付　属　資　料　2

現地コンサルタント報告書

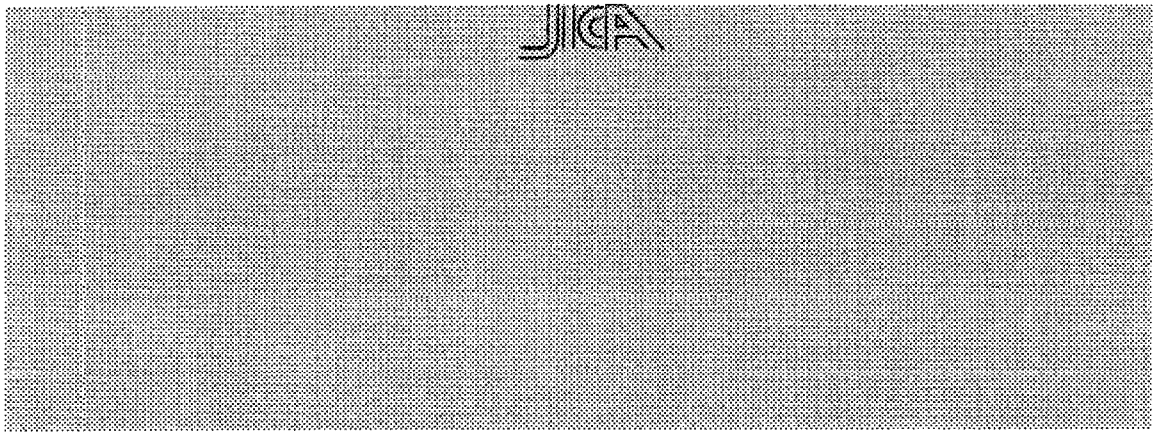
UTILIZATION OF THE PRIVATE SECTOR IN ROAD MAINTENANCE SYSTEM IN THE REPUBLIC OF KENYA

STUDY REPORT

20th July 2000

S. K. Mango and Associates,
Consulting Engineers and Planners,
P.O. Box 28180, Nairobi.

Japan International Cooperation Agency,
P.O. Box 50572,NAIROBI.



UTILIZATION OF THE PRIVATE SECTOR IN ROAD MAINTENANCE SYSTEM IN THE REPUBLIC OF KENYA

STUDY REPORT

4Th August 2000

S. R. Manga and Associates,
Consulting Engineers and Planners,
Capitol Hill Towers, Off Cathedral Rd.,
P.O. Box 28190, Nairobi.
E-mail : srm@insightkenya.com

Japan International Cooperation Agency,
P.O. Box 50572,NAIROBI.

ABSTRACT

Country	KENYA
Title	**Study on the Utilization of Private Sector in the Road Maintenance System**
Duration of Study	**7th July 2000 to 4th August 2000**
Consultant	**S. R. Manga and Associates, Consulting Engineers and Planners, Capitol Hill Towers, P.O. Box 28190, Nairobi - KENYA. (E-mail: srm@insightkenya.com)**
	Eng. S. R. Manga (President of Firm), Eng. M. A. Khandhia, Eng. P. S. Thethy, Eng. Kazungu M and Eng. W. K. Nguturi
Client	**JAPAN INTERNATIONAL COOPERATION AGENCY**

The Government of Kenya (GoK) requested the Government of Japan (GoJ) to consider supporting the introduction of Roads 2000 Programme that promotes private sector participation in routine and periodic maintenance of classified and trunk roads. *The Government of Kenya has acknowledged that it does not have adequate resources to effectively introduce Roads 2000 by itself and it has a policy of identifying Donor partners for this mission. Consequently, the GoK has entrusted the Japan International Co-operation Agency (JICA) to implement the Study on the Utilization of Private Sector in the Road Maintenance System.* The GoK acknowledges that poverty and unemployment are "the two major challenges that confront the Nation (Kenya)" and is currently committed to a broad based reform program with specific measures set out in the Policy Framework Paper (PFP) of February 1996.

In the first two decades after independence, Kenya demonstrated significant economic growth (averaging 7% p.a.). This wealth was primarily created by the rapid expansion of agriculture directed to markets in the region and Europe coupled with a significant rise in living standards, health and education of the population. Unfortunately this growth was not sustained, dropping to 0.4% in 1993. This economic slow-down together with the rapid expansion of population has resulted in almost half of the population of Kenya being classified as living below poverty line and some 2.5 million people unemployed. With half a million people entering the employment market each year, the economy will need to grow at the rate of 8.2% per year over the next two and a half decades to fulfil the expectations of full employment and eradication of poverty.

The principal traffic and transport modes in the Republic of Kenya are road, railway, harbor, airport and pipeline transport. However, road transport account presently for approximately 75% of total freight and 96% of total passenger transport making it, therefore, the prime mode among all transport methods.

One of the important features of post independence development in Kenya was the massive expansion of the road network to approximately 151,000 Kilometers. Past approaches have been for Donor funds to be only concentrated in the area of rehabilitation and upgrading. However, with limited government funds, the result has been that the meager Government funds are also concentrated in the same area as counterpart contributions, leaving nothing for recurrent activities such as maintenance. The consequence was that maintenance activities were subsumed to a continuous cycle of rehabilitation of failed infrastructure. The Road Maintenance Initiative (RMI) forms the main policy framework for improved road maintenance under which the Roads 2000 Programme represents the principal implementation strategy in Kenya.

For a long time now, the maintenance of road network was under the Ministry of Roads and Public Works. At that time the MORPW had a well-structured Roads Department which was its organ for deliverance unto the public infrastructure. However, as the economy plummeted, the funding decreased, as did the MORPW delivery capacity for road maintenance activities. The recurrent funding allocations have reduced by over 40% between mid 1970s and early 1990s. Of even more grave concern is the fact that the monetary allotment for maintenance operations per km of road has gradually been slashed from Kshs. 11,340 to Kshs. 2,580 in the same time frame. The consequence is that over the past decade the network has deteriorated rapidly. The road network depleted scenario is exacerbated by the nature of the surface of the network, as they are predominantly earth and gravel roads (unpaved), when proper engineering maintenance schedules are disregarded. At the MORPW, the road engineers become merchants of corruption and overpriced road works for personal gains - therein road maintenance effort was diluted.

Roads 2000 Program is a major initiative by the Ministry of Roads and Public Works (MORPW) to improve maintenance of the classified road network by introducing appropriate technology on a road network basis for selective rehabilitation, spot improvement and maintenance of the road network. Outside the strategic link road network, most of these roads are gravel or earth, providing access to the newly opened agricultural areas.

The inauguration of the Kenya Roads Board (KRB) on Tuesday the 25th July 2000 is the culmination of more than eight years of road reform efforts to provide an institution in which the management of Kenya's entire road network will be most effectively undertaken. The overall planning and co-ordination of the Roads 2000 activities in the country is still being carried out by the Ministry of Roads and Public Works. This arrangement will be streamlined in accordance with the KRB Act to revitalize the road sector.

The road network of the Republic of Kenya performs an important function for economic growth as well as regional and local development. The countries and Donor agencies providing *Official*

Development Assistance are aware of the need for assisting in the development of Kenya's road network and infrastructure, hence, the Donor support being enjoyed by Kenya.

Kenya has potential for labor-based efforts supplemented by light equipment. This scenario is conducive to the introduction of private sector. The activities requiring graders or similar heavy equipment can be acquired through the private sector. However, the private sector is not well developed, particularly in labor based road works, and will require considerable support in the early stages. The investment in private sector development is expected to be inherently more effective, with better prospects in terms of longer-term efficiency, flexibility and sustainability.

