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Report No. 8220-SO

STAFF APPRAISAL REPORT

SOMALIA

INFRASTRUCTURE REHABILITATION PROJECT

SEPTEMBER 14, 1990

Infrastructure Operations Division
Eastern Africa Department
Africa Region

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SOMALIA
INFRASTRUCTURE REHABILITATION PROJECT

CURRENCY EQUIVALENTS

Currency Unit	=	Somali Shilling (So. Sh.)
So. Sh. 1.00	=	US\$0.0017
US\$1.00	=	So. Sh. 583 1/
SDR 1.00	=	US\$1.312
US\$1.00	=	SDR 0.762

FISCAL YEAR

January 1 - December 31

WEIGHTS AND MEASURES

(Somalia uses the metric system)

1 meter (m)	=	3.28 feet
1 kilometer (km)	=	0.62 miles
1 square kilometer (km ²)	=	0.386 sq. mile
1 hectare (ha)	=	2.47 acres
1 metric ton (ton)	=	2,204 pounds
1 Imperial gallon (Ig)	=	1.2 US gal, 4.55 liters
1 cubic meter	=	220 Ig, 264.2 US gal

ACRONYMS AND ABBREVIATIONS

CED	-	Civil Engineering Department
DOH	-	Directorate of Highways
EEC	-	European Economic Community
GDP	-	Gross Domestic Product
GOS	-	Government of Somalia
GTZ	-	Deutsche Gesellschaft Fur Technische Zusammenarbeit
HMA	-	Highway Maintenance Area
IDA	-	International Development Association
mcm	-	million cubic meters
MCW	-	Mogadishu Central Workshops
MPT	-	Ministry of Posts and Telecommunications
MWA	-	Mogadishu Water Agency
MFMT	-	Ministry of Fisheries & Marine Transport
MMWR	-	Ministry of Mineral & Water Resources
MPWH	-	Ministry of Public Works & Housing
MLAT	-	Ministry of Land & Air Transport
NTA	-	National Transport Agency
SA	-	Somali Airlines
SPA	-	Somali Ports Authority
SSAL	-	Somali Shipping Agency & Line
UNDP	-	United Nations Development Program
VOC	-	Vehicle Operating Costs
vpd	-	Vehicles per Day
WDA	-	Water Development Agency

1/ As of October 7, 1989

SOMALIA
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This report is based on the findings of an appraisal mission in October 1989 by Mr. R. Beardmore (Mission Leader), Mr. B. Almassy (AF2IN), Mr. D. Lomax (AFTIE) and Messrs. Kathuria and Twitte (consultants). Mr. D. Jovanovic (AF2IN) provided transport sector background information and the economic analysis. Mr. B. Shantaram was responsible for processing the report.

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MAP

IBRD 22016

SOMALIA

INFRASTRUCTURE REHABILITATION PROJECT

Credit and Project Summary

Borrower: The Somali Democratic Republic

Implementing Agencies and beneficiaries: Directorate of Highways (DOH), Ministry of Public Works and Housing (MPWH), Mogadishu Water Agency (MWA), Ministry of Posts & Telecommunications (MPT)

Credit Amount: SDR 14.1 million (US\$18.5 million)

Terms: Standard IDA terms with 40 years maturity.

On-lending terms: As a loan of \$6.0 million to MWA at 12% interest rate to be repaid over 20 years including four years grace.

Project Description: The Project would protect the capital investment in and increase the service life of the primary and secondary road network, help improve DOH's capacity for road maintenance, strengthen the technical, financial, and administrative capacity of MWA and MPT, and prepare for the next phase of the expansion of Mogadishu's water supply system. The Project includes support for (a) routine road maintenance in Highway Maintenance Areas (HMAs) 1, 3 and 4; (b) consultancy services for the engineering design of Mogadishu's Stage 3 water supply expansion; and (c) technical assistance and training for DOH, MWA and MPT.

Risks: While the Project is designed to reduce as much as possible risks associated with implementation, there is nevertheless, the possibility that implementation could be delayed in the event local staff assigned to the project leave Government service or counterpart staff are not assigned on time. This risk will be mitigated by staff incentive schemes for DOH and MWA, coupled with the filling of key posts within the entities as conditions of credit effectiveness. There is also the possibility that the local funding for routine road maintenance may not materialize as planned. However, the establishment of the Road Maintenance Fund and its strengthening under the Project as well as periodic review of the Public Investment Program should reduce the risk. The one risk which is difficult to anticipate is the security situation in Project areas outside of

Mogadishu. Under the prevailing conditions the Project components dealing with water supply and telecommunications are feasible in that the major focus of the work is institutional development located in Mogadishu. If the situation severely deteriorates, it will undoubtedly have a negative impact on the road component of the Project. Under such adverse circumstances, the road activities could be delayed until later years in the project period.

<u>Estimated Costs:</u>	<u>Item</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
		-----	(US\$ million)	---
	Routine Road Maintenance	0.6	4.2	4.8
	Technical Assistance and Training for DOH	0.7	2.8	3.5
	Institutional Strengthening of MWA	0.3	2.3	2.6
	Engineering Design of Mogadishu Water Supply	0.3	2.6	2.9
	Institutional Strengthening of MPT	0.3	2.2	2.5
	Project Preparation	0.1	1.3	1.4
		---	---	---
	Base Costs	2.3	15.4	17.7
	Physical Contingencies	0.2	1.4	1.6
	Price Contingencies	0.2	1.5	1.7
	<u>Total Project Cost</u>	<u>2.7</u>	<u>18.3</u>	<u>21.0</u>

<u>Financing Plan:</u>	<u>IDA</u>	<u>0.2</u>	<u>18.3</u>	<u>18.5</u>
	<u>Government</u>	<u>2.5</u>	<u>0.0</u>	<u>2.5</u>
	<u>Total</u>	<u>2.7</u>	<u>18.3</u>	<u>21.0</u>

<u>Estimated Disbursements:</u>	<u>Bank FY</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>
		----- (US\$ million) -----						
	Annual	1.9	2.4	4.8	4.0	3.2	1.6	0.6
	Cumulative	1.9	4.3	9.1	13.1	16.3	17.9	18.5

Economic Rate of Return: 43%

SOMALIA

INFRASTRUCTURE REHABILITATION PROJECT

I. SECTOR BACKGROUND

A. Geography and Population

1.01 Somalia (IBRD Map 22016) is a large and sparsely populated country with approximately 6 million people living on 638,000 sq km of land. The climate is arid to semi-arid with moderate droughts occurring every 3-4 years and major ones every 8-10 years. In a rather harsh environment, the mainstay of the economy has been nomadic pastoralism taken up by about half the population. The remaining half of the population is equally divided between those living in settled rural communities and those inhabiting urban areas.

1.02 Between 1977 and 1987, the total population grew from 4.4 million to 5.8 million, an average annual rate of 2.9 percent. During the same period it is estimated that the urban population grew at an average annual rate of 6.5 percent, to its present level of 1.4 million, representing 24 percent of the total population. Nearly two-thirds of the current urban population lives in Mogadishu, the capital, which increased from a population of 450,000 in 1975 to its present size of nearly 1,000,000 inhabitants (1989). Some estimates indicate that Mogadishu's population is growing by more than 10 percent per year. Hargeisa is the second largest urban center with a population of 150,000. Other urban centers include Baidoa, Berbera, Burao, Kismayo, and Merca, all with populations ranging from 30,000 to 60,000, with Baidoa and Kismayo at the upper end of the scale.

B. Macroeconomic Performance

1.03 Somalia is one of the poorest countries in the world with a 1988 per capita GNP of US\$170 at market exchange rates. Other indicators of the country's low level of social and economic development include: an average life expectancy of 46 years; an infant mortality rate of 130 per thousand; an enrollment rate at primary schools of less than 10 percent; and a ratio of nearly 16,000 people per physician. Its economy is highly dependent on and vulnerable to the availability of foreign aid. Exports have suffered from unfavorable market developments and now cover less than one fourth of imports. The share of Government revenue in GDP has declined in recent years to only about 5 percent in 1988. Civil service wages and salaries are significantly below levels necessary to maintain minimum living standards, public resources available for economic and or social services are very limited and domestic savings are minimal. Economic development implementation capacity is constrained by a shortage of skilled personnel, weak financial control and a poor statistical base.

1.04 Livestock production has accounted for about 40 percent of GDP and 60 percent of export earnings. Apart from the traditional export of livestock, commercial agriculture is centered mainly on the production and export of bananas and the production of sugar, sorghum, and maize for the domestic market. The agricultural sector, including livestock production,

represents about 63 percent of GDP at factor cost, 80 percent of employment and most exports. The industrial sector is small, contributing 5 percent to GDP. Its growth has been hampered by problems in public sector management, an overvalued exchange rate, shortage of credit, past price controls, licensing problems, and tax and tariff structures in need of modernization.

1.05 In 1988 the Government adopted a medium term adjustment program aimed at stabilizing its domestic and external imbalances through greater financial and monetary discipline, and promoting growth through greater dependence on market forces. Implementation of the adjustment program has been mixed. After a slow start, the Government has followed through most of the measures to further liberalize the markets. The private sector is now actively engaged in the export of hides, skins, frankincense and myrrh. A non-discriminatory foreign exchange allocation system for private sector imports has been operative since the beginning of program implementation in mid-1988. To improve incentives to export, a foreign exchange retention scheme for exporters was introduced.

1.06 While Government implemented these macroeconomic and structural adjustment measures, the continued expansion of the supply of domestic credit has undermined the overall effectiveness of the program. Easy credit under uncertain political conditions has resulted in strong pressures on domestic prices and the free market exchange rate since a large part of the credit was used to finance capital flight and hedge against inflation. Under these fluid macroeconomic conditions, the proposed Project is intended to lend support to preserving existing infrastructural assets, alleviating poverty and promoting human resource development.

C. The Transport Sector

General

1.07 Somalia's transport infrastructure is limited, consisting of 21,830 km of roads, three principal ports and four airports with paved runways. There are no railways, pipelines or internal waterways, while coastal shipping has been negligible so far. Road transport is by far the principal means of internal transport. Camels and donkeys are important: camels for long distance transport (carrying about 100 kg loads over average distances of 30 km per day) and donkeys for small loads within and around towns and villages.

1.08 Owing to the size and shape of the country and the widespread distribution of its population, it has been difficult to develop a viable transport system. The transport sector remains largely underdeveloped due to investment levels of 5-6% of GDP which is the lowest in the region.

Transport Policy, Planning and Coordination

1.09 The role of the transport sector in the development of Somalia is to provide access to centers of economic activity and to integrate geographically isolated areas into the mainstream of the economy. To date,

road transport has been the main transport subsector contributing to the achievement of these goals. Coastal shipping, which once linked economically active coastal cities both nationally and internationally, has essentially ceased. Because of the high foreign cost element in the road transport system composed of both roads and vehicles, traditional means of land transport to move goods, services and people within the country are still common practice (Para. 1.07).

1.10 The objectives of the Somali Government for the transport sector as a whole are stated in the Five-Year Development Plan 1987-1991: (i) to facilitate the economic and social development of the country; (ii) to enable efficient and reliable transport and communication within the country and with the outside world at reasonable cost; (iii) to permit the most efficient use of the existing infrastructure; and (iv) to reduce dependence on external sources. These general objectives aim, inter alia, at promoting regional development and the efficiency of the transport system as support to other economic sectors. However, there is still a high level of dependence on external resources in financing the projects. About 95% of the investment program in the sector is financed by foreign sources. The efficient use of existing infrastructure has not yet been secured, bearing in mind the poor road conditions, mainly due to lack of maintenance.

1.11 The Government is now in favor of giving access to private enterprises to the road and sea transport market, although there would continue to be public participation. Transport rates are regulated but not vigorously controlled; the rates for road transport serve as a guideline. Domestic air transport is regarded as the means of transport to maintain communication with remote areas at affordable prices. In general, recent transport policy of the Government of Somalia (GOS) has been reasonable since it aims to minimize capital investments for new infrastructure. GOS appears to be guided by the objective of transport prices to allow people to afford transport services. That is reflected in comparatively low official tariffs for road transport, the low air fares for domestic flights, and the low taxes and fees imposed on vehicle circulation.

1.12 The GOS recognizes the vital role that adequate transport facilities and services play in the development of the nation's economy. In light of this policy and taking into account the macro-economic framework and its limitations, the role of the transport sector will be to maximize the provision of transport services with minimum foreign exchange availability. To this end GOS has adopted policies in the road sector which aim to (i) delay new road construction, (ii) avoid costly reconstruction of its paved road network through improved maintenance and (iii) achieve more efficient use of road vehicles by means of improved maintenance and higher load factors through greater private sector involvement.

1.13 The four ministries which are concerned with the transport sector are: (i) the Ministry of Public Works and Housing (MPWH) which is responsible for highway maintenance and for planning and construction of highways, ports and airports; (ii) the Ministry of Land and Air Transport (MLAT) which is responsible for road transport regulations including vehicle registration and control and for civil aviation through its Civil

Aviation Department; (iii) the Ministry of Fisheries and Marine Transport (MFMT) which, through the Somali Port Authority (SPA), is responsible for port operations, and, through the Somali Shipping Agency and Line (SSAL), is responsible for marine transport; and (iv) the Ministry of Interior which is responsible for highway traffic control. Sectoral coordination, provided by the Ministry of National Planning, is loose and needs improvement.

1.14 Sector Investment. For the period 1987-1991, transport investments account for about 20 percent of total planned public investment. As could be expected, financial allocations for roads are the highest and account for 77 percent of sector investments, while ports and civil aviation account for 19 and 4 percent respectively. The investment program for transport was basically well conceived, but because of cost overruns caused by planning and construction delays and price inflation the program has only been partially successful in meeting implementation targets. As a result, only about 50 percent of planned investments actually materialized during 1987 and 1988. The shortfall in the planned targets was particularly pronounced in the roads subsector.

Table 1.1

Investments in the Transport Sector: 1987-1991
(US\$ million)

<u>Sub-Sectors</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>Total</u>
Highways	62.6	85.2	24.8	42.4	42.1	157.1
Ports and Marine						
Transport	16.6	14.2	7.6	19.7	3.7	61.8
Civil Aviation	0.5	3.6	6.3	3.7	0.0	14.1
Total Trans.						
Sector	<u>79.7</u>	<u>103.0</u>	<u>38.7</u>	<u>65.8</u>	<u>45.8</u>	<u>333.0</u>

SOURCE: Ministry of National Planning, Mogadishu, 1988

Ports and Shipping Subsector

1.15 Somalia, with the second longest coastline in Africa, has three major ports: Berbera in the north on the Gulf of Aden and Mogadishu and Kismayo in the south on the Indian Ocean. SPA, created in 1962 as an autonomous Government agency under the authority of MFMT, is responsible for the operation and maintenance of these ports. All of them have sheltered deepwater facilities. The ports rely on ships' gear for general cargo loading and unloading. Mogadishu is the main port, handling most of Somalia's export/import traffic (73% in 1988); Berbera handled 20% and Kismayo 4%; the rest was handled by small secondary ports. The ports of Berbera and Kismayo are mainly for the export of livestock (94%) and bananas (75%) respectively.

1.16 The three ports were recently extended (1983-1988) and combined have 14 berths and 1 roll-on/roll-off ramp (Mogadishu). Their operations are currently being modernized under an ongoing IDA cofinanced project (Para. 1.74). Following a pattern of economic decline the combined throughput in the ports has been falling, i.e. from 1.22 million tons in 1983 to 1.00 million tons in 1986 and 0.85 million tons in 1988. The major decline was recorded in Berbera due to hostilities in the area and the closing off of exports of live animals to Saudi Arabia.

1.17 SPA seems to be better organized than other agencies in the sector. A number of Somalis were trained abroad (with Arab Fund and EEC assistance) to become naval/shipping engineers and navigators. Technical assistance is being provided under the IDA co-financed Port Project. Despite declining throughput, financial operations of SPA (including all ports) have been successful and total net income increased from SoSh 682 million in 1986 to SoSh 1,567 million in 1988.

1.18 While foreign vessels handle most of Somalia's international trade, about 5% is carried by SSAL, established in 1978 as an autonomous parastatal agency under the authority of MFMT. SSAL operates two small ships of about 4,500 dwt in total; however, it plans to purchase new ships and expand its operations. In 1988, total freight transported by SSAL was about 60,000 tons, mostly exports of livestock and bananas to the Near East and Italy, respectively. Financially, SSAL is about breaking even.

1.19 Despite the 2,700 km coastline, coastal shipping is limited mainly because there has been little inter-regional trade suitable for such shipping. However, individual operators with small boats of up to 300 dwt carry some passenger and freight traffic along the northern coast between Seyla and Bereda. The development of commercial fishing could stimulate coastal shipping.

Civil Aviation Subsector

1.20 In view of the long distances and inadequate land transport, civil aviation has potential for development in Somalia as evidenced by a strong growth pattern. In 1986, international passenger transport by Somali Airlines (SA) increased to 93,000 and freight to 1,542 tons. In addition, about 38,000 passengers were transported internally. Somalia has fifteen airfields; SA serves eight of them with scheduled domestic flights. Mogadishu, Berbera and Hargeisa have international airports; the airport at Kismayo also has a paved runway.

1.21 SA is an autonomous parastatal company established in 1964 under the Department of Civil Aviation of MLAT. It operates one Dornier and an Airbus 300, a wide body aircraft for international routes. SA connects Mogadishu with Rome, Frankfurt, Cairo, Nairobi and Djibouti. Also, a few foreign airlines link Somalia with cities in Africa and the Near East. UNDP is providing occasional fellowships for overseas training and technical assistance experts for training of SA personnel.

Road Transport Subsector

1.22 Road Transport Industry. No systematic records have been kept of road usage and the nation's vehicle fleet. Available data on fleet composition, age and condition indicate that there were about 40,200 vehicles in 1988. Of the total fleet, about 10,000 or 25 percent were medium to heavy trucks including buses, 29 percent were pick-ups and vans and the balance (46 percent) were passenger cars and taxis. With no rail service in the country, road vehicles cater to the majority of freight movement in the country although animal powered transport (with donkeys and camels) also provide an important means of transport. Freight transport is carried by private truckers and by the National Transport Agency (NTA), a parastatal company established in 1978 to provide freight transport services. There are no specific regulations (for entry, route allocations, etc.) which would limit operators in the freight transport industry. Vehicle weight and dimension regulations were introduced in 1972 and the Ministry of Interior is responsible for their enforcement. The maximum gross vehicle weight permitted is 32 tons; the maximum load for a single axle is 10 tons and for a tandem axle, 16 tons. Overloading is not a problem. Commercial vehicle operators engaged in public transport are required to register with the Public Registration Agency of the MLAT. MLAT is also in charge of vehicle inspections which are performed twice a year for commercial vehicles. The present tariffs set in July 1989 range between So. Sh. 12.5 - 20.9 per ton/km; however, the tariffs are not rigidly enforced. Lack of vigorous private sector activities, the poor road conditions, shortage of spare parts and fuel, and seasonality of demand for freight transport have rendered the profitability of the industry low. The most recent available data indicate that total central government revenue from road users amounted to the equivalent of US\$33.1 million in 1986. Of the total, 80% was derived from levies on vehicle and spare parts importation and the bulk of the remainder from fuel taxation. Less than 1% is collected from vehicle registration, licensing and inspections.

1.23 Despite low profitability, the road freight transport industry is dominated by the private sector which owns about 5,600 trucks (light and heavy) and handles over 80 percent of the demand for the internal movement of goods. The balance of demand is met by NTA with its fleet of about 400 trucks of which most are heavy trucks, 12 tons and above. Since its inception in 1978 NTA has incurred losses in some years and is partly dependent on Government subsidies for fleet expansion and replacement. However the performance has improved lately, showing an increase in net operating income from So. Sh. 51 million in 1986 to So. Sh. 127 million in 1988.

1.24 Passenger transport, provided only by the private sector, appears to be a relatively thriving business in Somalia, especially in and around large towns. Passenger transport facilities are also used to transport goods and commodities by individuals between towns and rural areas. Inter-urban transport is provided by buses and converted pickups, of which there are more than 2,000 in the Mogadishu area alone. In addition, by 1988, there were about 1,800 taxis in Mogadishu and 550 in the southern part of the country. Passenger transport rates are established by the MLAT. In inter-urban transport, the average official rate is fixed at about So. Sh.

3-4 per passenger/km, though the actual prevailing rate is about 20 percent higher. Given the relatively high demand for passenger transport, these rates make the operations commercially viable.

1.25 There is a growing demand for passenger services. Entry into the intra-urban transport industry in the Mogadishu area is regulated by local authorities to avoid over-capacity and undue demand on scarce foreign exchange resources. However, there are no limitations on inter-urban and rural transport which are exhibiting significant growth. So far, only a few routes have scheduled services. The industry faces the familiar problems of lack of spare parts and of adequately trained maintenance personnel. Poor road quality in the rural areas has also been cited as a barrier to expanding operations there.

1.26 Despite the recent liberalization of regulations governing the importation of fuel, the National Petroleum Agency (SOMPET) is still the sole importer of petroleum products in Somalia. Actual imports of gasoline and diesel fuel for 1988 were 46,000 tons (57.5 million liters) and 125,000 tons (146.4 million liters) respectively. These quantities, sold to consumers by the Fuel Division of the Public Building and Transport Co-operative (Iska Shidaal), were reported to be less than half of the estimated requirements for the country as a whole. As of October 1989, government regulated fuel prices per liter were SoSh 85 (US\$0.55 per US gallon) for regular gasoline and So. Sh. 65 (US\$0.42 per US gallon) for diesel fuel. As a result of the devaluation of the Somali shilling with respect to the US dollar, the retail price of fuel is heavily subsidized and represents about half of the economic cost of fuel as shown in Table 1.2. The present pricing system has no mechanism for adjusting the margins of SOMPET and Iska Shidaal for costs totally beyond their control. A recent study by Arthur D. Little 1/ recommends revising the present system of fixed prices to cover changing costs with a formula-based system whereby prices change automatically but margins remain fixed. The study recommends that prices be increased in steps to reflect their (international) CIF import cost at which point the price adjustment mechanism should be revised to include the formula-based system. At negotiations agreement was reached with the Government that it will gradually increase retail fuel prices to eliminate any subsidy by no later than the end of December 1990 (Para. 5.01).

1/ Petroleum Supply and Pricing Study, (Ref. 63571), Mogadishu, Somalia, November 1989.

Table 1.2

Structure of Fuel Prices
(in So. Sh. as of October 1989)

	<u>Regular Gasoline</u>	<u>Diesel Fuel</u>
Cost per metric ton (including insurance and inspection, CIF Mogadishu)	147,486.19	134,245.54
Interest and service charges to banks	32,938.54	29,981.50
Shipping costs	1,474.86	1,342.46
	-----	-----
Subtotal	181,899.59	165,569.50
Cost per liter	145.52	141.39
Government tax	16.60	6.60
NPA service charges	2.06	0.90
Cost of retail sales	5.50	4.00
	-----	-----
General total	169.68	152.89
Road maintenance fund		0.20

		153.00
		=====
Current pump price	85.00	65.00
Subsidy per liter	84.68	87.99
	=====	=====

SOURCE: National Petroleum Agency

1.27 Highway Network. The country's road network totals some 21,830 km and consists of primary, secondary and rural/feeder roads. Primary roads which are largely paved (91%) serve major population centers and are inter-regional in character. Secondary roads connect settlements of local significance to one another and to the primary road network, and are predominantly earth roads or tracks; 9% are paved and 17% constructed to gravel standard. Rural/feeder roads are low volume, low priority earth roads which serve as access to the primary and secondary road systems and

no reliable inventory exists for these roads. A breakdown for the 21,830 km network is shown below (Table 1.3).

Table 1.3

Road Network by Administrative
Classification and Surface Type

	<u>Primary Roads</u>	<u>Secondary Roads</u>	<u>Rural/Feeder Roads</u>		<u>All Percentage</u>
	-----km-----				
Paved	2,339	418	-	2,757	12.6
Gravel	-	844	-	844	3.9
Earth	<u>220</u>	<u>3,588</u>	<u>14,421</u>	<u>18,229</u>	<u>83.5</u>
Total	<u>2,559</u>	<u>4,850</u>	<u>14,421</u>	<u>21,830</u>	<u>100.0</u>

SOURCE: Directorate of Highways, Ministry of Public Works and Housing.

1.28 The extent of the primary and secondary road network is judged to be adequate. However, despite considerable road upgrading in the past, the standards and conditions of the roads are not satisfactory. Paved roads increased from 2,460 km in 1981 to 2,757 km in 1989. Paved roads constructed on the predominantly good, well-drained soils of central and northern Somalia remain in a generally satisfactory condition, whereas those lying in the valleys of the Shebelle and Juba rivers where soil conditions are difficult are generally in poor condition.

1.29 The north-south link between Mogadishu and Berbera on the gulf of Aden, via Beletweine, Galkayo, Garoe and Burao (about 1400 km) forms the backbone of the country's road system. The other most important roads are the coastal road from Mogadishu to Kismayo (about 475 km) and the road from Mogadishu to Dolo, on the Ethiopian border, via Afgoi and Baidoa (about 600 km).

