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***THE CURRENT STATUS OF TRANS-EAST-
AFRICAN-HIGHWAY (TEAH) NETWORK AND
THE MISSING LINKS***

FINAL REPORT

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ACRONYMS

| | |
|---------|--|
| ADB | African Development Bank |
| BADEA | Banque Africaine Pour le Developpement Economique en Afrique |
| OPEC | Organization of the Petroleum Exporting Countries |
| BOOT | Build-Own-Operate-Transfer |
| COMESA | Common Market for Eastern and Southern Africa |
| DANIDA | Danish International Development Agency |
| KFW | Kreditanstalt für Wiederaufbau |
| EAC | East African Community |
| ECA | Economic Commission for Africa |
| EU | European Union |
| GARBLT | General Authority for Roads, Bridges and Land Transport |
| GIS | Geographical Information System |
| IDA | International Development Association |
| MMS | Maintenance Management System |
| RCTD | Road Custom Transit Declaration |
| REC | Regional Economic Community |
| RMI | Road Management Initiative |
| SADC | Southern African Development Community |
| SATCC | Southern African Transport and Communications Commission |
| TAH | Trans African Highway |
| TEAH | Trans East African Highway |
| UNTACDA | United Nations Transport and Communications Decade for Africa |

I. BACKGROUND

According to different surveys and studies conducted recently over the economic development of Africa, lack of physical infrastructure has been among the major factors that have special significance to the impeded economic growth of African countries.

The limited performance of Africa in international trade and other development activities during the past had thus been due to low sub-regional integration mainly attributed to infrastructure constraints among other factors. Therefore, failure to expand and/or improve transport infrastructures means persisting in low economic performance as a result of limited interaction, due to inadequate transport access, between the African countries themselves and with the other parts of the globe.

The expansion of Transport facilities and infrastructure by its very nature involves a large amount of capital investment. If we consider the road infrastructure investment it is usually beyond the economic capacity of most African countries and as a result foreign loans or grants often support the need. Therefore, the separate efforts of each African country can not at all be adequate and has proved to be insufficient to overcome the lack of road infrastructure in Africa, and as a result the road density has still remained as low as 5 km per 100 square km at an average. This is very low even compared to the other developing regions, such as Latin America (12 km) and Asia (18 km)¹.

This situation has called for the joint effort of African countries, which has been proved to be essential in order to overcome the problem through the expansion of road infrastructure as well as improving the conditions of existing road network from its current poor state. Therefore, African Countries have already started to concentrate on the expansion of roads and road transport for their ultimate physical integration, both at sub-regional and regional levels, as it accounts for over 80 per cent of the freight and passenger movement of the Continent². It should also be noted that the road network expansion has not only been limited to national boundaries. Sub-regions had been inter-linked as well by intra-boundary road infrastructure depending on their geographical location, social and economic conditions. However, the rate of expansion of trans-boundary road links was very low that has resulted in the significant proportion of missing links remaining as earth roads. This has still remained as the major barrier for the physical integration of African countries.

In order to overcome this problem African countries had accorded a high priority to the Trans-African Highway theme during the previous decades. It was considered as an important instrument promoting collective self-reliant and self-sustaining development as well as an economic integration towards the aims and objectives of the African Union (AU), which is now materialised. It is thus expected that the vision would come true, which include the economic integration and the ultimate future renaissance of Africa.

The Trans-African Highway Theme has thus been part of UNTACDA I and II, and the ECA had played the major role behind its implementation together with ADB, OAU and other partners such as RECs. The long-term objective of the roads and road transport sub-sector under UNTACDA II was to abolish physical and non-physical barriers to inter-African trade and travels and to improve services in the sub-sector. The following were thus considered among the main areas of immediate concern, under the two consecutive Transport Decade Programmes (UNTACDA I and II), implemented during the last two decades regarding the regional/ sub-regional road network development in Africa.

¹ UN-ECA, UNTACDA II, SUBSECTORAL STRATEGIES, Roads and Road Transport, PROJECT RAF/89/016 PNUD/CEA, PREPARATION DE UNTACDA II, DOC/UNTACDA/STRAT/91/04

² Ibid

- Completion of the inter-country road network to link areas of production to areas of consumption at national, sub-regional, regional and international level;
- Facilitation of traffic over existing inter-country road links.

As far as the relationship with the other modes of transport in Africa is concerned, the Trans-African Highway (TAH) network was designated to compliment the different corridor transport modes, with a view of providing major links among all African Countries and hence facilitating the physical integration of the continent.

The TAH system consists of nine sub-groups of road links and feeders classified according to the sub-regions that they are serving. The Trans- East African Highway (TEAH) network is part and parcel of the whole Trans- African Highway system that constitutes the inter-regional as well as the inter-country road links that serve Northern, Eastern, and Southern sub-regions of Africa, stretching from Cairo (Egypt) to Gaborone (Botswana). The Trans- East- African Highway (TEAH) which is often referred to as the Cairo-Gaborone link is thus one of the sub- groups under the TAH network, linking the eight East African countries, namely, Egypt, Sudan, Ethiopia, Kenya, Tanzania, Zambia, Zimbabwe and Botswana. At present the total length of the main road network inter-connecting these countries is about 9,159 km, which constitutes 73 per cent paved, 21 per cent gravel and 6 per cent earth road. There is also a total length of 17,557 km feeder road network inter-connecting most of these TEAH member countries with the other nine associate member countries; namely, Libya, Djibouti, Somalia, Malawi, Mozambique, Uganda, Rwanda, Burundi and Swaziland. This total length constitutes about 73 per cent paved, 11 per cent gravel and 16 per cent earth road network. The details of these main and feeder links are presented in Annex I, and their status is described in the subsequent sections.

II. OBJECTIVE OF THE STUDY

The main objective of the study is to support the on-going efforts towards the re-vitalization of the Trans East African Highway network and to create awareness on the missing links. The completion of TEAH links is expected to play a vital role in the development of inter-government road infrastructure, and thereby enhancing the physical integration of the different sub-regions and promote better relations and economic co-operations among them. It is also aimed at the sensitization of the concerned countries towards the common goal of improving the road network for the development of the inter-regional linkage based on the findings, in order to promote economic integration within the countries themselves and between the sub-regions, as well as external regions such as Western Asia.

III. SCOPE OF WORK AND APPROACH TO THE STUDY

The major focus of this report is the review and evaluation of the implementation status of the Trans- East African Highway network and the missing links in order to assess the progress or achievements made in the whole TEAH system, since the last update in 1993.

The study has concentrated on the following major areas:

- Assessment of the impact of the implementation of the Trans-East African Highway network and the missing links;
- Identification of core problems encountered during implementation and based on the lessons learned propose solutions for future activities;
- Identification of the key actors and stakeholders involved in the implementation process;

- Identification of missing links and the level of remaining activities; and
- Propose subsequent efforts that will be required to continue with the achievement of the objectives on the development of Trans- African Highway (TAH) in general and the Trans East African Highway in particular, within the framework of upcoming road policies and strategies at national, sub-regional and regional levels.

Detailed desk study has been conducted in terms of literature review relevant to the study and collection and compilation of data that were made available from concerned countries, Regional Economic Communities (REC) and other institutions. This has been supplemented by the inputs of field missions carried out in some selected countries.

The level of implementation of the missing links under TEAH is thoroughly assessed in the report that is considered important for the formulation of upcoming policies and strategies both at country and regional level.

IV. COUNTRY REVIEW OF ROAD SECTIONS OF TEAH

This section of the report deals with the review of the specific road sections of TEAH with respect to each country under the system. The level of evaluation or review varies depending on the extent of data/information obtained from the individual countries and RECs and other institutions. The institutional set up and capacity of the national road agencies; Sub-sectoral development and conditions of their road network; future Policy and strategic issues; and to some extent the external financing structure of the road sub-sector have been reviewed for the countries whenever the data availability allows. The current status of the portion of TEAH network and the missing links in the different countries has also been evaluated depending on the level of data provided.

4.1 Institutional Structure and Capacity of Road Authorities or Departments

The organizations responsible for the development of roads in the different countries have various types of structures depending on the institutional and political set up of the different countries. In some cases they are established as an autonomous authorities while in the others as Road Departments only organised under various Ministries bearing different names depending on their functions and objectives such as Ministry of Transport, Ministry of Communication and Transport, Ministry of Works and Transport, Ministry of Environment and Transport and so on. The impact of these varying structures over the institutional set up and functions of the road organizations is indeed different. But most of them have something in common, which is the low capacity as they are not well equipped and /or under staffed and often affected by the constantly changing structures due to various reasons depending on the different conditions of the countries.

The institutional arrangement, which is considered as one of the major factors influencing the infrastructure and other development aspects of the sub-sector as well as capacity of the Road Authorities or departments, is presented below. The presentation considered only five of the member countries that have provided the required information regarding their institutional structure.

There is no as such a National Road Authority in Zambia. The organisational structure implemented at present is that of a Roads Department, which is functioning under the Ministry of Works and Supply. The Road Department in Zambia is the legal entity in charge of all Trunk, Main and District Roads development in the country. The Director of Roads heads the Road Department in Zambia. In addition to the administrative and other support staffs, the Roads Department has two major divisions; namely, Planning and Operations Divisions. Different sections and units are also

established under these Divisions that are implementing the various day to day activities of the Road Department. The Planning division takes care of the planning and Programming aspects of all trunk, main and district roads, while the Operations Division is directly responsible for the execution of Civil Works of the different road projects.

The other entity in charge of road development in Zambia is the National Roads Board (NRB), which was established in 1994 to administer the Road Fund. In addition, the board is responsible for the co-ordination and management of various donors financed programmes. Among these is the management of the ten-year Road Sector Development Programme (ROADSIP), which is presented, in section 4.3 of this report.

The Board of Directors consists of six representatives of different stakeholders representing both government and the private sector that include organisations like Chartered Institute of Transport, Zambia Association of Chambers of Commerce and Industry, Zambia National Farmers Union, Engineering Institution of Zambia, and Copper-belt University.

The existing structure of the Roads Department in Zambia is established considering a total of 141 professional Management, General Professional and other technical positions. At present the RD is equipped with 105 personnel that consist of 16 professional management staff, 8 general professionals (Executive Engineers) and 81 technical personnel. As far as the human resource development is concerned the organizational structure established is now in short of manpower with 36 vacant positions that include 7 Executive engineers (88 per cent of the required), and 29 Technical personnel (only 36%) that are required for the operational works of the RD.

In Ethiopia the existing Organisational Structure of the Ethiopian Roads Authority (ERA) functions under a board consisting of members representing different Ministries. It is managed by a General Manager at the top and three Deputy General Managers heading three distinct departments known as Engineering and Regulatory, Human Resource and Finance, and Operations under which different divisions and sub-divisions are organised. The two Divisions functioning under the Engineering and Regulatory Department are planning and programming and Contract Administration. The responsibilities of Planning and Programming Division include:

- Preparation and Recommendation of short, medium and long-term road infrastructure development plan;
- Determine programme priorities;
- Identify and propose road projects inline with sectoral long and short-term plans;
- Carryout pre-feasibility and detail feasibility studies of road projects;
- Collect, process and analyse road traffic data every year;
- Formulate and co-ordinate annual budgets and authorise budget transfer; etc.

The Contract Administration Division on the other hand undertakes the formulation and implementation activities of all contract projects. The other divisions under the Operations Department are responsible in the execution of own force projects and the operational activities of the maintenance districts.

At present the Road Authority is equipped with a total of 14,258 manpower, which consists of 6,387 permanent, 1,221 contract and 6,650 seasonal employees. Among these about 318 are professional staffs, with qualifications in Engineering, social science and related fields, while the other 13,940 employees comprise semi-skilled and unskilled personnel engaged in various operational activities. Although the Ethiopian Roads Authority seems in a better position, as it is relatively big and equipped with many technical and support staff the actual manpower need arising from the theoretical institutional structure is not still met.

There is also an office in charge of administrating the Road Fund in Ethiopia, which is collected in the form of Road User Charges and committed for the Road Maintenance works of both urban and inter urban roads.

The National highway authority is the government unit responsible for the Roads and Bridges in the Sudan. It is run by a board of directors, which is responsible for planning design and policy making. A sister company responsible for construction was recently established. Both the Authority and the company report to the Minister of Roads and Communications.

The General Authority for Roads, Bridges and Land Transport (GARBLT) of Egypt is functioning under the Ministry of Transport. It is directed by a board and managed by heads of various major sectors that include the projects research sector, roads and districts sector, engineering and traffic safety, construction and bridge execution and maintenance, investment road department, land transport sector and financial and management affairs sector. The GARBLT is equipped with a manpower of about 7000 technical and non-technical personnel. The main activities of the Authority include the following.

- A comprehensive planning for constructing roads network to cope up with the development requirement;
- Upgrading the existing road network using techniques compatible to current technological development;
- Designing and supervising main roads and highway projects;
- Preparing bid documents of contract projects both inside and outside Egypt;
- Preparing technical specifications for executing road and bridge projects;
- Conducting researches and studies concerning transport, roads bridges and other traffic fields;
- Construction of flyover bridges to avoid intersections with the railway lines and canals;
- Working as consulting firm on designs and supervisions of the execution of road and bridge projects.

Regarding institutional capacity, unlike the three countries considered above, GARBLT is not only properly equipped with qualified engineers but also uses additional expertise from regular advisory and consultancy services of renowned highway and other engineers from the Universities and other specialized institutions. This has thus provided the Authority with institutional strength, which is capable of executing new constructions and maintenance of roads effectively both within and outside Egypt.