With approximately 80% of the population living in the rural areas, and deriving their livelihood from agriculture, national policies have targeted improving productivity and standards of living in those areas to have the required impact. In this context an important feature is the plan for increased provision and rehabilitation of rural infrastructure, particularly roads. This will give increased opportunities for providing employment for the rural poor and utilizing other local resources. From experience we know that it is much more difficult to quantify the development impact to improve the standard of living of the rural population in a target area as a result of improved rural roads. This is a common problem with evaluating rural improvements, as it is difficult to divorce the influence of the road itself from all the other variables in the area. The Consultant's engineering experiences in Kenya illustrate support to the view of an overwhelming positive socio-economic impact to the rural communities whenever minor roads are improved to trafficable levels.

Roads 2000 ambitious targets will require considerable support, especially in the area of institution building and can be viewed as the logical development of JICA long-term support to the road sector. There are no manuals for maintenance works. Creation of standardized manuals for routine maintenance and periodic maintenance will go along way into aiding in quantification and execution of road works on time. JICA's involvement (based on their experience in East Asia and elsewhere) will champion this engineering cause.

The inauguration of the Kenya Roads Board (KRB) on Tuesday the 25th July 2000 is the culmination of more than eighty years of road reform efforts to provide an institution in which the management of Kenya's entire road network will be most effectively undertaken. The key to achieving all these is the separation of policy formulation and purchasing activities from the operational aspects of carrying out road works. This has been made possible through the formation of road agencies. The third schedule of the KRB Act recognizes three road agencies, namely, the Roads Department (RD) of MORPW, the Kenya Wildlife service (KWS) and the District Road Committees (DRCs).

The Consultant will act as the Principal technical advisor to the Project. He will be in constant liaison with the MORPW officers who have overall responsibilities of roads in a selected province. Further, the Consultants shall be in constant liaison with the JICA Nairobi office and the Permanent Secretary of MORPW to ensure the works sponsored by Japan are executed in

harmony with the Roads 2000 initiative undertaken by other Donors elsewhere in the Republic of Kenya.

In order to discourage dependency on the part GoK, the JICA funding should be dispensed on a sliding scale, thus giving the GoK the opportunity to gradually increase its road user charges to a realistic level. This kind of financial intervention plays dual role: bridging funding and an investment into road sector institution building.

It is recommended that a dual-phased approach with a well-defined *mid-term* break point in the overall project period be adopted. The mid-term point (end of phase I) will permit scrutiny of the validity of the project assumptions. At this break point JICA can decide to either continue into a wider phase II using the planned *modus operandi* or continue into phase II but with revised technical interventions (or to terminate the project).

It can be inferred that Kenya has potential for labor-based efforts supplemented by light equipment. This scenario is conducive to the introduction of private sector. The activities requiring graders or similar heavy equipment can be acquired through the private sector.

It is justifiable that Japan International Cooperation Agency supports the Roads 2000 Program. Technical support from JICA for Roads 2000 is positive towards the plans of Government of Kenya for road sector reform. This will be building on the results of the JICA-GoK development cooperation since Kenya attained her independence nearly four decades ago.

S. R. Manga and Associates confirms that the basic consideration in minor road maintenance procedures is the design standards that fit the alignment sympathetically into the terrain. This calls for realistic horizontal and vertical geometrical standards. Good engineering design specifications reduce the risks of soil erosion and side slope instability caused during the maintenance construction process and later with the dispersal of storm runoff.

Lastly, concentrating on establishing a sustainable maintenance operation both in terms of funding provisions and management as well as execution of maintenance works for the whole road network should be the hall mark of JICA's effort. The Study is practicable and timely.

TABLE OF CONTENTS

1: BACKGROUND

The Government of Kenya (GoK) requested the Government of Japan (GOJ) to support GoK in promoting private sector participation in routine and periodic maintenance of classified and trunk roads. GoK has entrusted the Japan International Co-operation Agency (JICA) to implement the *Study on the Utilization of Private Sector in the Road Maintenance System.*

In the first two decades after independence Kenya demonstrated significant growth, averaging 7% per annum. This wealth was primarily created by the rapid expansion of agriculture directed to markets in the region and the first world; coupled with a significant rise in living standards, health and education of the population. Unfortunately this growth was not sustained, dropping to 0.4% in 1993. This economic slow-down together with the rapid expansion of population has resulted in almost half the population being classified as living below poverty line and some 2.5 million people unemployed. With half a million people entering the employment market each year, the economy will need to grow at the rate of 8.2% per year over the next two and a half decades to fulfil the expectations of full employment and eradication of poverty.

In this Study it is anticipated that JICA will unveil engineering approaches that will lead to sustainable maintenance of the classified road network in the Republic of Kenya. The engineering approach shall embrace the concept of economic approach leading to the use of the skills available in the private sector.

JICA wishes to establish advantages that their Technical Support will offer to the people of the Republic of Kenya. Will this Support have direct impact on poverty alleviation in the form of job creation in the rural Kenya? This aspect of poverty eradication featured pronouncedly in the 2000/2001 Budget[ξ].

Secondly, the GoK now concedes that the dilapidated road network is a major constraint on the objectives of the current economic reform program. Efficient movement of agricultural produce and perishable commodities has become a major problem in many rural areas of the country and the manufacturing sector is being equally disadvantaged. From a sector perspective, JICA cooperation in saving the road network is viewed as an essential first step for any development activity - by making the classified roads passable implies that the 80% population of Kenyans residing in the countryside will have communication infrastructure in

[ξ] Economic Survey 2000 (Republic of Kenya - Prepared by Central Bureau of Statistics Ministry of Finance and Planning).

place. This has a sounding effect of increasing accessibility thereby stimulating higher agricultural activity.

The problem to be addressed by the JICA study team is the deterioration of Kenyan road network and the serious negative effect this is having on the country's economic recovery and growth. It is envisioned that JICA experts will formulate road sector interventions designed to address this problem. A successful study will automatically improve the national road transport system to facilitate the GoK's current economic reform program.

The focus of the Study is to determine appropriate tools for maintain the existing road network rather than constructing new ones, without causing significant environmental impacts. By considering the environmental impact assessment in the full scale Study, JICA will promote participation of the local community and enhance the environment.

The technical proposals to be formulated by JICA will require considerable support, especially in the area of institution building and can be viewed as the logical development of long-term support to the road sector. It will call for monetary support.

The Ministry of Roads and Public Works is responsible for the planning, construction and maintenance of the classified road network including all the bridges and drainage structures on the classified roads.

It is anticipated that JICA's expertise will strengthen the MORPW to manage and maintain capacity of the road system and will revitalise the Roads 2000 goals. JICA will introduce new approaches to road maintenance while keeping in line with GoK.