Administration, Staffing and Training

1.30 The Directorate of Highways (DOH), previously known as the Civil Engineering Department (CED), under MPWH, is responsible for planning, construction and maintenance of the country's road network. Up until the beginning of 1988, the responsibility for the upkeep and maintenance of the national road network lay with the CED, which was also responsible for the construction of ports and airports. While generally regarded as responsible for road maintenance, CED did not have authority over MPWH's regional directorates which directed actual work. Thus, road maintenance operations were performed that were not authorized, monitored, or controlled by the CED. In actual practice, CED was active only in planning and construction of roads, among other things; however, with the transfer of port and airport civil works responsibility to other authorities, CED

became responsible only for highways. Following recommendations of the road maintenance study carried out in 1985 by consultants with funds under the Fourth Highway Project (Cr. 1324-S0), the CED was reorganized and assigned full responsibility for the development and maintenance of the national road network, and its title changed to Department of Highways. Later, in January 1989, as recommended by IDA the department was elevated to the level of directorate making it autonomous in its organization and self budgeting.

1.31 DOH, headed by a director general, consists of five divisions: Development Division, Road Maintenance Division, Plant and Equipment Division, Administration Division, and Training Division (see Annex 1). The road maintenance division, headed by a director, has direct line responsibility for all road maintenance in the country; the responsibility for execution of road maintenance is divided into seven highway maintenance areas (HMAs), each headed by an area engineer. DOH has three main mechanical workshops at Hargeisa, Mogadishu, and Kismayo, set up under the First Highway Project (Cr. 74-S0 and 123-S0 Supplementary) which handle major repairs for vehicles and equipment; the few regional workshops take care of minor repairs and routine servicing. The plant and equipment division is responsible for the management and upkeep of DOH's workshops and equipment, and is headed by a director located at the Mogadishu Central Workshop (MCW).

1.32 DOH's organization is basically sound. However, a number of key management and technical positions in the DOH are filled by staff who lack formal training and/or have limited work experience. The plant and equipment division is severely understaffed; some key positions are filled by unqualified persons; there is also a shortage of foremen and mechanics, vital for day-to-day maintenance and repair of vehicles and equipment. At appraisal agreement was reached with Government that it will appoint suitably qualified and experienced persons to the three key posts of workshop superintendent, equipment fleet superintendent and warehouse superintendent at the MCW on priority basis. Appointment of suitable individuals to these posts will be a condition of Credit effectiveness (Para. 5.02). It was also agreed that Government will assign to DOH annually at least one graduated engineer (mechanical) until the completion of the Project. This was confirmed at negotiations (Para. 5.01). The Somali National University turns out some 60 graduates each year of whom about one-third are in the mechanical and electrical field. As for the vacant posts of technician level staff, DOH plans to recruit graduates from the country's technical schools including the Industrial Vocational Training Center (I.V.T.C.), Mogadishu which turns out 100-125 graduates in the mechanical, electrical and automotive fields every year.

1.33 Due to the low civil service salary scales, DOH has been unable to attract and retain qualified staff. Many staff have left DOH for better job opportunities in the private sector and others who want to leave and are restricted from leaving feel little obligation for job performance. At appraisal it was agreed that to motivate existing staff and to attract and retain qualified new staff Government will provide incentives to staff in the form of field allowances, etc. to be paid out of the proceeds of the road maintenance fund (Para. 1.39). The establishment of a suitable system in this regard will be a condition of Credit effectiveness. This was

confirmed at negotiations. (Para. 5.02). Based on the DOH, the funds required for the purpose are estimated at So. Sh. 100 million per year, in 1989 prices.

1.34 Under the Fourth Highway Project (Cr. 1324-SO), a technical assistance team assisted DOH to strengthen its administration and to improve highway operations. The 6-member team comprised a road maintenance engineer (team leader), a road design/construction engineer, a road maintenance superintendent, two workshop superintendents, and an administrative/financial officer. The technical assistance staff provided formal and on-the-job training to a number of Somali engineers and other categories of staff (mechanics, drivers, operators); however, the value of courses and on-the-job training for the other categories has been limited due to the lack of actual road maintenance work in the field (Para. 1.37). Also, four engineers received six months training at the New Mexico Department of Highways; two engineers attended one month courses at the Eastern and Southern African Management Institute (ESAMI), Tanzania; and three engineers are currently receiving training abroad, two in UK and one in Yugoslavia. To help upgrade staff skills, further technical assistance and training is needed and is provided in the proposed Project (Para. 3.13).

Engineering and Construction

1.35 DOH's development division carries out minor road design, while economic feasibility and detailed engineering studies for major projects are done by foreign consultants. The Somali Consulting Agency, a parastatal organization under MPWH, is generally involved with building design. There are no local private consultants in the country. DOH's materials and soils laboratory, set up under the First Highway Project, assists in investigations and design of major road projects. The design standards and specifications adopted by DOH are generally acceptable.

1.36 Major road and bridge construction contracts financed by outside agencies are awarded following contractor prequalification and international competitive bidding, and are supervised by foreign consultants. Apart from a few small contractors capable of carrying out minor road works, no local highway construction industry exists in the country. The National Construction Agency, a parastatal organization under MPWH, generally undertakes building construction. DOH carries out minor road rehabilitation/reconstruction work using its own crews.

Road Maintenance

1.37 Until recently, road maintenance was performed by regional directors with DOH (then CED) having no control over their operations. With the reorganization of the CED into a Directorate of Highways, the latter has now assumed full authority, as well as responsibility for the development and maintenance of the national road network (Para. 1.30). However, due to lack of funds, equipment and trained manpower, very little maintenance work currently is done on roads. Planning and coordination of road maintenance is virtually non-existent; apart from a few special crews set up for emergency repairs, there are no organized crews to carry out road maintenance. The shortage of workshop equipment and tools, and spare

parts, coupled with lack of trained manpower, has inhibited maintenance and repair activities in the DOH's workshops for several years. Much of the existing (pre-1987) road maintenance equipment is deadlined as a result (Para. 3.08). Another problem is that road maintenance equipment is frequently diverted to other uses. Certain road maintenance equipment supplied to DOH under the Japanese Grant Aid is currently being used by the Somali Construction Agency; some vehicles have been given away to other agencies. At negotiations it was agreed with Government that road maintenance equipment will not be diverted to other uses (Para. 5.01).

1.38 There has also been a decline in the allocation of funds for road maintenance, and present allocations are far below the requirements (Para. 1.39). Table 1.4 shows funds requested vis-a-vis those budgeted, mainly for routine road maintenance, during the period 1984-90.

Table 1.4

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
	----- US\$ '000 (equivalent) -----						
Funds requested	NA	600	660	1,430 ^{1/}	1,420 ^{1/}	1,600 ^{1/}	1,700 ^{1/}
Funds budgeted	960	490	790	370	201	400	NA

^{1/} Includes emergency repair to the Galuen-Gelib Road (250 km).

1.39 To increase the available funds for road maintenance, Government established effective September 1, 1988 a Road Maintenance Fund (RMF) generated by a tax (So. Sh. 0.20 per liter) on the retail price of diesel fuel, following a decision by the Council of Ministers in August 1988. All consumers except diplomats and building and civil engineering contractors engaged on development projects pay the tax. The Fuel Division of the Public Building and Transport Cooperative is responsible for the collection and transfer of the amount to the RMF account (Account No. 9647) maintained at the Central Bank of Somalia for DOH. Once transferred into the Central Bank account, DOH is responsible for using the funds for road maintenance subject to approval by the Minister. The estimated recurrent expenditure for routine maintenance of the country's road network is US\$1.2 million equivalent in 1989 prices, whereas the total funds generated by the RMF during the first nine months of 1989 amounted to So. Shs. 14.7 million or approximately US\$25,000, far less than the amount required. The low yield is attributable to the very low tax rate (So. Shs. 0.20 per liter) and to the fact that gasoline is excluded from the tax base. DOH estimates that if the tax rate was increased to SoShs 5 per liter and if it was levied on the sale of gasoline as well as diesel then the required sum could be raised. Because of its fragile beginning the RMF needs to be developed and strengthened. At negotiations agreement was reached with Government on a schedule for phased increases in the tax on gasoline and diesel fuel to the required level. Specifically, it was agreed that not later than September 1, 1991 Government will take all appropriate measures to ensure that at least 60% of the requirements for routine road maintenance for 1992 is financed by the Road Maintenance Fund. It was also agreed that with effect

from January 1, 1993, 100% of the requirements for routine road maintenance for all years in financed by the Road Maintenance Fund. Agreement was also reached that annual allocations for routine road maintenance will be at least US\$1.2 million equivalent, in 1989 prices, including the amount available from the Road Maintenance Fund and that not later than four months before the beginning of each fiscal year the Government shall, until the completion of the Project, review with the Association the road maintenance requirements and the proposed allocation for road maintenance (Para. 5.01). The broadening of the tax base to include a tax on gasoline will be a condition of Credit effectiveness (Para. 5.02).

1.40 Due to lack of maintenance, severe deterioration of riding surfaces, shoulders and roadside drains are evident on most roads. Paved roads which have not been resealed for several years have developed deep potholes and surface cracks and, in the worst cases, they require major rehabilitation/reconstruction. As of December 1987, some 430 km (16%) of the primary and secondary paved road network were in poor to bad condition and most of these are included for resealing/rehabilitation in the 1989-93 Road Maintenance and Rehabilitation Plan agreed during appraisal. The plan was confirmed during negotiations and will be reviewed on an annual basis as part of the Public Expenditure Review/Public Investment Program (Para. 5.01). Table 1.5 shows a breakdown of the Road Maintenance and Rehabilitation Plan (1989-93), categorized by ongoing and new works.

1.41 Three of the items listed in the Road Maintenance and Rehabilitation Plan (Para. 1.40) have been identified as the elements of a Highways Program: i) improvement/strengthening of the Afgoi (Wanle Wein)-Baidoa Road; ii) periodic maintenance (resealing/rehabilitation) of Mogadishu-Balad and Jowhar-Jahwil sections of the Mogadishu-Galkayo Road and iii) routine road maintenance of the primary and secondary road network in three out of the seven HMAs (HMAs 1, 3 and 4) located in central Somalia. Details of this Program are given in Chapter II.

Table 1.5

SOMALIA

Road Maintenance and Rehabilitation Plan (1989-1993)

Description	Length (km)	Estimated Cost (US\$ M)	Source of Finance	Remarks
A. <u>WORKS IN PROGRESS</u>				
1. Galuen-Gelib Road Maintenance	250	3.0	EEC	
2. Rehabilitation/ Reconstruction of Roads				
(a) Afgoi-Galuen	70	28.7	Italy	To be completed end 1990
(b) Nabadid-Baroma	45	3.2	GSDR	
(c) Garoe-Basaso	445	30.0	Italy	Substantially complete
(d) Juba & Shebelli Bridges	n/a	4.7	EEC	Substantially complete
Subtotal		69.6		
B. <u>NEW WORKS</u>				
1. Routine Road Maintenance	n/a	20.0		Under discussion with various donors including IDA and KfW
2. Periodic Road Maintenance	295	57.1		Sections appraised as part of proposed IDA Infrastructure Rehabilitation Project; under discussion with various donors including EEC
3. Rehabilitation/ Reconstruction of Roads				
(a) Balad Jowhar	55	10.7		Feasibility done; under discussion with Japan
(b) Gelib-Kismayo	112	6.1		No study yet; under discussion with KfW
(c) Gelib-Dugiama-Bardera	230	50.0		Tenders invited; under discussion with EEC for Lome III
(d) Afgoi (Wanle Wein)-Baidoa	137	13.0		Appraised as part of proposed IDA Infrastructure Rehabilitation Project; GOS pursuing sources of finance
(e) Djibouti-Seyla	45	6.0		No study yet
Subtotal		162.9		
Plan Total		232.5		

D. The Urban Water Sector

General

1.42 Water resources in Somalia are unevenly distributed and scanty. There are only two perennial rivers, the Juba and the Shebelle, both of which rise in Ethiopia and traverse the southern part of the country. The flow regimes in both rivers are considered flashy, with losses due to over-bank spillage occurring during peak flows. The annual flow of water in the Juba is about 2.5 times greater than that of the Shebelle. In both rivers, water quality varies throughout the year: the Juba is considered a good quality source while the Shebelle is considered borderline between good and poor. Water from both rivers require treatment and disinfection for human consumption. Surface water in any appreciable quantity is found only in areas adjacent to the two rivers.

1.43 Although generally limited in quantity and quality, groundwater from open or drilled wells is Somalia's main source of water supply. In the rural areas in particular ground water must also provide for livestock. In the Juba and Shebelle River basins, a combination of groundwater and surface water supplies are used. While fair records of surface water exist, records of groundwater resources are deficient, with the exception of the Mogadishu area for which groundwater surveys were undertaken as part of the first and second IDA financed Water Supply Projects (Credit 822-SO of 1978 and Credit 1236-SO of 1982).

Water Policy, Planning & Coordination

1.44 At the central Government level, two organizations have key roles in the sector:

- (a) The Ministry of Water and Mineral Resources (MMWR) is entrusted with the mandate to provide water for both human and livestock consumption, which is at present derived mostly from groundwater sources. MMWR is responsible for the collection and assessment of hydrometeorological data, hydrogeological studies, design and implementation of groundwater exploration projects and advising on water legislation.
- b) The National Water Committee chaired by the Minister for Mineral and Water Resources, is the highest policy and decision making body in the sector, created to co-ordinate all water resource projects. Committee members include the Ministers of National Planning, Local Government and Rural Development, Livestock, Forestry, and Range, Agriculture and the representatives of two autonomous bodies, the Water Development Agency (WDA) and the National Range Agency. The Committee's responsibilities include advising sector organizations on project selection and budget preparation.

1.45 Many of the functions overseen by the MMWR are carried out by four autonomous agencies. These include:

- (a) WDA which provides technical assistance to rural and urban communities through 16 regional offices and its headquarters in Mogadishu. WDA is partially funded through Government and partially through revenue producing activities (drilling and engineering).
- (b) the Mogadishu, Hargeisa and Kismayo public utilities which are responsible, as autonomous agencies, for the water supply in their respective territories.

1.46 Little sector legislation exists. There is no agreement between Ethiopia and Somalia on the sharing of Juba and Shebelli waters, nor is there specific legislation in Somalia governing water ownership and rights of use. At present the main items of law associated with the water sector are: (a) a decree of April 20, 1963 providing for more productive use of cultivable lands and irrigation waters; (b) Law No. 26 of 1971 establishing the WDA; and (c) Decree No. 18 of April 6, 1978 concerning the establishment of Mogadishu Water Agency (MWA).

1.47 No national water tariff policy exists to govern issues of cost recovery. Tariffs are levied in both rural and urban areas but they do not generally reflect the full cost of providing the service. In urban areas water tariffs are determined by the individual increases in water utilities, subject to confirmation by the Government. In the past, Mogadishu's water tariff had lagged behind the need for increased revenue to cover operating expenses.

Water Sector Investment

1.48 For the period 1987-1991, urban water investments account for 66 percent of total planned public investment in the water sector as a whole. Despite this high percentage, the capacity of the country's urban water supply systems is far below that required to meet the demand.

Table 1.6

Planned Investments in the Water Sector: 1987-1991
(US\$ million)

<u>Sub-Sectors</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>Total</u>
Urban water supply	12.4	14.2	36.3	42.4	23.3	128.6
Rural water supply	19.8	7.4	11.7	13.7	13.7	66.3
Total Water Sector	<u>32.2</u>	<u>21.6</u>	<u>48.0</u>	<u>56.1</u>	<u>37.0</u>	<u>194.9</u>

SOURCE: Ministry of National Planning, Mogadishu, 1988

Mogadishu Water Agency

1.49 MWA was established to supply water to Mogadishu in 1967. In 1978, after various organizational changes including mergers with other public utilities, MWA was established as an autonomous agency of the Government subject to the general supervision of the MMWR (Para. 1.45).

1.50 MWA is headed by a General Manager who, together with MWA's Directors, are appointed by the President on the advice of the Minister of Mineral and Water Resources. MWA has five departments each headed by a Director. Its present organizational structure is shown in Annex 2. The departments are responsible for: (a) technical services; (b) finance and administration (including accounting and purchasing); (c) project planning, manpower training and statistics; (d) personnel; and (e) commercial services. A review of the structure during project preparation revealed no need for major adjustments.

1.51 MWA's management performance during the implementation of the first two IDA assisted projects has shown improvement, marked by increasing efficiency in handling project implementation matters. However, there is still a need to improve some areas of management, operations, maintenance and accounting skills through technical assistance and training. Staff turnover is still high and morale is low. Some key staff positions identified during appraisal are either vacant or filled by individuals with inadequate qualifications. There is a shortage of trained mechanical and electrical technicians required to maintain pumping equipment. In recognition of these problems, MWA received MMWR authority in April 1989 to negotiate 3-year contracts with all its employees under new terms and conditions designed to increase worker productivity, discipline, and commitment to the Agency. However, MWA management concluded that it could not afford to implement the program of enhanced employee benefits, estimated to cost So. Sh. 78 million per year, owing to a lack of funds. During project appraisal, Government agreed that sufficient local financing would be provided to enable MWA to implement the new contract arrangements for the first two years of the project. For subsequent years MWA would be required to generate the required amount of cash to cover operating expenses and debt service. This was confirmed at negotiations (Para. 5.01). Government also agreed that it would fill the key posts of technical department director and head of the commercial department with qualified people. Appointment of suitable individuals to these posts will be a condition of Credit effectiveness. (Para. 5.02).

1.52 Prior to the second IDA financed Project, MWA's reporting and accounting had been on a cash basis. During Project implementation, conversion to a commercial accounting system (double-entry, accrual basis) was initiated. Further attention needs to be given to improving skills, understanding of commercial practices and a general overall direction and control. The Project would provide further technical assistance and training in this area to improve the quality of management information required to guide operations of the Agency.

1.53 MWA's financial position over the past several years has suffered from cash flow difficulties caused by inadequate tariff levels, poor billing and collection performance and increasing fuel costs. At the time of project appraisal, Government receivables amounted to So. Sh. 190 million, equivalent to 360 days arrears. For the year ending December 31, 1988, 77 percent of operating expenses were allocated to the purchase of fuel. Annex 3 illustrates MWA's financial position from 1985 to 1988. Inadequate billing and cash collection continue to be caused by insufficient numbers of meter readers, billing clerks, district collection personnel and poor supervision in both numbers and quality. The Project would provide specific technical assistance and training for this vital operation of the Agency (Para. 3.16).

1.54 During the five-year period beginning in 1984 MWA tariff rates ranged from So. Shs. 10-25 per cubic meter. In December 1988, the tariff rate was tripled to So. Sh. 75/m³. However, local inflation has already eroded the benefit of this increased revenue potential. The Project would provide technical assistance to help the revision of water tariffs on a regular basis.

Water Resources in Mogadishu Area

1.55 Groundwater is the traditional source of water for Mogadishu. The Mogadishu aquifer system is one of Somalia's most significant groundwater resources and probably one of its most intensively developed. Initial groundwater investigations in the area were carried out in the 1960's which resulted in the design and construction of the existing Balad Road wellfield. Additional investigations completed in 1979 under the first IDA assisted Project indicated that the annual sustainable safe yield of aquifers within the Afgoi-Balad-Mogadishu triangle would approximate 25 mcm. In order to meet annual water demand needs in excess of 25 mcm, additional sources of supply located outside the triangle will have to be developed. Investigations were carried out under the second IDA financed Project in coastal regions northeast of Balad Road and southwest of Afgoi Road and indicated that groundwater is available to cover the third phase extension of Mogadishu's water supply.

1.56 The water supply feeding the city in 1989 is derived from the following sources with a current combined level of production of 13.4 mcm per year:

- (a) the Balad Road field consisting of 19 wells with a design capacity of 8.8 mcm per year was originally developed under USAID assistance and commissioned in 1973. Owing to a series of generator, pump and well failures, current production has been reduced to 12% of the original average design capacity, yielding 1.1 mcm per year;
- (b) the Afgoi Road field constructed under the first IDA assisted Project and expanded to a full capacity of 12.1 mcm per year under the second Project in 1985. The field consists of 24 wells and, despite recent generator malfunctions, is presently operating at its design capacity;

- (c) other sources (including private wells) contribute 0.2 mcm per year.

1.57 However, by 1989, the average annual demand for water in Mogadishu was estimated to be 24.7 mcm, with a seasonal peak demand of 77,790 m³/day (28.3 mcm pa), resulting in a shortfall of 11.3 mcm or 46% below demand. Data presented in Annex 4 illustrate the water requirements for Mogadishu on an annual basis from 1976 to 1990. It shows the impact of the additional supply provided by incremental commissioning of the Afgoi wellfield in 1982, 1983, and 1984. The full commissioning of Afgoi in 1985 provided surplus source capacity for the first time. This surplus capacity was fully utilized by increased demand in 1986. Annex 4 also shows the increasing gap between supply and demand experienced since that time. The causes of the growing shortfall can be attributed to: (a) the increasing rate of growth of Mogadishu's population owing to immigration from rural areas of the country; (b) the declining capacity of existing wellfields to produce water because of lack of regular power supply, spare parts and skilled manpower; and (c) the delay, owing to lack of finance of the commissioning of a third wellfield designed as part of the Second Water Supply Project (Credit 1236-SO of 1982).

1.58 Two exercises are currently underway to improve the situation. First, remedial works financed by EEC and Japan on an emergency basis are anticipated to result in increased annual yields of 2.9 mcm at both Balad and Afgoi wellfields. Second, 18 out of 24 planned wells in the third field at Garras-Bintow, located 10 kms further inland from the Balad Road wellfield, are to be constructed with assistance from the Italian Government beginning March 1990 and are expected to be commissioned by mid-1991. It is expected that the increased total production from Garras-Bintow and the restored Afgoi and Balad wellfields will substantially improve the water supply in the city. However, the early implementation of Stage 3 is required to keep pace with the growing demand.

E. The Telecommunications Sector

1.59 Public telecommunications in Somalia are provided by the Ministry of Posts and Telecommunication (MPT). Somalia has about 17,000 direct exchange lines of which about 14,000 (82%) are in Mogadishu and the rest are in the main provincial towns. International service is provided through an earth satellite station.

1.60 Somalia has one of the poorest telephone and telex facilities in Africa. Its telephone density of 0.3 telephone lines per 100 inhabitants is far below the average density of 0.6 in Sub-saharan Africa. The facilities fall far short of the minimum required for Somalia's level of economic development, as reflected in the long lists of applicants most of whom have been waiting for over ten years.

1.61 In addition to the inadequacy in facilities, the quality of service is unacceptably low. On the average, more than 30% of the telephones are faulty at any given time. The poor state of the network is accentuated during the normal rainy season when more than half of the

outside plant breaks down. It is estimated that less than 10% of all local calls, less than 5% of STD calls and less than 2% of incoming international calls are successful, resulting in substantial economic and financial losses to the country and MPT.

1.62 The inferior quality of service is mainly due to old and obsolete cables and switching equipment. More than 50% of the switching equipment was installed over 20 years ago (normal lifetime is about 15 years) and 50% of outside cable is more than 25 years old (normal lifetime is about 20 years). Notwithstanding the age of the plant, the quality of service would be better if it had been well maintained. The plant has been operating for decades without proper maintenance, due mainly to the lack of spare parts (which had to be procured with scarce foreign currency) and the lack of proper maintenance systems and operating procedures.

1.63 The technical problems of the sector are also compounded by the lack of engineering and financial data. All these taken together with inadequate training, shortage of trained manpower and a weak organization structure has created an organization which lacks motivation.

1.64 MPT maintains its financial records on a cash basis. As a result data can be missing. Table 1.7 shows the cash results over the past three years for telecommunication operations.

Table 1.7

	1986	1987	1988
	----- So. Sh. Million -----		
<u>Cash Receipts</u>			
Telegraph	11.8	12.8	35.3
Telex	61.4	127.2	219.4
National	44.2	69.0	95.7
International	60.0	207.4	289.0
Total	<u>177.4</u>	<u>416.4</u>	<u>639.4</u>
<u>Operating Cash Costs</u>			
Salaries	19.3	29.3	43.9
General Admin. & services	18.9	57.4	33.7
Maintenance	3.1	17.0	7.8
Other (travel training ratio)	17.0	20.0	30.0
Total	<u>58.3</u>	<u>123.7</u>	<u>115.4</u>
Operating cash surplus	119.1	292.7	524.0

1.65 None of these figures can be relied upon nor can they be used to provide any guidance to management for operational planning. No records are maintained with respect to billing. It is estimated that only 80% of all bills are actually collected. However, this cannot be verified. There is no computerized billing system and, as a result, no analysis can be made on customer usage patterns (essential information for tariff structure and

level analyses and an important input into network planning analysis). No analysis can be made of international inpayment and outpayments. This is critical if over 75% of all receipts relate to international business (international calls and at least 90% of telex traffic).

1.66 The operating costs as a tool for analytic use also leave a lot to be desired. It is unlikely that costs were down in 1988 compared to 1987, however, this is what the only existing figures state. The most critical item missing is depreciation. Using estimates for network assets at replaceable market value could imply an annual depreciation requirement of about SoSh 350 million. Further deductions would be required for imputed interest costs which alone could amount to SoSh 200 million. In short, despite the cash accounts no assumption can be made that the Somali telecommunications sector is profitable.