The institutional set up of road management in Zimbabwe is the responsibility of the Department of Roads under the Ministry of Transport and Communications. The department is lead by a Director with two deputies under it, namely the Operations Deputy Director and Planning and Design Deputy Director. The operational activities of the Roads Department are the responsibilities of the Operations wing while the Planning and Design deputy director is responsible for planning, road and bridge design and other research activities. The planning Branch of the Department of Roads in Zimbabwe is responsible for the collection of information on the condition of all roads under its jurisdiction. In addition to its regular activities of co-ordinating and compiling of the various plans of works in terms of new roads construction and maintenance it also compiles annual traffic and accident statistics for Zimbabwe's Highways and other roads that fall under its jurisdiction including the TEAH links.

4.2 Current status of the Road sub-sector, infrastructure development and conditions

The present status of the Road sub-sector is presented in this section, in relation to the level of road network expansion, present physical conditions of the existing network, the level of maintenance

the different situations in the concerned countries to the TEAH links has also been assessed in this and subsequent sections of the report.

4.2.1 Current status of the road sub-sector

According to available evidences from the information obtained from member countries road transport is the most dominant mode of transport. In Zambia it is reported that Road Transport plays a critical role in the development of the country and the region as a whole due to its land lockness. This is also true in Ethiopia where more than 90 % of the interurban freight and passenger traffic is served by Road Transport. The same holds true for the other land locked and Coastal member countries located in the Eastern and Southern sub-regions, viz, Sudan, Kenya, Tanzania, Zimbabwe and Botswana. This is mainly because the land locked member and associate member countries of TEAH that are using the ports of neighbouring Coastal countries, to a large extent depend on road transport than on the other modes for the movement of their import/export traffic. For instance substantial amount of coastal import/export traffic from: South Africa to both Botswana and Zimbabwe (via Botswana); and Kenya/Tanzania to Rwanda Malawi and Burundi are served dominantly by the Road Transport mode.

In Egypt as well road transport is dominant as it serves 85-90% of the total freight and passenger transport services in the country. About 60% of the import/export traffic in the country is served by Cairo-Alexandria Road corridor.

4.2.2 Road infrastructure Development and Current Physical Conditions

In most of the TEAH member and associate member countries, with the exception of Egypt, the rate of road network expansion is very low compared to the ever-increasing road infrastructure need resulting from the high population increase and level of urbanisation. In addition, the existing limited network itself is in a very poor state due to lack of proper maintenance interventions. The current situation prevailing in each member country is presented as follows.

1. ZAMBIA

Zambia has a road network of 37,000 km of gazetted roads and about 30,000 km of ungazetted roads. Before 1991 about 80 percent of the road network had been deteriorated to a large extent. As a result, out of the total road asset valued at US\$2.3 billion, Zambia had lost a road network worth of US\$400 million of road networks including TEAH links, due to neglected maintenance.

The deterioration of the road network in Zambia and the consequent loss of the indicated road asset value have been caused by inadequate funding and poor management. Road maintenance was financed from the general tax revenues in competition with several other pressing demands. Due to financial constraints, allocations for maintenance of the road network by the Treasury had declined to only about 15 percent of the requirements. According to the reports, the problem of road maintenance was diagnosed to be not one of engineering but of policies and management.

Current ifrastructure Conditions and road budget in Zambia

The total 1999 Road Sector Budget is approximately US\$ 350.7 million, which was allocated for the overall network development and maintenance of roads in the country. This includes external support by the donor countries/organizations amounting to US\$ 168.9 million and the World Bank/IDA credit of US\$ 92 million. Zambia has committed US\$ 89.8 million, which includes the Road fund.

Funds available for rehabilitation and maintenance of different standard roads have declined in real terms over a long period of time although the core road network that includes TEAH sections has increased substantially. The government through its annual budgets has contributed approximately 30-35% of the total required fund, on average, towards road improvement in the financial years since early 1980s. According to the report, this scenario is not expected to improve in the next few years unless other measures to increase funding are implemented.

The Road Fund introduced in 1994 by an Act of Parliament has been the steady source of funding for road maintenance activities. It is meant for routine and periodic maintenance only but has been diverted to cover rehabilitation as well at the expense of maintenance. The total disbursement of the Road Fund during the years between 1995 and 1997 was 12.602 million US\$, which was about 4.20 million US\$ per annum at an average. The annual disbursement during the years 1998, 1999 and 2000 has been 4.90, 2.37, and 2.03 million US\$ respectively, showing the decline in disbursement of Road Fund towards road maintenance over the given years.

Regarding the contribution of external donors, the bilateral and multilateral financiers (donor countries/organizations), which include Germany (KFW), Denmark (DANIDA), Japan (JICA), European Union (EDF) and Norway (NORAD), as well as the WB/IDA and the ADB, presently cover 65-70% of the road sector capital financing in Zambia. Recent developments also include possible funding from the Kuwait Fund, BADEA and OPEC.

Norway has presently focused on institutional building of the road sector agencies in Zambia through recruitment of TA personnel and training in contract management.

Denmark's support to Zambia is programmed for the next five years in major road rehabilitation of the western road and Feeder Roads development and also in capacity building of the road agencies. The Great North Road section Kapiri -Mposhi-Serenje rehabilitation, which has included TEAH sections, was completed with DANIDA funding by April 2000.

The EU support in Zambia is both in terms of major road rehabilitation and strengthening of the RD through recruitment of two TA personnel and training of local technical staff. This support is not meant to duplicate the efforts of other donors but to reinforce the development of the road sub-sector.

Germany's finance is secured for the rehabilitation of the Livingstone-Sesheke-Katima Mulilo road and also the construction of a bridge at Katima Mulilo, which will replace the pontoon at the crossing.

Japan is financing the construction of a new Chirundu Bridge across the Zambezi River and is also presently undertaking the feasibility studies for the proposed Kazungula Bridge on the Zambezi River.

The African Development (ADB) financed the Lusaka-Luangwa Bridge, which was completed in 1999. It is hoped that the ADB will now also support the rehabilitation of the road section from Luangwa Bridge to the Malawi Border.

2. ETHIOPIA

The total length of classified road network in Ethiopia is about 29,571 km consisting of about 3,824 km paved, 12,267 km gravel and 13,480 km rural standard road. In addition, there is a total of 30000 km unclassified road network comprising low standard community roads, earth or dry weather roads, tracks and trails.

The road infrastructure of Ethiopia has been deteriorated markedly over the last few decades and hence it was estimated that about 56 per cent of the paved and 50 per cent of the gravel road network are in poor condition at present. It should also be noted that only 20 per cent of the whole road network is found in good condition. The present condition of the TEAH sections in Ethiopia is presented in detail in section 4.4.

3. EGYPT

The total length of road network in Egypt has almost tripled to 44,000 Km., by the end of year 2000 compared to 1981, which was only 15,298 Km. In addition, Upper Egypt was developed through constructing three vertical axes parallel to the Nile river. The Nile valley has also been joined with the Red Sea coast through seven transversal roads. The New valley as well is joined with Assuit, Tushky and Luxor through a number of main roads. The dual carriageways and main roads network belonging to the Ministry of Transport- General Authority for Roads and Bridges- is about 22,000 Km.

The road network in the country has been expanded completing the National road network in all directions in order to allow the development of the different regions. The General Authority for Roads, Bridges and Land Transport is responsible for major Roads in the country, which is about 50% of the total network. The remaining 50% road network, which is of a secondary standard, is functioning under the responsibility of the local municipalities. The TEAH link (Cairo-Aswan - Wadi Alfa-1225 km), which is totally of a paved standard is also under the major Roads category.

Almost all roads in the country including the TEAH section are in a very good condition. Road condition surveys, usually visual inspections are regularly undertaken by the Authority. In addition, regular traffic counts are also undertaken taking the different seasons into account.

The road network is regularly maintained through routine maintenance activities, and heavy maintenance intervention is also undertaken whenever it becomes necessary.

All road construction work in the country is financed from government budget and hence no dependence on external donor's assistance in the form of grant and loans, except the construction of the big bridge over the Suez Canal with a 60% grant from Japanese government (JICA).

The current situation of the road network in the country is as shown below:

- A. A roads network is constructed to complete national road network in all directions and develop the different regions. The most important are:
 - 1. Cairo/Assuit desert road along the west of the Nile with a total length of 587-Km including its feeder links. The extension of the road to Aswan is also under progress. This will make three axis roads that are stretching from Cairo to Aswan, viz. the existing two axes along the east and west of the Nile, with lengths of 852 Km and 905 Km respectively, as well as this new axis. These axes all together make up the Egyptian part of the TEAH.
 - 2. Tushky/intersection of Darb Al-Arbacen/East of Al-Auinat airport road with length of 370 Km.
 - 3. Armant/Al/kharga with length of 240 Km.
 - 4. Upgrading the quality and widening the Red Sea coastal road from Suez/Halayeb with length of 1080 Km.
 - 5. Al-Shat/Nakhle/Al-Tamd/Ra's Nakab/Nueibaa with length of 380 Km.
 - 6. Constructing a third lane for Cairo/Alexandria agricultural road with length of 220 Km.
 - 7. Transversal axis that connect the Nile valley and Delta with the Red Sea coast

- Cairo/Suez with length of 130 km.
- Al-Maady/Al-zaafarana road with length of 164 Km
- Al-sheikh Fadl/Ra's Ghareb road with length of 238 Km.
- Qena/Safaga road with length of 160 Km
- Keft/Al-Qussair road with length of 180 Km
- Edfu/Marasa Alam road with length of 225 Km.

B. Duality of the roads network to increase its capacity and accommodate the traffic volume with total length of 3500 Km. The most important are:

1. Cairo/Alexandria/Marsa Matrouh/Al-Sallum road with length of 752 Km
2. Cairo/Alexandria agricultural road with length of 220 Km
3. Damietta/Al-Mansura/Al-Mahala/Tanta road with length of 120 Km
4. Cairo/Ismailia/Port Said road with length of 200 Km
5. Al-Hikstep/Belbais road with length of 32 Km.
6. Cairo/Al-Fayoum road with length of 89 Km
7. Giza/Al-Ayat road with length of 50 Km
8. Benha/Meet Ghamr/Aga/Al-Mansura road with length of 90 Km
9. Duality of a distance of 30 Km at Al-Kantara/Al-Arish/Rafah and the duality of the rest distance is undergoing.

C. Sinai roads network

Sinai roads network has been completed to facilitate travelling between Sinai and the other regions of the country as well as the different parts of Sinai. This will help to fulfill the objectives of Sinai development. The total length of Sinai roads network is 5500 Km. This network is divided into:

- Three arterial axis to transmit movement from east to west which are:

| | |
|--------------------------------|-----------------------|
| - Al Kanatra/El-Arish/Rafah | with length of 220 Km |
| - Ismailia/Al-Auga | with length of 256 Km |
| - Al-Shat/Ra's Al Nakeb/Nuebaa | with length of 360 Km |
- Axis to connect the three arterial axis which are:

| | |
|----------------------------------|-----------------------|
| - Al-Kantra/Taba/Sharm El-Sheikh | with length of 490 Km |
| - Rafah/Taba/Sharm El-Sheikh | with length of 570 Km |
| - Al-Arish/Nakhl | with length of 155 Km |
| - Be'r Al Abd/Sedr Al-Hettan | with length of 142 Km |

D. Improving the quality and maintaining of about 1500 Km of the network are taking place annually to keep them in a good condition and to accommodate the increase in traffic volume on the network and service transport needs concerning all the activities.

E. International Connection Axis:

Connection axis with the Arab countries:

- Cairo/Alexandria/Matrouh/Sedi Barrany/Al-Sallum road with length of 752 Km, up to the Egyptian Libyan borders.

- Cairo/Suez/Al-Shat/Sedr Al-Hettan/Nakhl/Al-Tamd/Ra's Nakhb to Nuebaa with length of 470 Km, and from it to El-Aqaba Jordanian port using a line of ferries and then to the rest Arab countries.
- Ismailia/Al-Tasa/Al-Gafgafa/Abu-Ogela/Al-Auga road with length of 256 Km in Egyptian land and extends to Al-Kark with length of 400 Km.
- Cairo/Al-Kantara/Al-Arish/Rafah road with length of 350 Km, and its extension to the Palestinian Authority Region. Israel, Syria, Lebanon and Turkey in Europe.
- Sedi Suliman/Sed Omar road with length of 30 Km as additional axis to connect Egypt and Libya (feeders to TEAH).
- Two arterial axis to transmit movement from the east to the west which are:
 - Upper Egypt axis at the west of the Nile with length of 1217 Km from Giza/El-Minaya/Assuit/Sohag/Naga Hammadi/Qena/Halfa Valley (existing TEAH section).
 - Upper Egypt axis at the east of the Nile with length of 852 Km.

F. The Most Important Projects Under Execution:

1. Construction of Assuit/Aswan desert road at the west of the Nile (first stage) from Ho to Al-Raiaina with length of 100 Km and its link to Naga-Hammadi with length of 31 Km
2. Construction of the dual circular road around the region of Shark Al-Tafreea at Port Said with length of 24 Km.
3. Construction of Al-Dakhla/Shark Al-Auinat with length of 350 Km
4. Construction of a distance of 70 Km as a first stage of Aswan/Barnees road with length of 290 Km.
5. Dualization of Suez/Al-Ain Al-Sukna road with length of 44 Km

G. Bridges Field

(a) By the end of 2000 the Number of Bridges are as following:

- 25 bridges over the Nile
- 65 fly-over bridges on road Network
- 107 Movable bridges over water ways
- 991 Stationary bridges over water ways
- 6 Tunnels

(b) It was considered in the framework of the plan of the Ministry of Transport to connect the road network West and East of the Nile through constructing a number of bridges where the distance between 2 successive bridges does not exceed 50 Km. During the period from 1981 to 2000, ten Bridges were constructed over the Nile at: Beni Suef, El Minya, Desouk, Benha, El Mansoura, Faraskour, Luxor, Assuit, Sherbin, and Meet Ghamr.