The following are the main objectives of the JICA Preparatory Mission: -

(i.) hold discussions with key stakeholders of GoK including the Roads Department of the Ministry of Roads and Public Works (MORPW), the Kenya Wildlife Service and District Roads Committees

(ii.) hold discussions with representatives of international Donor agencies including the World Bank§ (IDA), Swedish International Development Agency(Sida), the European Community (EU), Kreditanstalt fur Wiederaufbau (KfW), Danish International Development Agency (Danida), United States Agency for International Development

§ *Word Bank refers to the International Bank for Reconstruction and Development (IBRD) and its affiliate, the International Development Association (IDA).*

(USAID), Swiss Development Cooperation (SDC) and African Development Bank (AfDB)

(iii.) collect and review relevant data and information on the current Roads 2000 maintenance system

(iv.) conduct field visits to the districts where the Roads 2000 Programme is implemented

(v.) conduct interviews with private contractors

(vi.) review and analyze plans and programs of other international Donor agencies in road maintenance

(vii.) identify current issues and problems of the road maintenance system

(viii.) examine and identify the scope for JICA's assistance in promoting private sector participation in road maintenance, to be conducted in association with the on-going Roads 2000 Programme

(ix.) discuss and agree with the GoK about the objectives, scope and implementation schedule for the Study

(x.) discuss and agree with the GoK about implementation arrangements for the Study including the counterpart agency and undertaking of GoK and GOJ

(xi.) sign and exchange with GoK the Scope of Work for the Study

To facilitate the realization of these objectives, JICA set the following terms of reference for the Consultant in this Study: -

(i.) Conduct data collection and interviews to review the details and actual status of each Donor's activity under the Roads 2000 Programme

(ii.) Collect data and information related to road maintenance including sector analyze, national policy and plans, and sector development program

(iii.) Review ongoing and planned activities of GoK, particularly the establishment of the Kenya Roads Board and management of fuel levy fund

(iv.) Collect information on the number, size and facilities of the private contractor for road maintenance

(v.) Collect information of availability, capability and fees of local consultants to be assigned under the study

(vi.) Attend meetings and join field visits as a member of the JICA Preparatory Mission

2: DATA FROM GOVERNMENT OF KENYA

2.1 REVIEW OF PLANNED ROADS 2000 ACTIVITIES OF THE GOVERNMENT OF KENYA

Background

One of the important features of post independence development in Kenya was the massive expansion of the road network to approximately 151,000 Kilometers. Kenyan road network is now the second densest in the Common Market for Eastern and Southern Africa (COMESA) region after Egypt. The Road Maintenance Initiative (RMI) forms the main policy framework for improved road maintenance under which the Roads 2000 Programme represents the principal implementation strategy in Kenya.

Roads 2000 Program is a major initiative by the Ministry of Roads and Public Works (MORPW) to improve maintenance of the classified road network of approximately 63,000 km by introducing appropriate technology on a road network basis for selective rehabilitation, spot improvement and maintenance of the road network. Outside the strategic link road network, most of these roads are gravel or earth, providing access to the newly opened agricultural areas, as indicated in Table 1. The following is the functional definition of various road classifications.

A - International Trunk	These are trunk roads built to very high standards and link other countries. They cross through major cities.
B - National Trunk	These are trunk roads linking Provinces and Province capitals and border posts.
C - Primary	These are trunk roads linking major towns, District capitals and border posts.
D - Secondary, **E** - Minor, **L** - Settlement, **G** - Government Access, **R** - Rural Access, **S** - Sugar, **T** - Tea and **W** - Wheat	These are roads that branch off from primary or secondary roads and serve as Feeder roads. These minor roads are low-volume roads having an Average Daily Traffic of less than 200 vehicles per day.

Table 1.1 (Classified Road Network (Road Length by Surface Type (km)) Source: MORPW Inventory 2000.

Road class	Bitumen (Km)	Gravel (Km)	Earth (Km)	Total (Km)
A - International Trunk	2667.1	782.8	241.0	3690.0
B - National Trunk	1403.3	820.6	524.2	2748.1
C - Primary	2500.9	3304.2	2148.3	7953.4
D - Secondary	1163.5	6170.6	3887.8	11221.0
E - Minor	667.1	6997.8	18958.7	26623.6
G - Government Access	162.4	205.3	113.3	481.0
L - Settlement	-	405.6	535.4	941.0
R - Rural Access	14.7	7132.9	728.9	7876.5
S - Sugar	6.7	80.0	855.7	942.4
T - Tea	29.7	403.3	90.4	523.4
W - Wheat	-	226.2	95.9	322.1
Total	**8615.4**	**26529.3**	**28179.6**	**63324.3**

This technical approach, Roads 2000, involves the introduction of labor and tractor-based methods for improvement and maintenance of the national unpaved road network wherever these methods are feasible. Another focal point is the conventional maintenance activities for selected paved roads under District road networks. Contrary to previous programs (RARP and MRP) where emphasis was on project-oriented works, now undivided attention is now paid to sustainable network programs of operations.

For a long time the maintenance of road network was under the Ministry of Roads and Public Works. At that time the MORPW had a well-structured Roads Department which was its organ for deliverance unto the public infrastructure. However, as the economy plummeted, the funding decreased, as did the MORPW delivery capacity for road maintenance activities. The recurrent funding allocations have reduced by over 40% between mid 1970s and early 1990s. Of even more grave concern is the fact that the monetary allotment for maintenance operations per km of road has gradually been slashed from Kshs. 11,340 to Kshs. 2,580 the same time frame. The consequence is that over the past decade the network has deteriorated rapidly. The road network depleted scenario is exacerbated by the nature of the surface of the network, as they are predominantly

earth and gravel roads, when proper engineering maintenance schedules are disregarded. Extreme rainfall events such as the 1998 El Nino event have contributed to further road surface destruction.

The problem of how to deal with an increasing transport demand, while receiving rapidly reducing maintenance funding for the road sector, has proved an almost insurmountable problem.

Numerous studies have been commissioned to recommend realistic solutions, given the major constraint that the percentage share of central revenue to road maintenance is unlikely to increase significantly. So far, the outcomes of such studies have not fully embraced the primary and secondary issues relating to sustainable efforts. Subsequently, they have failed to stand the test of time.

The main thrust has followed from the resulted derived from the Road Maintenance Initiative (RMI). This was an Africa-wide Programme supported by the World Bank and a number of Donors including JICA (JICA 1995[ξ]). The RMI originated from an acknowledgement that road maintenance was in a state of crisis in the Sub-Sahara region, and that action was required in terms of policy at senior government level if this situation was to be reversed.

The Kenyan government was an active participant in this process, and accepted the basic premise that attention must now turn from constructing new roads, to maintaining existing roads. Studies have revealed that by committing funds to constructing one unit length of a new road is equivalent to a colossal loss of four times of an existing road (where maintenance input is naught).

For Kenya, the two main policies to arise from the process were to secure an alternative form of funding, and to restructure the delivering organizations to become more accountable. The pragmatic steps taken by GoK to raise road funds and ensure trafficable road network throughout the country can be summed up as follows: -

- The Government, in June 1994, started imposing fuel levy on petroleum products in the country for road maintenance.
- In September 1994, the Government together with other countries in this region introduced the Common Market for Eastern and Southern Africa (COMESA) harmonized road transit charges for all heavy goods vehicles with more than 3 axles and all articulated vehicles.

[ξ] *JICA 1995: A Road Network Development Master Plan Study (in the Republic of Kenya).*

- The monies accrued from the above interventions (fuel and COMESA levies) is administered by the MORPW for road maintenance interventions.
- The Government has revised institution for maintenance delivery with greater emphasis on management and private sector involvement. As a consequence, the GoK has officially requested the GoJ to undertake this Study.
- In 1997 the Government approved the reforms and initiatives proposed in Road Sector Strategic Plan. The Strategic Plan endorsed a maintenance strategy termed Roads 2000 Program and the creation of the Road Transport Board (RTB) responsible for maintenance.

The objective of Roads 2000 is defined as to establish maintenance of the classified road network to an economic level of serviceability using local resources and labor-based methods wherever these are cost effective.