1.67 No adequate records are maintained of assets or loans used to purchase such assets. In order to have an accounting system which provides even minimal management information it is essential that a statement of affairs be prepared identifying assets and liabilities of the sector. It is also essential that a commercial accounting system be established.

1.68 Yet another weak area in the sector's operations is the establishment of tariff policies and the monitoring of both tariff structure and levels (Annex 5). These need to be examined. For example, rentals appear to be too low and there is no timing on local calls. With respect to tariff setting there is neither automaticity nor linkage to exchange movements. With high inflation and constant currency movement automaticity is essential. Tariff levels also need to be reviewed. Over the past three years, in US\$ terms, tariffs have fallen dramatically. Given the current level of some international call charges it is probable that MPT pays out as much in settlement and transit charges (all in foreign exchange) as it receives from its customers in So. Sh. for the calls.

1.69 Sector planning is extremely difficult owing to insufficient manpower, lack of essential and controlled funding, all of which is exacerbated by a lack of verifiable data. The basic organization structure of the sector with respect to operations is sound (Annex 6). At present telecommunications operations are handled by the MPT; there are, however, proposals that telecommunications operations of the Ministry be put within a public corporation. However, the management issues of the sector go much deeper than this. At most levels there are skill gaps and insufficient staff. There are not enough qualified engineers, there are no qualified accountants and salaries at all levels are too low to provide adequate incentives. What is critically missing is a determined policy framework within which sector management can set goals, plan strategies and implement.

1.70 The key for the future success of Somali telecommunications will be the people who now work in the sector and those who will work there in the future. It is essential that training both in Somalia and overseas be given high priority. The telecommunications training school is both short of instructors and lacks relevant instructors familiar with the

changing technologies. Currently graduates of the school immediately become instructors without having any relevant field experience. Equally concerning is that it is estimated that only about 50% of entering students finally graduate.

F. Past Bank Group Involvement

Transport

1.71 The World Bank group has been extensively involved in the development of the transport sector in Somalia through the provision of IDA Credits for four highways and five port projects. The first involvement, consisting of an initial Credit (74-SO) approved in 1964 and a supplementary Credit (123-SO) in 1968 which totalled US\$8.5 million, was used primarily to construct over 200 km of primary roads and to organize and improve the Civil Engineering Department under MPWH. Completed successfully in 1971, an economic reevaluation in 1978 by Bank staff confirmed the soundness of the project. The Second Highway Project, financed by a US\$9.6 million IDA credit (295-SO) in 1972 and by funds from the African Development Bank, was concerned largely with construction of the 158 km Hargeisa-Berbera Road. Completed in 1975, the road has greatly facilitated the movement of livestock from Hargeisa to the port of Berbera. A bank staff economic reevaluation of the project in 1978 revealed a 36% economic return.

1.72 A Third Highway Project provided a US\$7.0 million IDA Credit (699-SO) in 1977 primarily to assist in extending the Berbera-Hargeisa Road 132 km westward from Hargeisa to Borama and Tug Wajale. Due to hostilities in the areas, the original contract was terminated in midstream; a new reduced contract was awarded and 70 km from Hargeisa to Nabadid were completed in January 1985, 4-1/2 years later than the original estimate. The project was cofinanced by the Arab Fund for Social and Economic Development, the Islamic Development Bank and the African Development Bank. A Bank staff economic re-evaluation of the project (December 1985) showed a rate of return of 11% as compared to 24% estimated at appraisal. A Fourth Highway Project, financed by IDA (US\$23 million), the Arab Fund (US\$16.3 million) and Government (US\$4.2 million) was approved in 1983. The major civil works component involving improvement/strengthening of the Afgoi-Baidoa road was completed in October 1985, although reduced in scope due to the suspension of the loan from the Arab Fund. The technical assistance component and the urgent road maintenance component were completed in March 1989. Key policy objectives achieved as a result of the Fourth Project include the reorganization of the institutional framework and the establishment of a firm basis upon which to build up and sustain DOH's road maintenance capacity (Para. 1.30).

1.73 Port project financing began in 1964 with a technical assistance grant of US\$311,000 followed in 1969 by a Credit (55-SO) of US\$550,000 for engineering and accounting consultancy services. Although the Mogadishu Port Project was first identified in 1964 it took nine years to put the project together because of lack of donor funds and radical changes in the Government in 1969. In 1973 these preparations resulted in a US\$12.9 million IDA Credit (359-SO) which, together with an EDF grant of US\$12.5

million, financed the construction of the sheltered deep-water harbor of Mogadishu, consisting of a breakwater, two general cargo berths, a livestock berth and a banana berth, sheds and other facilities. In 1975, during execution of this Project, a Third IDA Credit (586-SO) for US\$5.2 million was approved for an additional general cargo berth and corresponding extension of the breakwater. The original Mogadishu Port Project and its extension Credit (586-SO) were completed in 1977, about six months behind schedule. A Bank staff economic re-evaluation in 1979 indicated an economic return of 17% which is slightly higher than that derived during reappraisal in connection with the Project extension.

1.74 The Fourth Port Project, approved by IDA in July 1978 for a US\$5.5 million credit, consisted of the construction of a tanker pier and related facilities for handling crude oil tankers and small products tankers. Since the lowest bid was substantially higher than the appraisal estimate, a decision was made to extend the banana berth and construct a ro-ro ramp instead. The Project was completed in July 1983. A Project Completion Report prepared in December 1985 showed that: (i) ERR was re-evaluated at 34% compared to 21% estimated at appraisal; and (ii) financially, SPA showed much better results than were projected, enabling SPA to pay large dividends to the Government. The favorable performance of the Project was due mainly to higher throughput than forecasted, 30% lower prices for revised civil works and readjustment of tariffs in 1983. During execution of the Project, however, it became evident that there were fundamental weaknesses in SPA such as the scarcity of skilled staff. To overcome these deficiencies, substantial additional efforts in institutional development and training were addressed in a fifth operation -- the Port Modernization Project, with an IDA credit of US\$22.6 million. The Project, approved in 1986, consists of technical assistance and training of SPA staff, procurement of cargo handling equipment and minor civil works in the Port of Mogadishu and Berbera. After initial delays, the Project is progressing satisfactorily.

Water Supply

1.75 The urban water supply sector has been assisted by two IDA lending operations, both focussing on Mogadishu. In 1978 a US\$16 million Credit was made for the First Mogadishu Water Supply Project (Credit 822-SO) to increase the water supply capacity of the MWA in the form of a new wellfield with 8 wells on the Afgoi Road together with an associated transmission system. The Project also aimed to strengthen the newly re-established water agency (MWA) and to assist in the preparation of a proposed Second Mogadishu Water Supply Project.

1.76 The feasibility study for the Second Project recommended that in order to meet the forecast water demand for 1989: (a) the Afgoi wellfield should be further developed by the addition of 16 more wells with accompanying service reservoirs, storage capacity and distribution facilities (Stage 2A); and (b) that a new wellfield at Garras-Bintow consisting of 24 wells should also be established (Stage 2B). Stage 2A was implemented beginning in 1982 under Credit 1236-SO for US\$15 million. Physical works included the full development of the Afgoi wellfield by constructing additional wells, the construction of a service reservoir within the city and major extensions to the distribution system.

Resources were provided to finance water quality studies, water auditing, mapping, asset valuation, diesel generating facilities, bulk and district water metering and technical assistance. Assistance was also provided to carry out water resource investigations to identify future sources required to meet water demand beyond the design horizon of 1989. The engineering design and preparation of bid documents for the Stage 2B project were financed by the Second Project. Stage 2B, overdue for implementation, is now being constructed with the assistance of the Italian Government.

Telecommunications

1.77 There have been no IDA-financed telecommunications projects in Somalia.

G. Rationale for Bank Group Involvement

1.78 In the light of the macroeconomic adjustment difficulties being experienced by Somalia, the Project is justified as part of a core lending program which supports the following key objectives articulated as part of IDA's country strategy: (i) preserving existing infrastructural assets (road maintenance); (ii) alleviating poverty (water supply); and (iii) promoting human resource development (institutional strengthening).

1.79 Several donors have financed multimillion dollar projects to rehabilitate roads and water supply systems. Yet the key institutions which have the responsibility to oversee operations lack the capability to effectively manage their respective sectors or to formulate sectoral policies and priorities. The most urgently needed support is to help put these civil works into their proper sectoral contexts. The Bank is better suited than bilateral donors to provide such assistance, to help build institutional capacity, to develop cost recovery mechanisms, and to act as a catalyst to attract and coordinate co-financing. Similarly, in the telecommunications sector, which is even in a greater disarray, the Bank's involvement is needed to strengthen the institution, help develop sectoral strategies and critically assess project proposals to assure the most cost effective decisions are made.

II. THE HIGHWAYS PROGRAM

A. Program Objectives

2.01 The objectives of the Highways Program are: (a) to protect the capital investment in and increase the service life of the primary and secondary road network; (b) help improve DOH's capacity and capability for road maintenance; (c) mobilize local resources for highway maintenance by encouraging the development of a recently established Road Maintenance Fund; and (d) rationalize investment by donor agencies in the sector within the framework of the 1989-93 Road Maintenance and Rehabilitation Plan (Para. 1.40). The program was designed by the Government, with the assistance of the Bank, to be presented to the donors, including the Bank, for funding.

B. Program Description

2.02 Three of the items listed in the Road Maintenance and Rehabilitation Plan have been identified as elements of a Highways Program: (i) routine road maintenance of the primary and secondary road network in three out of the seven HMAs (HMAs 1, 3 and 4) located in central Somalia (ii) periodic maintenance (resealing/rehabilitation) of Mogadishu-Balad and Jowhar-Jahwil sections of the Mogadishu-Galkayo Road; and (iii) improvement/strengthening of the Afgoi (Wanle Wein)-Baidoa Road. These items refer to lines B.1, B.2 and B.3(d) in Table 1.5 respectively.

2.03 The proposed routine road maintenance element would protect past capital investment by extending the service life of roads while, at the same time, improving road maintenance planning, organization and operations. The other two items are deemed to be of high priority because of the significant reduction in transport costs which would be achieved along two of the country's major arteries, the Mogadishu-Jahwil and Afgoi-Baidoa Roads. The two roads are among the busiest in Somalia and connect the capital city with the economically active Bay, Middle Shebelli and Hiran regions. Furthermore, the Mogadishu-Jahwil road is a part of the north-south link which forms the backbone of the country's road system (Para. 1.29).

2.04 All three elements of the highways program have been prepared and were appraised by IDA. Routine road maintenance is proposed for IDA financing and is described in more detail in Chapter III. During project appraisal, EEC expressed interest in financing the resealing/rehabilitation and related supervision of the Mogadishu-Balad and Jowhar-Jahwil sections of the Mogadishu-Galkayo road under Lome IV. Government is actively pursuing sources of funding for the improvement and strengthening of the Afgoi (Wanle Wein)-Baidoa road.

Periodic Maintenance of the Mogadishu-Jahwil Road

2.05 Apart from a slightly hilly terrain between Bulu Burti and Beletweine, the Mogadishu-Jahwil road traverses flat to gently rolling terrain. Because of the lack of maintenance the road is in a severe state of distress and suffers from extensive damages in the form of potholes,

surface cracks and shoulder erosion, and in the worst cases, the road pavement has completely disintegrated.

2.06 Consultants carried out a study, with funds from the Project Preparation Facility (PPF P481-S0), to assess the condition and strength of the existing pavement and to undertake detailed engineering for resealing/rehabilitation of the Mogadishu-Balad (32 km) and Jowhar-Jahwil (263 km) sections of the road. Based on the study report (March 1989), the road between Mogadishu and Balad where the pavement was reconstructed in 1977 is generally in fair condition and between Jowhar and Jahwil it is in poor to very poor condition; most road sections are badly deteriorated and exhibit extreme ravelling and potholes; a few short sections have been washed out and are in need of complete reconstruction.

2.07 The proposed rehabilitation/strengthening works designed for a service life of 15 years, consist of pothole patching and resealing on about 39 km, pothole patching and asphaltic concrete overlay on 32 km, pavement strengthening with crushed stone/lime treated base and double bituminous surface treatment (DBST) on about 210 km and pavement reconstruction on about 14 km. Road shoulders will be reconstructed and sealed with single bituminous surface treatment (SBST). Suitable construction materials are available along the road except between Jowhar (km 85) and km 150 where the materials will have to be hauled from a long distance. No land acquisition is involved since the road will follow the existing alignment. The proposed improvements by road segment are shown in Table 2.1.

<u>Section</u>	<u>Table 2.1</u>				<u>Total</u>
	<u>Reseal</u>	<u>Overlay</u>	<u>Strengthen</u>	<u>Reconst.</u>	
	-----Length (km)-----				
Mogadishu-Balad		32.0			32.0
Jowhar-Bulo Burti	27.6		90.9	7.7	126.2
Bulo Burte-Beletweine	11.6		101.8	1.6	115.0
Beletweine-Jahwil			17.0	4.3	21.3
	39.2	32.0	209.7	13.6	294.5
	====	====	=====	====	=====

2.08 The consultants' study mentioned above (Para. 2.06) also included the Jahwil-Galkayo section (347 km) of the Mogadishu-Galkayo Road which currently is in mostly "fair" condition. The study concluded that the improvements to this section are not economically viable and should be scheduled for a later date. In the meanwhile, the road should be kept in fair condition by pothole patching, etc. as part of the routine maintenance operations.

Improvement and Strengthening of the Afgoi (Wanle Wein) - Baidoa Road

2.09 The Afgoi-Baidoa Road (216 km) forms part of a major artery connecting Mogadishu, the capital, with Dolo on the Ethiopian border (see Map). The road passes through areas of rich agricultural potential and serves Lower Shebelli, Bay, Bakool and Gedo regions of Somalia. The road was constructed in 1971 with the assistance of the European Development

Fund and IDA under the First Highway Project. In order to keep the costs down, the pavement was originally designed for a service life of seven years using staged construction. The condition of the road deteriorated over the following ten years, during which no strengthening or resealing works were carried out. On the other hand, the traffic developed beyond what the road was designed to carry.

2.10 A pavement evaluation study carried out in 1980/81, with funds under the Technical Assistance Credit 821-SO, showed that although the road had generally retained its camber and profile, it had reached the end of its economic life, and was in need of improvement/strengthening. A contract for the improvement/strengthening works designed for a service life of 20 years was awarded under the Fourth Highway Project (Cr. 1324-SO), cofinanced by the Arab Fund for Economic and Social Development (AF) and the Government. Construction works on the road started in 1983 and progressed well until the AF withdrew from the Project; readjustments in the contract had to be made to compensate for the withdrawal. The reduced contract saw completion in 1985 of the improvement/strengthening works for the first 70 km of the road from Afgoi and a further two sections of 0.5 km and 8.7 km between Wanle Wein and Baidoa.

2.11 In 1988/89 consultants carried out a study with funds under the Fourth Highway Project, for updating of the detailed engineering for the remaining about 137 km of the road between Wanle Wein and Baidoa. Apart from a few short sections where the road deteriorated further over the intervening period, the study retained original proposals for road improvement/strengthening. These consist of wet-mix macadam overlay (100 mm-160 mm) covered over with DBST on about 58 km, pavement reconstruction on about 12 km, and pothole patching and resealing on about 67 km. Pavement reconstruction will be done on short sections where the road has either failed or is in a state of distress. In addition, road shoulders will be reconstructed and drainage improved along the road. In short sections where the road runs through dark gray soil areas, the road shoulders will be sealed to prevent the ingress of moisture into the pavement structure. Suitable construction materials are available along the road. No land acquisition is necessary since the road will follow the existing alignment. The design standards adopted for the original (1980/81) study have been retained which are shown in Table 2.2.

Table 2.2
Road Design Standards

Design speed	:	80-100 km/hr
Roadway width	:	9.5 meters
Carriageway width	:	6.5 meters
Shoulder width	:	1.5 meters (on either side)
Minimum horizontal curve radius	:	300 meters
Maximum vertical gradient	:	6%
Minimum vertical curve radius	:	20,000 meters (convex)
	:	10,000 meters (concave)
Road crossfall:		
(a) carriageway	:	3%
(b) shoulders	:	5%

C. Program Financing and Costs

2.12 The total cost of the Highways Program including contingencies is estimated to be US\$99.7 million, with a foreign exchange component of US\$76.2 million or 76% of the Program cost. Excluding taxes and duties the program cost is US\$93.6 million. Program base costs are in December 1989 prices. Physical contingencies of 10% have been added and price contingencies are based on estimated inflation rates of 4.4% for the period 1990-94. Detailed cost estimates are shown in Table 2.3. The funding of road rehabilitation/strengthening and periodic maintenance proposed under the program is under discussion between the Government and various donors, including the EEC. Funding for routine maintenance would be provided by IDA under the proposed Project.

Table 2.3

Highways Program Cost Estimates

(US\$ million)

	Local	Foreign	Total	% Foreign Component
A ROAD REHABILITATION/STRENGTHENING				
1. Improvement/strengthening of Afgei (Wanle Wein) - Saides Road and related supervision	3.19	10.81	14.00	77%
B PERIODIC MAINTENANCE				
1. Resealing/rehabilitation of Mogedishu- Jahwil Road and related supervision	14.85	45.10	59.95	75%
C ROUTINE ROAD MAINTENANCE				
1. Procurement of road maintenance and workshop equipment, tools and training aids				
(a) road maintenance equipment incl spares	0.33	3.02	3.35	90%
(b) workshop equipment, tools, training aids	0.05	0.45	0.50	90%
2. Improvement/construction of DMH workshops	0.18	0.27	0.45	80%
3. Supply of road maintenance materials	0.05	0.45	0.50	90%
4. Technical assistance and training for DMH	0.70	2.80	3.50	80%
TOTAL BASE COSTS	19.35	62.90	82.25	76%
D CONTINGENCIES				
1. Physical (10%)	1.94	6.29	8.23	
2. Price 1/	2.17	7.04	9.21	
Subtotal D	4.11	13.33	17.44	
TOTAL PROGRAM COSTS	23.46	76.23	99.69	76%
Total Program Costs excluding taxes and duties	17.37	76.23	93.60	81%

1/ Expected Price Increases (%)

	1990	1991	1992	1993	1994
Local and Foreign	4.4	4.4	4.4	4.4	4.4

NB: International rate has been used for local costs on the assumption that the difference between domestic and international price inflation will be offset by adjustments in foreign exchange rate.

III. THE PROJECT

A. Project Objectives

3.01 The proposed project would combine the routine road maintenance activity of the Highways Program (Chapter II) and water development activities building on earlier IDA lending operations together with telecommunication activities, a sector never before financed by IDA in Somalia.

3.02 In the highways sector, the Project would aim to: (a) protect the capital investment in and increase the service life of the primary and secondary road network; (b) help improve DOH's capacity for road maintenance; (c) mobilize local resources for highway maintenance by encouraging the development of a recently established Road Maintenance Fund; and (d) rationalize investment by donor agencies in the sector within the framework of the 1989-93 Road Maintenance and Rehabilitation Plan (Para. 1.40).

3.03 In the water supply sector, the Project would aim to: (a) strengthen the administrative, technical and financial capacity of MWA, particularly to support the physical investments being funded by other donors; and (b) set the stage for a further expansion of Mogadishu's water supply system.

3.04 In the telecommunications sector, the Project would aim to: (a) support a program of institutional and management improvement in the sector; and (b) improve the financial performance of MPT.

B. Project Description

3.05 The Project is composed of the following components:

- (a) routine road maintenance of the primary and secondary road network in HMAs 1, 3 and 4;
- (b) technical assistance and training for DOH;
- (c) engineering design of the expansion of the Mogadishu water supply system;
- (d) institutional strengthening of MWA; and
- (e) institutional strengthening of MPT.

Routine Road Maintenance

3.06 The routine road maintenance program, to be implemented over a five-year period (1990-1994), will help improve routine maintenance of the primary and secondary roads in HMAs 1, 3 and 4, covering the Lower

Shebelli, Middle Shebelli, Bay, Gedo, Bakool and Hiran regions of Somalia (see Map). Because of the shortages of trained manpower, it is not practicable to improve routine road maintenance simultaneously in all seven road maintenance areas in the country. A summary of the lengths and surface types of the roads included in the Project is given in Table 3.1.

3.07 The road maintenance will be carried out by force account by the DOH's HMAs with the assistance of technical assistance staff (Para. 3.20). The organizational structure of an HMA is shown in Annex 1. Routine maintenance crews to be established under the Project will be of three types: bitumen works, grading and manual. Bitumen works crews (5) will carry out pothole patching and spot sealing on paved roads; grading crews (4) will carry out grading operations on gravel/earth roads, and on shoulders of paved roads; and manual crews (10) will cut grass, clear ditches and culverts, and carry out day-to-day repairs to road furniture, bridges and culverts. Crew and equipment needs are shown in Annex 7. To assist in carrying out these tasks, the Project includes:

- (i) procurement of road maintenance equipment;
- (ii) procurement of workshop equipment, tools and training aids;
- (iii) improvement/construction of DOH workshops;
- (iv) supply of road maintenance materials; and
- (v) technical assistance and training for DOH.

Table 3.1

<u>Highway Maintenance Area (HMA)</u>	<u>Paved</u>	<u>Gravel</u>	<u>Earth</u>	<u>Total</u>
	-----Length (km)-----			
A. <u>Primary Roads</u> ^{1/}				
HMA 1	124		124	
HMA 3	128		128	
HMA 4	154		154	
B. <u>Secondary Roads</u>				
HMA 1	78	253		331
HMA 3	100	527	578	1,205
HMA 4	<u>7</u>	<u>60</u>	<u>220</u>	<u>287</u>
	591	840	798	2,229
	===	===	===	=====

^{1/} Excluding those expected to be under improvement/reconstruction.

Road Maintenance Equipment

3.08 Apart from some 39 equipment units supplied under an EEC grant during 1987-88 and 46 units supplied under a Japanese Grant Aid in May-June 1988, much of the DOH's existing equipment is old and unserviceable. Based on consultants' report (March 1989), some 61 items of equipment from the existing pre-1987 fleet of some 340 units could be considered for repair/rehabilitation for use in routine and periodic road maintenance operations. However, spot checks carried out by the consultants' technical assistance staff on the equipment items identified for repair/rehabilitation showed that due to the lack of maintenance there was a continuing deterioration in the state of the equipment fleet. The consultants' assessment was that due to the age of the equipment, it may be difficult to obtain the spare parts needed to overhaul the equipment; it may not be economical to carry out repair/rehabilitation of heavy plant in view of the age of the units and their low residual value.

3.09 The equipment supplied under the EEC-financed road maintenance program is specifically assigned for use on the Galuen-Gelib Road (250 km) while the equipment supplied under the Japanese Grant Aid is deployed on emergency repair/rehabilitation of roads. To help improve DOH's capacity for routine road maintenance in HMAs 1, 3 and 4, the Project provides for new road maintenance equipment, together with an initial stock of spare parts. The equipment to be purchased and its estimated cost is shown in Annex 7.

Workshop Equipment, Tools and Training Aids

3.10 Based on consultants' report, the recent deliveries of workshop equipment and tools to DOH under the Japanese Grant Aid will largely satisfy the needs of the Mogadishu Central Workshop and seven Area workshops over the next few years. To assist with particular requirements of routine road maintenance and to help meet the training needs of staff, the Project provides funds for the purchase of specialized workshop equipment, tools, and training aids; specific items to be purchased will be determined with the assistance of the technical assistance included in the project. During negotiations an agreement was reached with Government that the technical specifications and items of equipment, tools and training aids to be purchased will be submitted to the Association for its review (Para. 5.01).

Improvement/Construction of Workshops

3.11 Currently, there are no workshop facilities in HMAs 1, 3 and 4 except for a road maintenance camp set up for the maintenance of the Galuen-Gelib Road (para 3.09). The Project provides for the construction of small workshops at Schelambot (HMA 1), Baidoa (HMA 3), and Bulu Burti (HMA 4), as well as for some minor improvements to the Mogadishu Central Workshop. During negotiations an agreement was reached with Government that it will prepare and submit plans and construction details of these workshops to the Association for its review (Para. 5.01).

Road Maintenance Materials

3.12 Because of the severe shortage of foreign exchange in the country, the materials required for road maintenance are not easily obtainable. The Project provides for a supply of essential materials such as bitumen, cement, steel, lubricants, spare parts, etc. for a period of four years.

Technical Assistance for DOH

3.13 To help alleviate staffing shortage and to improve DOH's capability for road maintenance, the Project provides for technical assistance comprising:

	<u>No.</u>	<u>Work-months</u>
Road Maintenance Engineer (Team Leader)	1	36
Equipment Management System Specialist	1	36
Road Maintenance Superintendent	3	108
Mechanical Superintendent	2	72
		252
		====

The road maintenance engineer will assist and advise the head of the road maintenance division on all aspects of road maintenance planning, organization and operations; the equipment management system specialist will assist and advise the head of the plant and equipment division on matters concerning fleet management, workshop management and control; the three road maintenance superintendents (one each for HMAs 1, 3 and 4) will assist respective Area engineers in road maintenance planning and operations and in carrying out on-the-job training of field staff; and the two mechanical superintendents will assist in setting up preventive maintenance schedules and instituting standard equipment repair procedures at the Mogadishu Central/Area workshops and in carrying out on-the-job training of mechanics, plant and vehicle operators. The road maintenance engineer (team leader) will, inter alia, coordinate the work of the technical assistance team and will assist in assessing manpower requirements and their training needs and establishing training programs for staff. Outline terms of reference for the technical assistance staff (Annex 8) were discussed with Government at appraisal and an agreement reached that for the delivery of technical assistance DOH will use a twinning arrangement with a similar but more mature organization in another part of the world. It was agreed during negotiations that DOH's entering into a twinning agreement with an organization acceptable to the Association will be a condition of disbursement against the highways component of the project (Para. 5.03). In addition to the core of long-term advisory technical assistance to be supplied under the twinning

arrangement, DOH and the supplier will work together in other ways including sending DOH staff for short-term assignments to the supplier's facility. During negotiations Government agreed to provide suitable counterpart personnel (Para. 5.01).