(c) Many fly over bridges were also constructed over the railway lines such as: Ayat, Kom Umbo, Qena, Menufia, Abu Homus, and Manshiet El Gaml in order to avoid the intersection between roads and railways.

4. TANZANIA

The road network in Tanzania consists of 85,000 km. Out of these, 10,300 km (12%) are trunk roads, 24,700 km (29%) regional roads and 50,000 km (59%) are district roads. The district roads

include 27,550-km feeder roads and 2,450-km urban roads. Five percent (5%) of the total road network is paved, 10% gravel and 85% are earth roads. Out of the paved roads, 14% is in good condition, 25% fair and the remaining 61 % in poor condition.

Tanzania's road infrastructure had by late 1980's greatly deteriorated imposing great penalty on the economy, particularly the agricultural sector. Implementation of the Integrated Roads Project (IRP) since 1990 has had positive impacts, including the rehabilitation of about 70% of the trunk road network. Due to resource constraints, IRP paid little attention to the rest of the feeder roads. It was estimated that 49,000 km, out of the total 55,000-km of earth roads were in poor condition. Their improvements remain a major challenge to be tackled in the short, medium and long terms.

The medium term objective of IRP was to upgrade all trunk roads to a bituminous standard while at the same time ensuring that all regional as well as key district and urban roads are sufficiently rehabilitated and maintained to ensure smooth flow of traffic. Due to the limited resources available, the National Transport Policy (NTP) underlined the need for improvement of the private sector including the local communities in the rehabilitation of the roads that pass through their areas or traversing their localities.

The Road Transport system in Tanzania is also an essential outlet to a number of nearby land locked countries, viz. Rwanda, Burundi, Uganda, Zambia, Malawi and DRC. All these countries are critically dependent on Tanzania, which provides them with a stable sea, access to import/export traffic and eventually to international markets.

Furthermore, Tanzania is a member of SADC and a partner in plans for regional integration of markets with Kenya, and Uganda under the umbrella of East African Community (EAC). Currently, Tanzania also has started participation in Cross Border Initiative (CBI), which aims at facilitating cross border economic activities by eliminating non-physical barriers on the flow of goods, services, labour and capital to integrate markets by co-ordinating reform programmes in several key structural areas. At present road transport carries about 20% of the cross border trade and relative importance of this mode to international trade is increasing.

5. KENYA

The current total road network in Kenya is about 150,600 kilometers in length, which is under the responsibility of different agencies. The Ministry of Roads and Public Works is responsible for the classified road network of 63,664 Kms while the balance of the network is under Municipalities, County Councils, the Kenya wildlife service and the Forestry department. The classified road System measures some 63,664 kilometers consisting of 8,804 kilometers of paved roads, 27, 413 kilometers of gravel roads and 27,447 kilometers of earth roads.

The road network in Kenya accounts for over 80 percent of the country's total passenger and freight traffic. When the country attained independence in 1963, it had an estimated total road network of 150,600 km, which consisted of 41,800 km of "classified" roads. Of the 41,800-km of "classified" roads, only 1,811 km (or about 11 percent) was bitumenized. Although the "classified" network, which is under the responsibility of the Ministry of Roads and Public Works has been expanded to 63,663 km only 14% of it has been bitumenized.

Kenya's road network has however deteriorated in quality over the years due to inadequate funding for both periodic and routine maintenance, improper road management institutions, poor prioritization of road sector activities and overloading by heavy goods vehicles. About 57% of the classified road network is currently in a maintainable condition while the remaining 43% of the network is in a poor condition. It is estimated that the condition of roads in major urban centers and

local authorities is in similar or worse condition. The recent El Nino rains have further accelerated this poor status.

Kenya's road replacement cost is estimated to be about US\$ 8 billion while Kenya shillings 40 billions is required for reconstruction and rehabilitation of the 43% of the road network which is in a state of disrepair and a total annual financial requirements of Kshs. 9 billion required annually for the maintenance of the 57% of the network which is in a maintainable condition.

6. SUDAN

The development of the road network in Sudan has occurred comparatively recently with the majority being constructed in the past 25 years. The road system in the Sudan is extensive, comprising some 19000-km. However, only about 5000 km are paved, about 2000 km are gravel surface, about 1850 km are under construction and the remainder comprising unimproved earth and sand tracks.

The surfaced inter city highways are normally two lane roads and the surfacing is asphalt based. The most important road is the one connecting Khartoum (the capital) with Port Sudan and it is 1200km long. Other main roads run south of Khartoum closely following the river to Kosti and Westward to Elobeid. They are oriented for imports and exports through Port Sudan. The remainder of the road networks comprising earth roads inter-link other parts of the country. Ongoing activities in the road sub-sector include the continuing construction of 8 national roads including parts of the Trans-East African Highways.

7. BOTSWANA

The road network has increased tremendously in the past two decades and this has boosted road transport in Botswana. In the past decade the national network, that is all roads linking big villages, major villages and cities has been growing at 9% per annum on an average as shown in Table 4.1. In 1998 the total length of the road network in the country had reached 4790 km.

Table 4.1: Network Growth in Botswana

| Year | Network Growth |
|-------------|-----------------------|
| 1991 | 2831 |
| 1992 | 3663 |
| 1993 | 3874 |
| 1994 | 4172 |
| 1995 | 4529 |
| 1996 | 4529 |
| 1997 | 4589 |
| 1998 | 4790 |

8. ZIMBABWE

The total length of Zimbabwe's road network is 18,461 km comprising of 4,322 kms of primary, 8,841-km secondary and 5298 km feeder roads, of which 8, 708 km is paved and 9,753 km is of unpaved standard.

The general condition of the road network in Zimbabwe is as shown in Table 4.2 below.

Table 4.2 ROAD NETWORK CONDITION (ZIMBABWE)

| ROAD CONDITION | Percentage |
|-----------------------|-------------------|
| Very good | 37.7 |
| Good | 15.4 |
| Fair | 20.5 |
| Poor | 26.4 |

4.2.3 Transit Traffic Facilitation Measures by Regional Economic Communities (RECs)

The Transport sector of SADC/COMESA region, has been guided by the Southern African Transport and Communications Commission (SATCC); the SADC Protocol on Transport, Communication and Meteorology; and COMESA under its various Trade Facilitation measures. It should be noted that COMESA embraces all TEAH member States with the exception of Botswana, and all the associate Member States except Libya, Somalia and Mozambique. The TEAH member States of the southern region are also SADC members. Therefore, it would be worth mentioning the current status of these organs in order to give insight on the prevailing situation in the sub-region.

1. Southern African Transport and Communications Commission (SATCC)

This organ has now made a policy shift from countering dependency on South Africa to a new emphasis on policy changes to promote an efficient and optimal utilisation of existing transport infrastructure. According to some of its recent studies, the SADC area has 860 000kms of roads of which 320 000 kms are classified as main roads.

The SADC Protocol on Transport Communication and Meteorology, like the COMESA institutional Transit Traffic Facilitation measures also advocates for an efficient, integrated and harmonised transport system.

2. Common Market for Eastern and Southern Africa (COMESA)

The Road network under COMESA region consists of approximately 561,000 km of classified roads, of which 64,000 km are tarred. The main transport corridors are essentially focused in an east-west direction from the ports to the hinterlands, with very few north-south links. The main corridors are:

- 1) Mombasa -- Nairobi -- Kampala -- Kigali -- Bujumbura
- 2) Dar-es-Salaam -- Kigoma -- Bujumbura -- Kigali
- 3) Nairobi -- Blantyre -- Lusaka

- 4) Maputo -- Bulawayo -- Lusaka
- 5) Maputo -- Lubumbashi -- Lusaka
- 6) Beira -- Harare -- Lusaka

The COMESA region commercial vehicle fleet consists of about 600,000 vehicles, most of which are privately owned and operated.

COMESA has made considerable stride in introducing institutional measures to facilitate the regional flow of trade. These measures include the COMESA Yellow Card for 3rd Party Insurance, a COMESA Carriers' License to replace the 90 day National Road Service Permits, Road Custom Transit Declaration (RCTD) to replace Transit Bills of Entry, the Customs Bond Guarantee Scheme, and Harmonised Transit charges.

All these COMESA measures have introduced considerable cost savings for member countries particularly regional trade transport costs.

4.3 Sub-Sectoral Development Programmes and related policy reforms and Strategies

Long and short term programmes have been devised in some of the member countries in order to promote the Road Transport Sub-sector in terms of both infrastructure and services, which are reviewed in this section.

A ten-year Road Sector Development Programme (ROADSIP) is now under implementation by the Government of Zambia, after launched in 1997. The programme was aimed at bringing about total quality management of the road sub-sector, and targeted towards changing the present face of Zambia and accelerating the pace of National Development through the rehabilitation and maintenance of 50 per cent of the total road network in the country. The implementation of the programme is the responsibility of the National roads Board (NRB), through financial provisions of Government sources, Road Users and other Co-operating partners.

The cost of the first phase of the programme (1997-2002) was estimated at US\$ 500 million. The primary objectives, and cost estimates of the different components of the programme are briefed below.

The rehabilitation, reconstruction as well as upgrading of 898-km TEAH main Road sections had been incorporated in this big programme comprising the following trunk roads sections of the network.

1) Great North Road

- Section 1: Kapiri to Serenje (197 km)
- Section 2: Serenje to Mpika (236 km)
- Section 3: Mpika to Chinsali (168 km)
- Section 4: Chinsali to Nakonde (210 km)

2) Kabwe- Kapiri (65 km) together with upgrading of Chisamba (22 km)

3) Great East Road (town section) : Kabwe Roundabout to the Airport Section

The Trunk Road sections of the programme comprises a total of 898 km civil work of the Trans-East African Highway (TEAH) main road sections that are estimated to cost 84.24 million US\$.

Regarding the maintenance of the existing road network, including TEAH links, the Government of Zambia has also formulated a National Road Maintenance Action Plan. As 80 percent of the road network was not in a manageable condition, the road fund of about US\$8 million was hardly adequate to improve the condition of the road network. The National Roads Board, therefore, with the approval of the Government set up a National Task Force to launch a national programme of road rehabilitation with the private and public sector participation. The objective of the road sector investment programme is to bring about total quality management of the road network through contributions from the road users, government, co-operating partners and developmental agencies. The phase one of the programme has been launched and is in progress. The goals of phase one of the programme are as follows:

- i. Create a domestic sustainable system for financing and management of the road network which will reduce dependence on external financing for maintenance and rehabilitation;
- ii. Increase the proportion of roads in good condition to no less than 50 percent of the network, thus reducing vehicle operating costs;
- iii. Address poor accessibility in the rural areas with emphasis on feeder roads leading to productive areas;
- iv. Put in place an accelerated programme to address the deterioration of selected main and urban roads; and
- v. Put in place measures that will mitigate effects that road works might have on the environment.

Ethiopia has also formulated a Road Sector Development Program (RSDP) for a duration of 10 years (1997-2007), which is now under implementation.

The overall objective of the program is to improve the efficiency in road transport operation and reduce vehicle-operating costs in order to encourage production and distribution of goods and create access to rural areas and drought prone parts of the country.

The program is divided into two phases: RSDP I is the first phase which covers the period from 1997 to 2002 and RSDP II will be implemented during the period from 2002 to 2007.

The activities during phase one (RSDP I) consist of:

- a) Rehabilitation and upgrading of about 4900 km of trunk roads, upgrading and construction of about 2200 km of major link roads, construction of about 5400 km of regional roads and periodic maintenance of about 2100 km of trunk and major link roads.
- b) Institutional support to strengthen Federal and Regional Road Management Capacity, including support to domestic contractors, road safety and environmental programs.
- c) Institutional support to strengthen Road maintenance through decentralisation of maintenance program activities to districts.

The Road Sector Development Program consists of important road works in relation to TEAH links in the first five-year program. The present condition of TEAH sections and the proposed activities are presented in the following section.

The future plan of road network expansion in Egypt and the accompanying strategy of development are based on the following concepts:

1. Constructing the new development axis to attract the popular density from the condensed delta and Nile valley to the non-popular wide areas.

2. Constructing a number of freeways that have no intersection to achieve easy transportation between any two points on the network.
3. Completing the plan of doubling the roads that have been subjected to high traffic density.
4. Completing the plan of constructing the bridges over the Nile to connect road network east and west of the Nile
5. Condensing the traffic accidents through safety measures on the road network.

The road network development plan incorporates the following:

A. Construction of new development axis:

1. Completing the construction of Cairo/Assuit desert road west of the Nile to Aswan at an estimated cost of L.E 400 million (part of TEAH).
2. Construction of Aswan/Barnice road, with length of 290 km, at an estimated cost of L.E 190 million.
3. Construction of Al-Sheikh Fadl/Al-Baharia oasis/Sewa/Gaghoub road, with length of 685 km, at an estimated cost of L.E 350 million.
4. Construction of Paris/Darb Alarbaeen road, with length of 285 km, at an estimated cost of L.E 180 million.

B. Dualization of existing roads:

1. Belbais/El-Zagazig/Al-Senbelawain/El-Mansura road, with length of 180 km, at an estimated cost of L.E 50 million.
2. Ismailia/Fayed/Fanara/Suez road, with length of 83 km, at an estimated cost of L.E 70 million.
3. Qena/Safaga road, with length of 180 km, at an estimated cost of L.E 80 million.
4. Completion the duality of Al-Qantara/Al-Arish road, with length of 225 km, at an estimated cost of L.E 175 million
5. Ismailia/Al-Tasa/Gefgaga/Al-Auga road, with length of 256 km, at an estimated cost L.E 130 million.
6. Al-Shat/Nakhle/Ra's Nakeeb/ Nuebaa road, with length of 260 km, at an estimated cost of L.E 130 million.
7. Qeft/Al Qusair road, with length of 180 km, at an estimated cost of L.E 85 million³.

