

ROAD NETWORK

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Background

This chapter considers the need to rehabilitate the national road network. Responsibility for the network is divided into four areas of control.

2. The Ministry of Works has responsibility for the nation's major trunk road network. This has a total length of approximately 7,000 kms., of which about 2,000 kms. are sealed. Previously, responsibility for this network was vested in the former Ministry of Works and Housing. For administrative purposes, Uganda is divided into four regions which are centred around Kampala, Fort Portal, Mbale and Gulu. Each region is subdivided into three or four districts under the control of a district engineer with appropriate staff and facilities. The overall Administrative Headquarters is at Entebbe.

3. The Ministry of Regional Administration and Local Government has responsibility for the balance of the public road network, both urban and rural. The Ministry has other functions such as control of open spaces, drainage, street lighting, refuse collection, etc., and estimates or rehabilitation costs in this chapter allow for these functions.

4. Rural Local Authorities: these have responsibility for the construction and maintenance of some 20,000 kms. of secondary roads, virtually all of which are unsealed. The authority operates with 25 districts, and has the power to levy taxes in order to finance services.

5. Urban Authorities: established urban centres such as Kampala and Jinja have responsibility for the construction and maintenance of the road network within their urban boundaries. Because of high traffic densities in these areas, road conditions are generally worse than in the rural areas. There is no maintenance on the trunk roads within the urban areas. Discussions with senior officers in Urban Authorities and the Ministry of Works elicited the opinion that each believes the other Authority is responsible for these lengths of road. Consequently no maintenance has been carried out for many years and this is reflected in the urban trunk road conditions.

6. We are of the opinion that immediate direction must be given to each Authority as to the sections of road under their control and that the urban trunk road system responsibility should rest with the Ministry of Works.

7. Finally, estate roads are the responsibility of the various agricultural estates and form an essential part of the road network for the movement of produce within the estates. The proper care and maintenance of these roads must be achieved in order that produce may be moved on an all-weather basis. Requirements are comparatively modest and contract grading and resheeting on occasions would be sufficient treatment. It is important, however, that estate roads be maintained on this basis.

Introduction

8. Uganda's transportation capacity has been decimated both by years of neglect and also by looting during the liberation war. It is important now to consider the capability of the road network to carry the expected increase in the number of vehicles. Road repairs are time consuming and therefore must be considered an immediate priority.

9. Sections of road in the urban areas of Kampala and Jinja have been inspected. Lengths of trunk and minor roads, both sealed and unsealed, were inspected in eastern and western Uganda. As a result of these inspections and discussions with various officials, the priorities for rehabilitation are clear. Many lengths of sealed roads are at a critical point of rapid degeneration due to lack of routine maintenance. This is evident from the number of sizeable potholes which are untreated and the great lengths of shoulder erosion. Pavement deformations are developing in many areas.

Drainage lines are generally not functioning and there is evidence in many areas of pavement structural deficiencies, relative to present day axle loadings. Unsealed roads are in a similar state of disrepair.

10. From our observations, we have reached the opinion that:
- a) The routine maintenance organisation must be made effective;
  - b) Mobile heavy maintenance units for resheeting and resealing should be established on a direct labour basis;
  - c) Associated with b) above quarrying capacity must be regenerated;
  - d) Workshop facilities must be rehabilitated;
  - e) The Materials Testing Laboratory at Kireka must be re-equipped;
  - f) The Road School for training technicians should be re-established;
  - g) Road design capacity should be restored;
  - h) Road construction programmes should be re-evaluated and apart from necessary projects, such as the access road to the Katwe Salt Factory, construction programmes should be deferred until after the 1980/81 rehabilitation period;
  - i) Some heavy maintenance and resealing in the rehabilitation period will have to be carried out by contract. The aim should be to develop a balanced direct labour and contract operation beyond the rehabilitation period;
  - j) Maximum use should be made of existing organisations and capital installations which have proved successful in the past.