DOH Training

3.14 To help upgrade DOH's staff skills, the Project provides for short-term overseas courses and visitations for managers and key technical staff. The technical assistance provided through the twinning arrangement included in the Project (Para. 3.13) will assess training needs and establish a suitable program. Training may be formal or informal, on-the-job or in the classroom setting and arranged either at DOH or at the supplier's location. It may also be provided as part of the supplier's regular training program for its own staff or offered as a specially tailored effort to respond to DOH's needs, reinforced by professional visits to other entities in the same or neighboring countries. During negotiations it was agreed with Government that by March 31, 1991, it will prepare and submit for the Association's review a suitable training program for DOH's staff (Para. 5.01).

Design of Expanded Water Supply System for Mogadishu

3.15 The design of the next expansion of Mogadishu's water supply, outline terms of reference for which appear in Annex 9, would include the following elements:

- a) review and update of population and water demand projections for Mogadishu (latest projections date from 1985 - See Annex 4) and the adequacy of the distribution system;
- b) review of the Italian-financed Stage 2B(1) with an update of the engineering design and cost estimates;
- c) detailed engineering design (where necessary) and preparation of bid documents for Stage 2B(2) which includes:
 - (i) 6 additional wells with submersible pumps and collector mains;
 - (ii) extension of the power station as necessary; and
 - (iii) extension to the switchboard instrumentation, stores, and workshops as necessary; and
- d) detailed engineering design and preparation of bid documents for Stage 3 including:
 - (i) access roads;
 - (ii) new well field (about 21 km from Mogadishu along the Balad Road), with 20 deep wells (10" diameter) equipped with submersible pumps, collector mains and collector tank;

- (iii) power station, including building, generators, switchboard, instrumentation and fuel storage;
- (iv) stores, workshops, office space and operators dwellings as necessary;
- (v) transmission main (approximately 21 km long, 700 mm diam); and
- (vi) distribution network extension based on the studies under item (a).

Institutional Strengthening of MWA

3.16 The proposed institutional strengthening of MWA will be based on a 4-year effort aimed at restoring financial and administrative systems coupled with improved maintenance of mechanical and electrical equipment and staff training. A diagnosis of the major institutional problems of the MWA was financed under PPF P481-S0 and takes into account the expanded workload anticipated when Stage 2B(1) of the water augmentation program comes on stream in mid-1991. The program, based on resources supplied under the terms of a twinning arrangement with a mature water authority, will include:

- a) in the managerial area, operational assistance to review the duties and responsibilities of MWA management and staff, and recommend and where agreed, implement during the Project period, reorganization, management systems and procedures, delegation and clarification of authority and training schemes;
- b) in the finance area, operational assistance to formulate and implement a set of institutional, operational and investment measures to strengthen the reliability and efficiency of MWA's financial management, particularly in the areas of customer billings, collections and record keeping; plant accounting; inventory management and control; financial accounting and financial statement preparation; and financial planning and forecasting. In addition, MWA's data processing requirements would be reviewed, including the introduction of appropriate hardware and software systems which it is intended also be financed under the Project; and
- c) in the technical area, operational assistance to strengthen MWA's capacity to maintain all electrical and mechanical equipment.

Terms of reference for the services to be provided under the terms of a twinning arrangement are included in Annex 10. During negotiations it was agreed that MWA's entering into a twinning agreement with an organization acceptable to the Association will be a condition of disbursement against the water component of the Project (Para. 5.03). Funds for the provision of testing equipment, training aids and vehicles have been included in the Project.

3.17 Technical assistance to be provided to MWA under the twinning arrangement will include the following specialists:

<u>Specialist</u>	<u>No</u>	<u>Work-months</u>
Management Advisor (Team leader)	1	36
Accountant	1	36
Management Trainer	1	36
Billing & Collections Specialist	1	18
Mechanical Engineer	1	36
Electrical Engineer	1	36
Total		<u>198</u>

The benefits of the flexibility offered by a twinning arrangement relating to DOH as outlined in para 3.14 will also apply to MWA.

3.18 The Management Advisor will advise and assist the General Manager of MWA on all aspects of operating the Agency. The accountant will report to the Director of Finance and Administration and advise and assist with systems for plant accounting, financial accounting and financial statements, and auditing. The billing and collection specialist will report to the Commercial Manager and assist with the improvement of all aspects of revenue generation for the Agency. The mechanical and electrical engineers will report to the Director of Technical Operations and will advise and assist with all aspects of operation and maintenance of equipment, especially power supplies and pumps located at the wellfields. The management trainer, reporting to the Director of Planning, Training and Statistics, will coordinate all aspects of in-country and overseas training to be carried out under the Project. The agreement between MWA and the twinning agency will allow for flexibility in defining the particular technical tasks which require attention during the implementation of the Project. During negotiations it was agreed that Government will provide suitable counterparts to work with the technical assistance personnel. Government will also prepare a training program for MWA for submission to IDA by March 31, 1991 (Para. 5.01).

3.19 The institutional strengthening of MWA will be complemented with a plot-to-plot survey of all metered and unmetered water connections. Without this survey the proper data base for meter reading and billing cannot be established. This work would be carried out under the engineering consultants' assignment (Para. 3.15) where it would be part of the review of the adequacy of the distribution system.

Institutional Strengthening of MPT

3.20 The proposed institutional strengthening of the telecommunications sector will include:

- a) assistance in preparation of a draft policy framework for the institutional restructuring of the sector. This will review regulatory arrangements for tariff review, setting and monitoring together with a review of manpower policies. Of

particular importance will be an analysis of resource mobilization policies both to and from the sector (including taxation, dividends, debt/equity relationships, etc.). The involvement of the private sector will also be explored with Government (about 9 months);

- b) assistance in the preparation of a statement of affairs and the establishment of a commercial accounting system. Included in this will be the computerization of the sector's billing system (about 66 work-months);
- c) a review and analysis (to include recommendations) of the sector's tariff policies, procedures, structure and levels. In addition, there would be a review of international traffic data and settlement and transit arrangements (about six months);
- d) the provision of an experienced planning engineer to assist the planning department in reviewing traffic analyses, coordinating data collection and analysis, together with coordinating existing and future network plans (about 24 work-months);
- e) the provision of experienced training personnel who would prepare curricula, train instructors, train students, do field reviews and assist operational managers. Areas to be covered would be digital technology, transmission systems and power. Provision is also required for external engineering and management courses and training equipment (about 72 work-months). During negotiations Government agreed to prepare a training program for MPT for submission to IDA by March 31, 1991.

3.21 Given the telecommunications sector's low capacity in planning, training and implementation, consultants will have to be employed. The detailed terms of reference for the consultants and experts to be employed (Annex 11) were discussed and agreed with MPT prior to negotiations. During negotiations MPT agreed that it will nominate counterpart personnel for each task (Para. 5.01). The total technical assistance requirement is for 177 work-months employed under Bank guidelines. Specialists to be employed include the following:

<u>Specialist</u>	<u>No</u>	<u>Work-months</u>
Planning Engineer	1	24
Trainers	3	72
Accountants	2	48
Financial Analyst	1	3
Billings & Collection Specialist	1	21
Telecommunications Economist	1	<u>9</u>
Total		<u>177</u>

Funds for the provision of testing equipment, training aids, and vehicles have also been provided as part of the Project.

Preparation of A Future IDA-Assisted Infrastructure Project

3.22 The Project includes funds for the preparation of a second proposed IDA-assisted infrastructure project with a focus on municipal development. The preparation of this Project has already commenced, assisted by funds provided in the form of Project Preparation Facility P481-S0. Part of the PPF was used in preparing the present Project.

C. Project Financing and Costs

3.23 The total Project cost including contingencies is estimated at US\$21.0 million, with a foreign exchange component of US\$18.3 million or 87 percent of the Project costs. The amount of local taxes and duties is negligible. A breakdown of the costs (in December 1989 prices) is shown below in Table 3.2. The estimated annual capital and recurrent expenditures are shown in Annex 12.

Table 3.2

Project Cost Estimates

(US\$ million)

	Local 1/	Foreign	Total	% Foreign Component
A ROUTINE ROAD MAINTENANCE				
1. Procurement of road maintenance and workshop equipment, tools and training aids				
(a) road maintenance equipment incl spares	0.33	3.02	3.35	90%
(b) workshop equipment, tools, training aids	0.05	0.45	0.50	90%
2. Improvement/construction of DCH workshops	0.18	0.27	0.45	60%
3. Supply of road maintenance materials	0.05	0.45	0.50	90%
4. Technical assistance and training for DCH	0.70	2.80	3.50	80%
Subtotal A	1.31	6.99	8.30	84%
B WATER DEVELOPMENT				
1. Institutional strengthening of MWA	0.26	2.30	2.56	90%
2. Engineering design of Stage III of Mogadishu Water Supply	0.29	2.61	2.90	90%
Subtotal B	0.55	4.91	5.46	90%
C TELECOMMUNICATIONS				
1. Institutional strengthening of MPT	0.25	2.24	2.49	90%
Subtotal C	0.25	2.24	2.49	90%
D PROJECT PREPARATION 1/				
1. Project preparation	0.07	1.03	1.10	94%
2. Detailed engineering of Infrastructure II	0.03	0.24	0.27	89%
Subtotal D	0.10	1.27	1.37	93%
TOTAL BASE COSTS	2.21	15.42	17.62	87%
E CONTINGENCIES				
1. Physical 10% on items A, B, and C	0.21	1.41	1.63	
2. Price 2/	0.23	1.46	1.69	
Subtotal E	0.44	2.88	3.32	87%
TOTAL PROJECT COST 3/	2.64	18.30	20.94	87%

1/ PPF P481-S0

2/ Expected Price Increases (%) on Categories A, B, and C

	1990	1991	1992	1993	1994
Local and Foreign	4.4	4.4	4.4	4.4	4.4

NB: International rate has been used for local costs on the assumption that the difference between domestic and international price inflation will be offset by adjustments in foreign exchange rate

3/ Local taxes and duties on project elements are negligible

3.24 Project base costs have been derived as follows:

- a) Road maintenance equipment: based on estimates prepared by consultants' technical assistance staff and updated by Association staff;
- b) Workshop, equipment tools and training aids: a notional amount has been included to cover the cost of these items;
- c) Improvement/construction of DOH workshops: based on estimates prepared by consultants' technical assistance staff and updated by Association staff;
- d) Supply of road maintenance materials: based on estimates prepared by consultants' technical assistance staff and updated by Association staff;
- e) DOH technical assistance and training:
 - (i) Technical assistance: includes 252 work-months over a three-year period. The costs are in line with similar services in the area;
 - (ii) Training: \$0.5 million has been included for this item;
- f) Institutional strengthening of MWA:
 - (i) Technical assistance and training: includes 198 work-months of assistance and overseas fellowships over a three-and-a-half year period. The costs are in line with similar services in the area.
 - (ii) Equipment, tools and training aids: A sum of US\$0.22 million has been included based on estimates prepared by consultants and updated by Association staff;
- g) MWA Design of Stage 3 Water Supply: The detailed engineering design and additional engineering services will require 250 work-months over a 24-month;
- h) Institutional strengthening of MPT:
 - (i) Technical assistance and training: includes 177 work-months of assistance and local and overseas fellowships over a 2-year period. The costs are in line with similar services in the area.
 - (ii) Equipment, tools and training aids: includes US\$0.2 million based on estimates prepared by Association staff.
- i) Contingencies: physical contingencies of 10% have been added to the base costs; price contingencies to provide for anticipated cost increases over the implementation period are based on an

annual price increase of 4.4%. The international rate has been used also for local costs on the assumption that the difference between domestic and international price inflation will be offset by adjustments in the foreign exchange rate.

3.25 The Borrower would be the Somali Democratic Republic which would: (a) channel funds to the DOH under MPWH; (b) channel funds to MPT; and (c) onlend funds under the terms of a Subsidiary Loan Agreement to the MWA under MMWR at 12.0% interest over 20 years including a 4-year grace period (Para. 5.01). The Borrower will bear the foreign exchange risk. IDA would finance US\$18.5 million or 88% of total Project costs. The Government will finance the balance of US\$2.5 million.

Table 3.3

	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Financing as % of Total</u>
IDA	0.2	18.3	18.5	88%
Government	<u>2.5</u>	<u>0.0</u>	<u>2.5</u>	<u>12%</u>
Total Cost	2.7	18.3	21.0	100%

D. Implementation

3.26 Implementation of the highways component will be the responsibility of the DOH under MPWH. The technical assistance staff will assist DOH with routine maintenance planning and operations, establish suitable training programs and carry out on-the-job training of staff. The procurement of road maintenance equipment and improvement/construction of workshops will be completed by September 1991. This Project component is scheduled to begin in mid-1990 and be completed by end-1994, though routine road maintenance will continue to be carried out thereafter. Implementation of the water sector components will be the responsibility of MWA under MMWR. Implementation of the telecommunications component will be the responsibility of MPT.

E. Procurement

3.27 The procurement methods to be followed are summarized in Table 3.4 below:

Table 3.4

SOMALIA

INFRASTRUCTURE REHABILITATION PROJECT

<u>Project Element</u>	<u>Procurement Methods</u>				<u>Total</u>
	<u>ICB</u>	<u>LCB</u>	<u>IS</u>	<u>Other 1/</u>	
	----- US\$ million -----				
HIGHWAYS					
Procurement of road maintenance equipment and spare parts	3.93 (3.54)				3.93 (3.54)
Procurement of workshop equipment, tools and training aids			0.59 (0.53)		0.59 (0.53)
Improvement/construction of workshops		0.53 (0.47)			0.53 (0.47)
Supply of road maintenance materials			0.59 (0.53)		0.59 (0.53)
Technical assistance and training				4.28 (3.42)	4.28 (3.42)
WATER					
Consultant services/ technical assistance and training				6.45 (5.81)	6.45 (5.81)
Procurement of equipment, tools and training aids			0.23 (0.20)		0.23 (0.20)
TELECOMMUNICATIONS					
Consultant services/ technical assistance and training				2.54 (2.29)	2.54 (2.29)
Procurement of equipment, tools and training aids			0.44 (0.40)		0.44 (0.40)
PROJECT PREPARATION					
Consultant services (PPF)				1.37 (1.37)	1.37 (1.37)
Total	3.93	0.53	1.84	14.64	20.94
Total IDA	(3.54)	(0.47)	(1.66)	(12.89)	(18.50)

Note: Figures in parentheses are the respective amounts financed by IDA.
1/ Bank Guidelines for the use of consultants. Total may not agree due to rounding.

3.28 The road maintenance equipment including a supply of spare parts estimated to cost US\$3.9 million, including contingencies, will be procured through ICB in accordance with the Bank Guidelines for procurement. The equipment suppliers will be required to provide an adequate organization and maintain a reasonable inventory of spare parts in Somalia. They will

also be required to provide training of mechanics and plant operators. This DOH workshop equipment, tools and training aids estimated to cost US\$0.6 million, including contingencies, will be procured through international shopping by calling price quotations from not less than three suppliers from at least two countries. The improvement/construction of workshops estimated to cost US\$0.5 million, including contingencies, will be carried out by local contractors after competitive bidding in accordance with Government procedures satisfactory to the Association. The materials (bitumen, cement, steel, lubricants, spare parts, etc.) estimated to cost US\$0.6 million, including contingencies, will not attract ICB, and will be procured through international shopping by calling quotations from not less than three suppliers from at least two countries. Technical assistance and training for DOH, estimated to cost US\$4.3 million including contingencies will be employed using a twinning arrangement (Para. 3.13). All contracts for works and procurement of road maintenance equipment, except those that are procured locally, will be subject to the Association's review of procurement documentation.

3.29 The engineering design of the expansion of Mogadishu's water supply will take 24 months beginning in January 1991 and will be carried out by consultants appointed in accordance with Bank Guidelines at an estimated cost of US\$3.40 million including contingencies. Technical assistance and training for MWA, estimated to cost US\$3.0 million, including contingencies, will be provided through a twinning arrangement with an established public water authority and additional sub-consultancy as appropriate, appointed in accordance with Bank Guidelines. Equipment, tools and training aids, estimated to cost US\$0.23 million, including contingencies, will be procured through international shopping by calling price quotations from not less than three suppliers from at least two countries. During negotiations it was agreed with Government that the technical specifications and items of MWA vehicles, equipment, tools and training aids to be purchased will be submitted to the Association for its review (Para. 5.01).

3.30 Strengthening of telecommunications sector management through technical assistance and training, estimated to cost US\$2.5 million, including contingencies, would be undertaken through a consultancy appointed in accordance with Bank Guidelines beginning in January 1991 (Para. 3.21). Equipment, tools and training aids, estimated to cost US\$0.44 million including contingencies, will be procured through international shopping by calling price quotations from not less than three suppliers from at least two countries. During negotiations it was agreed with Government that the technical specifications and items of MPT vehicles, equipment and training aids to be purchased will be submitted to the Association for its review (Para. 5.01).

3.31 Consultant services for the preparation of the proposed Project and of a follow-up Infrastructure Project, estimated to cost US\$1.37 million, have been and will be procured in accordance with Bank Guidelines.

3.32 The implementation schedule for all Project components (Annex 13) and project progress reporting requirements (Annex 14) was agreed with Government at negotiations (Para. 5.01).

F. Disbursements

3.33 The proposed IDA Credit would be disbursed on the following basis:

- (a) 100% of foreign expenditures for procurement of DOH road maintenance and workshop equipment, vehicles, tools and training aids and MWA/MPT vehicles, equipment, tools and training aids;
- (b) 90% of total expenditures for improvement/construction of DOH workshops;
- (c) 100% of foreign expenditures for supply of materials for road maintenance; and
- (d) 100% of foreign expenditures for consultant services, technical assistance and training;

3.34 All disbursements will be fully documented except for payments against contracts valued at less than US\$10,000 equivalent which would be disbursed on the basis of statements of expenditure (SOE). Supporting documents for amounts withdrawn on the basis of SOEs would be made available for review by auditors and visiting Bank missions.

3.35 To expedite and facilitate disbursements, each of the three implementing agencies would establish a separate special account in the Somali Central Bank with an initial deposit as indicated in the Table 3.5 below. Initial deposits represent approximately four months expenditure for each agency.

Table 3.5

Establishment of Special Accounts & Initial Deposits

<u>Agency</u>	<u>Initial Deposit (US\$)</u>
DOH	300,000
MWA	200,000
MPT	100,000

3.36 An estimated disbursement schedule is set out in Table 3.6. The disbursement estimates are based on the Project implementation schedule as well as on the typical disbursement profile for the highway sub-sector in Somalia.

Table 3.6
Schedule of Estimated Disbursements

Bank Group Fiscal Year and Quarter Ending	Disbursement US\$ 000's	Disbursement at end of Period US\$ 000's	
1991			
December 31, 1990	970	970	
March 31, 1991	450	1,420	
June 31, 1991	450	1,870	10%
1992			
September 30, 1991	600	2,470	
December 31, 1991	600	3,070	
March 31, 1992	600	3,670	
June 30, 1992	600	4,270	23%
1993			
September 30, 1992	1,200	5,470	
December 31, 1992	1,200	6,670	
March 31, 1993	1,200	7,870	
June 30, 1993	1,200	9,070	49%
1994			
September 30, 1993	1,000	10,070	
December 31, 1993	1,000	11,070	
March 31, 1994	1,000	12,070	
June 30, 1994	1,000	13,070	71%
1995			
September 30, 1994	800	13,870	
December 31, 1994	800	14,670	
March 31, 1995	800	15,470	
June 30, 1995	800	16,270	88%
1996			
September 30, 1995	600	16,870	
December 31, 1995	400	17,270	
March 31, 1996	330	17,600	
June 30, 1996	300	17,900	97%
1997			
September 30, 1996	200	18,100	
December 31, 1996	200	18,300	
March 31, 1997	200	18,500	100%

Closing date: December 31, 1997

G. Accounting, Auditing and Reporting Requirements

Financial Accounting, Auditing and Reports

3.37 Project accounts will be maintained by MWA, DOH and MPT with separate accounts for each element of their respective components and will be available for inspection by IDA supervision missions. Government's Magistrate of Accounts does not have the capacity to audit all public accounts, especially those maintained by parastatal bodies. To ensure that adequate and timely review of Project finances is undertaken, all Project accounts will be audited by an international auditing firm acceptable to the Association, funds for which will be found from within the provision made for technical assistance included in the Project. The auditor's opinions will be required to contain a special reference to SOE's (Para. 3.34) confirming that the claimed expenditures were used for the purposes for which they were intended. During negotiations it was agreed that Government will submit certified copies of such accounts and annual audit reports to the Association not later than six months after the end of each fiscal year (Para 5.01).

3.38 Each Project implementation agency will prepare quarterly reports in a format acceptable to the Association and including the information set out in Annex 14. In addition, every fiscal year, concurrently with the annual budget, DOH will prepare a progress report of the preceding year and a detailed road maintenance work program for the following year, taking into consideration the overall maintenance targets set for the Project period and likely budgetary allocations, and specifying the role of the technical assistance and training targets.

3.39 During negotiations agreement was reached with Government that a completion report, in a form satisfactory to the Association, will be prepared and submitted not later than six months after the closing date of the Credit (Para 5.01).

H. Environmental Aspects

3.40 The proposed Project has been classified as a Category B project for purposes of determining the appropriate level of environmental screening required as part of Project preparation. All components of the project are directed towards rehabilitation, improved operation, maintenance and limited upgrading of facilities. None of the Project components will adversely affect the environment. All road maintenance works will occur within existing rights of way and will have no effect on current land uses. The improvement of routine road maintenance will considerably increase road safety and contribute to a lessening of road accidents; the rehabilitation of roadside drains will reduce overflow of rain waters with commensurate reduction in soil erosion along the road alignment.

IV. ECONOMIC EVALUATION

A. General

Highways Program

4.01 One of the main objectives of GOS in the roads subsector is to facilitate low-cost movement of goods within the country (para 1.11). The proposed Highways Program of which the IDA Project is part will reduce transport costs on major arteries, the Mogadishu-Jahwil and Afgoi-Baidoa Roads, which are among the busiest roads in Somalia and connect the capital city with the economically active Bay, Middle Shebelli and Hiran regions. The proposed civil works will also protect past capital investment by extending the roads' service life. The program would also help improve road maintenance planning, organization and operations in Somalia. In addition, the proposed program is designed to support the rehabilitation of the part of the main north-south road axis used by long-distance traffic.

4.02 With regard to the rehabilitation/strengthening of the Afgoi (Wanle Wein)-Baidoa and Mogadishu-Jahwil Roads, it should be noted that larger investments will be needed later for reconstruction of the roads if the proposed works are not carried out now at comparatively lower costs. The proposed civil works are expected to yield an economic rate of return (ERR) of 18% and 15% respectively. The ERR has also been calculated for the routine road maintenance component including technical assistance to DOH; the component is well justified and the expected ERR is 43%. In addition, substantial benefits are expected to occur through the much needed institutional improvement of DOH and its capability to better plan and maintain the road network. The overall return for the Highways Program is estimated at 18%. The ERR of the IDA-financed routine road maintenance component of the Project is 43 percent.

B. Benefits and Beneficiaries of Highways Program

4.03 The main benefits expected from the proposed civil works are reduced vehicle operating costs and road repair/maintenance costs. There will also be savings in deferred major reconstruction works which would be necessary if the roads were allowed to deteriorate further. Benefits from improved road safety and accident reduction could not be quantified and have not been included in the computation of the ERR. Since the paved roads have existed for some time, it is estimated that traffic generated due to the rehabilitation works will be negligible; consequently, vehicle operating costs savings have been limited to existing traffic levels. There would also be various non-quantifiable benefits in terms of improving access to social and administrative services as well as facilitating regional development.

4.04 It is expected that the major beneficiaries of transport cost reductions will be the users of the roads -- owners of taxis, pick-ups, buses and trucks. Some of the transport cost reductions are likely to be passed on to small farmers and their families along the network to be included in the maintenance program and in particular in the zone of the road rehabilitation. The benefits will take the form of higher farmgate

prices owing to expected lower transport costs or slower increases in transport costs. Patrons of road services should benefit from the expected reduction in transport costs in the form of lower transport rates or at least in prevention of further increases. Some benefits are expected to be passed on to passengers since there is some competition in inter-urban passenger transport. Refugee relief operations which have placed heavy demands on the roads would greatly benefit as well. The Project is also expected to produce general benefits to other sectors, such as supporting an increase in marketed agricultural production and to the economy as a whole by improving and maintaining main roads in the country. However, it is not feasible to estimate quantitatively how Project benefits would diffuse to the Government, among the population and to different economic sectors.