C. Construction of a third lane:

1. Cairo/Alexandria desert road with length of 210 km
2. Al-Haykstep/Belbees road with length of 32 km

D. Future Freeways Projects

1. Assuit/Wadi Halfa west of the Nile (1000 km)-TEAH section
2. Port Said/Halayeb (1400 km)
3. Ring road around Sinai peninsula from Qantara to Taba (1000 km)
4. Cairo/Damietta (156 km)
5. Converting Cairo/Alexandria/Matrouh road to be a freeway with length of 500 km
6. Converting Cairo/Ismailia/Port Said road to be a freeway with length of 200 km
7. Converting Cairo/Benha/Damietta road to be a freeway with length of 150 km

E. New Bridges Over the Nile: Gerga-Tamalay-Ashmon-Ikhmim-Naga_Hammadi-Tema-Talkha

The implementation status and financing of these road sections has been briefed under section 5.2.

A National Transport Policy (NTP) has been formulated by the Government of Tanzania that has given emphasis on:

- (a) Road maintenance and development; institutional reforms especially on the separation of financing the infrastructure from the provision of transport services; improved rural roads and mobilization of local communities for maintenance with a view to improve rural access and private funding on road investments through arrangements such as BOOT;
- (b) Encourage partnership/ organization among the private operators with a view to develop medium and large sized commercial fleet operators in the long term as a partial solution to the current operational problems in the sector;
- (c) Calls for efficiency improvement measures such as implementation of traffic management systems, parking control systems, bus priority schemes and institutional improvements such as strengthening the policy formulations and enforcement, traffic safety organization and policy improvement measures, such as periodic review of tax policies, road user taxation policies and assessment of role of the public and private sectors in the provision of passenger and private sectors;
- (d) Improved documentation, customs and administrative procedures at international boundaries, land border crossing, sea and airports and the importance of harmonizing and implementing already approved bilateral, regional and international protocols for trade and transport with a view to improve efficiency.

During the years between 1997 to 2000 Tanzania has signed bilateral road transport agreements with Zambia, Malawi and Zimbabwe. In addition, Tanzania has implemented several provisions of the SADC protocol on Transport and Communications and Meteorology regarding overloading control, vehicle length and dimensions, road safety matters and works with other SADC members and East African Community (EAC) towards a common goal like the facilitation of one stop over clearance post.

Zimbabwe is under the process of implementing national programmes in relation to the transport sector. One is the Zimbabwe Programme for Economic and Social Transformation (ZIMPREST) that is under implementation during the period from 1998 to 2003. ZIMPREST considers public infrastructure development and the maintenance of existing facilities such as roads. The implementation of this programme will support the Department of Roads to achieve its objectives of maintaining the road network at acceptable levels. The other is the Road Sector Investment Programme (RSIP) that has started implementation in 2000 and will continue until 2005. The Government of Zimbabwe will improve and strengthen the national road network through the ZIMPREST policy and improvement of infrastructure in potential development areas is of high priority in RSIP. Improvement of road network through periodic maintenance is among the high priority activities.

Reforms in relation to the establishment of a dedicated Road Fund have also been under progress in order to ensure that funds collected from the users are used for the maintenance of the road infrastructure. The required legal framework is under processing to facilitate institutional changes in the road sub-sector.

Regarding the SADC Protocol on Transport Communication and Meteorology, Zimbabwe has embarked on a Transport Sector reform programme aimed at improving efficiency in the flow of goods, both, internally and within the region. These reform measures will see the Railways, Air and Roads sectors being not only revamped through an overhaul of the regulatory frame as is already

becoming the case now with new institutional arrangements being introduced, but, an extensive restructuring process of state enterprises in the sector. The ZIMPREST Policy Document's Policy Matrix outlines some of the reform targets.

These reforms are expected to generate investment opportunities for both domestic and foreign investors, with the road sector reform programme alone being expected to create up to US\$75 million worth of business opportunities.

Like other SADC member states, it is also entering into bilateral arrangements to harmonise transport charges and requirements.

4.4 Country review of the Road Sections of TEAH network and the missing links.

This section deals with the review of the current status of TEAH sections including the missing links in the respective countries. Much progress has been seen in improving the missing links to higher standard. As shown in Table 4.3 an earth road section with a total length of 200 km has been upgraded to a paved standard in the Sudan. Ethiopia has also improved about 375-km length of earth road to a gravel road standard. In some cases like Zambia and Ethiopia there are prospects of further improvement as the TEAH links are incorporated under their respective ten-year Road Sector Development Programmes, which are now under implementation. In Botswana an improvement in the road sections will be expected under the envisaged rehabilitation program that will take place in the near future.

The review of TEAH sections in Kenya, Sudan and Tanzania are based on the brief report obtained from COMESA. According to the information obtained from COMESA the status of TEAH feeder sections in Uganda, and Burundi has remained the same as it has been in the last update (1993).

The total length of the missing links (Earth Roads) of the main network in the different countries has been reduced by about 575 km compared to the last update in 1993. Similarly, the length of missing links of the feeder roads had been reduced by about 698 km as shown in Table 4.4. This is mainly due to the improvement or upgrading of the missing TEAH sections in some of the member and associate member countries. Due to this and some alignment changes during upgrading of the main road sections have resulted in an increase on the length of the gravel and paved sections by 558 and 637 km respectively. Similarly the inventory on the feeder roads has shown an increase of 618 km in the length of paved and 775 km in the gravel road sections. The details are shown in the following country by country review of the respective TEAH sections.

The portions that are identified by this study as the remaining missing links or earth road sections in the Cairo –Gaborone network are the Dongola- Khartoum (341 km) and Ghedarif- Metema (155 km) road sections in Sudan. Part of the Azezo- Metema road section (63 km), which is now under construction in Ethiopia is also identified as an earth road or a missing link during the compilation of this report. However, the construction of the remaining section is expected to be completed by the end of 2000.

Table 4.3: Changes observed on the status of TEAH main links

| COUNTRY | CATEGORY | LENGTH (KM) | | | | | | | | | | | |
|--------------------|----------|-------------------------------|-------------|-------------|----------------|-------------|-------------|-----------------------------|-------------|------------|------------|--------------|------------|
| | | PREVIOUS STATUS OF TEAH(1993) | | | PRESENT STATUS | | | CHANGES (INCREASE/DECREASE) | | | | | |
| | | Paved | Gravel | Earth | Total | Paved | Gravel | Earth | Total | Paved | Gravel | Earth | Balance |
| Egypt | Main | 951 | | | 951 | 1225 | | | 1225 | 274 | | | 274 |
| Sudan | " | 415 | | 696 | 1111 | 615 | 325 | 496 | 1436 | 200 | 325 | (200) | 325 |
| Ethiopia | " | 1135 | 142 | 438 | 1715 | 1145 | 472 | 63 | 1680 | 10 | 330 | (375) | (35) |
| Kenya | " | 429 | 507 | | 936 | 429 | 534 | | 963 | | 27 | | 27 |
| Tanzania | " | 666 | 596 | | 1262 | 740 | 551 | | 1291 | 74 | (45) | | 29 |
| Zambia | " | 1488 | | | 1488 | 1488 | | | 1488 | | | | |
| Zimbabwe/ Botswana | " | 1076 | | | 1076 | 1076 | | | 1076 | | | | |
| Total | " | 6160 | 1245 | 1134 | 8539 | 6718 | 1882 | 559 | 9159 | 558 | 637 | (575) | 620 |

B: Figures in parenthesis show negative values (decreases)

Table 4.4: Changes observed on the status of TEAH feeder sections

| COUNTRY | CATEGORY | LENGTH (KM) | | | | | | | | | | | |
|-----------------------|----------|-------------------------------|--------|-------|-------|----------------|--------|-------|-------|-----------------------------|--------|-------|---------|
| | | PREVIOUS STATUS OF TEAH(1993) | | | | PRESENT STATUS | | | | CHANGES (INCREASE/DECREASE) | | | |
| | | Paved | Gravel | Earth | Total | Paved | Gravel | Earth | Total | Paved | Gravel | Earth | Balance |
| ya-Sudan | Feeder | 625 | | 1275 | 1900 | 625 | | 1275 | 1900 | | | | |
| outi-Ethiopia | " | 251 | 278 | 241 | 770 | 251 | 519 | | 770 | | 241 | (241) | |
| alia-Ethiopia | " | 1043 | 140 | | 1183 | 1043 | 140 | | 1183 | | | | |
| alia-Kenya | " | 907 | 190 | 225 | 1322 | 907 | 190 | 225 | 1322 | | | | |
| awi-Zambia | " | 717 | | | 717 | 717 | | | 717 | | | | |
| awi-Tanzania | " | 663 | 20 | 271 | 954 | 767 | 20 | 271 | 1058 | 104 | | | 104 |
| zambique-awi | " | 2826 | | | 2826 | 2826 | | | 2826 | | | | |
| nda-Tanzania | " | 89 | | 180 | 269 | 89 | 288 | | 377 | | 288 | (180) | 108 |
| nda-Tanzania | " | 170 | | 50 | 220 | 264 | | | 264 | 94 | | (50) | 44 |
| undi-Tanzania | " | 235 | 484 | 267 | 986 | 606 | 484 | 40 | 1130 | 371 | | (227) | 144 |
| zania-Malawi | " | | | | | 104 | | | 104 | 104 | | | 104 |
| ziland-zambique-ambia | " | 1732 | 342 | 50 | 2124 | 1732 | 342 | 50 | 2124 | | | | |
| zania | " | 1368 | | | 1368 | 1313 | 246 | | 1559 | (55) | 246 | | 191 |
| pt-Sudan | " | 1600 | | 623 | 2223 | 1600 | | 623 | 2223 | | | | |
| al | | 12226 | 1454 | 3182 | 16862 | 12844 | 2229 | 2484 | 17557 | 618 | 775 | (698) | 695 |

1. ZAMBIA

The road section of TEAH in Zambia is entirely of a paved road standard, which is 1488 Km in length. There is no any missing link or a lower standard road section of TEAH in this country. According to the report of Zambia's Road Department, no major changes are made on the length of TEAH Road Sections, since 1993.

However, the rehabilitation of certain parts of this section is incorporated under the Road Sector Investment Programme (ROADSIP), with an original estimated budget of US\$ 860 million. The principal objectives are to: improve the condition of a core network of roads; strengthen the management of the road sector; create employment opportunities; improve road safety; improve environmental management; improve rural transport services; and improve community roads.

In relation to TEAH links, the ROADSIP has rehabilitation projects as follows;

1. T2-Kapiri-Mposhi-Nakonde (works almost completed that include major rehabilitation and pavement strengthening).
2. T2-Kapiri-Mposhi-Kabwe (Plans were underway to start rehabilitation works by mid-2001)
3. T2-Lusaka-Chirundu (resealing works are planned for 2001)
4. T1-Monze-Zimba (major rehabilitation works are in progress)
5. T4-Works has been completed on Lusaka-Lunagwa and holding maintenance works have continued on Lunagwa-Chipata section. Major rehabilitation to start soon on this section.

The harmonization of Highway codes, signs, axle loads etc. are being implemented under the SATCC protocol. The SATCC Code of practice has been endorsed by member countries that include Zambia. Actually all the sections under TEAH links are also SATCC links.

The road condition in Zambia has been in a better position during the 1980's. In 1984 about 40% of the paved road network had been in good condition while the proportion of road network in fair and poor condition was 30% each, respectively. Although the condition of the paved road network has shown a significant decline during the mid nineties, it has revived again from its deteriorated state in 1998 after the implementation of the ten-year Road Sector Investment Programme (ROADSIP).

Below is a summary of the current road conditions. These are mainly conditions as exhibited by paved road sections including the TEAH links.

Table 4.5: Present road network condition of Zambia

| Year | Road Network Condition | | |
|------|------------------------|----------|----------|
| | Good (%) | Fair (%) | Poor (%) |
| 1984 | 40 | 30 | 30 |
| 1995 | 20 | 29 | 51 |
| 1998 | 31 | 36 | 33 |
| 1999 | 38 | 42 | 20 |
| 2000 | 43 | 14 | 43 |

2. ETHIOPIA

The present condition of most of the road sections of TEAH in the Ethiopian part is generally in either poor or fair condition, despite the National Road Maintenance Initiative aimed at improving the road network from generally poor condition to a better state, since 1991. This is because most of the road sections have been planned under a package of either rehabilitation or upgrading project to an asphalt concrete standard. Therefore no heavy maintenance intervention was made on those road sections except in some portions of the road from Awassa to Moyale, as shown below.