The approach has grown directly from the MRP/RARP program, funded by as many multinational Donors (World Bank, JICA, USAID, KFD, Danida, Sida, etc) since 1976. Faced with the situation where minor roads are at the low end of the network (improved and maintained using labor based methods) had, on average, better levels of serviceability than higher levels of road, it was decided that change was necessary. The Roads 2000 is not in favor of the piecemeal improvement and rehabilitation of individual roads (project-orientated maintenance activities). It stresses the need for global road network based planning and implementation using mainly labor and simple equipment technology to salvage the wrecked road network to a minimum level of serviceability where routine maintenance can be re-established. Much of this maintenance is to be provided by labor-based efforts supplemented by light equipment (i.e., compactors, tractor-towed graders and tractor-towed trailers) if need arises.

Techniques have been tested in several areas of Kenya, and the Roads 2000 concept is technically feasible, hence, its adoption on the classified road network. Nonetheless, to achieve ideals set in the Roads 2000 demands a major overhaul of the institutions responsible for the road infrastructure. The overhaul has to take place concurrently with retrenchment of public sector servants, development of systems, training of management staff and the private sector. This calls for technical expertise and financial assistance from international funding agencies such as JICA who have supported identical programs else in the developing world.

2.2 EVOLUTION OF ROADS 2000

The Roads 2000 has evolved in the following stages: -

- **Phase I (September to November 1990)**

Initial investigations studied the current maintenance situation and its problems. The principal problem areas identified were: -

(i.) Insufficient funds available for road maintenance needs

(ii.) Vehicle and equipment management unsatisfactory

(iii.) Works inefficiently carried out

A structured analysis identified some 160 interrelated constraints that catalyzed the principal problems mentioned above. These constraints emanated directly from an inefficient and corrupt government personnel at all echelons (top-down). For instance: -

- One of the main restraints in the past to institutionalizing the approach has been a resistance on the part of the Ministry to any change in established procedures.
- Road maintenance funds are diverted to other 'uses' i.e., utilized for periodic maintenance and renovation of GoK buildings.
- Lack of transparency in accounting for public funds.
- Another important restraint has been the lack of opportunity for the MORPW to raise adequate funding to maintain the road infrastructure that donors were helping to create. Reliance on an increased allocation from central revenue has always proved problematic given the many demands and priorities of government.
- The resistance to private sector small-scale contractors.
- Tender awarding not based on competitive bidding (highest bidders awarded tender or unreasonable contract variations to increase project costs thereby resulting into kick-backs to the MORPW officers, etc).
- The MORPW technical personnel are less qualified in design or supervision of major road works. Unscrupulous contractors have taken advantage of this incapability to solicit for more money than the work is worth. Experienced and more qualified Engineers are in the private sector (but they are more expensive to hire, said the Chief Roads Engineer).

- Late payments to certified contractor certificates have resulted into the payment of penalty for delays or the contractors do shoddy job.

Phase II (November 1990 to September 1991)

Options for improvement were developed to address the identified networks of problems, at a project workshop in November 1990. Representatives of MORPW, ILO, World Bank and a number of Donor organizations interested in supporting the Government's initiative attended the Workshop. The options for improvement were refined and endorsed at the workshop. The Roads Department of MORPW could not furnish specific details of this workshop.

Phase III a pilot project (October 1991 to June 1993)

Phase III was implemented to test the necessary techniques and procedures before a wider national application is adopted for implementation. The work activities on unpaved roads relied heavily on new techniques developed specifically for Roads 2000 involving the use of tractor drawn graders manufactured locally, supported by casual labor gangs. Limited routine work activities on paved roads have to-date focused on patching, localized resealing and off-pavement operations. The pilot activities were carried out principally in the Districts of Kericho, Bomet (both formerly part of Kericho District), Homa Bay, Migori, Suba, Rachuonyo and Kuria (formerly part of South Nyanza District) with support provided by KfW, SDC, DANIDA, SIDA and GoK.

Phase IV (June 1993 to July 1993)

A workshop was held (June/July 1993) to review the pilot project, identify and analyze problem areas, discuss and refine options and develop the full-scale implementation framework. The participants included representatives of Donor agencies funding the roads sector and GoK officials MORPW and treasury. The Workshop endorsed the positive results of the Pilot Project and proposed expansion of the Roads 2000 principles to the rest of the road network.

- **Phase V**

A full-scale implementation on a National basis is underway.

The Roads 2000 Pilot Project has demonstrated the feasibility and cost effectiveness of limited unpaved road rehabilitation and spot improvements, and follows up establishment of effective routine maintenance, using local labor and simple equipment. The strategy is being expanded to other Districts, and the techniques can be developed for the routine maintenance of paved roads, and the involvement of the local private sector contractors.

2.3 ROADS 2000 IMPLEMENTATION APPROACH

The entire process of the Roads 2000 Programme aims at developing and having in place adequate maintenance on both the unpaved and paved road networks by the end year 2000.

Programme objective was formulated as the *Maintenance of the classified road network to an economic level of serviceability using local resources and labor based methods wherever these are cost-effective.*

Other Programme key elements are: -

(i.) improved funding arrangements

(ii.) Manpower rationalization initiatives

(iii.) Development of appropriate and manageable maintenance systems

(iv.) Involvement of the private sector and

(v.) Improved training on labor-based methods

The expansion process of Roads 2000 is taking place on a gradual scale to allow the Roads Department to build up its management capacity in parallel and to set up the operational systems in a structured and organized way. At the same time training is taking place for all road supervisory staff in the implementation Districts.

The change from the traditional maintenance approach in the Districts to the new Roads 2000 approach is carefully being introduced. A number of Preparatory activities are carried out and the organizational set-up in the District is getting rearranged to meet the new requirements. The newly launched Kenya Roads Board (KRB) will have to formulate the emerging needs and the question of the

final management structure for fuel fund is a key part of the KRB (reference should be made to section 3 for elaborate information about this KRB). Also training is taking place gradually as all the involved staff have to be re-trained and introduced to new work methodologies and management systems. In particular the following steps are being undertaken in each District: -

(i.) Establishing infrastructure at District Works Officer's base (if necessary)

(ii.) Procurement of all required equipment, tools and materials

(iii.) Introduction training for all involved staff

(iv.) Setting-up of new management systems

(v.) Preparation of road inventories and condition surveys

(vi.) Development of work plans

(vii.) Establishing of *lengthman* or gang system routine maintenance on roads which do not require initial rehabilitation, especially the rural access and minor roads

(viii.) Rehabilitation of roads requiring initial work, using *labor-only or labor-and-intermediate-equipment* methods,

(ix.) Commencement of a Programme of selected spot improvements,

(x.) Routine grading on high traffic roads

(xi.) Re-allocation of existing heavy equipment, to major rehabilitation works

2.4 EXPECTED ROADS 2000 PROGRAMME BENEFITS

Through the Roads 2000 strategy a number of direct and peripheral benefits are expected, namely: -

(i.) The overall improvement in the condition of the roads through the network approach to maintenance will substantially reduce vehicle operating cost (VOC) and raise accessibility to the entire rural population served by the roads. All rural economic and social activities depend on the condition of the road network and the improved situation will have a significant impact in encouraging and supporting their development

(ii.) The Roads 2000 approach, utilizing locally available labor and simple equipment, selected spot improvements and routine maintenance, improves the deteriorated road network rapidly so that substantial road user savings can be expected when the Programme has fully covered all the Districts in the country, hopefully by year 2005

(iii.) Available limited road maintenance funds are used more effectively and up to 80% of the routine and 60% of the periodic maintenance costs are used for wages of local manpower

(iv.) The foreign exchange component of the current routine maintenance system (of approximately 50%) will be significantly reduced

(v.) The network approach of Roads 2000 allows a flexible maintenance management strategy, more responsive to the needs of the road user, and better matched to the capacity of MORPW

(vi.) The manpower rationalization Programme of Roads 2000 follows the RMI principles of reducing unproductive staff and replacing them by productive and manageable local labor

(vii.) Roads 2000 creates long term employment for a rural population of at least 20,000 casuals per year and assists in reducing migration to urban centers. It also creates short term employment for improvement work for more than 5,000 laborers per year

(viii.) The current rate of women employment in the Roads Department is 4%. The Roads 2000 approach is expected to raise this rate to a minimum rate of 20% in order to distribute the benefits to more women and address the issue of gender equity

(ix.) The direct and indirect training provided to Roads 2000 personnel has the potential of benefiting also other sectors in the rural areas

(x.) The Programme will encourage local manufacture of hand tools and equipment

(xi.) The Programme will promote use of the private sector in road maintenance, especially in the use of Labor-based contractors

The foregoing benefits will support a self reliant and sustainable maintenance system based on the optimization of the use of local management, labor, private sector and manufacturing resources.