#### Problems and Policies

11. The road network is here considered as an entity. It is important to accept that information is not available from the northern areas of Uganda because of security imposed as a result of the recent liberation war. Specific facts are quoted, where known, as examples and general conclusions are based on the data known to apply in the southern areas. As stated in the introduction, maintenance must be considered the first priority. We are of the firm opinion that maintenance must be restored to reasonable levels within the next two years. If this aim is not achieved, then the much more costly task of considerable reconstruction, over and above that which is now necessary, will have to be faced.

#### War Damage

12. Damage to roads and bridges as a direct result of the liberation war is assessed as remarkably light. Some minor bridges and culverts have been demolished but the only evidence of this during our inspections was near Mityana on the Class II murrum road between Kampala and Fort Portal. No reports of other damage to road structures have been received. The office and storage complex at Mbarara was damaged by rocket or shell fire during the liberation war.

13. The results of looting and wanton destruction during, and immediately following, the liberation war are of a far more serious nature. In summary a reasonable overall estimate of looting in the various Authorities is:

- 50% of furniture and fixtures wantonly destroyed or stolen;
- 90% of workshop tools and equipment destroyed or looted.  
(The central workshops at Kampala have virtually no tools or spare parts);
- 90% of stationery damaged or looted;
- 40% of records lost or destroyed;
- 30% of plant lost or destroyed;
- 95% of vehicles lost or destroyed.

14. These percentage estimates were submitted to us by senior civil servants and are considered reasonable following inspections to selected areas.

15. As an example, the following list of road maintenance equipment available to the

Ministry of Works in December 1978, compared with that lost during the war, indicates the seriousness of the situation in this area.

<u>Items</u>	<u>No. in 1978</u>	<u>No. lost during War</u>
Tippers	46	31
Flat lorries	16	12
Graders	35	10
Water tankers	4	2
Steel wheel rollers	-	-
Heavy vibrating rollers	5	-
Light vibrating rollers	10	4
Bitumen heaters (handspray)	8	3
Bitumen tankers	1	1
Tractors and trailers	12	8
Traxcaters cat. 951C	10	3
Bulldozer cat. D8	-	-
Diesel pumps	4	2
Premix mixall	2	-
Land rovers	16	16

Notes: 1. Tippers are used for road maintenance, and flat lorries for housing construction.

2. The plant which has been saved is in poor condition and generally not able to work. Heavy overhauls are required.

3. The situation with the Construction Divisions of the various Authorities is similar.

16. The losses and dilapidated state of the retained plant has resulted in the collapse of the road maintenance system. During the inspection of approximately 1,000 kms. of trunk and minor roads this statement was confirmed, as the few gangs seen working were invariably cutting grass on the shoulders and in the drains. Very occasionally there was evidence of attempts to repair potholes but this was with the use of soil dug from the side of the road which was most unsuitable in quality.

17. The effect of war damage and looting is very serious in the workshop areas. During inspections various workshops were visited. Looting has resulted in few basic tools being available in the workshops at Kampala, Fort Portal and Jinja. Very few tools were retained at Mbale while the Ministry of Works workshop at Mbarara has been taken over by the military authorities and seemed to have a reasonable number of tools to permit the repair of military vehicles. In all centres, store rooms have been forcibly entered and spare parts looted. Essential items such as batteries, oil filters, fan belts. etc. have disappeared for all types of vehicle. As a result of the looting of tools and spare parts it is impossible to repair or maintain the few vehicles which have been recovered. A similar situation exists in the workshops and stores of private companies. For example, the Tata Company had established a well equipped central workshop in Kampala with smaller agencies throughout Uganda. None of these centres is known to be operational.

18. The Ministry of Works' Materials Laboratory is situated at Kireka on the outskirts of Kampala. The complex was visited. It was apparent that as a result of looting the laboratory cannot function. A full list of broken and lost equipment is on file and the re-equipping of this unit must be regarded as of very high priority, since the rehabilitation of roads will require strict quality control. Apart from quality control an essential function of the laboratory is to locate sources of road making material. The restoration of these and associated functions is considered to be

of great importance as the opening of new pits will reduce haulage loads and therefore reduce costs. The service of the Laboratory should be available to all Authorities.