4.05 On the institutional side, the Project will help improve the capacity of DOH under MPWH in planning and executing road maintenance operations. These benefits, although difficult to quantify, should result from the more rational investment decisions in the transport sector and in savings or better use of limited resources.

C. Economic Analysis

Road Rehabilitation/Strengthening

Afgoi-Baidoa Road

4.06 The Afgoi-Baidoa Road is part of one of the main arteries in south-central Somalia, linking the capital with the Lower Shebelli and Bay regions. An estimated one million people live within its zone of influence. The road crosses the largest cereal producing area in the country in a region which has good potential for adding to its 800,000 hectares of dry-land farming. The road is essential for the efficient functioning of agricultural projects financed by IDA, important parts of the Government's rural development strategy for the southern part of the country. The road also provides the vital link for supplies to a large number of refugees in the country.

4.07 Occasional traffic counts have been taken on the road in recent years. A comparison of the most recent counts (1987) and those carried out in 1980 indicate that traffic on the road has been growing at about 5% per annum. At the end of 1987, the actual traffic on the road sections to be addressed under the Program was about 180-260 vpd, about 40% of which were heavy vehicles. Table 4.1 below shows the estimated traffic levels by vehicle by road section at the completion of works in 1992. It is expected that normal traffic will continue to grow at 5% annually. The traffic forecast also takes into account the estimated traffic demand for development projects in the region and for supplies to be delivered to refugee camps. Some additional transport demand is anticipated by 1990 by two projects in the region (Bay Region Agricultural Development Project and a cement plant).

4.08 The economic analysis deals with the improvement/strengthening of road sections (137 km) which were left out of the Fourth Highway Project

(Para. 2.11). The analysis was carried out by comparing "with" and "without" project cases. VOC unit savings were treated as a function of deteriorating road surfaces in the "without" project case. Consequently, unit savings of VOC's were gradually increased in the course of the Project's economic life. Savings in transport costs are based on operations of typical vehicles under four different surface conditions, ranging from good to very poor. Currently, the road is assessed to be in poor condition and deteriorating. In the "without" project case, it was assumed that the condition of some sections of the road would rapidly worsen within the next few years to very poor requiring costly repairs to keep the road passable.

4.09 The economic analysis was done in 1989 prices net of taxes and duties. The cost/benefit analysis, including the detailed assumptions underlying the calculations, is presented in Annex 15. The costs included in the economic evaluation comprise: (i) cost of civil works (improvement/strengthening) in 1990-92; (ii) 10% physical contingencies; (iii) cost of works supervision; and (iv) cost of routine and periodic maintenance on the road.

Table 4.1

Estimated Traffic Levels on the Afgoi-Baidoa Road in 1992
(vpd)

<u>Sections</u>	<u>Type of Traffic</u>						<u>Total</u>
	<u>Passenger</u>			<u>Freight</u>			
	<u>Cars</u>	<u>Pickups</u>	<u>Buses</u>	<u>7t or less</u>	<u>10t</u>	<u>Over 20t</u>	
Wanle Wein-Bur Acaba	21	41	25	64	34	22	207
Bur Acaba-Daymunay	29	55	34	88	46	31	283
Daymunay-Baidoa	34	65	40	104	54	36	333

SOURCE: Consultants' Study, 1989

4.10 The benefits considered in the economic analysis include: (i) savings in vehicle operating costs of the projected traffic growing at 5% per annum; and (ii) savings in avoiding emergency repair costs which were assessed as becoming imminent for the road to keep it open in the "without" project case. The proposed strengthening and improvement is expected to extend the economic life of the road by 20 years.

4.11 The cost/benefit analysis based upon the assumptions explained in Paras. 4.08-4.10 shows that the proposed civil works are economically justified. The ERR for the three sections combined is estimated at 18% with ERRs for individual sections ranging from 15%-23%. The first year

returns for the road sections are also satisfactory, ranging from 12%-19%. In the sensitivity analysis which assumed cost increases of 10%, the ERR would be between 14%-22%, while reduction of benefits by 20% would reduce ERR to 13%-19%. (Annex 15).

Mogadishu-Jahwil Road

4.12 The road to be rehabilitated and resurfaced between Mogadishu and Jahwil (295 km) is one of the most heavily trafficked sections of the national road network and is part of Somalia's main north-south link between Mogadishu and Berbera via Galkayo, Garoe and Berbera. In 1988, annual average daily traffic was about 1,500 vpd near Mogadishu, decreasing to about 380 vpd at Jahwil. The share of heavy traffic ranges between 50-60% of total traffic. The road has deteriorated to a level which is inadequate to support the growing volume of traffic. Normal routine road maintenance can no longer arrest the accelerating deterioration of the pavement.

4.13 The recommended level of road rehabilitation per road section was compared to the "without-the-project" case, i.e, further deterioration of existing pavement with consequent increase in voc. In carrying out the economic analysis, the road was divided into four sections due to the different scope of works needed, cost per km, and uneven traffic volumes. The cost (in 1989 prices) includes civil works, physical contingencies of 10% and supervision; the foreign cost component is estimated at 75%. Road rehabilitation is expected to be carried out in 1991 and in 1992. The proposed works are economically justified with first year returns between 10-19% (except for the second section which was 8%). Based on a 15-year economic life for the civil works and annual traffic growth between 5.0-6.2%, the combined ERR for Mogadishu-Jahwil Road is about 15%. The ERRs per section are presented below:

ECONOMIC RATES OF RETURN

<u>Road Section</u>	<u>Length (km)</u>	<u>Traffic (1988)</u>	<u>ERR (%)</u>
Mogadishu-Balad	32	1,478	24.6
Jowhar-Jalalaqsi	76	623	11.3
Jalalaqsi-Bulo Burti	51	564	21.4
Bulo Burti-Jahwil	136	450	12.3

Total	295		
	===		

4.14 In the sensitivity analysis, substantially lower traffic growth rates were assumed, ranging between 2.5-3.5% annually, depending on the road section. Under this unfavorable assumption the overall ERR for the road would fall to 11%. On individual sections, the ERRs would be as follows: Mogadishu-Balad 18%; Jalalaqsi-Bulo Burti 15%; while two road sections (Jowhar-Jalalaqsi and Bulo Burti-Jahwil) would have a marginal return of about 9% (Annex 15).

4.15 The consultants analyzed the Mogadishu-Balad (32 km) and Jowhar-Galkayo (610 km) sections of the Mogadishu-Galkayo Road. However, the northern part of the road (Jahwil-Galkayo, 347 km) was found not to be economically justified for road rehabilitation at present. Its economic viability should be reassessed in a few years.

Road Maintenance Program

4.16 Deficiencies in DOH's road maintenance operations include lack of proper organization, equipment and trained manpower (Para. 1.37). The thrust of the routine road maintenance component of the proposed Project is to secure the necessary improvements in maintenance operations, including funding, utilization and maintenance of equipment and staffing.

4.17 The roads selected for routine road maintenance under the proposed Project are included in HMAs 1, 3 and 4. Of the seven HMAs in Somalia, these three are the closest to Mogadishu and have the highest road traffic in the country, ranging from about 55-1,300 vpd (Table 4.2).

4.18 DOH carries out traffic counts on an irregular basis and it is, therefore, difficult to determine a reliable annual traffic growth rate. Based on the available data (traffic counts in 1985-1988), a conservative annual growth rate of 3% per year was assumed in the economic analysis of the road maintenance program.

4.19 The economic evaluation of the routine road maintenance program has been carried out in end-1989 prices. The economic costs include: (i) capital investment for equipment, improvement/ construction of workshops and supply of materials; (ii) technical assistance; and (iii) incremental recurrent annual costs (over five years) for spare parts, bitumen, fuel, quarry products and labor. It is conservatively estimated that the proposed program of routine road maintenance will modestly reduce vehicle operating costs (VOC) on the roads, by about 5-6%. The benefits include savings in VOCs translated into passenger car unit (PCU) savings. Estimated VOC on roads in Somalia in 1989 prices are presented in Table 4.3. The capital and recurrent costs stream together with the benefit stream are presented in Annex 15. The routine maintenance program of the selected primary and secondary roads (in the three zones with higher traffic volumes) is well justified and will yield an estimated ERR of 43%. In the sensitivity analysis, assuming that the program will yield only 70% of the estimated benefits, the ERR is still acceptable at about 18%. The ERR would have been even higher had possible savings in costly road reconstruction (if there would be no road maintenance for a prolonged time) been included in the analysis.

Table 4.2

Traffic Volumes on the Road Network Included in the Program 1/
(Highway Maintenance Areas 1, 3, and 4 - 1987/1988)

<u>Traffic Volume</u> (vpd)	<u>Weighted 2/</u> <u>Average</u> (vpd)	<u>Length</u> (km)
50-100	55	1,160
100-200	130	450
200-400	290	144
400-600	480	280
600-1,000	730	130
1,000>	1,300	65

		2,229

1/ Traffic data are rounded.

2/ Estimated to be 40-50% heavy vehicles.

SOURCE: Estimates based on Somali National
Transport Master Plan, GTZ, 1989

Table 4.3

Estimated Vehicle Operating Costs
(US\$/km, net of taxes)

<u>Vehicle Type</u>	<u>Road Surface</u>			
	<u>Paved Roads</u>		<u>Unpaved Roads</u>	
	<u>Good</u>	<u>Poor</u>	<u>Good</u>	<u>Poor</u>
Passenger car	0.17	0.26	0.27	0.42
Pick-up	0.22	0.32	0.34	0.51
Bus	0.46	0.65	0.68	0.98
Truck (10 t)	0.51	0.82	0.90	1.31
Trailer	0.74	1.05	1.15	1.64
Passenger Car Unit ^{1/}	0.17	0.26	0.27	0.42

1/ Average heavy vehicle was translated as 3 PCUs.

SOURCE: Somali National Transport Master Plan, GTZ, 1989,
Mogadishu-Galkayo Road Study Report and IDA estimates.

The Project

D. Road Maintenance

4.20 The routine road maintenance component of the Highways Program included in the Project is estimated to have an ERR of 43% (Para 4.19).

E. Other Project Components

4.21 The other project components include the institutional strengthening of MWA and MPT, and the design of the expansion of the Mogadishu water supply system. Owing to the non-quantifiable nature of the benefits associated with these components, no ERR was calculated.

4.22 It is anticipated that the technical assistance and training to be provided to MWA will lead to a higher level of institutional performance. The resultant strengthening of the revenue generating capacity of MWA will permit a realignment of salaries and benefits to the level required to induce greater productivity and commitment from the work force. Increasing the financial viability of MWA will eliminate its dependence on central government, thus freeing financial resources for other development activities. The training of mechanical and electrical technicians will result in a more dependable supply of water from the Afgoi and Balad well fields as well as the new field at Garras-Bintow which is expected to be commissioned in mid-1991.

4.23 Similarly the provision of technical assistance and training to MPT will set the stage for improved telecommunications in Somalia, both domestically and internationally. The development of a policy framework will provide a context within which strategic sector planning can be undertaken, including the possibility of involving private enterprise in managing some aspects of the sector. The development and application of principles and procedures to guide the formulation and implementation of appropriate tariff levels and structures is an essential step in strengthening the financial viability of the sector. The commercialization of the MPT's accounting and billing system will lead to improvements in operating efficiency.

F. Project Risks

4.24 While the Project is designed to reduce as much as possible risks associated with implementation, there is nevertheless, the possibility that implementation could be delayed in the event local staff assigned to the Project leave the Government or counterpart staff are not assigned on time. This risk will be mitigated by negotiating a condition of Credit effectiveness calling for the implementation of staff incentive schemes for DOH and MWA, coupled with the filling of key posts within the entities with suitable staff. There is also the possibility that the local funding for routine road maintenance does not materialize as planned. However, the establishment of the Road Maintenance Fund and its strengthening under the Project as well as periodic review of the Public Investment Program should reduce this risk.

4.25 The one risk which is difficult to anticipate is the security and political situation which will exist at the time of Project execution, particularly in areas outside of Mogadishu. Under prevailing conditions the Project components dealing with water supply and telecommunications are feasible in that the major focus of the work is institutional development located in Mogadishu. If the situation severely deteriorates, it will undoubtedly have a negative impact on the road component of the Project. Under such adverse circumstances, the road component could be delayed until later years in the Project period.

V. AGREEMENTS REACHED AND RECOMMENDATION

5.01 The following principal items were discussed and agreed upon with the Government during negotiations:

- (a) Government will gradually increase retail fuel prices to eliminate any subsidy by no later than end December 1990 (Para. 1.26).
- (b) Government will assign to DOH annually at least one graduated engineer (Mechanical) until the completion of the Project (Para. 1.32).
- (c) road maintenance equipment under the control of the DOH will not be diverted to other uses (Para. 1.37);
- (d) Government will undertake that (i) annual allocations for routine road maintenance will be at least US\$1.2 million equivalent, in 1989 prices, including amounts in the Road Maintenance Fund; and (ii) not later than four months before the beginning of each fiscal year the Government shall, until the completion of the Project, review with the Association the financial requirements and the proposed allocations for road maintenance; agreement will also be reached with Government for phased increases in the tax on gasoline and diesel fuel to the required level (Para. 1.39).
- (e) the National Road Maintenance and Rehabilitation Plan 1989-1993 agreed with Government during appraisal was confirmed during negotiations and will be reviewed on an annual basis as part of the Public Expenditure Review/Public Investment Program (Para. 1.40);
- (f) to motivate existing staff and to attract and retain qualified new staff at MWA, Government will provide local funds to finance the additional costs of new employment contract arrangements for the first two years of the Project. For subsequent years MWA would be required to generate the required amount of cash to cover operating expenses and debt service. (Para. 1.51).
- (g) Government will submit the lists of items and technical specifications for DOH workshop equipment, tools and training aids and all equipment, tools and training aids for MWA and MPT to be purchased to the Association for its review (Paras. 3.10, 3.29 and 3.30);
- (h) Government will prepare and submit plans and construction details of DOH workshops to the Association for its review (Para. 3.11);

- (i) agreement was reached with Government that DOH, MWA, and MPT will nominate counterpart personnel to work with appointed consultants (Paras. 3.13, 3.18 and 3.21);
- (j) by March 31, 1991, Government will prepare and submit for the Association's review suitable training programs for DOH, MWA and MPT (Paras. 3.14, 3.18 and 3.20);
- (k) Government will relend to MWA part of the proposed IDA Credit at an interest rate of 12.0 percent for 20 years including a grace period of four years and interest during project implementation added to the onlending during the same period (Para. 3.25);
- (l) consultants will be employed in accordance with the Bank Group guidelines for the use of consultants (Paras. 3.29 and 3.30);
- (m) the implementation schedule for all Project components (Annex 13) and Project progress reporting requirements (Annex 14) was agreed with Government at negotiations (Para. 3.32);
- (n) Government will have Project accounts audited by independent auditors acceptable to the Association and will submit its audited financial statements to the Association within six months after the close of the financial year (Para. 3.37); and
- (o) an agreement was reached with Government that a completion report, in a form satisfactory to the Association, will be prepared and submitted not later than six months after the closing date of the Credit (Para. 3.39);

5.02

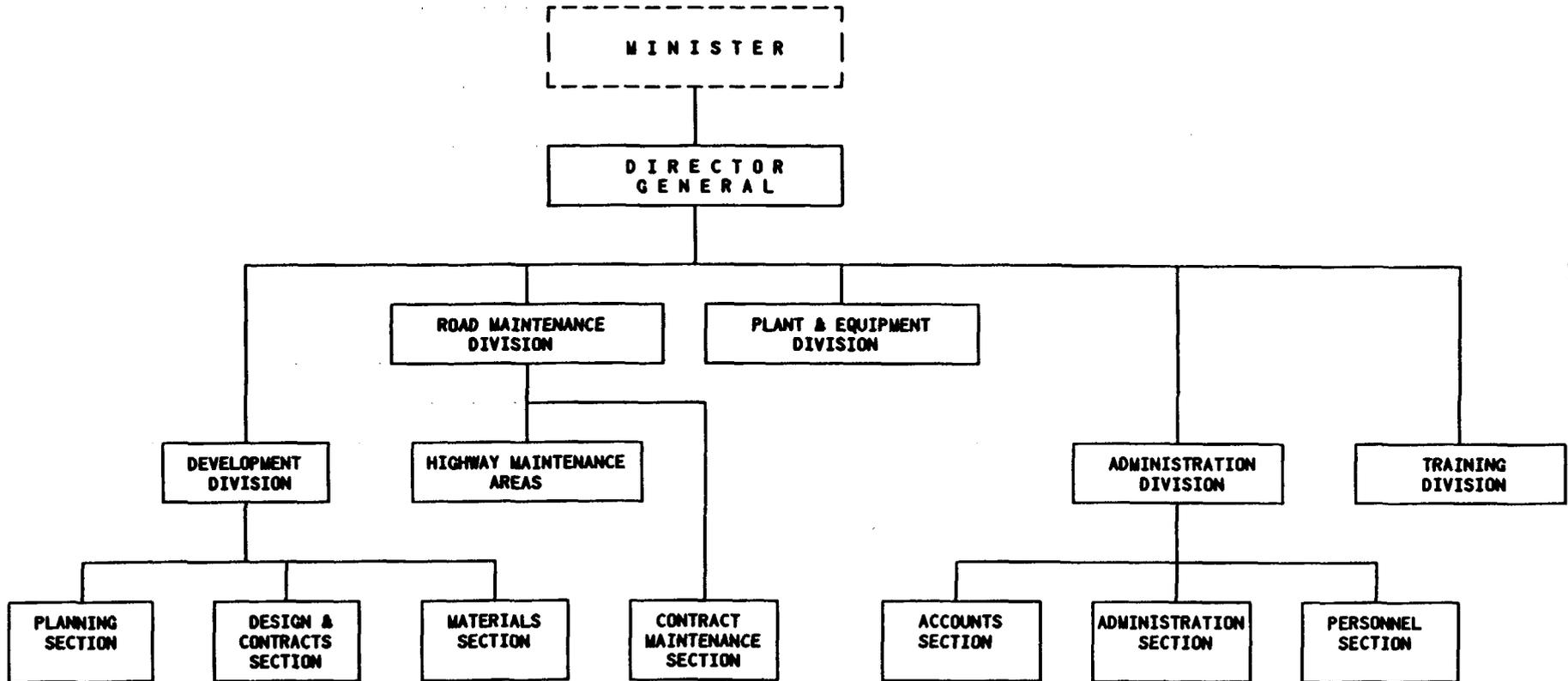
The following items were discussed and agreed upon as conditions of Credit effectiveness:

- (a) appointment of suitable candidates to key posts within DOH and MWA will have been effected (Paras. 1.32 and 1.51);
- (b) to motivate existing staff and to attract and retain qualified new staff to DOH, Government will have established a system to provide incentives to staff in the form of field allowances, etc. to be paid out of the proceeds of the Road Maintenance Fund.
- (c) the inclusion of gasoline in the fuel tax base (Para. 1.39);
- (d) the Subsidiary Loan Agreement between the Government and MWA will have been executed (Para. 3.25).

5.03 As conditions of disbursement against the specified individual sectors, DOH and MWA would each sign a twinning agreement with an organization acceptable to the Association (Paras. 3.13 and 3.16).

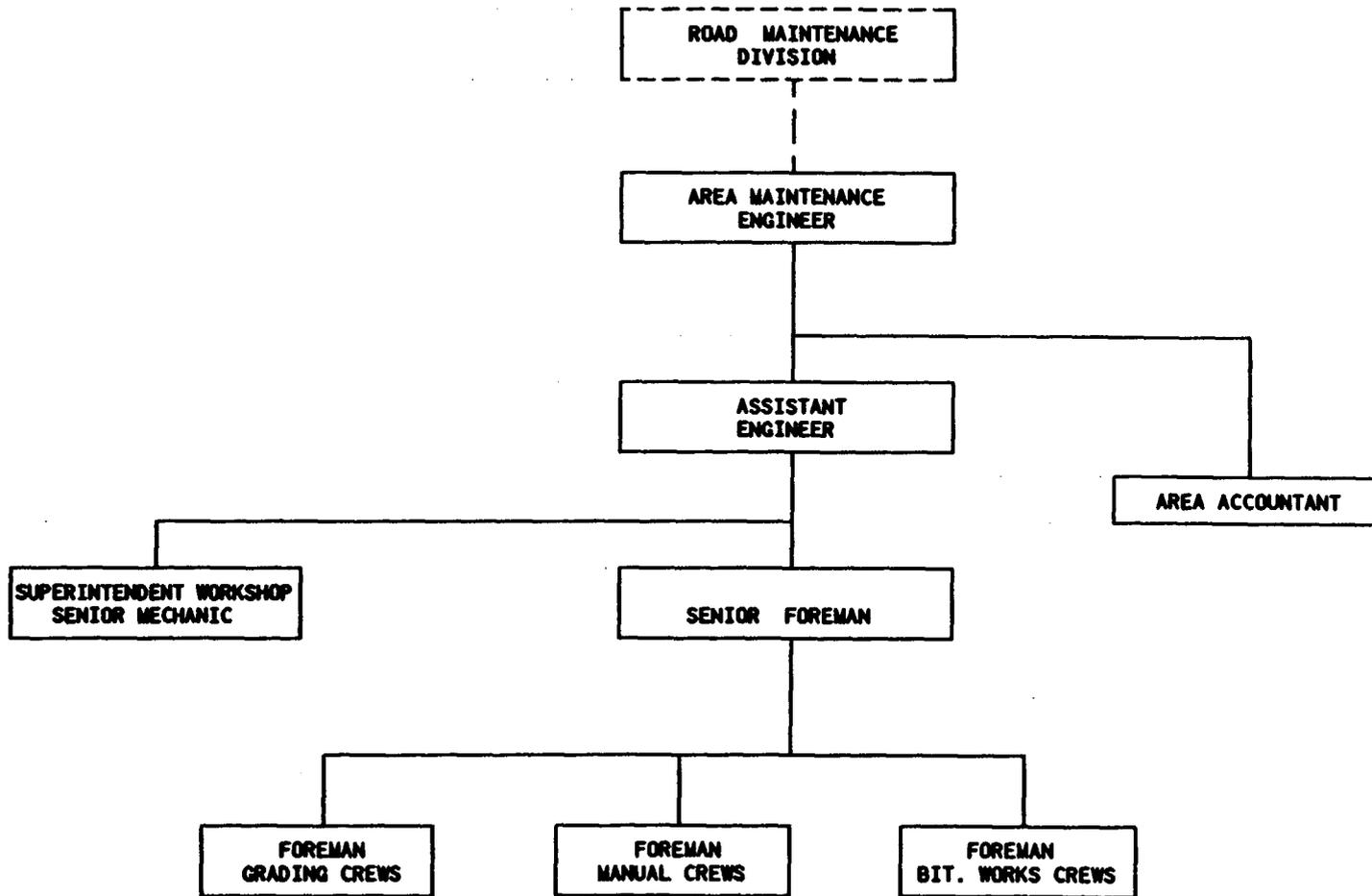
5.04 With the above agreements reached, the proposed project would be suitable for an IDA Credit of SDR 14.1 million (US\$18.5 million) on standard IDA terms.

SOMALIA
INFRASTRUCTURE REHABILITATION PROJECT
ORGANIZATION OF THE DIRECTORATE OF HIGHWAYS

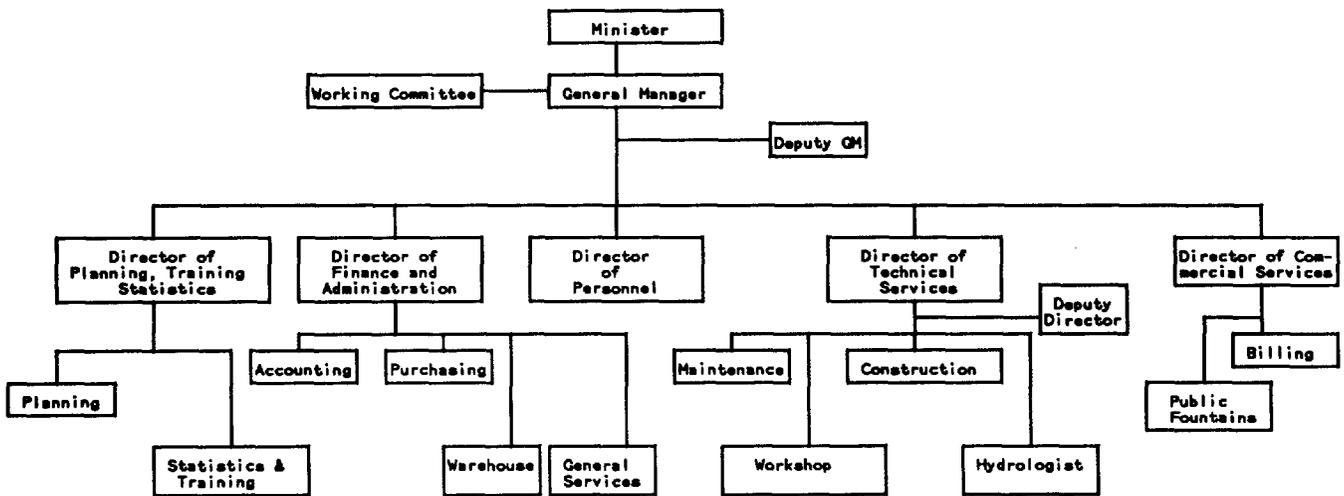


**SOMALIA
INFRASTRUCTURE REHABILITATION PROJECT**

**ORGANIZATION OF HIGHWAY
MAINTENANCE AREA**



SOMALIA
Infrastructure Rehabilitation Project
Organization of the Mogadishu Water Agency



SOMALIA

Infrastructure Rehabilitation Project

Mogadishu Water Agency
Income Statement for Years Ending December 31

(SoSh'000)

	1985	1986	1987	1988
Exchange rate (SoSh/USD)	38.00	91.50	99.50	275.00
Total Water Production	10,327	11,633	15,400	16,050
Connections at Start of Year	26,747	30,570	35,311	41,425
Unaccounted-for water	42	42	44	50
Water Volume Billed (000 m ³)	6,039	6,730	6,975	8,025
Tariff rate (SoSh/m ³) 1/	12.75	23.25	25.00	25.00
REVENUES				
Water Revenue	76,995	133,536	163,792	445,148
New Connections	3,800		43,000	15,401
Deposits			3,478	
Total revenue	80,795	133,536	210,270	460,549
EXPENDITURES				
Wages and Benefits	12,093	12,407	15,403	29,352
Fuel expenses	51,959	85,539	106,960	202,893
Other expenses	21792	13918	26186	84381
Total Operating Expenses	85,844	111,864	148,549	316,626
Net Operating Income before Depreciation and Interest	(5,049)	21,672	61,721	143,923
Depreciation	45,334	96,404	207,983	207,983
Operating income	(50,383)	(74,732)	(146,262)	(64,060)
Interest	7,307	11,973	11,973	11,000
Net Income	(57,690)	(86,705)	(158,235)	(75,060)

Source: MWA, 1989

1/ Tariff raised to SoSh 75/m³ in December 1988.