2.5 DONOR SUPPORT

Some Donor[β] representatives attending the January 1994 Unpaved Roads Review Meeting endorsed the Roads 2000 strategy and promised to provide support for its implementation.

In subsequent Annual Review Meetings held between 1994 and 1998, the Kenya Government and the Donors have agreed that since the strategy has already been accepted, there was need to accelerate its implementation across the classified road network.

Formal responsibility for policy, planning and co-ordination of the Roads 2000 lies with the Ministry of Roads and Public Works (MORPW) and the Ministry of Finance and Planning. However, *defacto* responsibility has devolved to the individual agencies, with the MOPWH as the dominant partner.

2.6 STRUCTURE OF MINISTRY OF ROADS AND PUBLIC WORKS (MORPW)

The overall planning and co-ordination of the Roads 2000 activities in the country is carried out by the Ministry of Roads and Public Works from its headquarters in Nairobi. The Provinces co-ordinate the Roads 2000 works in the Districts within the Province, including guiding the Districts on work plans preparation, as well as contracts management and quality assurance. The current organization structure at the Headquarter and Provinces is as shown in Figure 1 below.

The major responsibilities of the Headquarter, Provinces and Districts in Roads 2000 maintenance strategy are explained under the following sub-headings.

Headquarter Responsibilities

The Headquarters organization is responsible for the overall planning, co-ordination and monitoring of the Roads 2000 Programme. Some of the responsibilities at this level include: -

(i.) Co-ordination of all Roads 2000 activities and representation of the Programme in all relevant committees

(ii.) Liaison with other Government Ministries including the Office of the President, Finance, Planning and National Development, Agriculture and

[β] *Potential Donor agencies include World Bank, JICA, Sida, Danida, EU, KfW, SDC, USAID, AfDB, etc. In spite of have not been represented in the January 1994 meeting, JICA came up with a document of authority for system overhaul in 1995 entitled "A Road Network Development Master Plan Study" whose technical recommendations have been effected in the road sector in Kenya.*

Labor in order to ensure a high level of co-operation among those involved with road infrastructure

(iii.) Liaison with the representatives of Donor and multilateral agencies for matters relating to all Roads 2000 technical and financial assistance

(iv.) Preparation of Annual Budget Estimates and forwarding it to the Finance Ministry

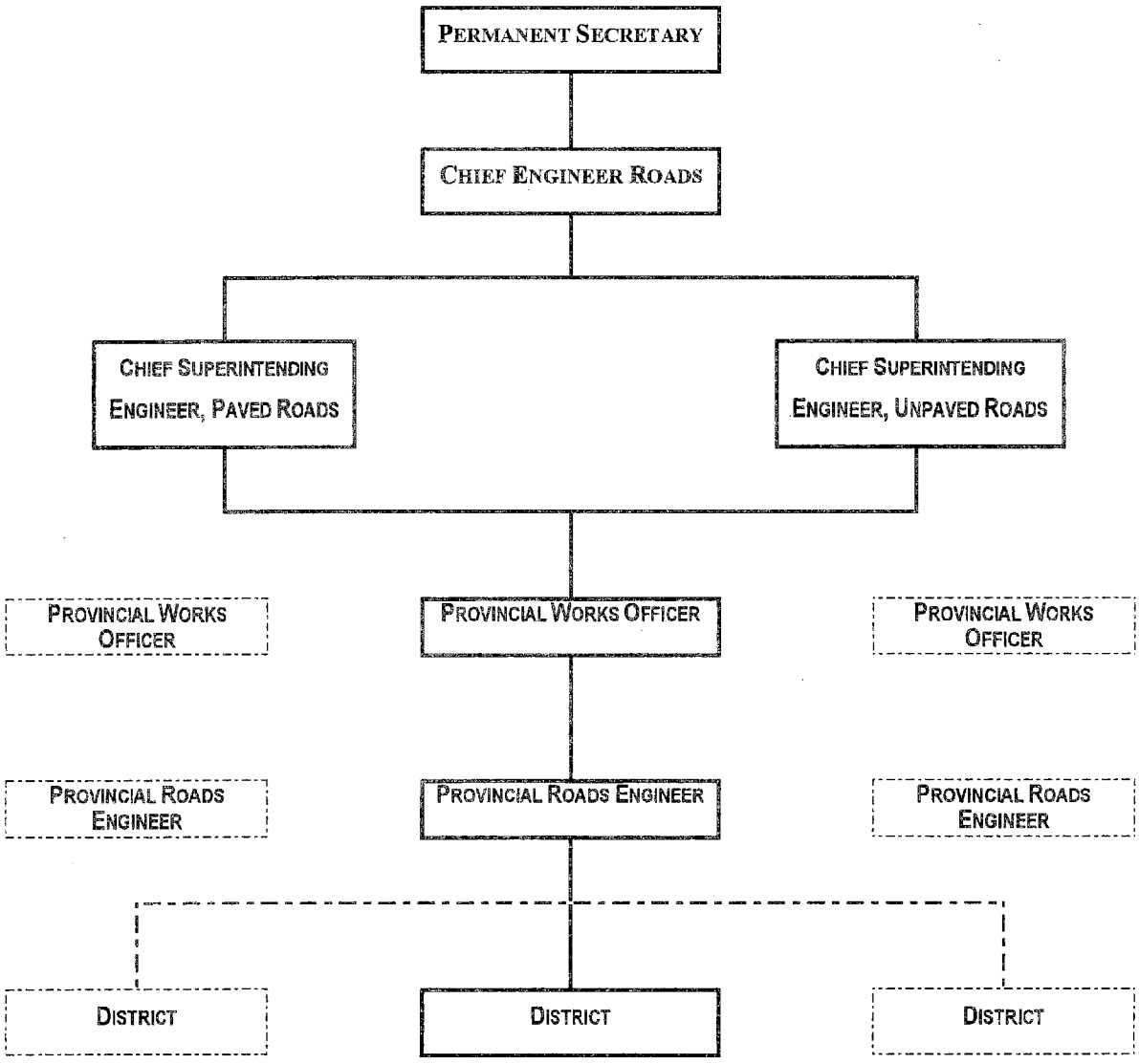


Figure 1.: Organization of the Roads Department, Ministry of Roads and Public Works.