19. The Ministry of Works' Road School is not functioning because of the effects of the liberation war. We consider it to be important to re-equip the school in order that the technical personnel of all of the Road Authorities may benefit from standard tuition.

20. Various ferry links are an integral part of Uganda's road network. Reports received indicate that these have been severely damaged during the fighting. We were unable to inspect any of the ferry services but suggest that a local evaluation of damage should be made as a matter of high priority.

#### Period 1970-79

21. From comments and facts received it is reasonable to state that the general level of finance allocated and the personnel structure were satisfactory in the late 1960s. Maintenance levels and road improvements were comparable with those in other countries. International bodies such as the World Bank, the Commonwealth Development Fund, etc. provided loans and grants for specific projects and technical assistance where appropriate. Uganda had, in 1970, the ability and financial capacity to implement the proposals of the National Development Programme.

22. By the end of the 1970s, the situation had changed dramatically. Regravelling in 1978 was 10% of the 1970/71 level, and the cost of regravelling is now Shs. 100,000 per km. compared with Shs. 7,000 per km. The cost of resealing is now Shs. 300,000 per km. compared with Shs. 24,000 per km. The costs of resheeting, materials, etc have all increased to a similar degree.

23. Associated with the escalating costs was a loss of expertise (both indigenous and expatriate), a decline in discipline, an increasing lack of spare parts; materials such as lime and cement became virtually unobtainable; Government audit ceased to exist, and civil engineering contractors left Uganda.

24. The combined effect of eight years of mismanagement and looting is that Uganda has been left with Road Authorities which do not have the means even to carry out effective routine maintenance.

#### Effects of Changes in East African Organisations

25. The main adverse effect on the road system was the break-up of the East African Railways. This factor caused an increase in the volume of heavy vehicles and trailers on the road network. The most serious effect is on sections of the Kampala/Kabale road with vehicles destined to and from Kigali in Rwanda and Eastern Zaire. Roads were not designed to carry this volume and are showing signs of failure in various degrees.

#### The Task Ahead

26. To restore the trunk road network to its 1970 level of service within the next two years is an enormous but essential task. Uganda's economy depends heavily on its ability to transport agricultural produce and other commodities efficiently. If the overall road network is not improved to its former levels of service then the cost to the country must be measured in terms of reduced travel speeds, increased use of fuel, rapid deterioration of all vehicles, increased accident rates and the ultimate exceptionally high cost of reconstruction compared with the more modest cost of immediate maintenance.

#### Policies and Resources Needed

27. With the exception of specific projects, we believe that the first priority for the overall road network is to re-establish the various maintenance organisations. This will require, over the coming two years:

- Tools and equipment for road gangs;

- The refurbishing of depots and workshops;
- Re-establishing plant and vehicle fleets;
- Re-equipping the Materials Laboratory;
- Re-establishing the Road School;
- Making existing quarries operational;
- Locating and operating new quarries - considering the use of mobile crushers on a direct labour basis;
- Establishing a capacity to reseal 200 kms. of road per annum by direct labour;
- Establishing direct labour reconstruction capacity;
- Establishing a direct labour regravelling capacity.

28. We advocate the redevelopment of a capacity to carry out any type of work by direct labour, with the possible exception of heavy earthworks. Experience in direct labour operations is the ideal training ground for inexperienced engineers. With experience in the direct control of plant, personnel and financial allocations, together with the experience gained in overcoming the inevitable problems which arise on all construction works, an engineer is better able to supervise work carried out by contract at a later date. It is, of course, essential that direct labour operations should be established and run efficiently. An efficiently operated direct labour capacity gives an alternative if contract tenders are not competitive. A direct labour capacity to carry out heavy earthworks is not recommended as this operation requires specialised machinery which may not be fully utilised in ongoing projects.