Table 4.6: Proposed maintenance and upgrading work activities for TEAH sections in Ethiopia under the first phase of the Road Sector Development Programme (RSDP I).

| TEAH Link | Existing Surface | Proposed Work | Length (km) |
|----------------------------|------------------|--------------------------|-------------|
| Yebello-Ageremariam-Awassa | ASD | Heavy Maintenance | 281 |
| Awassa-Modjo-Addis Ababa | ASD | Asphalt Concrete overlay | 263 |
| Addis-Dejene-Debremarkos | ASD | Asphalt Concrete overlay | 299 |
| Debremarkos-Gonder/Azezo | Gravel | Asphalt Concrete overlay | 439 |
| Azezo-Metema | Earth | Gravel | 175 |

ASD= Asphalt Surface Dressing

Table 4.7 Road Condition of Asphalt Road Sections of TEAH

| Road Section | Length (km) | Condition | | |
|--------------------|---------------|------------|------------|--------------|
| | | Good | Fair | Poor |
| Moyale-Mega | 108 | 45 | 42 | 21 |
| Mega-Yabello | 100 | - | 100 | - |
| Yabello-Agermariam | 100 | - | 100 | - |
| Agermariam-Dilla | 110 | 42 | 26 | 42 |
| Dilla-Awassa | 80 | 80 | - | - |
| Awassa-Shashamane | 18 | - | - | 18 |
| Shashamane-Modjo | 171 | 69 | - | 102 |
| Modjo-Addis | 58.5 | 58.5 | - | - |
| Addis-Debremarkos | 299 | 17.5 | - | 281.5 |
| Total | 1044.5 | 312 | 268 | 464.5 |
| % | 100 | 30 | 26 | 44 |

Table 4.8 Road Condition of unpaved road sections of TEAH

| Road Section | Length (km) | Condition | | |
|--------------------|-------------|-----------|------------|------------|
| | | Good | Fair | Poor |
| Debremarkos-Bure | 106 | | 106 | - |
| Bure-Dangla | 75 | | 75 | - |
| Dangla-Dahir Dar | 80 | | 30 | 50 |
| B/Dar-Woreta | 54 | - | 45 | 9 |
| Woreta-Addis Zemen | 82 | - | 62 | 20 |
| Addis Zemen-Azezo | 91 | 20 | 50 | 21 |
| Azezo-Metema | 175 | | 105 | 70 |
| Total | 663 | 20 | 473 | 170 |
| % | 100 | 3 | 71 | 26 |

Notes:

- Paved part of TEAH has 7m wide surface and 1.5m wide shoulder on both sides, on the average.
- The age of surface and structure of most TEAH road section is more-than 30 years old.
- Drainage characteristic is fairly good.

The construction of the missing link, Azezo-Metema (175 km) on the Ethiopian part, to a level of

(64%) of the road project has been constructed as of the end of 2000. The project was planned to be completed after one year.

The rehabilitation of Addis-Debremerkos (299 km), and upgrading of Debremerkos-Gonder(Azezo) gravel road (439 km) to asphalt concrete standard has commenced two years ago in two contracts. Lot two of the upgrading projects (Merawi-Gonder-Azezo) was terminated and re-tendering is under process to contract it out again. Lot one of this project (Debremerkos-Merawi) is also behind schedule, as the contractor is not progressing according to the work plan.

In addition, the rehabilitation of Addis-Modjo-Awassa road (263 km) with asphalt concrete standard has started in September 1998. So far about 128 km (49%) of this project has been completed and the remaining is planned to be completed in one-year time.

ERA has now introduced a systematic classification of road based on function rather than standard. The road sections of TEAH in Ethiopia are presented below according to the new classification introduced in the country.

Table 4.9: The TEAH sections in Ethiopia classified according to the new road functional classification

| Description | Category | Paved | Gravel | Earth | Total length (km) |
|--------------------------|-----------|-------|--------|-------|-------------------|
| Metema- Azezo | Collector | - | 112 | 63 | 175 |
| Azezo-Dejen | Trunk | 163 | 360 | - | 523 |
| Dejen-Addis Ababa-Moyale | Trunk | 982 | - | - | 982 |
| Total | | 1145 | 472 | 63 | 1680 |
| % | | | | | |

3. KENYA

The status of the TEAH sections in Kenya has remained unchanged as shown below, except that certain portion i.e. Isiolo- Archers (32.4 Km) that is proposed to be upgraded from gravel to bitumen standard. The remaining section, Archers post to Moyale (500.2 Km) is also proposed to be constructed at gravel standard. The gravel road section of TEAH in Kenya (Moyale- Isiolo) has previously been 507 Km in length. According to the recent reports this road section, a portion of which is proposed for upgrading, is 534 Km in length due to changes in the alignment.

Table 4.10: Status of Kenyan Portion of Trans East African Highway

| Road Section | Present standard | Length (km) | Proposed plan/remark |
|-----------------------------------|------------------|-------------|---|
| Road section:Isiolo – Moyale Road | Gravel | 534 | <ul style="list-style-type: none"> i. Construct to bitumen standard from Isiolo – Archers Post (34.2 km) ii. Construct Gravel road from Archers Post to Moyale (500.2 km) |
| Isiolo – Nairobi – Namanga | Paved | 429 | Rehabilitation work of : <ul style="list-style-type: none"> i. Isiolo – Nairobi (264 km) ii. Nairobi – Athi River (25 km) iii. Athi River – Namanga(140 km) iv. The ongoing works on the project are 95% complete |

4. *Present Status of the Main "TEAH" section in Tanzania and the Feeder Road Sections in the Neighbouring Land Locked Countries (Uganda, Rwanda, Malawi and Burundi)*

Regarding the main TEAH sections in Tanzania, certain progress has been reported as shown in Table 4.12 below. In this regard, the paved road portion of the Makuyuni-Iringa paved road section has shown an increase from 25 Km, which was previously recorded, to 125 Km indicating that about 100 Km of the gravel portion of this road has been upgraded to a paved standard. Much progress has also been made in terms of TEAH network. As shown in Table 4.12 the Mutukula-Lusahunga (288 Km) road inter connecting Uganda and Tanzania has been newly constructed at a gravel standard. During the previous update of TEAH links (1993) this feeder road network has been known as an earth road with only 180 Kms in length, which indicates that there has been an alignment change during the construction of the new road. Similarly, the feeder roads inter linking Rwanda and Burundi to Tanzania has been upgraded as summarized in Table 4.11 below. The TEAH section in Tanzania is also inter-linked to a feeder road in Malawi, Uyoli-Kasumulo (104 Km), which is of a paved road standard. The present road network conditions in Tanzania is as shown Table 4.13.

Table 4.11: Status of Feeder Roads Linked to TEAH Section in Tanzania.

| Previous Status (1993) | | | Present Status | | |
|--|--------------|-------------|--|--------------|-------------|
| Old Alignment | Old Standard | Length (km) | New Alignment | New Standard | Length (km) |
| <u>Uvanda-Tanzania</u> Rusumo-Bulunge | Earth | 50 | Rusumo-Nyakasanza Nyakasanza-Lusahunga | Paved | 34 |
| | | | | Paved | 70 |
| | | | | 104 | |
| Sub total | | 50 | | | |
| <u>Kibondo-Tanzania</u> Kobero-Rulenga Lusahunga-Isaka | Earth | 50 | Kobero-Nyakasanza Nyakasanza-Lusahunga Lusahunga-Isaka | Paved | 60 |
| | Earth | 50 | | Paved | 70 |
| | Earth | 127 | | Paved | 241 |
| | Sub total | | 227 | | |

Table 4.12 : Status of TEAH main road sections in Tanzania and Feeder Roads from neighboring countries.

| ROAD SECTOR | CATEGORY | PAVED | GRAVEL | EARTH | TOTAL |
|-----------------------|----------|-------|--------|-------|-------|
| manga-Arusha-Makuyuni | Main | 182 | - | - | 182 |
| kuyuni-Iringa | Main | 125 | 551 | - | 676 |
| nga-Tunduma | Main | 433 | - | - | 433 |
| Sub Total | | 740 | 551 | - | 1291 |
| ole-Kasumulo (Malawi) | Feeder | 104 | - | - | 104 |
| anda-Tanzania | | | | | |
| itukula-Lusahunga | Feeder | - | 288 | - | 288 |
| rundi-Tanzania | | | | | |
| bero-Nyakasanza | Feeder | 60 | - | - | 60 |
| akasanza-Lusahunga | Feeder | 70 | - | - | 70 |
| isahunga-Isaka | Feeder | 241 | - | - | 241 |
| Sub Total | | 371 | - | - | 371 |
| r-es-Salaam-Arusha | Main | 663 | - | - | 663 |
| alinze-Morogoro | Main | 82 | - | - | 82 |
| rogoro-Dodoma | Main | 261 | - | - | 261 |
| doma-Iringa | Main | 10 | 246 | - | 256 |
| anda-Tanzania | | | | | |
| sumo-Nyakasanza | Feeder | 34 | - | - | 34 |
| akasanza-Lusahunga | Feeder | 70 | - | - | 70 |
| Sub Total | | 104 | - | - | 104 |

OTES:

The standard shoulder width is 1.5m with the exception of the Chalinze-Segera stretch, which is 1.0m.
The standard carriage way (surface) width is 6.5m.
Tanzania/Malawi corridor is via Kasumulu.
Maximum curvature and gradient to be supplied later.

Table 4.13: Present condition of TEAH network in Tanzania

| Road Section | Condition |
|--------------------------|--------------|
| Lusaka to Kapiri Mposhi | Good |
| Kapiri Mposhi to Tunduma | Fair to Good |
| Nakonde to Dar-Es-Salaam | Good |

The transit requirements along the Lusaka to Dar-Es-Salaam Road Transit Corridor are summarized below in order to show the level of external transport costs incurred to the land locked countries.

Road Transit / User Charges

LUSAKA – TUNDUMA

(i) Heavy Goods Vehicles with more than 3 axles US\$10 / 100km

1,014 kms * US\$10/100km= US\$101.4 per truck

(ii) Heavy Goods Vehicles with maximum of 3 axles US\$6 / 100km

1,014 kms * US\$6/100kms =US\$60.84 per truck

These are COMESA rates

NAKONDE TO DAR-ES-SALAAM

(i) Heavy Goods Vehicles with more than 3 axles US\$16 / 100km

994 kms * US\$16/100km= US\$159.04 per truck

(ii) Heavy Goods Vehicles with maximum of 3 axles US\$6 / 100km

994 kms * US\$6/100kms =US\$59.64 per truck

ADDITIONAL TRANSIT CHARGES FOR TANZANIA

It is required that heavy good vehicles obtain the following licences in order to use the roads in Tanzania:

Special Transit Permit issued by Customs at the port of entry costs truckers US\$300 with a validity of 6 months.

Licence to convey Customs Controlled Goods costs truckers US\$200 and is valid for one year.

COMESA CARRIERS LICENCE

On the basis of a COMESA carriers licence foreign truckers are free to operate in and out of Zambia without any further requirements.

Although Tanzania issues COMESA carriers licences to its own operators it does not recognise the validity of carrier licences issued by other member states, hence the application of the Special Transit Permit and Licence to convey Customs Controlled goods.

CUSTOMS BOND GUARANTEE

Both in Zambia and Tanzania transit goods require Customs Bond Guarantee, which on average costs about US\$150 and US\$ 400 per truck depending on the value of the consignment, respectively.

5. *Present Status of Main "TEAH" Section in Sudan and the Feeder Road Sections of Neighbouring Country Libya*

The main road section Wadi Halfa-Dongola (325 Km) has still remained as a gravel road. About 200 Km of the other main road section in the Sudan, which has been entirely a missing link before with an earth road standard. About 200 km portion of Dongloa-Khartoum (541 Km) has been upgraded to a paved road standard, while the remaining portion of it, which is 341 Km in length has still remained as a missing link as it is not still upgraded and hence left as an earth road. The other section inter linking Sudan to Ethiopia, Ghedaref-Metema (155 Km) has also remained as a missing link as it is not as well upgraded from its previous earth road standard. The status of all the road section is presented in Table 4.12.

The status of the Feeder roads linking neighbouring countries (Egypt and Libya) to Sudan have also remained unchanged, as shown in Table 4.14.

Table 4.14

Status of "TEAH" Main Road Sections in Sudan and Feeder Roads from Neighboring Countries

| Country | Road Sector | Category | Paved | Gravel | Earth | Total |
|-------------|----------------------------|---------------|-------------|------------|-------------|-------------|
| Egypt | Cairo-Aswan-Wadi Haifa | Main | 1225 | | | 1225 |
| | Sub total | Main | 1225 | | | 1225 |
| Sudan | Wadi Haifa-Dongola | Main | | 325 | | 325 |
| | Dongola-Khartoum | Main | 200 | | 341 | 541 |
| | Khartoum-Ghedaref | Main | 415 | | | 415 |
| | Ghedaref-Metema | Main | | | 155 | 155 |
| | Sub total | Main | 615 | 325 | 496 | 1436 |
| | Total | Main | 1835 | 325 | 496 | 2661 |
| Sudan/Libya | Ajdabiya-Al Khafra Uweinat | Feeder | 625 | | 675 | 1300 |
| | El Uweinat-Abri | Feeder | | | 600 | 600 |
| | Sub total | | 625 | | 1275 | 1900 |
| Sudan/Egypt | Cairo Ras Hadarba | Feeder | 834 | | 323 | 1157 |
| | Ras Hadarba-Port Sudan | Feeder | | | 300 | 300 |
| | Port Said -Ghadaref | Feeder | 766 | | | 766 |
| | Sub total | Feeder | 1600 | | 623 | 2223 |
| | Total | Feeder | 2225 | 325 | 1898 | 4123 |

6. EGYPT

Regarding the Egyptian part of the Trans east African Highway, it has already been completed as main paved road from Cairo/ Aswan to Wadi Halfa on Egyptian/ Sudanese border with a total length of 1225 km and width of 12m. As a result there is no any missing link of TEAH sections inside Egypt.

The existing main road network consists of the following two axes stretching from Cairo, along the eastern and western sides of the Nile River, to Aswan, and then Wadi Halfa located at the Sudanese border. These two axes are connected with ten bridges constructed over the Nile River.

1. The first axis is the Helwan – Elmina – Aswan (852 km) stretching along the eastern part of Nile. It is a paved road with a 12-mt total width, 7.5-mt carriage and 2.5-mt-shoulder width on each side.
2. The second axis is Cairo – Quena – Aswan (900.5 km) stretching along the western side of Nile having the same standard with the other alignment This is an Agricultural road serving the agricultural regions.