(v.) Co-ordination of District work plan development

(vi.) Liaison with the Department of Staff Training in order to ensure sufficient and timely training of manpower for the implementation of the Roads 2000 Programme

(vii.) Development and introduction of the technology, systems and procedures necessary for the successful implementation of Roads 2000

(viii.) Procurement of certain equipment and hand tools for the Programme

(ix.) Planning, monitoring and evaluation of the Roads 2000 activities and analysis of the District performance

- **Provincial Responsibilities**

The personnel at the helm at the Provincial level are the Provincial Works Officer (PWO) and Provincial Roads Engineer (PRE). The Principal responsibilities of the Provincial Organization are: -

(i.) Co-ordination of Roads 2000 activities within the Province, and to represent the Programme in the Province

(ii.) Liaison between Roads 2000 Headquarters and the District within the Province

(iii.) Guidance for planning, monitoring and evaluation of the major Roads 2000 activities in the Districts and analysis of their performance

(iv.) Assessment of manpower needs in the Province and co-ordination of staff deployment including training of personnel

(v.) Allocation of equipment and vehicles and support to the Districts for major repairs

(vi.) Monitoring and analysis of all District reports, forwarding them to HQ and providing feedback to the District Engineers

(vii.) Monitoring and analysis of all District reports of the District Works Officer (DWO)

(viii.) Quality and productivity control of the District works

The proposed Roads 2000 organization structure at the District level is shown in Figure 2 overleaf.

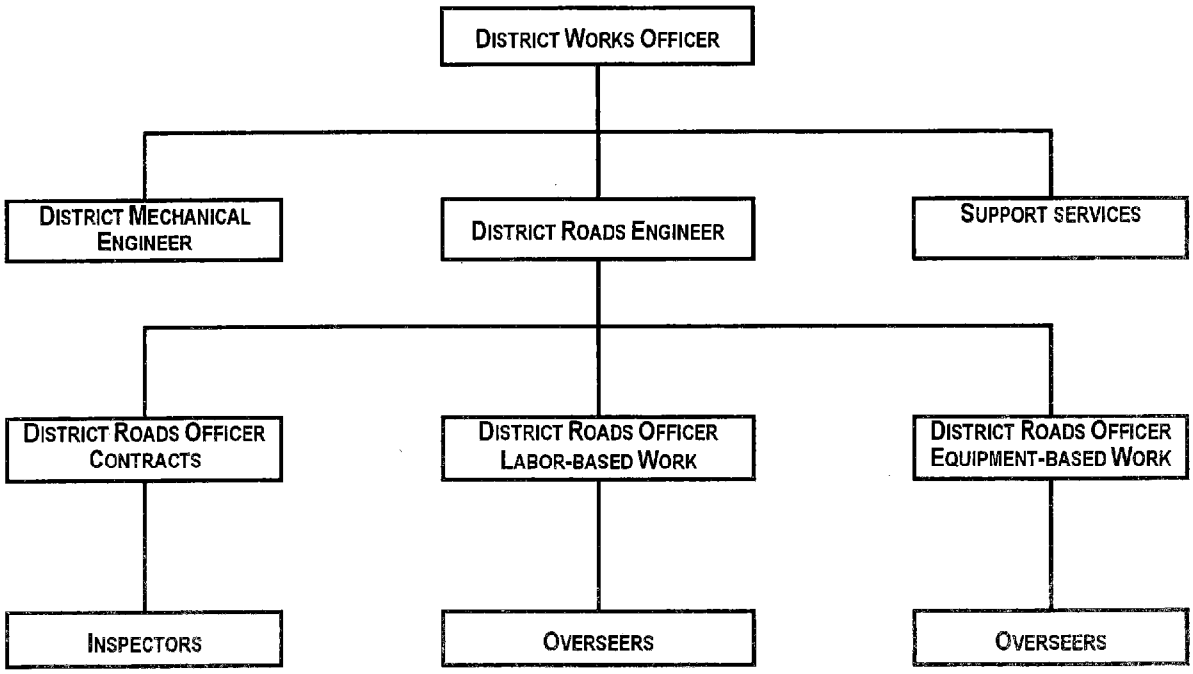


Figure 2.: Organization of the District Roads Engineer, Ministry of Roads and Public Works.

■ District Responsibilities

The personnel at the helm at the District level are the District Works Officer (DWO) and District Roads Engineer (DRE). The principal responsibilities of the District Organization under the DWO and DRE include: -

(i.) Management of all District Roads 2000 activities in order to achieve the set targets

(ii.) Development of the Annual Work Plans including planning and control of the required resources (finances, personnel, material, equipment)

(iii.) Planning, directing and monitoring of all Roads 2000 operations in the District

(iv.) Reporting of the Roads 2000 District performance according to the Roads 2000 Management Reporting System

(v.) Supervision of operations and maintenance of all Roads 2000 District equipment and vehicles

(vi.) Overall control of all Roads 2000 District administrative activities

(vii.) Organization of timely and correct payment of salaries for the casual laborers

(viii.) Guidance of Unit and Site Supervisors in technical and operational aspects

(ix.) Liaison with the Provincial Administration, the District Administration, the District Development Committee (DDC) and other related authorities and agencies in order to ensure co-operation among those involved with road infrastructure

With the emergent of the Kenya Roads Board, the organizational structures for road maintenance shall change completely. But, for the next one year (up to 2001) not much shall have changed. The MORPW shall still retain its position as the custodian of road maintenance during the transition period when powers for maintenance activities are shifting to the new authority (KRB).

3: KENYA ROADS BOARD (KRB)

3.1 BACKGROUND

The inauguration of the Kenya Roads Board (KRB) on Tuesday the 25th July 2000 is the culmination of more than eighty years of road reform efforts to provide an institution in which the management of Kenya's entire road network will be most effectively undertaken.

Kenya expanded its road network considerably in the 1960s and 1970s. In the same period, there was an upsurge in population growth, creating a large demand on local re-sources. Government budget allocation for road maintenance continued to be reduced in response to managing health, education, agriculture and other social dimensions. In the late 80s, the annual budget allocations for road maintenance hardly exceeded 20 % of the required funds. Routine and periodic maintenance of roads (which at that time were considered low profile events) was not given enough priority and the network suffered.

In the late 1980s, the United Nations Commission for Africa working with the World Bank and other Donor communities formed the Sub-Sahara Africa Transport Programme (SSATP) to address the poor state of road infrastructure in Sub-Sahara Africa (SSA). The Road Maintenance Initiative (RMI), a component of the SSATP was launched as the vehicle for road reforms in the region.

Recognizing that if nothing was done, the state of road infrastructure in SSA would continue to deteriorate the RMI identification four building blocks of reform, revolving around ownership, financing, responsibility and management. Kenya became a target country for road reforms. Today's inauguration of KRB is the fulfillment of the ownership building block.

In 1992, the Government of Kenya together with the RMI World Bank team hosted a road sector stakeholders' seminar at the Safari Park Hotel, to address the deteriorating condition of the roads network in Kenya and the constraints to timely and proper road maintenance. Identified constraints were institutional, managerial and financial. It was resolved that a sustainable source of funding should be established and the existing road management institutional set-up is reviewed.

In 1993, the Road Maintenance Levy Fund (RMLF) Act was enacted, providing a sustainable source of funding for the maintenance of the road network. This source of financing has steadily grown and now amounts to about US$ 110 million. The fuel levy has provided sustainable funding for routine maintenance and has greatly reduced the backlog of periodic maintenance and rehabilitation on the road network.

In 1995, with assistance of the European Commission, the Road Sector Institutional Study was commissioned. Its objective was to identify the most appropriate institutional framework within which the management of Kenya's entire road network would be most effectively undertaken. The study recommended the formation of a Roads Board with representation from the private sector to manage the RMLF and purchase services from road agencies.

In 1998, the Kenya Roads Board (KRB) Bill was drafted. In December 1999, Parliament passed the Bill and the President enacted it into law on 6th day of January 2000.

On 3rd March 2000 the Minister for Roads and Public Works appointed an Interim Steering Group (ISG) whose mandate was to identify the most appropriate approach to ensure KRB is institutionalized by 1st July 2000. The ISG carried out its task and presented its report to the Minister on 28th April 2000.

