentially Economic
59. Specified 13 GIHOC Co.'s 1/	191	n.a	191	-	Economic, treating previous investment as sunk costs
<u>Sub-Total</u>	<u>1,965</u>	n.a	<u>1,965</u>	<u>848</u>	

1/ Bottling Co., Paints, Metal Industries, Paper Conversion, Electronics, Footwear Ghana manufacturing, Printing and Paper Production, Refrigeration and Household Equipment, Boatyards, Fibre Products Co., Distilleries, Cannery

"CORE" CAPITAL EXPENDITURE PROGRAM - PROJECT DETAIL

(C Million Constant 1985 Prices)

	Total Program/ Project Cost (Cmn)	Expenditure Through December 1985 (Cmn)	Expenditure Proposed 1986-88 (Cmn)	Foreign Financing Committed/Under Negotiation 1986-88 (Cmn)	Economic Viability ERR/DRC/IRR
V. <u>Roads and Highways</u>					
<u>Ghana Highway</u>					
<u>Authority</u>					
A. <u>Trunk Road System</u>					
60. Road Rehab. and Maintenance Project (IDA sponsored)	4,907	-	4,907	3,463	50% ERR (1985)
B. <u>Ongoing Rehab. and Construction Project (50%-85% completed)</u>					
	2,153	n.a.	2,153	302	ERR estimated at more than 50% on investment required for completion of project.
61. Reconstruction of Axim-Mpataba- Elubo	325	n.a.	325	211	"
62. Asseby bridge Program	102	n.a.	102	91	"
63. Reconstruction of Daboase Junction To Takoradi	900	n.a.	900	-	"
64. Construction of Several Bridges	40	n.a.	40	-	"
65. Construction of Asukawkaw Bridge	107	n.a.	107	-	"
66. Reconstruction of Yamoransa Assim Preaso Road	91	n.a.	91	-	"
67. Reconstruction of Begoso-Ayanfuri Road	587	n.a.	587	-	"
68. <u>Other Rehabilitation (construction Projects)</u>	5,682	n.a.	5,682		
69. Rehab. of Yanarona- Anwiankwanta	992	n.a.	992		16% ERR (1985)
70. Reconstruction of Yepi- Morno Road and Bridge Approaches	376	n.a.	376		10% ERR (1981)

"CORE" CAPITAL EXPENDITURE PROGRAM - PROJECT DETAIL

(C Million Constant 1985 Prices)

	Total Program/ Project Cost	Expenditure Through December 1985	Expenditure Proposed 1986-88	Foreign Financing Committed/Under Negotiation 1986-88	Economic Viability ERR/DRC/IRR
	(Cm)	(Cm)	(Cm)	(Cm)	
71. Reconstruction of Tepa Junction-Sunyani	724	n.a	724	-	20% ERR (1985)
<u>Department of Feeder Roads</u>	<u>2,904</u>	<u>n.a</u>	<u>2,904</u>	-	
72. Development/Recons.	1,936	n.a	1,936	-	15% ERR (Rule)
73. Periodic maintenance	968	n.a	968	-	24% ERR (1985)
<u>Urban Roads</u>	<u>3,642</u>	<u>n.a</u>	<u>3,642</u>	<u>1,947</u>	
74. Rehab. of Accra City Roads	1,026	n.a	1,026	807	70% ERR (1985)
75. Rehab. of Kumasi City Roads	2,228	n.a	2,228	1,140	30% ERR (1985)
76. Reconstruction of Kaneshie-Mallam Road	387	n.a	387	-	30% ERR (1985)
<u>Sub-Total</u>	<u>15,698</u>	<u>n.a</u>	<u>15,698</u>	<u>5,712</u>	
<u>VI. Transport and Communications</u>					
<u>A. Ghana Railways</u>					
77. Ongoing inc. Suppl. Project	941	3,648	941	485	30% ERR (1985)
78. Two Accident Relief Trains and 1 Crane	228		228		Primaefacie justifie
79. 150 Wagon Replacement	428		428		"
80. Workshop Facilities	126		126		"
81. Training School Phase II	228		228	-	"
82. 3 Locomotives	240		240	-	"
83. Rehabilitation of Buildings	102		102	-	"
84. Technical Assistance	188		188	-	"
<u>Sub-Total Indicated</u>	<u>2,481</u>	<u>3,648</u>	<u>2,481</u>	<u>485</u>	