In addition to the existing main road network, the Ministry of Transport of Egypt is preparing to construct a new freeway axis starting from Alexandria on the Mediterranean Sea passing through Fayoum, Assuit, and Aswan up to Wadi Halfa. The portion from Cairo to Assuit (580 km) is now under construction. This road is already designed to be upgraded into a freeway standard through stage construction. It is considered as part of the future Road development plan through the financing of private investors. The private Road investment is now the general policy of the Government of the Arab Republic of Egypt, which is intended to encourage privatization and pumping new investment and to raise the level of services through opening new horizons for private investment. Due to budget limit the policy encourages private investment in roads. This road is also planned to continue to Aswan – Wadi Alpha, which is part of the TEAH Section.

4.5 Major problems of the Trans East African Highway Network

Physical barriers

The missing link backlogs in some countries have already been removed from the system while they are under the process of elimination from other others through the implementation of National ongoing Road Sector Development Programmes. However, there are still missing links in the system that are creating gaps between the network sections of member and neighbouring countries that are causing serious barriers to the physical integration of the sub-regions in particular and the Africa region in general.

Non-physical barriers

Among the eight Trans East African Highway member countries four are land locked countries, viz., Ethiopia, Zambia, Zimbabwe and Botswana. In addition, the neighbouring associate members such as Uganda, Rwanda, Burundi, Malawi and Swaziland are also land locked. These countries have been faced with various challenges associated to their geographical positions that are often manifested in terms of additional costs in the import/export of goods due to:

- The high road transit costs or user charges imposed to them by the neighbouring coastal countries;
- The high vehicle operating costs resulting from the additional distances in the haulage of goods using land transport, dominantly road transport that is more expensive compared to the maritime and rail transport modes.

It should be noted that the transit charges are costing these land locked countries a lot, affecting the prices of both import and export items eventually disturbing their economic activities as a whole often creating such as difficulties in attracting foreign investments and other related disorders.

In addition to these, there are problems associated to the specific countries that are presented as follows.

- Financial issue is one of the major outstanding problems of the ROADSIP in Zambia. There is risk that necessary local funding through increased road user charges in addition to allocations through government budget will not be met, causing ROADSIP II to be scaled down as enhanced in ROADSIP I. There is also a risk that the external financing from the donors and other external agencies will continue to be less than that anticipated;
- In Egypt one of the major problems in the sub-sector is the financial constraint in the development of different online services along the road network that include hotels and foodservices, gas stations and other relevant institutions. As most of these roads are crossing very remote and under developed desert regions, which are either sparsely or non-populated at all, a lot of work is required towards the development of these services and safety. At present government is taking measures to solve security problems. Measures are also taken to the resettlement of the areas that are sparsely populated;
- The main problem reported by Ethiopia in this regard is the long delays, by contractors, in the execution of road projects than the anticipated time. Almost all ongoing road projects under the ten year Road Sector Programme (RSDP) are far behind schedule;
- Despite the remarkable achievement in infra-structural development in Botswana road accidents and the resultant fatality rate has continued to show dramatic increase with ghastly

consequences on human life and property. The increased levels of congestion during peak hours has also tended to impact negatively on the country's production level as a large number of both the private, public service and freight vehicles are caught up in traffic thus resulting in waste of time and increased vehicle operation costs. Furthermore, this means loss of output for those workers caught in traffic. As a result their production for the day will be minus the time lost in traffic jam;

- Problems and constraints for the road haulage sector in Zimbabwe have varied from cost of capital to clearance delays at borders. This has been mainly due to:
 - i. Lack of transparency between Clearing Agents and Customs, which requires more transparency between the actors and the necessary practical arrangements should also be made to ensure that all stakeholders are fully informed or involved in regulation changes.
 - ii. Congestion at the Vehicle Inspection Department, which needs that there be consideration for the introduction of additional off-site inspections.

In Zimbabwe the major problem in connection to TEAH link has been that the section of the road that is located in the country has been in surfaced condition for quite a long time and as such has outlived its design life. The flooding that was caused by Cyclone Eline in March 2000 has worsened the situation. Insufficient funding for the maintenance and/or rehabilitation of the road has resulted in the road having bumpy sections.

- In Tanzania the performance of the Road Transport Sub-sector is characterized by its high traffic levels as a result of poor conditions of roads; low effective demand for transport services especially in sparsely populated regions where income for subsistence farmers is low; and overloading and high accident rates. The Road Transport system of Tanzania is also characterized by the following:
 - i. More than 80% of the operators own not more than two vehicles;
 - ii. These small operators have little technical and managerial expertise and little financial capacity to adopt to market condition changes and the economic down turns;
 - iii. Easy entry and exit in to the market which allows excess capacity in the market;
 - iv. In a few areas with good roads such as the North East of the Country, operators provide a slightly differentiated product such as luxury and semi-luxury buses for passenger services.
 - v. The challenges regarding the Urban Transport Sub-sector are often manifested in terms of: Lack of appropriate urban transport infrastructure and services to increase productivity in service availability and quality as well as financial viability with a view to meet the needs of the low income groups of the society (i.e. greater accessibility to employment activities and opportunities; and the lack of enforcement of traffic laws and regulations which need improvement.

4.6 Other policy and strategic issues

1. Zambia

In view of the backlog of maintenance and the huge amount of money required, the Government joined the World Bank Road Maintenance Initiative (RMI) in 1991 and launched a road maintenance policy seminar in February 1993. This seminar was a watershed in road maintenance

management in Zambia. The Government of Zambia accepted the recommendations of the RMI Seminar and implemented them with the following outcomes:

A road user charge tariff was introduced in the form of fuel levy with effect from 1 May 1993 with K10 per litre (about US1 cent of diesel and gasoline). Since 1993, the fuel levy was increased to K30 per litre in 1995, K40 per litre in 1996 and to 15 percent of the wholesale price in 1998 which works out to about K73 per litre (US3 cents) and K85 per litre in 1999.

As recommended by the seminar, the proceeds from the fuel levy are deposited in an autonomous road fund. The account for the road fund is maintained in commercial banks through a tender, obtaining the best terms and conditions to protect the funds. The fund is audited by the external auditors on a quarterly basis and accounts published and tabled in Parliament.

As recommended by the seminar, a new institutional structure was also established under the name of the National Roads Board (NRB) to manage and administer the road fund.

One of the notable and unique features of the Board is that it is a private sector driven Board as seven board members are from the private sector and four from public sector. The private sector members who are in the majority and nominees of non-user government organizations have the right to vote whilst four members of the public sector representing relevant ministries and the government have the right to participate and advise but not vote.

This road user dominated Board represents a major change in policy and is also a deliberate attempt by the Government to hand-over ownership of the roads and the management of the road infrastructure to the private sector as a prerequisite to promote development.

Since it came into being in October 1994 the National Roads Board has achieved the following:

1. Formulated a policy in the road sector and sought approval of the Government;
2. Instituted policy guidelines to manage and administer the road fund with the approval of the Committee of Ministers on Road Maintenance Initiative;
3. Established systems and procedures to ensure total transparency and accountability in the management of the road fund dedicated to maintenance of the road network. Accounts are audited by external Auditors and published;
4. Launched a national programme of sustainable maintenance to arrest the deterioration of the road network in the country and also prolong the life of the road network in good and fair conditions through continuous and timely maintenance; ;
5. Instituted a maintenance culture in Zambia by involving the 72 councils in the district administration and the provincial administration in formulating and implementing annual national programme of road maintenance funded through the road fund;
6. Provided guidelines to Councils, which assisted them in formulating the annual programme on road maintenance. The Councils through the representatives of the people from the grassroot level approve the programme through a resolution at a full Council meeting. District Development Co-ordinating Committee co-ordinates the programme from all the districts. It is thereafter ratified by the Provincial Co-ordinating Committee and submitted to the respective ministries to compile the national programme and submit to the NRB for funding. The NRB funds the roads identified and contracted by the district Councils. All payments to contractors for road works completed are certified by Consultants and approved by the Councils before payment is made by NRB. In this manner, the Councils take ownership for maintenance and quality of road works carried out.
7. Collaborated with the Association of Consulting Engineers of Zambia (ACEZ) to appoint consultants at provincial level to assist the district councils, district administration and the

provincial administration in drawing up a programme, preparing, evaluating and managing road maintenance contracts and certifying payments for contracted and completed road maintenance work.

8. Encouraged the development of contractors and consultants capacity in the country to the extent that unit price of road works came down by 40 percent in some areas whilst the quality of work improved. The private sector now undertakes 90% of road works and the number of contractors has increased from 4 in 1993 to about 153 in 1998.
9. Initiated action to strengthen Roads Training School and Copperbelt University to train and develop personnel to improve the performance of road sector.

Other policy and Strategies issues of the Road sub-sector in Zambia

i. CAPACITY BUILDING

The following interventions are being undertaken to build local capacity for sustainability:

- **Road Equipment Leasing Company**

The Japanese Government assisted in setting up of a Road Equipment Leasing Company to build capacity of indigenous small and medium scale contractors.

- **Credit Facility**

Credit facilities are being provided to build capacity of indigenous contractors through local banks in collaboration with the World Bank.

- **Contractor and Consultants Training**

The Roads Training School supported by ILO, UNDP and NORAD are providing training and development initiatives to build the capacity of local contractors and consultants.

- **National Construction Council (NCC)**

NCC has been set up to facilitate the development of local construction industry in the country through a plan of action under the National Policy on Construction Industry approved by the Government.

- **National Competitive Bidding (NCB)**

Ceiling for NCB has been increased from US\$500,000 to US\$1 million to provide business opportunities to local contractors on ROADSIP Projects.

- **Packaging of Contracts**

Deliberate measures have been taken to package contracts to encourage participation of small-scale indigenous contractors. Collaborative ventures between foreign and local contractors on ROADSIP Projects.

- **Procurement**

Zambia National Tender Board (ZNTB) has undertaken several initiatives to streamline and decentralise procurement process for greater efficiency, transparency and accountability.

- **National Roads Board**

Management Support Service is being provided to NRB in order to enhance its capacity to manage ROADSIP.

- **Roads Department**

Technical Assistance is being provided by NORAD and European Union to Roads Department to build its capacity to implement ROADSIP.

- **Ministry of Local Government and Housing (MLGH)**

Technical Assistance is being provided to implement Feeder Roads and Urban Roads component through two ROADSIP Consultancies.

- **Roads Training School**

NORAD is providing Technical Assistance to improve training capacity of the Copperbelt University to meet the training needs of the road construction industry.

- **Copperbelt University**

NORAD is providing Technical Assistance to improve training capacity of the Copperbelt University to meet the training needs of the road construction industry.

- ii. Road Safety**

IDA and NORAD with the advisory support from the Norwegian Public Road Administration (NPRA) are financing the implementation of an action plan developed by a team of consultants to reduce the rate of accidents in the country and to improve safety awareness in the country.

- iii. Environmental Management**

Two officers have been recruited and the Environmental Management Unit (EMU) established in the Roads Department under Ministry of Works and Supply to implement an action plan to manage environmental aspects of road rehabilitation and maintenance.

- iv. Legal Reforms**

Funding is to be provided under the IDA ROADSIP Credit to update, review and revise the Roads and Road Traffic Act (CAP 464).

2. EGYPT

Transport Sector studies and other policy measures

The following are some of the studies conducted in the country on the Transport sector:

- National Transport Study (1974). It was first updated in 1979, and the last update was in 1992 financed by grant from Japan under the complete Master Plan.
- Maintenance Management System (MMS) study based on the traffic Count data of the Authority.
- Geographical Information System (GIS), which is now under its latest stage of Implementation.
- The Ministry of Transport, represented by G.A.R.B.L.T. has also adopted a study to unify the engineering design principles of the connecting axis between the Arabic countries regarding the construction and maintenance of roads and also harmonized the axle load, dimension and total weight of vehicles to facilitate trade activities between Egypt and the other Arabian countries;
- The Ministry has also introduced a Build-Own –Operate- Transfer (BOOT) road system in Egypt by constructing a number of freeways, dual carriage way and single carriage way main roads that will be financed and constructed by private investors as investment roads. The investors will be able to charge a reasonable road toll for the use of the roads and will be given concessions on either side and at both ends of the roads in order to build agricultural, industrial

Environment

Natural gas is the main energy resource in the country, which is environmental friendly. The road transport vehicles are totally using natural gas instead of petrol or diesel.

The other environmental problem in the country has been dust. This problem has now been resolved by recycling.

3. ETHIOPIA

Road Safety

Because of the highest accident rate prevailing in Ethiopia road safety has become a very crucial issue. A study has been undertaken recently, financed by EU, which has identified sectoral road safety programme in the country. The study has also established a basis for an action plan to reduce poor safety record of the road system through the formulation and enforcement of safety regulation.

Environment

Road projects like other development project have impact upon the environment. Road project can have high, medium and low environmental risk depending on Biological, Social, physical characteristic of the project area. Therefore Environmental management Branch has been established in 1998 to co-ordinate Environmental Impact Assessment and Monitor the Implementation of mitigating measures to minimize the harmful effects of the projects.

Adherence to Road Maintenance Initiative

Before 1991 the road net work of the country has been heavily deteriorated, as adequate budget was not allocated for the maintenance of the road network.

The road condition survey made in 1992 showed that only 20% of the road network have been in good and 28% in fair condition. The remaining 52% road network at that time was in a poor condition. In 1999, after the implementation of the Road Sector Development Programme has started, the road network in good condition has been improved to 41%, while the level of poor condition road network has been reduced to 31 % and the fair condition road has remained as it is (28 %).

The percentage of road network in good condition has not been improved much because some sections were so badly deteriorated with significant structural failures that need rehabilitation work in order to restore them to their original condition. Therefore, no heavy maintenance was made on these road sections as they were categorized under a rehabilitation program. At present the rehabilitation works of these road sections is progressing well.