The report was discussed in various workshops, including a workshop held for Members of Parliament on 17th May 2000 at the Safari Park hotel. The ISG has now finalized the report and presented it to the Minister on 24th July 2000.

During the month of June 2000, in a *special Issue of the Kenya Gazette Supplement No. 44*, the Minister for Roads and Public Works proclaimed the 1st day of July 2000 as the date commencement of the KRB Act. Within the same week, the Minister appointed members representing organizations from the private sector to the KRB (see table 3.1).

The President appointed the immediate former Chairman of the Institution of Engineers of Kenya as the chairman of KRB.

In addition to those named above, Permanent Secretaries from the Ministries of Roads and Public Works, Information Transport and Communications, Local Government, Finance and Planning, Tourism, Trade and Industry are members of the KRB, immediately thrusting the management of the entire road network in Kenya into the hands of the 13 members.

Table 3.1: Members of the Kenya Roads Board.

NAME	ORGANIZATION REPRESENT
(1.) Eng. Shem Oduor Noah	Chairman of KRB, appointed by H.E. the President of Kenya
(2.) Mr. David Njoroge	Automobile Association of Kenya
(3.) Mr. Ali F.	Chamber of Commerce and Industry
(4.) Ms. I. B. Madziye	Institute of Surveyors of Kenya
(5.) Mr. Japhet Mayabilo	Kenya National Forrex Union
(6.) Mr. Shahid Butt	Kenya Association of Tour Operators
(7.) Mr. Joseph Muongeri	Kenya Transport Association
(8.) Prof. Joseph Kimura	Association of Certified Public Accountants of Kenya
(9.) The Permanent Secretary	Ministries of Roads and Public Works
(10.) The Permanent Secretary	Information Transport and Communications
(11.) The Permanent Secretary	Local Government
(12.) The Permanent Secretary	Finance and Planning
(13.) The Permanent Secretary	Tourism, Trade and Industry

3.2 OBJECTIVES OF THE KRB ACT

The major tasks of the KRB as outlined in the Act are: -

(a.) Coordinate implementation of all policies relating to the maintenance, rehabilitation and development of the network.

(b.) Coordinate maintenance, rehabilitation and development of the road network with a view of achieving efficiency, cost-effectiveness and safety.

(c.) Administer the funds derived from the fuel levy and any other funds that may accrue to it.

(d.) Determine the financial allocation required by road agencies for the maintenance, rehabilitation and development of the road network.

(e.) Monitor operations and activities of road agencies and evaluate, by technical, financial and performance audits, the delivery of works.

(f.) Ensure that all procurements of works are conducted in accordance with the guidelines and criteria set by the Board.

(g.) Recommend to the Minister responsible for roads, the studies and research necessary: the specifications design standards and classification of roads according to vehicle type dimensions and axle load limits and road safety.

The key to achieving all these is the separation of policy formulation and purchasing activities from the operational aspects of carrying out road works. This has been made possible through the formation of road agencies. The third schedule of the KRB Act recognizes three road agencies, namely, the Roads Department (RD) of MORPW, the Kenya Wildlife service (KWS) and the District Road Committees (DRCs). Briefly, the following shall be the responsibility of each agency: -

(1.) The Roads Department will be responsible for class A (International Trunk Road), B (National Trunk roads) and C (Primary roads) of the classified road network.

(2.) The Kenya Wildlife Services will be responsible for all roads within National Parks and Game Reserves.

(3.) The District Roads committees will be responsible for class D, E, Special Purpose roads and all unclassified roads (rural and urban) within a District.

The RD and the KWS have been in existence and will continue to operate as they have always done.

The DRCs, however, are new entities and there is need therefore to establish the framework for their operation. The DRC is composed of the following persons: -

(i.) All Members of Parliament (MPs) from the District

(ii.) Chairman or Mayor of every local authority in the District

(iii.) The District Commissioner (DC)

(iv.) The District Roads Engineer (DRE)

(v.) Two other members co-opted by the committee

The Chairman is to be elected by the committee from among the elected MPs or the civic heads. The DRE will be the Chief Executive and Secretary to the DRC. DRCs are independent road agencies and will be responsible to KRB for all funds allocated to them.

The KRB being in charge of the Road Maintenance Levy Fund (RMLF) as per the Act will purchase services from the road agencies identified above.

The road agencies will confine their activities to carrying out works on the identified road networks.

The MORPW will formulate policy on the road sector.

3.3 CHALLENGES TO THE KENYA ROADS BOARD

KRB has an uphill task ahead. For the objectives of the KRB Act to be realized, there is a lot to be done and for a successful start, the KRB has to fall back on the workings of the Interim Steering Group (ISG). The ISG has made efforts in tackling short and long-term activities needed to make the KRB effective. Some of these activities have been achieved, and a more focussed approach to the rest has been identified.

The Act states that "KRB will indicate to road agencies, a year in advance the funding ceilings that will be available to them". Three weeks have passed since this Fiscal Year (2000/2001) began on July 1, 2000 and even though road agencies have prepared work programs, they still have to receive their funding ceilings and accommodate their programs within the ceilings. This will be the first major task of the KRB.

There will be need to harmonize existing legal statutes to ensure there is no conflict in the management of roads in Kenya. It is anticipated that such harmonization could lead to a comprehensive bill that addresses the management of the road networks much more effectively.

The formation of road agencies and regulating their activities will require a lot of

input from KRB. For the time being, the GoK is placing the management of a section of the District road infrastructure in the hands of a committee where the District Commissioner (DC) no longer has much say. The DRC is top heavy with politicians, and this does cause a conflict with their legislative status. The DRC should adopt the status of a monitoring team, effectively ensuring the road fund resources are utilized to the benefit of the people in the District. The management of funds allocated to the DRC should be left to a secretariat, which can be made accountable for any misdeeds.

The effectiveness of the DRC will depend on acquiring a professional engineer as the DRE.

Decentralization of many activities in Kenya has in the past been victim to the vagaries of regionalization, where such a decentralized organization wants its person (read tribe) in charge, completely ignoring the need for competence. This has seen the downfall of many sterling institutions/organizations and had made nonsense of the principle of decentralization. KRB has to regulate and guide DRC in ensuring the DRC acquires competent professionals to assist them make maximum use of the funds allocated to them.

A Committee composed of Members of Parliament and Councilors will always have its own rivalry and this could cause problems, which can spill over and affect the execution of the road works program. The committees that will be able to set aside unnecessary rivalries will be able to work together and improve their road networks quite effectively.

The challenge to the KRB will be how to ensure funds provided to the DRCs are utilized as contained in the work program, and also provide an effective deterrent towards misuse of funds.

3.4 CHALLENGES TO THE REPRESENTED ROAD USERS

Ownership and management of roads involve active support of road users, stakeholders and other persons with a vested interest and interested in sound management. Road users are willing to pay for roads, but only if the money is spent on the roads and done so efficiently. Most road users are willing to pay for roads and in return demand value-for-money. KRB must move purposely towards winning their support.

The objective of ownership is to empower road users and to encourage them to take an active interest in the management of roads. The eight members of KRB from the private sector represent a large body of road user constituents and outnumber the five members from the public sector. If the combined team of Government officials and the private sector work together, the countrymen can

expect an improved level of service of the road network. This partnership between road users and government could extend to solving other road management related problems such as improving road safety, controlling axle overloading and even fuel smuggling.

The represented constituents must not just sit back and expect their representatives to do all the work. They must insist on continuous updates of the work of KRB. Difficult decisions must always be referred back to them for deliberations before KRB makes a final decision. The KRB members are expected to prepare thoroughly for meetings and to participate effectively in all matters pertaining to road management business.