SOMALIA

Infrastructure Rehabilitation Project

Mogadishu Water Agency

Balance Sheet at Years ending December 31

(SoSh'000)

	1985	1986	1987	1988
ASSETS				
Fixed Assets				
Plant in Operation	2,021,514	5,199,924	5,931,524	5,931,524
Less: Accumulated depreciation:	45,334	953,159	1,273,959	1,273,959
Net Plant in Operation	1,976,180	4,246,765	4,657,565	4,657,565
Work in progress	0	0	0	0
Current Assets				
Cash	1,004	23,109	38,435	6,703
Accounts Receivable	24,402	22,000	65,904	221,000
Inventories	102,765	101,085	214,165	N/A
Total Current Assets	128,171	146,194	318,504	227,703
TOTAL ASSETS	2,104,351	4,392,959	4,976,069	4,885,268
LIABILITIES AND EQUITY				
Equity	922,858	1,118,065	4,953,293	3,212,611
Long-term Debt	1,162,541	3,252,457	N/A	1,602,135
Current Liabilities				
Deposits			3,478	3,522
Accrued Interest Payable	7,307	11,793	17,212	11,000
Accounts Payable	11,644	10,644	2,086	56,000
Total Current Liabilities	18,951	22,437	22,776	70,522
TOTAL LIABILITIES AND EQUITY	2,104,350	4,392,959	4,976,069	4,885,268

Source: MWA, 1989

SOMALIA

INFRASTRUCTURE REHABILITATION PROJECT

Population and Water Demand

Background

1. Detailed forecasts of population and water demand for Mogadishu were developed in 1980 and updated in 1985, by MWA's engineering consultants, Sir Alexander Gibb and Partners (Kenya) Ltd. These projections, summarized in the following paragraphs, should only be considered as indicative and a review and update of recent urban development, population growth and water demand projections in Mogadishu is required to provide a rectified base for the future water supply development program for the capital city.

Population

2. An official census was conducted in Mogadishu in 1976, when the population was estimated as 444,800 persons. The population growth was estimated at 10% per annum, about 3% being due to natural growth and the remaining 7% due to migration from rural areas. The population forecast in the quoted studies was done district by district, and the maximum densities of different housing types in each district were also taken into consideration. The table below summarizes the most probable population projection in 5 year intervals, including the base year of 1976.

Population Forecast

<u>YEAR</u>	<u>POPULATION</u>
1976	444,800
1985	783,600
1990	1,014,600
1995	1,282,300
2000	1,592,700

Water Demand

3. The water demand, in accordance with usual practice was estimated by consumer categories, i.e, residential, institutional and industrial.

3.1 Residential demands have been estimated on the basis of population, household size, means of supply, standard of housing and per capita demand. The per capita demand used in the forecast are summarized below. The number of connections grew from 1,200 in 1976 to about 45,000 in 1989.

Residential Demand

<u>Means of Supply</u>	<u>Housing Class</u>	<u>Per Capita Demand (lpcd)</u>				
		1976	1985	1990	1995	2000
Private Connection	I	120	175	215	250	300
	II & III	60	85	105	125	150
Public Fountain	II & III	8.5	13	16	20	20
	IV	4.2	6.5	8	10	12.5

3.2 Institutional Demand. The following categories have been classified as institutional consumers:

- Government offices;
- Police establishments;
- Military establishments;
- Educational establishments;
- Medical establishments;
- Religious establishments;
- Embassies; and
- Hotels.

Demand by government offices, police and medical establishments has been assumed to grow at a rate related to growth of total population and demand by educational and religious establishments in proportion to growth in the appropriate district population. Forecast for military establishments were provided by the establishments themselves.

3.3 Industrial Demands. Most of the existing industries until the early 1980s had their own private wells. It has been assumed that with the expansion of the water supply system all water requirements of the industry would be provided by MWA. The industrial demand in 1976 was only 2.5% of the total consumption in Mogadishu. This is low in comparison with other towns of similar size, and in absence of further information, it was assumed that industrial demand would grow in proportion of population growth.

4. Based on the criteria described in Para. 3, the total water requirements are summarized below. The table also shows the best estimate of actual consumption, unaccounted-for water in percentage of water production, estimated demand at source and the shortfall and surplus of production capacity in percentage terms.

Water Requirements
(1000 m³ per year)

Year	Consumption ^{a/}	Unaccounted for Water (%) ^{b/}	Production	Demand at Source	Capacity (Shortfalls at Surplus %)	Remarks
1980	5,360	20	6,700	8,620	-22	
1981	5,200	20	6,500	8,980	-28	
1982	6,820	18	8,273	9,375	-12	Production at Stage 1 Wellfied started May 1, 1982.
1983	8,200	20	10,500	10,500	- 2	
1984	8,200	20	10,250	11,250	- 9	Part commissioning of Stage 2A.
1985	10,200	20	17,700	17,700	0	Full commissioning of Stage 2A.
1986				19,200		
1987	12,650	30	15,200	20,900	-27	Data from T.A. Program under Second Mogadishu W/S Project.
1988			(16,050) ^{c/}	22,700	-29	
1989			(13,380) ^{c/}	24,700	-54	
1990				26,800		
1995				39,600		
2000				51,400		

a/ No reliable consumption records are available for 1988 and 1988 onwards.

b/ Unaccounted-for water in the period 1988 and 1989 probably as high as 40 to 50%.

c/ Production capacity as follows:

	1988	1989
Balad Wellfied	3,780	1,100
Afgoi Wellfied	12,090	12,100
Other sources	180	180
TOTAL	16,050	13,380

Demand Summary

5. The following table summarizes the forecast total population per year, the forecast annual average demands and the overall per capita demands, at source.

Demand Summary

<u>Year</u>	<u>Population</u>		<u>(1000 m³/year)litre/day</u>
1985	783,600	17,700	62
1990	1,014,600	26,800	72
1995	1,282,300	39,600	85
2000	1,592,700	57,400	99

The per capita demand in the year 2000 appears to be over estimated. This is most probably due to overestimated industrial demand growth (see Para. 3.4). The present estimate of consumption in the various consumer categories are given in the table below:

Composition of Annual Consumption

<u>Consumer Category</u>	<u>Consumption in % of Total</u>
Residential	
Private Connections	51
Public Tops (Kiosks)	6
Government & Institutions	40
Industrial & Commercial	<u>3</u>
TOTAL	100

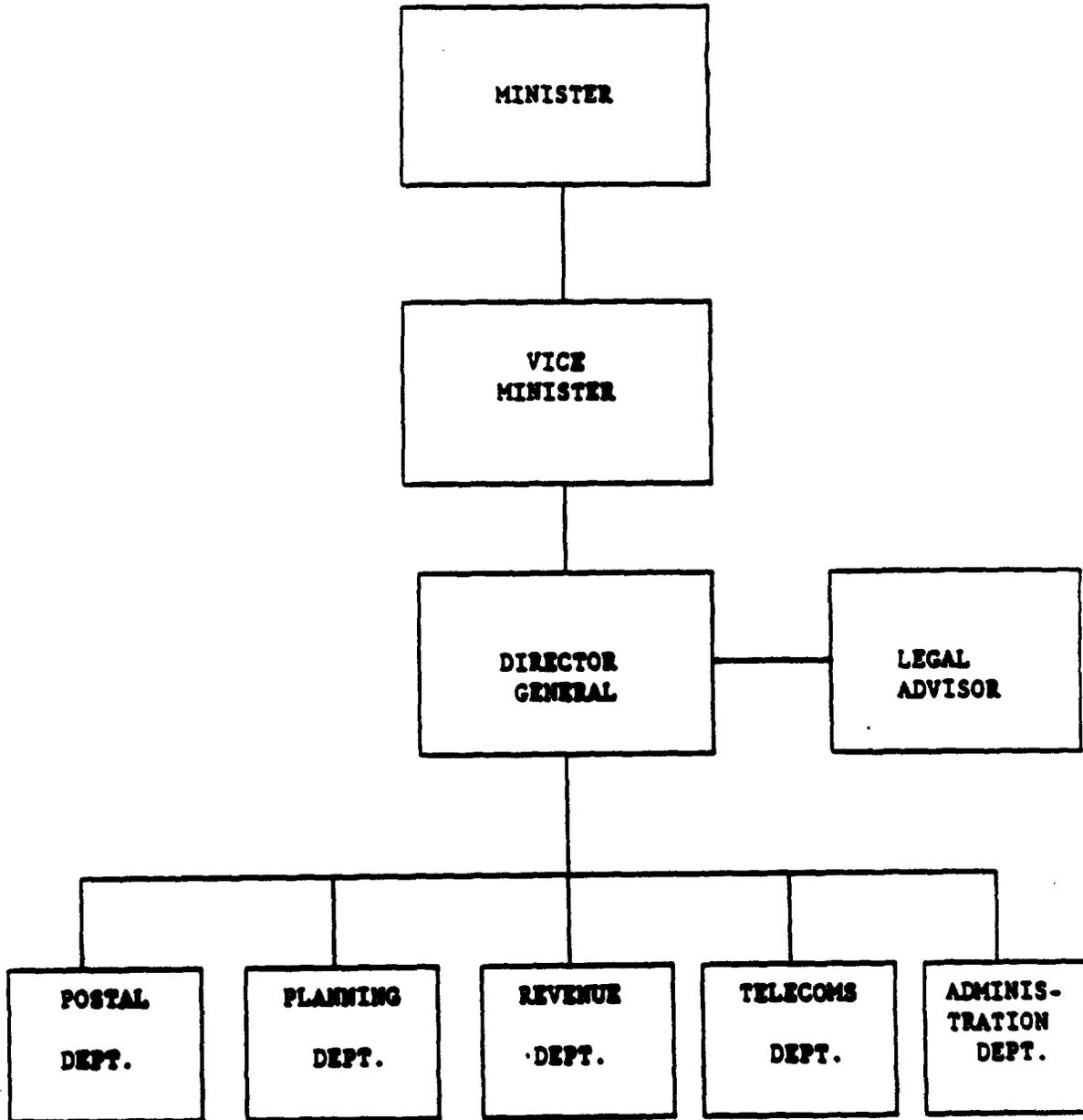
SOMALIA
Infrastructure Rehabilitation Project
Ministry of Posts and Telecommunications
Telecommunications Tariffs 1989

Year Date Set	1987		1988		1989	
	SOSH	US\$ <u>1</u> /	SOSH	US\$ <u>2</u> /	SOSH	US\$ <u>3</u> /
	January		September		June	
Rental ^{4/}	900	9.94	1,800	7.70	2,700	5.54
Connection	8,000	88.40	16,000	68.45	24,000	49.28
Local call ^{5/}	2	0.02	4	0.02	6	0.01
Long distance ^{6/} to Tanzania	26	0.29	52	0.22	78	0.16
International ^{6/}						
Italy	235	2.60	662	2.83	993	2.04
Saudi	180	1.99	341	1.46	512	1.05
Abu Dhabi	180	1.99	448	1.92	672	1.38
USA	447	4.94	1,304	5.58	2,020	4.15

- 1/ Converted at official rate at tariff change date US\$1.0 = SOSH 90.50.
2/ Converted at official rate at tariff change date US\$1.0 = SOSH 233.75
3/ Converted at official rate at tariff change date US\$1.0 = SOSH 487.00
4/ Includes 240 free calls. Rental is for 3 months.
5/ Untimed.
6/ Per minute.

ORGANIZATION CHART

MINISTRY OF POSTS AND TELECOMMUNICATIONS



SOMALIA

Infrastructure Rehabilitation Project

Road Maintenance Equipment to be Procured by HMA

ITEM	HMA 1			HMA 3			HMA 4			TOTAL
	BC x1	GC x1	MC x2	BC x1	GC x2	MC x6	BC x3	GC x1	MC x2	
Bitumen heater/distributor (500-800 lit)	1	-	-	1	-	-	1	-	-	5
Bulldozer (160-165 hp)	-	1	-	-	1	-	-	1	-	4
Concrete mixer (1.3-1.5 CY)	-	-	1	-	-	1	-	-	1	10
Front-end loader (90-100 hp)	-	1	-	-	1	-	-	1	-	4
Motor grader (120-130 hp)	-	1	-	-	1	-	-	1	-	4
Pneumatic tired roller (10-12t)	-	1	-	-	1	-	-	1	-	4
Pedestrian controlled roller	1	-	-	1	-	-	1	-	-	5
Plate compactor	1	-	-	1	-	-	1	-	-	5
Pick-up truck (2-3t)	2	2	-	2	2	-	2	2	-	18
Tractor (70-80 hp)	-	-	1	-	-	1	-	-	1	10
Tipper truck (6-8t)	1	1	1	1	1	1	1	1	1	9
Water tanker (8000 lit)	-	1	-	-	1	-	-	1	-	4
Water tanker trailer (2000 lit)	-	-	1	-	-	1	-	-	1	10

HMA = Highway Maintenance Area
 BC = Bitumen works crew
 GC = Grading crew
 MC = Manual crew

SOMALIA
Infrastructure Rehabilitation Project

Road Maintenance Equipment to be Procured: Estimated Costs

<u>Item</u>	<u>Units</u>	<u>Unit Cost</u> <u>US\$ '000</u>	<u>Total Cost</u> <u>US\$ '000</u>
Bitumen heater/distributor (500-600 lit)	5	15	75
Bulldozer (160-165 hp)	4	150	600
Concrete mixer (1.3-1.5 CY)	10	15	150
Front-end loader (1.5 CY)	4	70	280
Motor grader (120-130 hp)	4	85	340
Pneumatic tired roller (10-12t)	4	55	220
Pedestrian controlled roller	5	10	50
Plate compactor	5	5	25
Pick-up truck (2-3t)	18	15	270
Tractor (70-80 hp)	10	35	350
Tipper truck (6-8t)	9	35	315
Water tanker (8000 lit)	4	45	180
Water tanker trailer (2000 lit)	10	5	50
			<hr/>
	Spare parts (15%)		2,905
			<u>436</u>
			<u>3,341</u>
	on rounding		(3,350)

SOMALIA

Infrastructure Rehabilitation Project

TECHNICAL ASSISTANCE TO THE DIRECTORATE OF HIGHWAYS

Outline Terms of Reference

I. Background

1. Up until the beginning of 1988, the Civil Engineering Department (CED), under the Ministry of Public Works and Housing (MPWH) was responsible for the upkeep and maintenance of the country's road network. However, actual field operations were carried out by sixteen regional road maintenance sections under administrative control of the MPWH's regional directorates. Thus, road maintenance operations were performed that were not authorized, monitored or controlled by the CED. Following recommendations of the road maintenance study carried out in 1985 by consultants Louis Berger Int'l. Inc., the CED was reorganized and assigned full responsibility for the development and maintenance of the national road network, and its title changed to Department of Highways, later elevated to the level of Directorate of Highways (DOH).
2. In the reorganized set up, the responsibility for the execution of road maintenance is divided into seven highway maintenance areas (HMAs), each headed by an area engineer. The area engineers report to the director of the road maintenance division who has direct line responsibility for all road maintenance in the country. Due to the lack of resources of funds, equipment and trained manpower, very little maintenance work is currently done on roads. Severe deterioration of riding surfaces, shoulders and roadside drains are evident on most roads as a result.
3. DOH's three main workshops at Mogadishu, Hargeisa and Kismayo handle major repairs for vehicles and equipment; the few regional workshops take care of minor repairs and routine servicing. The shortage of workshop equipment and tools, and spare parts, coupled with lack of trained staff, inhibit maintenance and repair activities in the workshops.
4. DOH wishes to employ technical assistance services under twinning arrangement with a similar but more mature organization in another part of the world to improve maintenance planning and operations on the primary and secondary road network in three selected HMAs (HMAs 1, 3 and 4) located in Southern Somalia.

II. Objectives

5. The purpose of the technical assistance services is to assist DOH with improving road maintenance planning, organization and operations, including equipment management and control, and to train Somali staff in these fields.

III. Scope of Technical Assistance Services

6. The technical assistance services to be provided will cover the following key areas:

- a) road maintenance planning and programming;
- b) developing road maintenance costs and budgets;
- c) establishing performance standards and procedures for road maintenance;
- d) road maintenance operations;
- e) instituting standard equipment repair and overhaul procedures;
- f) workshop management and control;
- g) assessing training needs and establishing training programs for DOH staff; and
- h) on-the-job and formal training of DOH staff.

7. On-the-job and formal training of staff through lectures/training courses/seminars in Somalia will be supplemented by short-term assignments within the TA supplier's organization and/or training courses/professional visits abroad.

8. The services will be performed over a period of about three years, commencing January 1991. The technical assistance staff to be provided will work with the DOH staff as advisers, and would consist of:

- a) one senior road maintenance engineer (team leader);
- b) one equipment maintenance management specialist;
- c) three road maintenance superintendents; and
- d) two mechanical superintendents.

A job description for each of the above positions is shown in the Attachment.

IV. Facilities to be Provided by Government

9. The Government shall provide the technical assistance staff with all available information and reports for their services and will assign suitable counterparts to work with them. It shall also provide them with necessary office space, furniture, equipment and office supplies, as well as secretarial and clerical services. They shall, however, make their own arrangements for living accommodation and local transportation.

V. Reports

10. The TA supplier shall submit quarterly progress reports (three copies each to Government and the International Development Association) summarizing accomplishment during the reporting period and total progress since the start of the work and identifying any problems encountered in the work with recommendations for corrective action.

SOMALIA

Infrastructure Rehabilitation Project

TECHNICAL ASSISTANCE TO THE DIRECTORATE OF HIGHWAYS

Individual Job Descriptions

Senior Road Maintenance Engineer (Team Leader)

Qualifications:

1. The road maintenance engineer should be a qualified professional civil engineer with 10-15 years experience in design, construction and maintenance of bituminous-surfaced, gravel and earth roads, including the design and use of bituminous mixes and the testing of soils and materials; should have experience in operational and administrative aspects of highway maintenance in a government highway/roads organization, including establishment of efficiency incentives, unit costing and similar management systems and controls. He should have suitable experience not only in usage and control of equipment but also labor-based methods, with a good appreciation of where the use of the latter is technically and economically appropriate. He should also have previous experience in organizing and conducting training programs for staff. Fluency in written and spoken English and the ability to communicate ideas easily are also required.

Duties:

2. He will report to the Director General, DOH, and will assist and advise him on all aspects of highway maintenance planning, organization and operations, including but not limited to:

- (a) reviewing and evaluating existing inventories, records and other data and carrying out additional surveys and investigations for preparing updated inventories for the road network;
- (b) identifying for each road section the type and amount of work required for adequate maintenance and translating such works into specific tasks in terms of routine/periodic maintenance;
- (c) reviewing and updating existing data on highway traffic counts, axle loads, origin and destination data and traffic forecasts;

- (d) establishing performance standards and procedures for routine and periodic maintenance involving an appropriate mix of labor and equipment;
- (e) installing a system of cost accounting procedures to facilitate determining the cost of individual road maintenance operations and the total cost of maintaining individual road sections, relating costs to physical environments and traffic;
- (f) operating the highway maintenance organization, including equipment management and control, work scheduling and budgeting;
- (g) reviewing staff inventories, assessing manpower requirements and their training needs, and establishing suitable training programs for staff; and
- (h) coordinating the work of the technical assistance team and of personnel employed in road maintenance planning and operations.

Road Maintenance Superintendent

Qualifications:

3. The road maintenance superintendent should be a technologist qualified in the civil engineering field with 15-20 years experience in the construction and maintenance of bituminous-surfaced, gravel and earth roads, including the design and use of bituminous mixes and the testing of soils and materials; should be conversant with unit costing and similar management systems and controls and have suitable experience in equipment usage and control and in labor intensive methods of road construction and maintenance. He should also have experience at supervisory level in a government highway/road organization and should have previous experience in organizing and conducting training programs for staff. He should also be fluent in written and spoken English.

Duties:

4. He will report to the Director, Road Maintenance Division, and will assist and advise him on all aspects of road maintenance, including but not limited to:

- (a) planning and implementing routine and periodic road maintenance;
- (b) developing maintenance costs and budgets;

- (c) establishing performance standards and work procedures, including the use of labor-based methods wherever technically and economically feasible;
- (d) instructing road maintenance personnel in proper work execution and demonstrating how required standards of maintenance can be obtained;
- (e) directing and controlling the deployment of equipment assigned to areas of operation; and
- (f) training of local staff.

Equipment Management System Specialist

Qualifications:

5. The equipment management system specialist should be a qualified professional mechanical engineer with 10-15 years experience in the operation and management of equipment fleets, including road construction/maintenance plant and vehicles; should have sufficient experience in management of spare parts inventories and workshops in a government highway/roads organization. In addition, he should have previous experience in organizing and conducting training programs for staff. Fluency in written and spoken English and the ability to communicate ideas easily are also required.

Duties:

6. He will report to the Director, Plant and Equipment Division, and will assist and advise him on all matters concerning fleet and workshop management and control, including but not limited to:

- (a) establishment of a practical comprehensive management system including information systems (equipment availability, utilization, costing and control) and budgeting systems creating appropriate incentives for efficiency and providing for the ultimate replacement of the equipment;
- (b) reviewing and updating of existing inventories of equipment and spare parts, and establishing a continuous stock verification system;
- (c) forecasting needs, establishing maintenance parts and component requirements (maximum-minimum stock levels);
- (d) establishing an efficient system for spare parts distribution and control;

- (e) preparing specifications and bid documents for procuring road maintenance and workshop equipment, tools and spare parts, evaluating bids and inspecting equipment, spare parts and tools upon delivery;
- (f) setting up a preventive maintenance schedule for road maintenance equipment and instituting standard equipment repair and overhaul procedures; and
- (g) training of local staff.

Mechanical Superintendent

Qualifications:

7. The mechanical superintendent should be a technologist qualified in the mechanical field with 15-20 years experience in the operation and management of equipment fleets, including road construction/maintenance plant and vehicles; should have sufficient experience in workshop management in a government highway/roads organization and be able to carry out on-the-job training of workshop staff. He should also be fluent in written and spoken English.

Duties:

8. He will report to the Director, Plant and Equipment Division, and will assist and advise him on all matters concerning workshop management and control, including but not limited to:

- (a) routine administrative matters concerning workshop management;
- (b) reviewing and updating equipment and spare parts inventories and establishing a continuous stock verification system;
- (c) setting up a preventive maintenance schedule for equipment and instituting standard equipment repair and overhaul procedures; and
- (d) carrying out on-the-job training of mechanics, plant and vehicle operators.

SOMALIA

Infrastructure Rehabilitation Project

DETAILED ENGINEERING DESIGNS AND ADDITIONAL ENGINEERING SERVICES
FOR THE
STAGE 3 EXTENSION OF MOGADISHU'S WATER SUPPLY

Terms of Reference

I. Background

1. Mogadishu, Somalia's capital city, with an estimated population of over 900,000 inhabitants is experiencing increasing water shortages. Mogadishu currently has two major water sources with a combined effective production capacity of 44,647 m³/day (16.3 million cubic meters per year).

2. The estimated average demand for water in 1989, without suppression is 67640 m³/day (24.7 mcm/year), with a seasonal peak demand of 77790 m³/day. The shortfall between the present production and the average demand is about 50%.