"CORE" CAPITAL EXPENDITURE PROGRAM - PROJECT DETAIL

(C Million Constant 1985 Prices)

	Total Program/ Project Cost	Expenditure Through December 1985	Expenditure Proposed 1986-88	Foreign Financing Committed/Under Negotiation 1986-88	Economic Viability ERR/DRC/IRR
	(C Mn)	(C Mn)	(C Mn)	(C Mn)	
B. Ports					
85. Ongoing Project ERS	95	264	95	95	Economically viable
86. Proposed Rehab. Project, Tena & Takoradi Ports	4,160		4,160	3,550	20% ERR (1985)
<u>Sub-Total Indicated</u>	<u>4,255</u>	<u>264</u>	<u>4,255</u>	<u>4,002</u>	
C. Ghana Airways					
87. Aircraft Purchases (2 MD-82)	3,078	-	3,078	2,736	15% ERR (Rule)
<u>Sub-Total Indicated</u>	<u>3,078</u>	<u>-</u>	<u>3,078</u>	<u>2,736</u>	
D. Black Star Line					
88. 4 New Vessels	1,098	-	1,098	1,098	15% ERR (Rule)
<u>Sub-Total</u>	<u>1,098</u>	<u>-</u>	<u>1,098</u>	<u>-</u>	
E. State Transport Corporation					
89. Purchase of 240 new buses 40 new trucks and 37 new tankers as replacement and expansion	1,405	41	1,405	-	15% ERR (Rule)
<u>Sub-Total</u>	<u>1,405</u>	<u>41</u>	<u>1,405</u>	<u>-</u>	
F. Omni Bus Service					
90. New Buses	546		546	-	15% ERR (Rule)
<u>Sub-Total</u>	<u>546</u>	<u>-</u>	<u>546</u>	<u>-</u>	
G. City Express Transport					
91. New Buses	201		201	-	15% ERR (Rule)
<u>Sub-Total</u>	<u>201</u>	<u>-</u>	<u>201</u>	<u>-</u>	
H. Internal Telecom. Service					
92. Ongoing	24	452	24	-	Economically viable
93. Rehabilitation	1,307	-	1,307	-	"
<u>Sub-Total</u>	<u>1,331</u>	<u>452</u>	<u>1,331</u>	<u>-</u>	
I. External Telecomm.					
94. Service	461	-	461	-	Economically viable
J. 95. Postal Services	589	-	589	-	Economically viable

"CORE" CAPITAL EXPENDITURE PROGRAM - PROJECT DETAIL

(C Million, Constant 1985 Prices)

	Total Program/ Project Cost (C Mn)	Expenditure Through December 1985 (C Mn)	Expenditure Proposed 1986-88 (C Mn)	Foreign Financing Committed/Under Negotiation 1986-88 (C Mn)	Economic Viability ERR/DRC/IRR
<u>VII. Water Supply</u>					
96. Rehabilitation Programs (128 Systems)	2,247		645		69% IRR (1985)
Completion of ongoing schemes: Total	5,080	4,036	1,044	236	
97. (- Accra)	(3,075)				50% IRR (1985)
103. (- 6 other cities)	(979)				Neg. 48% IRR (1985)
(- Technical Asst)	(1,026)				
Rural Water Supply :					
Total			473	-	6% IRR (1985)
104. - 1700 Schemes	833				
- Tech. Asst.	218				
<u>Sub-Total</u>	<u>8,428</u>	<u>4,036</u>	<u>2,162</u>	<u>236</u>	
<u>Total (I-VII)</u>	<u>108,519</u>	<u> </u>	<u>68,626</u>	<u>26,588</u>	

FINANCING OF THE "CORE" DEVELOPMENT EXPENDITURE PROGRAM 1986-88

(C Million, Constant 1985 Prices)