4. ZIMBABWE

The introduction of the Quality Operator Licensing System in phases since June 1998 replaces the old permit system, which were not only route specific, but also vehicle specific.

The regulatory frame for this sector, including the Roadmap for doing business in the sector are stipulated under Statutory Instrument 134 of 29th May 1998.

The total haulage capacity is estimated at 46 360 vehicles with a truck to trailer ratio of 1.5, of which the own account operators comprise 28 736 trucks. Operators command about 25 000 trailers with a capacity to move one billion tonnes per annum.

The ratio of own account operator trucks to total trucks has declined from 82% in 1992 to 62% in 1998, indicating a general move from own account to the transport hiring option for road haulage.

Bilateral Road Transport Agreements

Zimbabwe has made negotiations and signed bilateral road transport agreements with Malawi, Mozambique, Tanzania, Zambia, South Africa and Namibia to facilitate smooth flow of traffic and exchange of information. Negotiations were also going on with Botswana and Kenya and it was expected that an agreement could be reached and signed soon with Botswana. Zimbabwe is also actively participating in the joint route management committees, which have been formed to address problems at various border posts.

Other Policy Issues

- **Environment:** The Government of Zimbabwe is going to make Environmental Impact Assessment compulsory to be carried out with respect to any infrastructure projects that includes roads and other related transport facilities.
- **Road Management Initiative (RMI):** The Department of Roads in Zimbabwe has trained labour-based contractors in order to increase the capacity of the private sector that can carry out the maintenance of roads in the country. The Department is also looking for mechanisms of increasing the funds to be used for the purpose of road maintenance in the country.
- **Rural Travel and Transport Program (RTTP) and related gender issues:** The Department of Roads is striving to make rural travel more comfortable for more people by upgrading as many kilometres of feeder roads as possible. The improvements in the condition of the roads is meant to improve the accessibility of services such as hospitals, schools and service centres which contributes largely towards the improvement of the lives in rural areas, specially the rural women.

V. Impact of the Trans- East African Highway (TEAH) on Inter-regional land and Land-Cum-Sea Transport linkages

As the Trans- East African Highway (TEAH) is stretching from Egypt (Cairo) to Botswana (Gaborone), it has been serving as one of the main inter country road link between the Northern, Eastern and Southern sub-regions of Africa. In addition to its role as a road access in between these parts of Africa, it has also opened up an inter-regional road transport access between Africa and other continents. This is mainly due to the good geographical location of one of the member countries, Egypt, which has given the region easy access to Asia, Europe and the Middle East countries across the Mediterranean and the Red seas.

Egypt has already taken advantage of its unique geographical position and constructed different main axes interconnecting itself and consequently the other parts of Africa to the different regions in all directions. These include the axis to El-Sallum (West), Nuwaiba (East), Wadi Halfa (South, which is part of TEAH) and Rafah (North). As a result it has served as an outlet for African countries to other continents by all modes of transport including road in all directions. These inter-regional access roads constructed by Egypt are presented as follows.

- A dual carriageway with length of 752 km, width of 11.5 m for each direction and paved shoulder on both sides from Cairo- Alexandria- Matruh- Sedi Barani to El Slum as part of Cairo- Aghadir coastal road, which was one of the commitments to the Arab League;
- Interconnected Eastern and Western Arabian countries through Sinai by extending the road Cairo- Suez- El Shatt – Sadr El Hetan –Nekhel-Temed-Ras El Nakab to Nuwaiba with length of 470 km. The part Cairo to Suez is a dual carriageway with length of 130 km, width of 10.5 m and is divided by a medium. The rest of the road to Nuwaiba is a single carriage way with a width of 11.5 m. and the passengers can travel from Nuwaiba El Aqaba port in Jordan and other Arabian countries using Ferries.;
- Another axis has been constructed extending from Cairo through the bridge, which is under construction over the Suez Canal to El Qantara- Al Arish to Rafah with a total length of 350 km and further extends the Ghaza-Yafa-Hifa-Beirut-Tartus- Halab-Turkey in Europe with a length of 1200 km to connect the North African and TEAH member countries with Europe;
- Another axis extends from Ismailia to El Tasa- El Gefagafa- Abu Ugila –El Auga with length of 230 Km in Egypt and extends to Nitzana –El Kark with total length of 400 km, connecting North African and TEAH member countries with Jordan and Israel and Asia as a whole;
- Egypt has already constructed her part of the Trans East African Highway link, which extends from Egypt (Cairo) – Sudan(Wadi Halfa), with a total Length of 1225 km. The section of TEAH in Egypt comprises two axes from Cairo along the East and the West sides of the Nile River to Aswan and then Wadi Halfa located on the Sudanese border. Ten bridges constructed over the Nile River connect the two axes to one another. The west side road is 900.5 km in length, dual carriage way from Giza to Al –Aiat with width of 9.5 m for each direction and single carriage way with width of 11.5 m the rest of it. The east side road is single carriage way with a total length of 852 km and width of 11.5 m. Another axis is also constructed from Cairo to Assuit (589 km), along the western side of Nile River, 20 km away from the valley, which is part of the Freeway project and is also planned to be extended to Aswan;
- constructed a bridge over the Suez Canal with the assistance of Japan (JICA), with a total length of 9 m, including its approaches, width of 20 m(2 lane per direction), clearance of 70 m, and main span of 404 m. This bridge has a paramount significance in connecting Africa with Asia;

These achievements of Egypt in connection to Trans East African Highway can be considered as part of the ongoing efforts under the UN regional Commissions initiative, which is directed towards promoting the intra-regional and inter-regional land and land-cum-sea transport linkages. It should also be noted that the Economic Commission for Africa (ECA) is now working under this initiative

representing the African region in promoting the regional network comprising the Trans African Highways, Ports, and Railways, since the beginning of these regional initiatives.

VI. CONCLUSION AND RECOMMENDATIONS

One of the major problems encountered in relation to the TEAH network, has been the gap in the system due to the missing links. The lack of access between neighbouring countries due to these missing links has had an adverse effect over the physical integration between the member and associates member states of the different sub-regions and consequently has affected the economic co-operation among them. It is recommended that all the concerned countries should give special emphasis to this issue and hence concentrate on the upgrading of the exiting inter country earth roads or the missing sections TEAH. Once the physical integration is made possible through developed road infrastructure the trade and other economic as well as social interactions will be promoted taking advantage of the transport access. These interactions need to be further facilitated through bilateral agreements among countries based on the different schemes and protocols of concerned RECs and their Transport Organs..

The lack of financial resources has been one of the factors affecting the physical implementation of the TEAH network development, especially the improvement of the missing links inside some of the member countries that are known for their low economic performance. The mobilization of bilateral and multilateral financiers will then be very essential in this regard mainly focusing on the assistance especially dedicated to the improvement of the missing links and the development of the main network in the TEAH system. The formulation of a special fund raising program is recommended here in relation to the development of the TEAH network and the elimination of the missing links inside the different countries. The role of ECA in this regard will be to consult the different ways and means with the concerned countries and RECs with their transport organs in order to facilitate the proposed mobilization of financiers. These include advisory and other technical assistances on the organization of donor's conferences and providing other necessary advisory services.

Non-physical barriers

In addition to the physical barriers due to the indicated missing links there are also non-physical barriers affecting the inter-country road transport operations of member countries, associated to the disparities in terms of transit services, customs and other regulations arising from the policy framework of the different countries. The role of RECs and their transport organs, in relation to these problems is very crucial in order to harmonise these irregularities affecting the inter-country operational activities of the sub-sector.

Regarding the TEAH links, all of the member and the associate members countries, with the exception of Botswana, are under COMESA. So far COMESA has implemented different measures in relation to this problem in order to curb the different non-physical constraints, and overcome the challenges arising due to these discrepancies, such as the schemes of COMESA Carriers license, the yellow card system, etc. However, these schemes are not fully implemented by the member States. For instance if we take the COMESA Carriers licence, which allows foreign truckers to operate freely in and out of the member countries, it is fully recognised by Zambia without any further conditions. On the other hand, Tanzania does not recognise the validity of the Carriers Licences issued by other member states, although it has issued COMESA Carriers Licence to its own operators. This kind of disparity is very common in the implementation of the different COMESA schemes, which has been directly affecting healthy road transport operations among the member countries. Especially the landlocked countries are victims of these inconsistencies. Therefore, the

the sub-regional integration in general and overcome the problem of the land locked member countries in particular.

A lot of work will then be required in relation to the sensitisation of these issues to the member States, which should be considered as the main part of the effort towards the anticipated economic integration of Africa. Similarly the implementation of the Policies and Protocols of SATTC and SADC on institutional Transit Traffic Facilitation measures and the promotion of an efficient and optimal utilization of existing road infrastructure must be ensured. The proper implementation of Bilateral Road Transport Agreements between member countries should also be ensured through close follow up and monitoring activities of these sub-regional organs including COMESA, SATTC and SADC.

As shown in the previous sections the current state of the road network of most of the member countries, including the TEAH sections, is not in a good condition. This has been mainly due to the problem of maintenance backlogs that had been accumulated for many years. Although there can be different reasons for the negligence of the road network that has resulted in the high deterioration of the infrastructure, the weak maintenance policies arising from the various political and economic conditions prevailing in the different countries have been some of the driving factors. In addition, the lack of frequent maintenance due to financial constraints has also been obtained as a common phenomenon among all sub-Saharan African member countries. The extent of the problem had thus called for new policies in some countries and they have introduced or are in the process of introducing the Road Fund, which indeed is a fund collected from different sources including user charges and will be fully dedicated only to the maintenance of roads. This tendency is very encouraging and appreciable, as it will guarantee the sustainable development of the road infrastructure of the different countries. The remaining member countries should also be encouraged to strive for the establishment of their own dedicated Road Fund, in order to remove their maintenance backlog and ensure sustainable road network development as a whole, and the inter-country TEAH sections that are required for sub-regional and regional economic integration as well.

In addition, the Road Maintenance Initiative (RMI) of the World Bank that has already been adopted by some of the TEAH member Sub-Saharan African countries will also supplement the other outstanding efforts to overcome the problems associated with road maintenance. Therefore, the other countries are also recommended to join the RMI of the World Bank

The Build-Own -Operate –Transfer (BOOT) road development policy or system, which has been introduced by two of the member countries, viz., Egypt and Tanzania, will contribute a lot to the expansion of their road infrastructure and ensure its sustainability through the involvement of the private investors. As the private sector participation will allow the fast growth of the road infrastructure and ensures its sustainability it should be encouraged and other member countries should also be sensitised about this new concept in the form of seminars, workshops and other means. ECA and the Regional Economic Communities (RECs) are expected to provide the necessary technical as well as advisory services in this regard. The adoption of this concept, however, depends on the context of the different countries, which may need thorough review before implementation, taking the level of in-house capacity building of the private sector, in to account.

It will also be worthwhile to note the various efforts on Egyptian side of the TEAH, directed towards the expansion of the inter-regional access roads and the construction of extraordinary bridges over the Suez Canal, which are part of the ongoing efforts under the UN regional Commissions initiative in order to promote the intra-regional and inter-regional land and land-cum sea transport linkages between the different regions. The other member states with similar

goal. The necessary technical and advisory support should be provided to Egypt and the other countries by the concerned RECs and the ECA, under the objective of promoting inter-regional integration.

Finally, in order to achieve the different regional and sub-regional goals and to promote and accelerate the physical integration of member States through coordinated efforts, the Trans- East African Highway Network Development Programme should be formulated as part of the Trans African Highway Programme. This requires that the institutional basis be set up again, which is proposed here as the centralized Trans- African Highway Bureau that would be the focal point for the TAH authorities including the TEAH Authority.

The revitalization of TEAH Network and the ultimate goal towards the establishment of a single Authority will provide the basis for the full co-ordination of plans and programmes formulated at the national and sub-regional levels into a coherent continental network.

The institutional structure under a single Authority will therefore allow effective and dynamic servicing of the activities of revitalizing Trans- East African Highway links and helps reduce and minimize the cost borne by member states.

The Trans- East African Highway Programme must therefore aim at:

- establishing an institutional framework which would enable member Countries to develop a coordinated and integrated sub-regional highway network, which shall form the basis for a sound regional road transport development;
- coordination and harmonization of the road planning processes at the national and sub-regional levels;
- Reconciling any divergences towards the promotion of a unified and integrated regional network.