3. Therefore, the Mogadishu Water Agency (MWA) which is responsible for the water supply services in the capital city has decided to prepare for the next (Stage 3) extension of Mogadishu's water supply, simultaneously with the ongoing (Stage 2B) extension works, and other proposed remedial works aimed to increase MWA's present production capacity. The development of Stage 2B expansion phase (Garas Bintow wellfield) is expected to commence in early 1990 and be commissioned by mid 1991. It is expected that the increased total production (i.e Garas Bintow wellfield, Afgoi Road wellfield) and the restored Balad Road wellfield will substantially improve the water supply in the city, but the early implementation of Stage 3 is required to keep pace with the growing demand.

II. Objectives

4. MWA seeks the services of engineering consultants to carry out the detailed engineering designs, cost estimates and preparation of bid documents for the Stage 3 based on the approved design proposals. The scope of work (detailed in the following parts of this Terms of Reference) shall also include the review and update of recent urban development, population growth and water demand projections in Mogadishu, in order to provide a rectified base for the long-term water supply development program for the city.

III. Scope of Work

6. The Consultant's task will include but not necessarily limited to the following and the consultant's proposal shall indicate the sequence and timing

of carrying out the tasks.

- No. 1 Review and update of the population forecast and water demand projections for Mogadishu, by districts and supply zones, and by consumer categories (i.e residential, institutional, commercial, industrial).
- No. 2 Review and analyse the design proposals for the source work extensions (including Stage 3 and Stage 4) and submit final proposals for MWA's consideration and approval.
- No. 3 Review the scope and engineering design of the scaled down Stage 2 extension phase (ongoing works) and submit proposal for MWA's consideration for the additional works required to restore Stage 2 to its originally planned capacity.
- No. 4 Review the distribution network extension carried out under the previous extension phases (including the proposed but postponed network extension under Stage 2) and submit proposals for the distribution network extension including system's reservoirs under Stage 3, for MWA's consideration. The proposal shall also take into consideration the recent trend(s) in Mogadishu's urban development, the physical conditions of the existing distribution network, and rehabilitation works, as required.
- No. 5 Review and assess the condition of chlorination plants and equipment at the source works and in the system and prepare proposals for replacement and/or rehabilitation, as necessary.
- No. 6 Based on the results of Tasks No. 1 through 5, prepare layout design and survey proposals for a Stage 3 extension project including preliminary cost estimates (by components) and implementation schedule, in the format of an Interim Design Report. This Interim Design Report will be reviewed by MWA and the prospective funding agency(es), to determine the final scope of the detailed engineering designs, and contract packaging.

The detailed engineering design (subject to the approval of the Interim Design Report, Task No. 6) is expected to include:

- No. 7 Preparation of final layout design for Stage 3 source works (wellfield), including all survey work, for external and internal access roads, siting of wells, collector pipes, collector tank, pumping station, power generating plant and power distribution lines, workshops, stores, offices and amenity buildings.
- No. 8 As task No. 7 but for the required additional works at Garas Bintow wellfield (stage 2B).

- No. 9 Detailed design and cost estimate for all access roads at stage 3 wellfield and for access roads extension at Garas Bintow wellfield (including access to observation wells).
- No. 10 Detailed design and cost estimate of production and observation wells, both for stage 3 extension and for supplementary works at Garas Bintow wellfield.
- No. 11 Detailed design and cost estimate for collector pipes both for Stage 3 extension and for supplementary works at Garas Bintow wellfield.
- No. 12 Detailed (architectural and civil) engineering design and cost estimate for all buildings at Stage 3 wellfield and supplementary extension at Garas Bintow wellfield, as required.
- No. 13 Detailed engineering design and cost estimate for the collector tank at Stage 3 wellfield.
- No. 14 Detailed engineering design (electrical/mechanical plant and equipment) and cost estimate for the power generating plant, power distribution network, switchyard, control and instrumentation equipment, and pumping plant and equipment, for Stage 3 wellfield and for the supplementary works at Garas Bintow wellfield.
- No. 15 Detailed engineering design including all survey work and cost estimate for the transmission main(s) from Stage 3 wellfield to the Yaqshid reservoir, and from there to the Mogadishu system and system reservoir, including modification in the existing pipeworks, as necessary.
- No. 16 Detailed engineering designs (civil and electrical/mechanical) and cost estimate for booster pumping stations, as and where necessary.
- No. 17 Detailed engineering design and cost estimate for the distribution system extension and rehabilitation works in Mogadishu.
- No. 18 Detailed engineering design and cost estimate for the distribution system reservoirs (including pipework) and rehabilitation of existing reservoirs, as necessary.
- No. 19 Detailed design and cost estimate of a proposed radio-telecommunication system between the existing and new wellfield and MWA's H.Q. including mobile units at MWA's service centers.
- No. 20 Preparation of bid documents for the contract packages as agreed after the review of the interim Design Report (Table No.6). The bid documents will be prepared in accordance with the procurement guidelines of the prospective funding agencies.

In addition to Tasks No. 1 through 19 the consultants shall prepare proposals and provide for the following services;

- No. 21 Review the availability of existing maps covering Mogadishu's built-up areas and areas (planned and unplanned) of future urban development and prepare proposals and cost estimate for additional (aerial) mapping, as required.
- No. 22 MWA currently has about 45,000 service connections. The listing of these connections are incomplete and it is MWA's intention to prepare an updated and full recording (listing) of its service connections. The consultants shall prepare proposals to carry out a field survey in cooperation with MWA's staff for the preparation of the service connections' records. This task should be carried out as early as possible under this T.O.R.
- No. 23 The consultants shall review the Water Quality Study (prepared under the Stage 2 extension project) and prepare proposals for additional laboratory and/or pilot scale study(ies) and experiment(s) for the treatment of the water produced at Afgoi wellfield in order to reduce the extensive scaling in the pipes and at the bulk, district and consumer meters. The proposals shall also include recommendation for a Water Quality Laboratory for MWA and prepare detailed designs for this facility (including building, furnishing and laboratory equipment), as and when agreed with MWA.
- No. 24 The consultants shall undertake an analysis of the environmental impact of the proposed project and recommend countermeasures therefore.
- No. 25 The consultants shall carry out detailed economic analysis of the proposed project with the object of identifying the least cost solution. In this analysis the consultants shall consider the effects of the following: staged construction, optimizing transmission main(s) sizes, sensitivity of the proposed project to prevailing interest rates and the use of shadow pricing, present value analysis of capital and operating costs discounted at relevant rates; the marginal cost of water and affordability and social and health benefits.
- No. 26 The consultants shall provide a complete description of sources of cost data, assumptions made and calculation procedures used in the preparation of cost estimates. Cost estimates will cover the capital costs, estimates of the management, operation and maintenance costs of the water supply system, by years, at constant and current prices. The estimates shall cover a period of ten years beginning with the year when construction is expected to begin.
- No. 27 The consultants shall prepare a financial analysis to assess viability of the proposed project. The analysis shall include

preparation of standard balance sheets and income and cost flow statements over a ten years period (see also No. 26). It shall incorporate fixed assets and provide alternative financing plans with proposed terms. The analysis shall be used by the consultants to estimate the related tariff levels to achieve various degrees of cost recovery from the beneficiaries of the project.

IV. Reporting Requirements

7. The reporting requirements by the consultants shall include, but not necessarily limited to:

- (a) Preliminary Design Report (as described under Task No. 6);
- (b) Quarterly Progress Reports;
- (c) Draft Final Design Report based on the detailed designs. The report shall include the economic and financial analyses and all necessary engineering computations;
- (d) Final Consolidated Report, to be submitted within two months of receipt of the client's detailed comments on the Draft Final Design Report.

SOMALIA

Infrastructure Rehabilitation Project

INSTITUTIONAL STRENGTHENING OF MOGADISHU WATER AGENCY

Outline Terms of Reference

I. Background

1. The Mogadishu Water Agency (MWA) was established in 1978 as an autonomous body to supply water to the capital city of Somalia. The water supply feeding the city is derived from two active wellfields located within a 20 km radius of the center of town. It has become evident in recent years that the volume of water supplied to consumers is inadequate to meet the effective demand. The shortfall in supply is caused in part by physical water sources which are no longer adequate to meet the growing demand of the city. Expansion of the water supply system is therefore being undertaken with the assistance of the Italian Government. The problem is also caused by inefficiencies in the running of the water agency itself. Recent studies of the functioning of MWA have revealed a number of areas where improvements in performance are urgently required. The critical areas of need include management, operations, maintenance and accounting.

2. Therefore, it is proposed that Mogadishu Water Agency (MWA) be institutionally strengthened through a process of technical and operational assistance and training of staff. Professional services for this task are sought from an experienced water authority that would operate under the terms of a twinning arrangement for an initial period of four years. The services of the twinning agency may be supplemented by those of a consulting firm working as a sub-contractor.

II. OBJECTIVES

3. The purpose of the technical assistance services is to assist MWA by making improvements in the utility's management, technical and financial functions - in the short-term with the provision of staff support, and in the longer term with system and managerial improvements and reorganization, staff development and training.

III. SCOPE OF TECHNICAL ASSISTANCE SERVICES

6. To assist MWA, the agency would provide resident advisory staff who would work in conjunction with counterpart staff for up to three years in the following key areas:

- a) customer billing and collection;
- b) management;
- c) procurement and inventory control;
- d) financial accounting leading to better financial planning;
- e) auditing;
- f) manpower training;
- g) maintenance of mechanical and electrical equipment; and
- h) rehabilitation and rationalization of the use of available headquarter and district office space, furniture and equipment.

7. On-the-job and formal training of staff through lectures/training courses/seminars in Somalia will be supplemented by short-term assignments within the TA supplier's organization and/or training courses/professional visits abroad.

8. The services will be performed over a period of about four years, commencing January 1991. The technical assistance staff to be provided will work with the MWA staff as advisers, and would consist of:

- a) Management Advisor (Team Leader)
- b) Accountant
- c) Management Trainer
- d) Billings & Collections Specialist
- e) Mechanical Engineer
- f) Electrical Engineer

A job description for each of the above positions is shown in the Attachment.

IV. FACILITIES TO BE PROVIDED BY GOVERNMENT

9. The Government shall provide the technical assistance staff with all available information and reports for their services and will assign suitable counterparts to work with them. It shall also provide them with necessary office space, furniture, equipment and office supplies, as well as secretarial and clerical services. They shall, however, make their own arrangements for living accomodation and local transportation.

V. REPORTS

10. During the course of the services the agency shall submit to MWA quarterly reports within 15 days of the end of the quarter giving a statement of the work performed and its results, and a detailed account of project progress including a statement and supporting tables illustrating the project expenditures to date and cost of the project to complete; a reconciliation of both progress and expenditure of the services and a schedule of the work to be performed during the remainder of the period of the services; the findings and advice for improvement, the latest conclusions and recommendations; the personnel employed during the quarter; equipment, used, installed or required.

SOMALIA

Infrastructure Rehabilitation Project

INSTITUTIONAL STRENGTHENING OF MOGADISHU WATER AGENCY

Individual Job Descriptions

Management Advisor (Team leader)

Qualifications:

1. The management advisor should be a qualified professional with 10-15 years of experience, of which at least 5 years have been with a public water authority. He/she should have suitable experience in managing the affairs of a parastatal organization providing a service to a population of at least 1,000,000 people. Experience in a developing country is required as is fluency in written and spoken English and the ability to communicate ideas easily.

Duties:

2. The management advisor will report to the General Manager of MWA and will assist and advise him on all aspects of the management of the Agency including but not limited to:

- (a) reviewing the duties and responsibilities of MWA management and staff, and recommending and where agreed, implementing during the project period reorganization, management systems and procedures, delegation and clarification of authority and training schemes.
- (b) reviewing the organizational structure of MWA (including statutes, role and composition/authority of its Board) as well as linkages among Government, MWA management and Board, evaluate and, where agreed, implement restructuring option.
- (c) reviewing and revising where agreed MWA corporate procedures and statutory instruments, and advising the General Manager and Government on the need for and the format and objectives of a Statutory Board of Governors.
- (d) formulating and implementing a set of institutional, operational and investment measures to strengthen the reliability and efficiency of MWA's financial management,

- (e) assisting MWA in evaluating, selecting, procuring and setting to work the most appropriate hardware/software option for the various accounting, billing collection, planning and MIS functions of the utility, and assisting MWA in securing necessary technical service and support contracts from hardware and software equipment suppliers.
- (f) reviewing existing systems and procedures for forecasting capital requirements, investment plans, and cash; recommending new hardware/software required to strengthen financial analysis capabilities; implementing new system, including training.
- (g) reviewing financial management information needs and reporting requirements; developing financial MIS; outlining performance indicators to monitor financial performance; implementing MIS, including necessary training.
- (h) analyzing annual financial requirements including tariff adjustments to meet stipulated performance parameters.

Accountant

Qualifications:

3. The accountant should be a qualified professional accountant with 5-10 years of experience of which at least 5 years have been with a public water authority. He/she should have suitable experience in managing the accounts of a parastatal organization providing a service to a population of at least 1,000,000 people. Fluency in written and spoken English and the ability to communicate ideas easily are also required.

Duties:

4. The accountant will report to the Director of Finance and Administration and advise and assist in all aspects of accounting and financial control, including but not limited to:

- (a) plant accounting; surveying MWA assets and inventories, making necessary write-downs and write-offs existing assets register; deriving monetary value of assets for financial statements; reviewing existing plant accounting practices;
- (b) inventory management and control; reviewing existing commercial procurement procedures; recommending and implementing new procedures to simplify and accelerate purchase approval procedure; reviewing existing inventory

control and accounting procedures; recommending, implementing new procedures to ensure more accurate accounting and evaluation for maintenance planning and financial statement preparation;

- (c) financial accounting, financial statement preparation and financial planning and forecasting; reviewing appropriate revaluation method for fixed assets in financial statements; recommending procedures and hardware/software requirements to develop computerized register for financial statement preparation and capital investment planning; and implementing new system, including necessary training; revaluing fixed assets;
- (d) data procesing; reviewing data processing requirements, including the introduction of appropriate hardware and software systems which it is intended also be financed under the Project.
- (e) reviewing existing procedures and account classifications used in financial accounting system and financial statement preparation; recommend new procedure classification, and hardware/software requirements needed to provide thorough and timely financial statements; implementing new system including necessary training; preparing audited and consolidated financial statement.
- (f) Reviewing existing internal auditing procedures, recommending and implementing new practices to strengthen internal audit and financial control functions.

Management Trainer

Qualificiations:

5. The management trainer should be a qualified professional human resource development specialist with 5-10 years of experience, of which at least 5 years have been with a public utility or comparable organization in the private sector. He/she should have suitable experience in planning, designing and implementing participatory, cross-cultural adult training programs. Fluency in written and spoken English and the ability to communicate ideas easily are also required.

Duties:

6. The management trainer will report to the Director of Planning, Training and Statistics and will assist on all aspects of the Departments work including but not limited to the following:

- (a) conducting manpower needs assessment for implementation of engineering operations and maintenance and financial management reforms; identifying new positions and writing job descriptions; assisting in local hiring.
- (b) reviewing training and qualifications of existing managerial, financial management and accounting and engineering staff; determining training requirements necessary for implementation of the reforms; developing and organizing training courses; developing training materials as necessary to support training program.
- (c) reviewing and evaluating existing technical, engineering, managerial and financial training programs available in Somalia, the region and overseas which would be appropriate for MWA training and arranging for selected MWA staff to participate in the chosen program.
- (d) evaluating the various staff of MWA and possible local recruits, proposing the most suitable to act as counterparts to the expert staff, evaluating their progress during training and the over the project period, and supporting them with advice during the project period.

Billings and Collection Specialist

Qualifications:

7. The billings and collection should be a qualified professional accountant with 5-10 years of experience, of which at least 5 years have been with a public utility. He/she should have suitable experience in the commercial operations of a utility serving a population of at least 1,000,000 people. Fluency in written and spoken English and the ability to communicate ideas easily are also required.

Duties:

8. The billings and collection specialist will report to the Director of Finance and Administration and will assist the commercial manager with all aspects of water billing and revenue collection including but not limited to the following:

- (a) reviewing existing billing procedures; reviewing level of billed connections based on field mapping of actual connections carried out under the terms of a separate consultancy (See Annex 9); recommending and implementing new procedures to ensure complete billing of all customers; recommending new procedures and new hardware/software equipment requirements to improve reliability of billing data and expedite billing process; implementing new system including necessary training.
- (b) recommending new procedures designed to expedite collection time and reduce level of arrears for both private and public sector customers; implementing new procedures, including necessary training;

Mechanical Engineer

Qualifications:

9. The mechanical engineer should be a qualified professional engineer with 10-15 years of experience, of which at least 5 years have been with a public water authority serving a population of at least 1,000,000 people. He/she should have suitable experience in managing the operation and maintenance of mechanical systems. Experience in a developing country is required as is fluency in written and spoken English and the ability to communicate ideas easily.

Duties:

10. The mechanical engineer will report to the Director of the Technical Operations Department and will advise and assist with all aspects of the maintenance and operations of mechanical equipment including but not limited to the following:

- (a) day-to-day operation of stationary diesel engines, pumps, construction machinery and vehicles;
- (b) organizing central and field mechanical workshops for maintenance purposes;
- (c) Preparing and introducing a schedule of preventive maintenance for all mechanical equipment, machinery and vehicles;
- (d) assist management in preparation of list of spare parts, organizing central and field stores for spare parts and tools;
- (e) review and complete operational manuals and instructions, as necessary;
- (f) organize/provide training for personnel at all levels in operation maintenance, safety regulations and management of mechanical equipment;
- (g) review, in cooperation with the management, the fuel consumption records and advice the management in introduction of adequate control systems.

Electrical Engineer

Qualifications:

11. The electrical engineer should be a qualified professional engineer with 10-15 years of experience, of which at least 5 years have been with a public water authority serving a population of at least 1,000,000 people. He/she should have suitable experience in managing the operation and maintenance of electrical systems. Experience in a developing country is required as is fluency in written and spoken English and the ability to communicate ideas easily.

Duties:

12. The electrical engineer will report to the Director of the

Technical Operations Department and will advise and assist with all aspects of the maintenance and operations of electrical equipment including but not limited to the following:

- (a) day-to-day operation of generators, electric motors and instrumentation;
- (b) organizing central and field electrical workshops for maintenance purposes;
- (c) preparing and introducing a schedule of preventive maintenance for electrical equipment and instrumentation;
- (d) assist management in preparation of a list of spare parts, organizing central and field stores for spare parts and tools;
- (e) review and complete operational manuals and instructions, as necessary;
- (f) organize/provide training for personnel at all levels in operation, maintenance, safety regulations and management of electrical equipment;
- (g) review, in cooperation with the management, consumption records and advise the management in introducing adequate control systems.

SOMALIA

Infrastructure Rehabilitation Project

INSTITUTIONAL STRENGTHENING OF THE TELECOMMUNICATIONS SECTOR

Terms of Reference for Consultants Services

A. Policy Framework Analysis

Objectives: To work with senior staff of the Ministry of Posts and Telecommunications (MPT) to review the present policy environment, analyze options and develop a draft policy framework for the telecommunications sector in Somalia.

Scope of Work: The policy framework will cover the following areas:

- (a) the aims of the Government for the telecommunications sector, including in particular the provision of services in remote and rural areas;
- (b) the methods of regulation of the provision of telecommunications services;
- (c) financial objectives and resource mobilization strategies;
- (d) pricing policies and monitoring of standards of performance;
- (e) the adoption of institutional structures to the effective achievement of sector goals;
- (f) development of manpower and training policies.

Requirements: The policy analysis will be undertaken by a qualified telecommunications economist with experience of the management of change in the sector and of working overseas. He or she will be expected to work closely with counterpart staff in the Ministry of Posts and Telecommunications.

B. Tariff Study

Objectives: To develop principles and procedures to guide formulation and implementation of appropriate tariff levels and structures, apply these to existing tariffs and recommend changes as appropriate. Review and assist MPT to optimize international settlement and transit arrangements.

Scope of Work: The task will cover the following areas:

- (a) description and analysis of the present tariff structure, its evolution and changes in the recent past;
- (b) data collection on the economic and financial costs and benefits of the different telecommunications services offered, including full analysis of subscriber characteristics, patterns and trends of usage;
- (c) tariff formulation on the basis of available data and selected methodology;
- (d) development of a computer model for assessing the financial impact, over a five and twenty year period, of the tariff recommendations made, with assessment in particular of possible cross subsidies, foreign exchange implications and the financial viability of any proposed capital investment;
- (e) determine appropriate pricing methodologies to adopt and propose service price levels for the ensuing period;
- (f) identify further data collection necessary to allow MPT to continue to refine the formulations proposed and identify how this might be done;
- (g) determine an appropriate tariff review process and procedure;
- (h) analyze the existing international settlement and transit arrangements and submit a report indicating the effect these are having on traffic flows and how they may be modified to the overall economic and financial advantage of MPT;
- (i) identify further data collection necessary to allow MPT to continue to monitor the efficiency of their international settlement and transit arrangements and identify how this might be done.

Requirements: The tariff study will be undertaken by a qualified economist and a qualified financial analyst each experienced in telecommunications tariff studies and of working overseas. The consultants will be expected to work closely with counterpart staff in the MPT in order to provide for the transfer of knowledge in tariff formulation and setting.

C. Financial Statements

Objectives: To develop principles and working methodologies for the preparation of annual accrual accounting financial statements and to assist with the preparation of accrual accounting financial statements at an agreed date that can be used as the base date from which new accounting systems could be implemented.

Scope of Work: The task will cover the following areas:

- (a) review the existing accounting records and transaction recording systems and procedures and determine the extent to which they can be relied upon to prepare financial statements showing a true and fair view;
- (b) in any areas where it is determined that the records cannot be relied upon to achieve the above, assist MPT to prepare the financial statements using alternative means for determining profit and loss and balance sheet items;
- (c) in areas where it is considered that accounting policies have not been fully or appropriately established propose such policies, taking account of both national and international statements of accounting practice;
- (d) training of a selected number of MPT's accounting staff in the accrual accounting concepts and principles, and working methodologies of the preparation of financial statements.

Requirements: The assistance with the preparation of the Financial Statements of MPT for the chosen period will be undertaken by qualified accountants experienced in telecommunications accounting and of working overseas. The consultants will be expected to work closely with counterpart staff in the MPT in order to provide for the transfer of knowledge and it would be expected that some permanent reference material would be prepared by the consultant for future use by MPT in the preparation of Financial Statements.

D. Computerization of Commercialized Accounting and Billing Systems

Objectives: To establish computerized commercial accounting and billing systems which will allow for the preparation of regular accounting and management information reports and as a consequence lead to an improvement in operational efficiency and billing and collection efficiency.

Scope of Work: The task will cover the following areas:

(a) Sction I - Appraisal of Existing Systems

(i) liaise with the consultants preparing the financial statements in assessing the existence, accuracy, efficiency, availability and applicability of accounting information within the Corporation;

(ii) identify MPT's accounting and financial management information data flows and channels of communication, and assess their effectiveness in support MPT's management to meet MPT's current objectives and plans for future development;

(iii) examine and report on the present management structure and organizational responsibilities;

(iv) assess the resource availability and constraints within MPT which would impact on the successful installation of a commercial and computerized accounting system;

(v) report on the shortcomings of the existing systems and identify major areas of weakness;

(b) Section II - Definition of Policy

(i) advise and collaborate with MPT management on the formulation of a policy document which specifies the Corporation's overall objectives in respect of commercialization and computerization;

(ii) establish a corporate strategy for the introduction of computer based management information systems which will include, and give priority to, computerized billing and accounting;

(iii) prepare a draft organization structure to accommodate the management and operation of the computer system;

(c) Section III - Specification of Requirements

(i) define and specify the information needs and reporting requirements at the various managerial and operational levels within MPT. These requirements should relate specifically to the accounting and billing systems giving particular attention to billing efficiency reporting and collection procedures, while recognizing future developments of the computerized management information system;

(ii) specify the output formats for management reporting and control, together with procedures for reviewing and acting on such reports;

(iii) specify data input requirements for information reports, and define the procedures for the processing and control of transaction data, assets and liabilities;

(iv) propose document formats for accounting transaction recording including customer bills;

(v) prepare a technical specification for a total hardware and software solution to transaction and asset and liability recording, control and reporting, recognizing the need for full system support;

(vi) specify manpower resources which will be required to implement the program and to ensure its operational efficiency after installation;

(vii) identify and report on training needs for system users and computer staff;

(viii) prepare a five year budget for the acquisition, installation and operation of the total computerized accounting and billing solution, including all costs of hardware, software and system support, including local manpower and other operational expenses.

(d) Section IV - Implementation

(i) prepare a detailed implementation plan showing activities, time scales and MPT and consultant resources required;

(ii) organize MPT's accounting staff into appropriate work groups for undertaking the necessary tasks connecting with the implementation of the computerized systems;

(iii) supervise the transfer of masterfile data into the system;

- (iv) specify program modifications to the format in which masterfile data is stored and agree changes to be made with management;
- (v) carry out agreed masterfile program modifications;
- (vi) organize and supervise the input of transaction data for a preliminary period until the procedures are well understood and operated by MPT staff;
- (vii) specify the program modifications required to the transaction recording systems and agree changes to be made with management;
- (viii) carry out agreed transaction recording program modifications;
- (ix) program the computer to produce the agreed management reports;
- (x) train MPT's management in the use of the management reports produced and the use of the computer system to obtain additional information.