29. We are of the opinion that the aim should be an even balance between direct labour and contract capacities for resealing, heavy maintenance and construction. Routine maintenance should continue to be carried out directly by the various Authorities, as in the past.

30. Routine maintenance must be commenced at the earliest possible date. An urban and rural resealing programme of 20% of total sealed length per year should be aimed for in the coming two years. It is also estimated that heavy expenditures must be incurred with regravelling unsealed roads and strengthening sections of sealed roads. Time and circumstances have not permitted us to suggest a specific priority programme but guidelines are offered and best estimates made.

31. Apart from the structures destroyed in the Mitya, the bridges and culverts along the routes inspected were in reasonable condition. A few culvert sections had collapsed, usually at the ends and not on the carriageways. Repair of these is relatively minor and inexpensive work. Unless reports are subsequently received regarding bridge damage, we are of the opinion that all planned bridge replacements should be deferred until after the rehabilitation period.

32. Previously in this chapter, we stated that construction projects should be deferred with certain exceptions. Our opinions are now offered on this subject.

33. The UNECA report dated May 1976 recommends reconstructing on a first priority basis the following sections of road:

Kampala-Masaka	-	100 kms.
Lyantonde-Mbarara	-	64 kms.
Mbarara-Ntungamo	-	78 kms.
Katunguru-Fort Portal	-	115 kms.

Kampala-Masaka - This section was inspected and pavement strengthening is required on several lengths, especially 0-20 kms. from Kampala.

Lyantonde-Mbarara - Except for low lying areas, this section of road is in relatively good condition. We are of the opinion that the low lying lengths should be strengthened and major patching work be carried out on local failures.

This, followed by selective resealing and proper routine maintenance, should be sufficient for several years.

Mbarara-Ntungamo - We were unable to inspect this section and therefore make no comment.

Katunguru-Fort Portal - With routine maintenance, minor patching and selective resealing we are of the opinion that this section of road need not be reconstructed for at least another five years.

34. The Action Programme, published in July 1977 lists many new construction and reconstruction proposals (p. 155). Work has commenced on some of the projects. We were unable to inspect many of the areas in which work is proposed. However, we note for example that there is a proposal to duplicate the Entebbe Airport Road. The existing road is structurally sound and with proper maintenance will remain so for several years. Duplication is considered to be of low relative priority and beyond the terms of rehabilitation. We are of the opinion that the construction proposals in the programme must be re-evaluated in the light of the heavy financial and material resources needed to repair and retain the existing network. The re-evaluation must also consider the need to open all-weather access to projects such as the Katwe Salt Factory and the improvement of the Katunguru - Ishasha road to encourage international traffic to use the railhead facilities at Kasese. We stress the importance of diverting to rail the heavy loads now carried by road on the grounds of economy of transport and lessening road maintenance costs.

35. Estimates by government agencies of rehabilitation requirements are listed in detail on file. The needs are basically plant, tools, equipment, office restoration, vehicles and workshop facilities. The listed details are considered reasonable in all areas except the claimed requirements for the rural Local Authority districts. In this area the claimed needs would give a capacity over and above any which has existed in the last 10 years. This, of course, may be desirable but in principle goes beyond the definition of rehabilitation. Even if such needs could be justified we are of the opinion that such an expansion of capacity could not be managed efficiently over the next two years. Accordingly we have based our financial estimates in this area on more modest requirements.

36. The detailed lists have been costed as accurately as possible and are shown in Table 17.1.

Table 17.1  
Costs of Rehabilitation  
(Shs. m.)