	Total Development Expenditures	Self		Financing		
		Financed	Govt. Dir. Budget Expenditures	Govt. Dir. Lending to Public Sector	Direct Foreign Capital to Govt. 1/	Foreign Capital Orient Public Sector 1/
I. Agriculture						
1. Ministry of Agriculture	2,156	-	1,956	-	200	-
2. MOA Projects & Authorities	4,016	-	1,795	-	2,221	-
3. Other Agr. Projects	2,086	-	-	1,673	-	413
4. Cocoa Board	4,500	2,100	2,400	-	-	-
<u>Sub-Total</u>	<u>12,758</u>	<u>2,100</u>	<u>6,151</u>	<u>1,673</u>	<u>2,421</u>	<u>413</u>
II. Mining						
1. AGC	6,954	-265	-	4,141 2/	-	3,078
2. SGMC	2,097	377	-	10	-	1,710
3. GNC	393	325	-	68	-	-
4. GBC	313	-264	-	577	-	-
5. GDC	792	-125	-	917	-	-
<u>Sub-Total</u>	<u>10,549</u>	<u>48</u>	<u>-</u>	<u>5,713</u>	<u>-</u>	<u>4,788</u>
III. Fuel & Power						
1. GNPC	2,907	-	-	1,570	-	1,337
2. Refinery	1,368	-	-	338	-	1,030
3. GOIL	1,567	1,567	-	-	-	-
4. VRA	3,420	3,420	-	-	-	-
5. EOG	1,311	-	-	171	-	1,140
6. NEB	342	-	342	-	-	-
<u>Sub-Total</u>	<u>10,915</u>	<u>4,987</u>	<u>342</u>	<u>2,079</u>	<u>-</u>	<u>3,507</u>
IV. Industry						
1. Tema Food Complex	341	23	-	-	-	318
2. Bonsa Tire Co.	227	117	-	110	-	-
3. GIHOC	1,397	867	-	-	-	530
<u>Sub-Total</u>	<u>1,965</u>	<u>1,007</u>	<u>-</u>	<u>110</u>	<u>-</u>	<u>848</u>

FINANCING OF THE "CORE" DEVELOPMENT EXPENDITURE PROGRAM 1986-88 (CONTD)

(¢ Million, Constant 1985 Prices)

	Total Development Expenditures	Self Financed	Govt. Dir. Budget Expenditures	Financing Govt. Dir. Lending to Public Sector	Direct Foreign Capital to Govt. <u>1/</u>	Foreign Capital Orient Public Sector <u>1/</u>
V. <u>Roads & Highways</u>						
1. GHA	9,152	1,098	4,289	-	3,765	-
2. Dept. of Feeder Roads	2,904	602	2,302	-	-	-
3. Urban Roads	3,642	352	1,343	-	1,947	-
4. Road Fund	-	(1,908)	-	-	-	-
<u>Sub-Total</u>	<u>15,698</u>	<u>2,052</u>	<u>7,934</u>	<u>-</u>	<u>5,712</u>	<u>-</u>
VI. <u>Transport & Communic.</u>						
1. Ghana Railways	2,481	-418	-	2,414	-	485
2. Ports	4,255	-	-	253	-	4,002
3. Ghana Airways	3,078	-	-	342	-	2,736
4. Black Star Line	1,098	-	-	-	-	1,098
5. State Transport Corp.	1,405	1,405	-	-	-	-
6. Omni Bus Service	546	546	-	-	-	-
7. City Express Transport	201	201	-	-	-	-
8. Internal Telecomm.	1,331	1,331	-	-	-	-
9. External Telecomm.	461	461	-	-	-	-
10. Postal Services	589	589	-	-	-	-
<u>Sub-Total</u>	<u>15,445</u>	<u>4,115</u>	<u>-</u>	<u>3,009</u>	<u>-</u>	<u>8,321</u>
VII. <u>Water Supply Sector</u>						
1. GWSC	2,162	-1,818	-	3,744	-	236
<u>Sub-Total</u>	<u>2,162</u>	<u>-1,818</u>	<u>-</u>	<u>3,744</u>	<u>-</u>	<u>236</u>
<u>TOTAL</u>	<u>69,492</u>	<u>12,491</u>	<u>14,427</u>	<u>15,328</u>	<u>8,133</u>	<u>18,113</u>

1/ Identified as of May 1985.

2/ Likely to be domestic commercial bank borrowings.