Requirements: The above tasks require the deployment of qualified accountants, information technology and management information consultants experienced in the telecommunications industry and of working overseas. The consultants will be expected to work closely with counterpart staff in the implementation stage in order to provide for the transfer of knowledge and it would be expected that a permanent systems reference manual will be prepared by the consultant for future use by MPT.

The overall intention is that at the end of the assignment MPT will be in a position to continue to develop their management information systems with out the need for further external assistance.

E. Strategic Planning

Objectives: To prepare a long-term and mid-term development plans for the Telecommunications Sector including the establishment of a Strategic Planning Unit in MPT.

Scope of Work:

- (a) based on the data available at micro and macro level;
 - (i) analyze the procedures and principles used in forecasting demand;
 - (ii) establish appropriate methods to be employed for future forecasts;

- (iii) finalize input data for the determination of plans; and
- (iv) assist in the establishment of a Demand Forecasting Unit in MPT at appropriate levels.
- (b) undertake technical and operational planning to meet future demand in different aspects of: (i) technology development; (ii) upgrading of existing facilities; (iii) introduction of new facilities; (iv) extension of new areas; (v) determination of human resources needs; all these leading to establishment of estimates of telecommunications sector growth at macro level in terms of services, facilities, distribution, employment, investments, etc.;
- (c) using appropriate financial staff, undertake financial planning of the development plans, including revenue planning, to assess the long term viability of telecommunications sector in its different service segments;
- (d) develop comparative alternatives for the future development of the different services in different regions and assess their economic viability;
- (e) assist in establishment of a planning unit to (i) undertake strategic and corporate planning functions; (ii) define broader policies, strategies and priorities of the telecommunications sector; (iii) undertake special studies in the economic development of the sector; and (iv) adopt planning techniques to suit local environment.

Requirements: The Strategic planning will be undertaken by a qualified telecommunications engineer with appropriate experience. He will be expected to work closely with the Director of Planning (to whom he will report) and counterpart staff in MPT.

F. Training

Objectives: To improve the standards and methods of training in telecommunications systems engineering and thereby improve the quality of engineering staff in MPT.

Scope of Work: The training program will evolve throughout the assignment, but the task includes the following areas:

- (a) determine the curricula for the following subjects:

- (i) digital technology. This will include training in digital design, integrated circuits, computer techniques and digital communication systems;
- (ii) transmission systems. This will include training on local line networks, signal transmission, telephony and radio communications and optical and fiber optic communications;
- (iii) power systems. This will include training in power distribution and control, switching systems and single and three-phase systems;
- (b) establish a program structure and training discipline for local instructors which will enable them to continue effective training after the assignment is complete;
- (c) actively participate in student training programs, with the cooperation and involvement of local instructors as necessary;
- (d) undertake a field analysis of systems and equipment in use in training for each of the three disciplines noted in point (a). Identify equipment and other resource needs for both the tasks of this assignment and for the future;
- (e) advise and assist the Director of Planning on preparing training planning documents and on an appropriate strategy for the implementation of those plans.
- (f) prepare an engineering training manual for use within the Corporation. This task to be done in liaison with the economist assigned to the Policy Framework Analysis.

Requirements: The training program will be undertaken by three qualified telecommunications engineers with experience of designing and implementing training programs in developing countries. These training specialists will work closely with training instructors and senior planning staff in MPT.

SOMALIA

INFRASTRUCTURE REHABILITATION PROJECT

Capital Expenditures
(US\$ million)

	CY1990			CY1991			CY1992			CY1993			CY1994			TOTALS			
	Local	For	Total	Local	For	Total	Local	For	Total	Local	For	Total	Local	For	Total	Local	For	Total	
A ROUTINE ROAD MAINTENANCE																			
1. Procurement of road maintenance and workshop equipment, tools and training aids	-	-	-	0.33	3.02	3.35	-	-	-	-	-	-	-	-	-	0.33	3.02	3.35	
(a) road maintenance equipment incl spares	-	-	-	0.05	0.45	0.50	-	-	-	-	-	-	-	-	-	0.05	0.45	0.50	
(b) workshop equipment, tools, training aids	-	-	-	0.18	0.27	0.45	-	-	-	-	-	-	-	-	-	0.18	0.27	0.45	
2. Improvement/construction of DDM workshops	-	-	-	0.05	0.45	0.50	-	-	-	-	-	-	-	-	-	0.05	0.45	0.50	
3. Supply of road maintenance materials	-	-	-	0.26	1.04	1.30	0.24	0.96	1.20	0.20	0.80	1.00	-	-	-	0.70	2.80	3.50	
4. Technical assistance and training for DDM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Subtotal A	-	-	-	0.87	5.23	6.10	0.24	0.96	1.20	0.20	0.80	1.00	0.00	0.00	0.00	1.31	6.99	8.30	
B WATER DEVELOPMENT																			
1. Institutional strengthening of MWA	-	-	-	0.08	0.67	0.75	0.08	0.67	0.75	0.08	0.67	0.75	0.02	0.29	0.31	0.26	2.30	2.56	
2. Engineering design of Stage III of Mogadishu Water Supply	-	-	-	0.13	1.80	1.93	0.16	0.81	0.97	-	-	-	-	-	-	0.29	2.61	2.90	
Subtotal B	-	-	-	0.21	2.47	2.68	0.24	1.48	1.72	0.08	0.67	0.75	0.02	0.29	0.31	0.55	4.91	5.46	
C TELECOMMUNICATIONS																			
1. Institutional strengthening of MPT	-	-	-	0.12	1.12	1.24	0.13	1.12	1.25	-	-	-	-	-	-	0.25	2.24	2.49	
Subtotal C	-	-	-	0.12	1.12	1.24	0.13	1.12	1.25	-	-	-	-	-	-	0.25	2.24	2.49	
D PROJECT PREPARATION 1/																			
1. Project preparation	0.07	1.03	1.10	-	-	-	-	-	-	-	-	-	-	-	-	0.07	1.03	1.10	
2. Detailed engineering of Infrastructure II	0.03	0.24	0.27	-	-	-	-	-	-	-	-	-	-	-	-	0.03	0.24	0.27	
Subtotal D	0.10	1.27	1.37	-	-	-	-	-	-	-	-	-	-	-	-	0.10	1.27	1.37	
TOTAL BASE COSTS	0.10	1.27	1.37	1.20	8.82	10.02	0.61	3.56	4.17	0.28	1.47	1.75	0.02	0.29	0.31	2.21	15.41	17.62	
E CONTINGENCIES																			
1. Physical 10% on items A, B, and C	-	-	-	0.12	0.88	1.00	0.06	0.36	0.42	0.03	0.15	0.18	0.00	0.03	0.03	0.21	1.41	1.63	
2. Price 2/	0.00	0.00	0.00	0.09	0.85	0.74	0.08	0.45	0.52	0.06	0.30	0.36	0.00	0.07	0.07	0.23	1.46	1.69	
Subtotal E	0.00	0.00	0.00	0.21	1.63	1.74	0.14	0.80	0.94	0.09	0.45	0.54	0.01	0.10	0.10	0.44	2.88	3.32	
TOTAL CAPITAL EXPENDITURES	0.10	1.27	1.37	1.41	10.35	11.76	0.75	4.36	5.11	0.37	1.92	2.28	0.03	0.39	0.41	2.65	18.29	20.94	

1/ PPF P481-S0

2/ Expected Price Increases (%) on Categories A, B, and C

	1990	1991	1992	1993	1994
Local and Foreign	4.4	4.4	4.4	4.4	4.4

NB: International rate has been used for local costs on the assumption that the difference between domestic and international price inflation will be offset by adjustments in foreign exchange rate

SOMALIA
INFRASTRUCTURE REHABILITATION PROJECT
 Recurrent Expenditures
 (US\$ million)

	CY1990			CY1991			CY1992			CY1993			CY1994			TOTALS			
	Local	For	Total																
A HIGHWAY MAINTENANCE / REHAB																			
1. DGM salaries and wages to local staff	-	-	-	0.10	-	0.10	0.10	-	0.10	0.10	-	0.10	0.10	-	0.10	0.40	-	0.40	
2. Materials	-	-	-	0.12	-	0.12	0.12	-	0.12	0.12	-	0.12	0.12	-	0.12	0.48	-	0.48	
3. Overheads				0.08	-	0.08	0.08	-	0.08	0.08	-	0.08	0.08	-	0.08	0.32	-	0.32	
Subtotal A	-	-	-	0.30	-	0.30	0.30	-	0.30	0.30	-	0.30	0.30	-	0.30	1.20	-	1.20	
B WATER DEVELOPMENT																			
1. MMA salaries and wages top-up for local staff	0.18	-	0.18	0.18	-	0.18	0.18	-	0.18	0.18	-	0.18	0.18	-	0.18	0.65	-	0.65	
Subtotal B	0.18	-	0.18	0.18	-	0.18	0.18	-	0.18	0.18	-	0.18	0.18	-	0.18	0.65	-	0.65	
TOTAL BASE COSTS	0.18	-	0.18	0.48	-	0.48	0.48	-	0.48	0.48	-	0.48	0.48	-	0.48	1.85	-	1.85	
C CONTINGENCIES																			
1. Physical 10% on items A and B	0.01	-	0.01	0.04	-	0.04	0.04	-	0.04	0.04	-	0.04	0.04	-	0.04	0.19	-	0.19	
2. Price 1/ on items A and B	0.00	-	0.00	0.08	-	0.08	0.06	-	0.06	0.09	-	0.09	0.10	-	0.10	0.28	-	0.28	
Subtotal C	0.02	-	0.02	0.07	-	0.07	0.10	-	0.10	0.13	-	0.13	0.14	-	0.14	0.46	-	0.46	
TOTAL RECURRENT EXPENDITURES	0.18	-	0.18	0.50	-	0.50	0.53	-	0.53	0.56	-	0.56	0.57	-	0.57	2.31	-	2.31	

1/ Expected Price Increases (X)

	1990	1991	1992	1993	1994
Local and Foreign	4.4	4.4	4.4	4.4	4.4

NB: International rate has been used for local costs on the assumption that the difference between domestic and international price inflation will be offset by adjustments in foreign exchange rate

SOMALIA
Infrastructure Rehabilitation Project
Project Implementation Schedule

MAIN ACTIVITIES	1990				1991				1992				1993				1994																		
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
Board Presentation				X																															
Sign Credit Agreement				X																															
Credit Effectiveness								X																											
Road Maintenance Equipment																																			
Prepare Bidding Documents																																			
Bidding																																			
Bid Evaluation and Award																																			
Delivery																																			
Workshop Equipment, Tools and Training Aids																																			
Assess Requirements																																			
Call Quotations																																			
Evaluation and Award																																			
Delivery																																			
Improvement/Construction of Workshops																																			
Prepare Design and Bidding Documents																																			
Bidding																																			
Evaluation and Award																																			
Execution																																			
Supply of Materials																																			
Assess Requirements																																			
Call Quotations																																			
Evaluation and Award																																			
Delivery																																			
Technical Assistance																																			
Identify TA Supplier																																			
Negotiate Contract																																			
Execution																																			
Execution of Routine Road Maintenance																																			

	1990	1991	1992	1993	1994
MAIN ACTIVITIES	J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D				

II. WATER SUPPLY

Technical Assistance
 Identify TA Supplier
 Negotiate Contract
 Execution



Stage 3 Engineering Design
 Call Proposals
 Selection and Award
 Execution



III. TELECOMMUNICATIONS

Technical Assistance
 Call Proposals
 Selection and Award
 Execution



SOMALIA

Infrastructure Rehabilitation Project

Project Progress Reporting Requirements and Supervision Plan

I. Progress Reports shall be submitted quarterly in triplicate no later than one calendar month after the end of the quarter. The first report should cover the quarter ending December 1990.

II. The Report should contain the following information:

1. General Information

(a) Physical progress accomplished during the reporting period in respect of:

(i) Road Improvement/Strengthening

- prequalification of contractors
- invitation to bid
- bid receipt and evaluation
- contract award
- preliminaries to mobilization
- construction progress

(ii) Procurement of Road Maintenance Equipment

- preparation of bidding documents
- invitation to bids
- bid receipt and evaluation
- contract award
- delivery of goods

(iii) Procurement of Workshop Equipment, Tools and Training Aids

- assessment of needs
- calling quotations
- receipt and evaluation of quotations
- contract award
- delivery of goods

(iv) Improvement/Construction of Workshops

- preparation of design and bidding documents
- invitation to bid
- bid receipt and evaluation
- contract award
- physical progress

(v) Procurement of Materials

- assessment of needs
- calling quotations
- receipt and evaluation of quotations
- contract award
- delivery of goods

(vi) Technical Assistance

- calling proposals
- receipt and evaluation of proposals
- contract award
- arrival date of staff
- man-months expended

(vii) Training

- preparation of training program
- selection of trainees
- course(s) held with dates
- numbers and categories of staff trained

- (b) actual or expected deviations from the project implementation schedule;
- (c) actual or expected difficulties or delays and their effects on the implementation schedule, and the steps planned or taken to overcome the difficulties and avoid further delay;
- (d) expected changes in the completion date of the project;
- (e) key personnel changes in the staffs of the DOH, consultants or contractors;
- (f) matters which may affect the cost of the project; and
- (g) any development activity likely to affect the economic viability of project components.

2. A bar-type progress chart, based on the project implementation schedule, showing the progress on each project component.

3. A financial statement set out in a tabular form showing for each project component:

- (a) original estimated cost
- (b) revised cost, if appropriate;
- (c) actual expenditure;

- (d) projected expenditure; and
- (e) actual and projected withdrawals from the Credit Account.

4. The status of compliance on each covenant of the Credit Agreement.

III. Project Supervision

1. Bank Supervision Input into Key Activities. The staff input indicated in the table below is in addition to regular supervision needs for the review of progress reports, procurement actions, correspondence, etc.

2. Borrower's Contribution to Supervision

(a) Project monitoring and coordination will be the responsibility of the separate implementing agencies. Review meetings with the participation of the various project agencies will be held normally in mid-April and mid-October of each year. The meetings will be chaired by the Director General, Ministry of National Planning and Juba Valley Development.

(b) MNPJVD will be responsible for coordinating arrangements for Bank supervision missions, and for providing information required by missions.

(c) Mission briefing meetings on arrival, and wrap-up meetings will normally be chaired by the Director General, MNPJVD and representatives of the project agencies.

Bank Supervision Input into Key Activities

Approx Dates	Activity	Skills Required	Staff Input
1-3/91	Supervision mission (Project launch workshop)	TM, HE, WE, Tel	6.0
4-5/91	Review training plans	TM, HE, WE, Tel	1.5
5-6/91	Review DOH workshop plans, mech. equip, material, tool bid docs	HE	2.0
8-9/91	Supervision mission (review annual DOH allocation, road maintenance plans, workshop bid docs)	TM, HE	4.0
1992	Supervision missions (2) (review MWA, MPT, DOH progress, incl. DOH annual plan review and mid-term review)	TM, WE, HE, Tel	8.0
1993	Supervision missions (2) (review MWA, MPT, DOH progress, incl DOH annual plan review)	TM, HE, WE, Tel	4.0
1994	Supervision missions (2) (review MWA, MPT, DOH progress, incl. DOH annual plan review)	TM, HE, WE, Tel	8.0
1995	Supervision mission (review MWA, MPT, DOH, progress, incl DOH annual plan review)	TM, HE, WE, Tel	4.0
1996	Supervision mission (review MWA, MPT, DOH progress, incl DOH annual plan review)	TM, HE, WE, Tel	4.0
1997	Supervision missions (2) (including one to prepare PCR)	TM, HE, WE, Tel	8.0

TM = Task Manager; HE = Highway Engineer; WE = Water Engineer;
Tel = Telecoms Specialist

SOMALIA

Infrastructure Rehabilitation Project

Economic Evaluation of Improvement/Strengthening of
Afgoi-Baidoa Road 1/
Net Benefit Stream (in So Sh million) (137 km)

<u>Year</u>	<u>Section I</u>	<u>Section II</u>	<u>Section III</u>
1	- 1,100.0 (1991)	- 2,748.0 (1992)	- 1,242.0 (1992)
2	- 3,310.0 (1992)	398.7	247.4
3	511.7	420.7	149.2
4	344.3	596.1	154.6
5	352.4	461.1	265.3
6	531.3	220.0	1.3
7	259.2	668.5	414.9
8	956.8	667.5	542.0
9	1,180.8	565.5	457.6
10	1,048.2	745.8	476.5
11	1,090.7	358.8	440.7
12	675.2	660.5	532.1
13	1,230.5	845.6	559.4
14	1,292.6	722.5	693.5
15	1,522.1	759.2	613.3
16	1,411.5	687.8	478.1
17	850.0	842.2	787.3
18	1,749.5	885.3	715.8
19	1,737.8	1,077.6	750.0
20	1,976.5	966.7	890.1
21	1,270.5	1,024.8	828.5
	-----	-----	-----
Base ERR:	<u>15.4%</u>	<u>18.7%</u>	<u>23.3%</u>
ERR (Inv. cost: +10%)	14.1%	17.1%	21.7%
ERR (benefits: -20%)	12.6%	15.5%	19.3%
Overall ERR for road is	17.7%		
FYR	11.6%	14.5%	19.3%
	-----	-----	-----

1/ Economic analysis was done in end 1989 price with exchange rate US\$1 = So Sh. 600. The calculations were based on consultants report on Afgoi-Baidoa Road prepared by W. Halcrow and Partners, London in June 1989.

SOMALIA
INFRASTRUCTURE REHABILITATION PROJECT
Economic Evaluation of Rehabilitation of Mogadishu-Jahwil Road
Net Benefit Stream in US\$ Million

<u>Year</u>	<u>Mogadishu- Balad (82 km)</u>	<u>Jowhar- Jalalqsi (76 km)</u>	<u>Jalalqsi- Bulo Burti (51 km)</u>	<u>Bulo Burti- Jahwil (186 km)</u>
1990				
1991	(9,786)	(15,019)	(8,899)	(27,278)
1992	1,817	1,195	1,161	2,592
1993	1,923	1,252	2,411	2,705
1994	2,035	1,312	2,522	5,602
1995	2,166	1,376	2,640	5,854
1996	2,284	1,448	2,764	6,119
1997	4,332	1,514	2,895	6,399
1998	(1,963)	(4,813)	(483)	(6,391)
1999	4,429	1,648	(514)	3,718
2000	4,701	5,545	2,714	5,970
2001	4,992	5,829	2,847	6,252
2002	5,303	6,131	2,987	6,551
2003	(503)	48	185	1,970
2004	5,990	5,516	1,535	6,088
2005	6,369	5,821	3,460	7,555
2006	6,775	6,132	3,636	7,929
2007	7,209	6,462	3,823	8,324
ERR:	24.6%	11.3%	21.4%	12.3%
Overall ERR:			14.9%	

1/ Based on economic analysis carried out by consultants Louis Berger Int., 1989

SOMALIA
INFRASTRUCTURE REHABILITATION PROJECT

Economic Evaluation of Road Maintenance Program
(in US\$ million)

<u>Year</u>	<u>Costs</u>	<u>Benefits</u>	<u>Net Benefits</u>
1991	6.5	0	- 6.50
1992	1.3	4.51	3.21
1993	1.3	4.65	3.35
1994	0.3	4.79	4.49
1995	0.3	4.93	4.63

ERR: 43.2%

Source: Economic evaluation was carried out by the World Bank in 1989 prices on the basis of data provided by DOH and consultants.

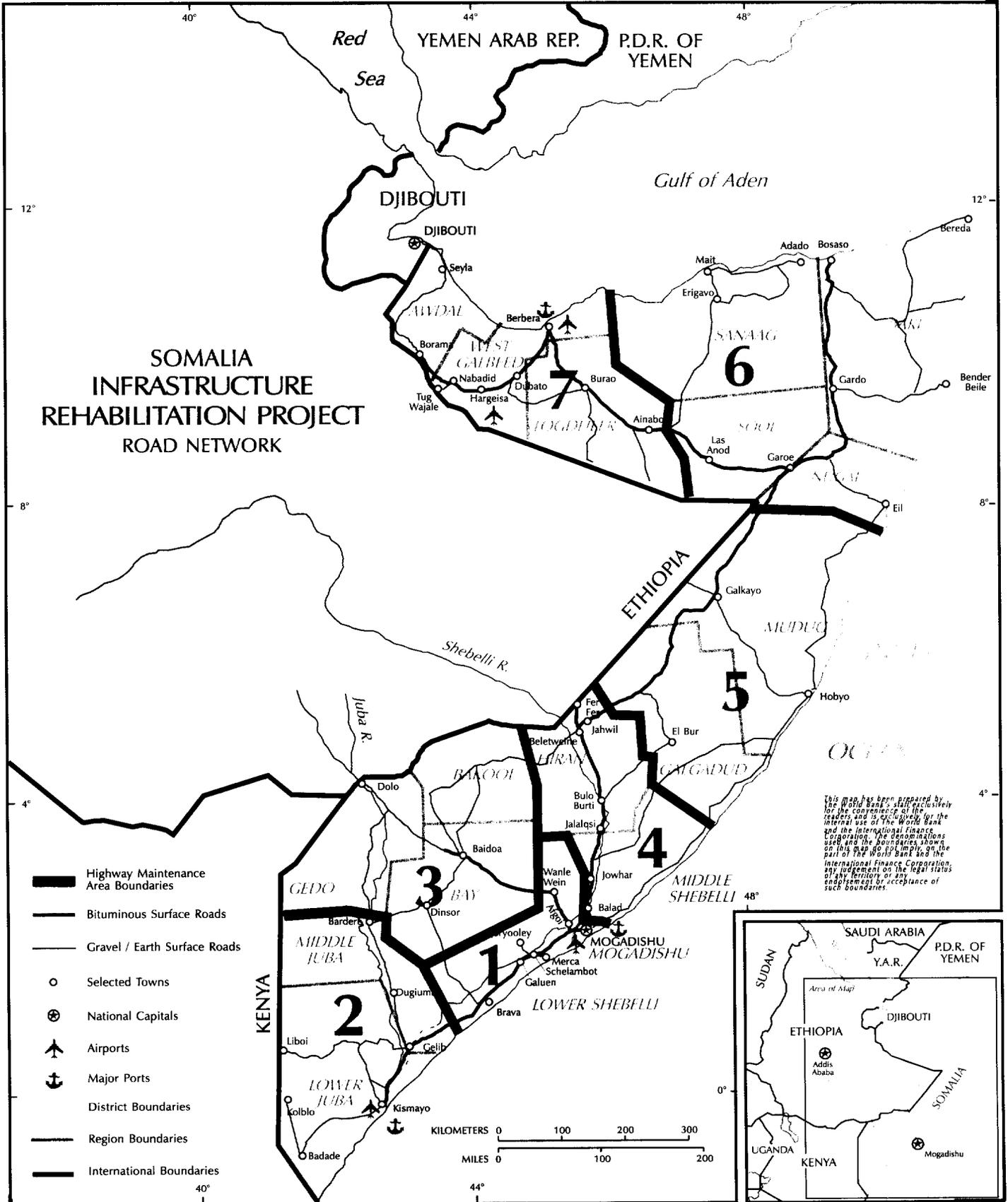
SOMALIA

Infrastructure Rehabilitation Project

Related Documents and Data Available in Project File

1. Afgoi (Wanle Wein)-Baidoa Road (Consultants Sir William Halcrow and Partners Ltd.)
 - (i) Study for Updating of Detailed Engineering, Revised Draft Final Report, Main Report (June 1989)
 - (ii) Study for Updating of Detailed Engineering, Revised Draft Final Report, Appendix 1 (June 1989)
 - (iii) Study for Updating of Detailed Engineering, Tender Documents, Volumes 1, 2 and 3 (February/June 1989)
2. Mogadishu-Galkayo Road (Consultants Louis Berger International, Inc.)
 - (i) Engineering Report (March 1989)
 - (ii) Report on Economic Evaluation (March 1989)
 - (iii) Cost Estimate (March 1989)
 - (iv) Tender Document, Volume 4
 - (v) Tender Documents, Mogadishu-Balad Section (Lot 1), Volumes 1, 2, 3 and 5 (March 1989)
 - (vi) Tender Documents, Jowhar-Jahwil Section (Lot 2), Volumes 1, 2, 3, 5 and 6 (March 1989)
 - (vii) Tender Documents, Jahwil-Galkayo Section (Lot 3), Volumes 1, 2, 3 and 5 (March 1989)
3. Road Maintenance Study (Consultants Louis Berger International, Inc.)
 - (i) Final Report (April 1985)
 - (ii) Revised Executive Summary (September 1985)
4. Routine Road Maintenance Program and Budget Estimates, 1989/93 (November 1988)
5. Report on the Development of Mechanical Workshops (March 1989)

6. Report on Mogadishu Water Agency Institutional Development Component by Price Waterhouse Associates, April 1989
7. Mogadishu Water Supply Expansion Stage 2A -- Exploration and Modelling Studies (Institute of Hydrology), June 1984
8. Second Water Resources Investigation Final Report, Sir A. Gibb & Partners, February 1985
9. Stage 28 -- Draft Report on Final Design, Sir A. Gibb & Partners, August 1985
10. Report on Petroleum Supply and Pricing Study, Volumes I and II, Reference 63571, Arthur D. Little, Mogadishu, November 1989



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