	1979/80		1980/81	
	Foreign Exchange	Local	Foreign Exchange	Local
Ministry of Works Direct Labour - maintenance	80.0	15.0	67.0	9.0
Ministry of Works Contract - maintenance	70.0	15.0	70.0	15.0
Ministry of Works Contract - construction	60.0	15.0	60.0	15.0
Local Authorities - urban	40.0	15.0	40.0	15.0
Local Authorities - rural	50.0	10.0	40.0	5.0
<b>TOTAL</b>	<b>300.0</b>	<b>70.0</b>	<b>277.0</b>	<b>59.0</b>

37. The costs shown in Table 17.1 do not include local wages, etc., and solely indicate capital expenditure on plant and equipment, etc., needed to permit the various

Authorities to function effectively. Spare parts and imported materials are included in the estimates.

#### External Assistance

38. The following bodies have given loans to the Government:

##### Arab Bank for Economic Development

The funds from this Bank are for the construction of the Pakwach-Arua road. The Project is ongoing.

##### The African Development Bank (ADB)

A financial loan agreement was recently concluded with the Government for the construction of Equator Road which is the last segment in Uganda of the Trans-African Highway (TAH). The operations have not yet started. The ADB gave the Government a grant (from Sweden) for the feasibility studies of the Kampala-Mukono-Lugazi Road improvement to dual carriageway. These studies were completed at the beginning of this year.

##### The EEC

The Community, through the EDB, recently gave the Government a grant for the detailed engineering and design of the Lake Katwe Salt Project Access Road. The job had started when the war intervened.

##### IBRD/IDA

The World Bank under credit UG-164 (the second Highway Project) had agreed to use the balance on the Credit - about US \$700,000 for the replacement of Ishasha Bridge on Bulema-Kayonza Tea Road in Ankole, but because of the war this work could not be started. Within the same credit technical assistance was also provided.

##### Recent Offers of Assistance

We are advised that the following offers of assistance have been made and will reduce the costs shown in Table 17.1.

EEC - Shs. 20m. (general roadworks)

UK - Shs. 3.75m. (rehabilitation of the central workshop, Kampala i.e. Ministry of Works).

39. We are of the opinion that donor aid should be sought and directed into programmes based on new priorities. We have attempted to offer guidelines for the fixing of priorities and this exercise must be completed as soon as internal conditions permit.

40. Historically Uganda has relied on contractors to supply the expertise and equipment for major construction and sealing works. As previously stated we are of the firm opinion that an increasing capacity to carry out some of these works by direct labour is essential on the grounds of economy and as training for indigenous engineers. To establish this concept it would be appropriate to request the secondment of capable engineers and foremen with the experience and willingness necessary to guide indigenous staff through the period of establishment. If aid is forthcoming on an international basis it may be appropriate to request the appointment of selected staff from a country such as Australia which has a surplus of engineers and technicians. This approach would give consistent advice at a technically competent level.

41. At this point it is not possible to estimate the numbers of expatriate staff needed. This will depend on factors such as the number of suitably qualified and experienced Ugandans who will return from exile and the rate at which plant and equipment etc. is purchased or donated. However, we are of the opinion that town planning, mechanical engineering and architectural assistance will be required in the urban areas.

We are also of the opinion that experienced construction, mechanical and bituminous sprayer engineers and foremen would be of benefit throughout the period of rehabilitation. The approximate numbers, depending on previously discussed factors, would be 15 professional and 10 technician expatriates.

42. Donor nations may offer to supply plant and equipment but it is stressed that in accepting such offers the Government should be aware of the complications which will arise if plant and equipment is not matched and is received from many various areas. The value of spare parts held, variety of maintenance machinery needed and the difficulties of spare part distribution could reach intolerable levels.

#### Recommendations

43. We recommend that the following course of action be adopted within the period 1979-81:

- re-equip and activate routine maintenance organisations;
- retain and re-equip existing central, regional and district administrative and workshop centres;
- carry out an extensive resealing programme by both contract and direct labour;
- carry out a resheeting or pavement strengthening programme by both contract and direct labour;
- restore quarrying capacities both by base and mobile units;
- re-equip the Materials Testing Laboratory at Kireka;
- re-establish the Road School for training technicians;
- restore planning and design capacities;
- initiate a construction programme based on new priorities;
- seek donor aid for specific projects, plant and equipment and expertise.