ANNEX I

Current status of Cairo - Gaborone (Trans-East African Highway) main Links and feeder roads

| LENGTH (KM) | | | | | | |
|-------------|--|----------|-------|--------|-------|-------|
| | Description | Category | Paved | Gravel | Earth | Total |
| EGYPT | 1) Cairo - Aswan - Wadi Halfa | Main | 1225 | - | - | 1225 |
| | SUB TOTAL | | 1225 | - | - | 1225 |
| SUDAN | 2) Wadi Halfa - Dongola | " | - | 325 | - | 325 |
| | 3) Dongola-Khartoum | " | 200 | - | 341 | 541 |
| | 4) Khartoum - Ghedaref | " | 415 | - | - | 415 |
| | 5) Ghedaref - Metema | " | - | - | 155 | 155 |
| | SUB TOTAL | | 615 | 325 | 496 | 1436 |
| ETHIOPIA | 6) Metema - Azezo | " | - | 112 | 63 | 175 |
| | 7) Azezo - Dejen | " | 163 | 360 | - | 523 |
| | 8) Dejen - Moyale | " | 982 | - | - | 982 |
| | SUB TOTAL | | 1145 | 472 | 63 | 1680 |
| KENYA | 9) Moyale - Isiolo | " | - | 534 | - | 534 |
| | 10) Isiolo - Nairobi - Namage | " | 429 | - | - | 429 |
| | SUB TOTAL | | 429 | 534 | - | 963 |
| TANZANIA | 11) Namanga - Arusha - Makuyuni | " | 182 | - | - | 182 |
| | 12) Makuyuni - Iringa | " | 125 | 551 | - | 676 |
| | 13) Iringa - Tunduma | " | 433 | - | - | 433 |
| | SUB TOTAL | | 740 | 551 | - | 1291 |
| ZAMBIA | 14) Tunduma - Mpika - Kapiri - Mposhi - Lusaka - Livingstone | " | 1488 | - | - | 1488 |
| | SUB TOTAL | | 1488 | - | - | 1488 |
| ZIMBABWE | 15) Livingstone - Bulawayo - Plumtree | " | 539 | - | - | 539 |
| | SUB TOTAL | | 539 | - | - | 539 |
| BOTSWANA | 16) Plumtree - Francistown - Gaborone | " | 537 | - | - | 537 |
| | SUB TOTAL | | 537 | - | - | 537 |
| | GROSS TOTAL (KM) | | 6718 | 1882 | 559 | 9159 |
| | PERCENTAGE | | 73 | 21 | 6 | 100 |

Cairo - Gaborone Trans-East African Highway Links (feeders)

| LENGTH (KM) | | | | | |
|---|----------|-------------|------------|-------------|-------------|
| Description | Category | Paved | Gravel | Earth | Total |
| LIBYA - SUDAN | | | | | |
| 1) Ajdabiya - Al Khafra El Uweinat | Feeder | 625 | - | 675 | 1,300 |
| 2) El Uweinat - Abri | " | - | - | 600 | 600 |
| Sub total | | 625 | | 1275 | 1900 |
| DJIBOUTI - ETHIOPIE | | | | | |
| 3) Djibouti - Dewele | " | 96 | 11 | - | 107 |
| 4) Dewele - Dire Dawa | " | - | 230 | - | 230 |
| 5) Alen Maya - Mojo | " | 155 | 278 | - | 433 |
| Sub total | | 251 | 519 | - | 770 |
| SOMALIA - ETIOPIA | | | | | |
| 6) Mogadiscio - Ferfer (Ethiopia Front) | " | 390 | - | - | 390 |
| 7) Ferfer - Alem Maya | " | 653 | 140 | - | 793 |
| Sub total | | 1043 | 140 | - | 1183 |
| SOMALIA - KENYA | | | | | |
| 8) Mogadiscio - Liboi | " | 566 | - | 225 | 791 |
| 9) Liboi - Thika | " | 341 | 190 | - | 531 |
| Sub total | | 907 | 190 | 225 | 1322 |
| MALAWI - ZAMBIA | | | | | |
| 10) Lilongwe - Zambia Front | " | 128 | - | - | 128 |
| 11) Zambia - Front - Lusaka | " | 589 | - | - | 589 |
| Sub total | | 717 | - | - | 717 |
| MALAWI - TANZANIA | | | | | |
| 12) Lilongwe - Tunduma | " | 663 | 20 | 271 | 954 |
| 13) Uyole-Kasumulo | " | 104 | - | - | 104 |
| Sub total | | 767 | 20 | 271 | 1058 |
| MOZAMBIQUE - MALAWI | | | | | |
| 14) Maputo - Tete | " | 1,656 | - | - | 1,656 |
| 15) Tete - Cassacatiza | " | 277 | - | - | 277 |
| 16) Cassacatiza - Lusaka | " | 524 | - | - | 524 |
| 17) Tete - Bracanga | " | 272 | - | - | 272 |
| 18) Bracanga - Lilongwe | " | 97 | - | - | 97 |
| 19) Masaka - Mutukula | " | - | - | - | - |
| Sub total | | 2826 | - | - | 2826 |
| UGANDA - TANZANIA | | | | | |
| 20) Masaka- Mutukula | " | 89 | - | - | 89 |
| 21) Mutukula - Lusahunga | " | - | 288 | - | 288 |
| Sub total | | 89 | 288 | - | 377 |
| RWANDA - TANZANIA | | | | | |
| 22) Kigali - Rusumo | " | 170 | - | - | 170 |
| 23) Rusumo- Nyakasanza | " | 34 | - | - | 34 |
| 24) Nyakasanza- Lusahunga | " | 60 | - | - | 60 |
| Sub total | | 264 | - | - | 264 |
| BURUNDI - TANZANIA | | | | | |
| 25) Bujumbura - Kobero | " | 235 | - | - | 235 |
| 26) Kobero - Nyakasanza | " | 60 | - | - | 60 |
| 27) Nyakasanza - Lusahunga | " | 70 | - | - | 70 |
| 28) Lusahunga - Isaka | " | 241 | - | - | 241 |
| 29) Isaka - Dodoma | " | - | 484 | 40 | 524 |
| Sub total | | 606 | 484 | 40 | 1130 |
| TANZANIA-MALAWI | | | | | |

| | | | | | | |
|---------------------------------|---|--------|-------|------|------|-------|
| 30) | Ugole-Kasumulo | " | 104 | - | - | 104 |
| Sub total | | | 104 | | | 104 |
| SWAZILAND - MOZAMBIQUE - ZAMBIA | | | | | | |
| 31) | Mbabane - Nama'acha | Feeder | 87 | 54 | - | 141 |
| 32) | Nama'acha - Maputo | " | 77 | - | - | 77 |
| 33) | 32) Maputo - Inhambane - Chimoio - Changara - Tete - Cassacatiza - Katete | " | 1,568 | 288 | 50 | 1,906 |
| Sub total | | | 1732 | 342 | 50 | 2124 |
| TANZANIA | | | | | | |
| 34) | Dar-es-Salam - Arusha | " | 663 | - | - | 663 |
| 35) | Chalinze - Morogoro | " | 82 | - | - | 82 |
| 36) | Morogoro - Dodoma | " | 261 | - | - | 261 |
| 37) | Dodoma- Iringa | " | 10 | 246 | - | 256 |
| 38) | 37) Morogoro - Iringa | " | 297 | - | - | 297 |
| Sub total | | | 1313 | 246 | | 1559 |
| EGYPT - SUDAN | | | | | | |
| 39) | Cairo - Ras Hadarba | " | 834 | - | 323 | 1,157 |
| 40) | Ras Hadarba - Port Sudan | " | - | - | 300 | 300 |
| 41) | Port Sudan - Ghadaref | " | 766 | - | - | 766 |
| Sub total | | | 1600 | | 623 | 2223 |
| Gross Total (km) | | | 12844 | 1988 | 2905 | 17557 |
| Percentage | | | 73 | 11 | 16 | 100 |

ANNEX II

Status of Cairo - Gaborone (Trans-East African Highway) main Links and feeder roads during last update (1993)

| LENGTH (KM) | | | | | | |
|-------------|--|----------|-------|--------|-------|-------|
| | Description | Category | Paved | Gravel | Earth | Total |
| EGYPT | 1) Cairo - Aswan - Wadi Hafa | Main | 951 | - | - | 951 |
| | SUB TOTAL | | 951 | - | - | 951 |
| SUDAN | 2) Wadi Hafa - Dongola | " | - | 325 | - | 325 |
| | 3) Dongola-Khartoum | " | | - | 541 | 541 |
| | 4) Khartoum - Ghedaref | " | 415 | - | - | 415 |
| | 5) Ghedaref - Metema | " | | - | 155 | 155 |
| | SUB TOTAL | | 415 | 325 | 696 | 1436 |
| ETHIOPIA | 6) Metema - Azeso | " | - | 51 | 159 | 210 |
| | 7) Azeso - Dejen | " | 153 | 91 | 279 | 523 |
| | 8) Dejen - Moyale | " | 982 | - | - | 982 |
| | SUB TOTAL | | 1135 | 142 | 438 | 1715 |
| KENYA | 9) Moyale - Isiolo | " | - | 507 | - | 507 |
| | 10) Isiolo - Nairobi - Namage | " | 429 | - | - | 429 |
| | SUB TOTAL | | 429 | 507 | - | 936 |
| TANZANIA | 11) Namanga - Arusha - Wakuyuni | " | 182 | - | - | 182 |
| | 12) Makuyuni - Iringa | " | 25 | 596 | - | 621 |
| | 13) Iringa - Tunduma | " | 459 | - | - | 459 |
| | SUB TOTAL | | 666 | 596 | - | 1262 |
| ZAMBIA | 14) Tunduma - Mpika - Kapiri - Mposhi - Lusaka - Livingstone | " | 1488 | - | - | 1488 |
| | SUB TOTAL | | 1488 | - | - | 1488 |
| ZIMBABWE | 15) Livingstone - Bulawayo - Plumtree | " | 539 | - | - | 539 |
| | SUB TOTAL | | 539 | - | - | 539 |
| BOTSWANA | 16) Plumtree - Francistown - Gaborone | " | 537 | - | - | 537 |
| | SUB TOTAL | | 537 | - | - | 537 |

Cairo - Gaborone Trans-East African Highway Links (feeder)

| LENGTH (KM) | | | | | |
|---|-----------------|--------------|---------------|--------------|--------------|
| Description | Category | Paved | Gravel | Earth | Total |
| LIBYA - SUDAN | Feeder | | | | |
| 1) Ajdabiya - Al Khafra El Uweinat | " | 625 | - | 675 | 1,300 |
| 2) El Uweinat - Abri | " | - | - | 600 | 600 |
| Sub total | | 625 | | 1275 | 1900 |
| DJIBOUTI - ETHIOPIE | | | | | |
| 3) Djibouti - Dewele | " | 96 | - | 11 | 107 |
| 4) Dewele - Dire Dawa | " | - | - | 230 | 230 |
| 5) Alen Maya - Mojo | " | 155 | 278 | - | 433 |
| Sub total | | 251 | 278 | 241 | 770 |
| SOMALIA - ETIOPIA | | | | | |
| 6) Mogadiscio - Ferfer (Ethiopia Front) | " | 390 | - | - | 390 |
| 7) Ferfer - Alem Maya | " | 653 | 140 | - | 793 |
| Sub total | | 1043 | 140 | | 1183 |
| SOMALIA - KENYA | | | | | |
| 8) Mogadiscio - Liboi | " | 566 | - | 225 | 791 |
| 9) Liboi - Thika | " | 341 | 190 | - | 531 |
| Sub total | | 907 | 190 | 225 | 1322 |
| MALAWI - ZAMBIA | | | | | |
| 10) Lilongwe - Zambia Front | " | 128 | - | - | 128 |
| 11) Zambia - Front - Lusaka | " | 589 | - | - | 589 |
| Sub total | | 717 | | | 717 |
| MALAWI - TANZANIA | | | | | |
| 12) Lilongwe - Tunduma | " | 663 | 20 | 271 | 954 |
| Sub total | | 663 | 20 | 271 | 954 |
| MOZAMBIQUE - MALAWI | | | | | |
| 13) Maputo - Tete | " | 1,656 | - | - | 1,656 |
| 14) Tete - Cassacatiza | " | 277 | - | - | 277 |
| 15) Cassacatiza - Lusaka | " | 524 | - | - | 524 |
| 16) Tete - Bracanga | " | 272 | - | - | 272 |
| 17) Bracanga - Lilongwe | " | 97 | - | - | 97 |
| Sub total | | 2826 | | | 2826 |
| UGANDA - TANZANIA | | | | | |
| 18) Masaka - Mutukula | " | 89 | - | - | 89 |
| 19) Mutukula - Lusahanga | " | - | - | 180 | 180 |
| Sub Total | | 89 | | 180 | 269 |
| RWANDA - TANZANIA | | | | | |
| 20) Kigali - Rusumo | " | 170 | - | - | 170 |
| 21) Rusumo - Rulunge | " | - | - | 50 | 50 |
| Sub Total | | 170 | | 50 | 220 |
| BURUNDI - TANZANIA | | | | | |
| 22) Bujumbura - Kobero | " | 235 | - | - | 235 |
| 23) Kobero - Rulenge | " | - | - | 50 | 50 |
| 24) Rulenge - Lusahanga | " | - | - | 50 | 50 |
| 25) Lusahanga - Isaka | " | - | - | 127 | 127 |
| 26) Isaka - Dodoma | " | - | 484 | 40 | 524 |
| Sub Total | | 235 | 484 | 267 | 986 |
| SWAZILAND - MOZAMBIQUE - ZAMBIA | | | | | |
| 27) Mbabane - Nama'acha | Feeder | 87 | 54 | - | 141 |
| 28) Nama'acha - Maputo | " | 77 | - | - | 77 |
| 29) Maputo - Inhambane - Chimoio - Changara - Tete - Cassacatiza - Katete | " | 1,568 | 288 | 50 | 1,902 |

| | | | | | | |
|-------------------------|--------------------------|---|---------------|--------------|--------------|--------------|
| 32) | Morogoro - Dodoma | " | 340 | - | - | 340 |
| 33) | Morogoro - Iringa | " | 297 | - | - | 297 |
| Sub Total | | | 1368 | | | 1368 |
| EGYPT - SUDAN | | | | | | |
| 34) | Cairo - Ras Hadarba | " | 834 | - | 323 | 1,157 |
| 35) | Ras Hadarba - Port Sudan | " | - | - | 300 | 300 |
| 36) | Port Sudan - Ghadaref | " | 766 | - | - | 766 |
| Sub total | | | 1600 | | 623 | 2223 |
| Gross Total (km) | | | 12,226 | 1,454 | 3,182 | 16862 |
| Percentage | | | 72 | 9 | 19 | 100 |

ANNEX IV

LIST OF PERSONS CONTACTED

- 1) Mr. Alaa Mostafa Kamel,
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- 2) Professor M. Rashad El Mitaingy
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Expert in UNDP Transportation Planning
- 3) Mr. Walid Badawi
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United Nations Development Programme (UNDP) Office
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- 4) Andrew Nkaro
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- 5) Mr. Obusitswe Bonnyface
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