3.5 THE ANNUAL WORK PROGRAM

KRB will be expected to consolidate an annual work program that shows all the work to be carried out by the road agencies just before the beginning of every fiscal year. Once KRB is fully in stride, the annual work program will be expected to have received all relevant approvals by May of each year, just to be in time for printing before the budget estimates are read.

The printed annual work program will not be changed or varied at all during the year. The printed annual work program will be available to everybody, and this will form the performance contract between KRB and the public.

3.6 ROAD AGENCIES

Over the years, Roads Department (RD) and its associate road sector department in the Ministry of Roads and Public Works (MORPW) have emerged as the authority on roads in Kenya. The RD has the largest body of road engineers in the country and has carried out most of the functions that will be taken over by KRB.

Before the advent of fuel levy, the RD was an outfit that was well respected for its efficacy in delivering road works services to the public with the little money they were allocated from the Treasury. In the last seven or so years, the image of the RD has received quite a dent, with the road engineers becoming merchants of corruption and overpricing road works for personal gains. In the last one year, however, the RD is cleaning up its own act and the tide of corruption may go down.

With the establishment of DRCs, RD will be managing a much more rescued network, mainly from provincial centers (and no more financial management). At this infancy period of KRB activities, the RD will be providing assistance to the DRCs through sub-agency arrangements. As the RD moves towards becoming an

autonomous unit, it has to start by accepting its reduced role in management of the road network, and gear itself towards becoming an effective road works delivery unit, concentrating on the most critical part of the road network, the Trunk roads. The DRCs, however, have to grow up fast.

Miracles should not be expected and in this first year of KRB activities, many DRC will have to learn the rules hands on. By law, they are expected to open bank accounts from which to manage funds allocated to them by KRB. The DRCs will not be manned by angels and as the KRB goes through the preparations of regulations and rules of operation, it will have to concentrate its efforts in ensuring funds allocated to DRCs are effectively utilized.

A lot will be expected of the DRCs and this time around, if the funds allocated to your Districts are not spend as per the work program, you should start by first blaming yourself as a road user for not blowing the whistle and then take your DRC to court.

4: DONOR AGENCIES - SUPPORT AND ASSISTANCE

The road network of the Republic of Kenya performs an important function for economic growth as well as regional and local development. The countries and donor agencies providing "*Official Development Assistance*" are aware of the need for assisting in the development of Kenya's road network and infrastructure.

There has been considerable Donor assistance to the Road Sector over the years. Most of this has been in the construction and upgrading of the network and institutional support. However an interesting feature has been the close co-ordination of Donors involved in the RARP and MRP since 1974. These Donors have assisted in the evolution of the Programme through annual workshops, and have together supported the development of the Roads 2000 project in acknowledgement of the growing maintenance problem in the network outside the Programme. The World Bank has also been instrumental in hosting a Donor group with interests in the Transport sector. These two initiatives came together in 1993 when an annual Road Sector Review was instigated with quarterly Donor Liaison Meetings.

The Donor co-ordination was organized by the International Labor Organization (ILO) Labor-based support Programme ASIST until 1994, when responsibility passed to a Donor-funded secretariat (including JICA). This has now been taken over by a dedicated secretariat in the MORPW. The secretariat produces *Barabara*

Zetu newsletter which contains details of Road Sector activities and Donor support.

As a positive effort in the same direction, JICA produced a document entitled "A Road Network Development Master Plan" in 1995. This technical proposal established a long-term arterial road development plan to support nation-wide road network system as well as its implementation program, reviewing the on-going short-term road facility maintenance program.

As at June 2000 Donor activity in the roads sector can be viewed in two parts, namely: -

- the funding of reconstruction/upgrading of priority sections of the major road network
- support to the Roads 2000 maintenance programs

World Bank (IDA), JICA, AfDB, China, EU, KfW, Italy, Kuwait, DFID, Saudi Arabia, USAID, SCD and the World Bank are all involved in the rehabilitation or upgrading of infrastructural projects, including the rehabilitation of the Nyali Bridge and Mtwapa Bridge in Mombasa by JICA.

Details of the proposed Roads 2000 programs (excluding the request by GoK to GoJ for support in this endeavor) are under the following subtitles.

4.1 WORLD BANK (IDA)

The World Bank is expected to fund the Roads 2000 project in 16 Districts from this 2000/2001 financial year. They have set aside US$30 million to be spent in four years while Kenya is expected to provide US$ 6 million (Kshs. 450 Million) in the same period. The pre-appraisal mission came to Kenya in May 1999 and it was agreed to proceed with preparatory works as follows: -

(i) Setting up of Roads 2000 District Committees for selection and prioritization of roads by September 1999 (by GoK).

(ii) Workshops for the Roads 2000 District Committees in October 1999 (IDA and MORPW).

(iii) Selection and prioritization of roads by Districts by early December 1999.

(iv) Procurement of Consultancy Services by MORPW in conjunction with IDA between July 1999 and January 2000.

(v) Design of first year projects by the Consultants/DREs between January and June 2000.

(vi) Getting a Consultant to carry out Environmental Impact Assessment between July and November 1999.

The Districts that will be covered include Nyandarua, Baringo, Koibatek, Muranga, Maragwa, Samburu, Laikipia, Kisii, Gucha, Homa Bay, Migori, Kuria, Suba, Rachuonyo, Kisumu and Nyando.

4.2 EUROPEAN COMMUNITY (EC)

The Donor is providing Kshs. 700 million for a period of 3 years from 1998 up to 2001. The Districts being funded are Meru North, Meru Central, Meru South, Tharaka, Embu, Mbeere, Machakos and Makueni. The status of the various projects is as follows:

■	The following projects, being carried out by Force Account (i.e. using MORPW staff, equipment and casual laborers), were started between December 1998 and January 1999 (status: **on-going**).	
(i.)	**Makueni District** Ukia – Upendo Market (C99) road of length 11 Km	Estimated Cost = Kshs. 8,262,219.00
(ii.)	**Machakos District** Mwala Market – Kivani Market (C98)road of length 10.5 Km	Estimated Cost = Kshs. 7,106,010.00
(iii.)	**Embu District** Embu Town – Kairuri – Manyatta Market (E635/E638) road of length 12 Km	Estimated Cost = Kshs. 7,659,661.00

■	Contract for the following roads were awarded in May 1999	
(i.)	**Meru Central** Meru Town – Kagaeni Market (D482) road of length 15Km	▮ Awarded to Victory Construction Co. Ltd. at Kshs. 36,278,248.50. ▮ Order to commence to be issued during week beginning 15th June 1999.

		▮ Estimated completion in February 2000. ▮ Construction in progress.
(ii.)	**Makueni District** Emali Town – Upendo Market (C99) road of length 30.2 Km	▮ Awarded to Kirinyaga Construction Co. Ltd. at Kshs. 54,367,055. ▮ Order to commence to be issued during week beginning 12/7/99. ▮ Estimated completion in February 2000. ▮ Construction in progress.
(iii.)	**Mbeere District** Siakago Town – Ugweri Market – Ena Market (D487/C92) road of length 20.2 Km	▮ Awarded to S. S. Mehta and Sons at Kshs. 27,794,010/80. ▮ Order to commence issued on 5/7/99 Expected completion in January 2000. ▮ Construction in progress.
(iv.)	**Meru South District** Nkorongo Market – Kamaende Road (D472) of length 6.6 Km	▮ The District Tender Board awarded the tender on 20th July to Kundan Singh Contractors at a tender sum of Kshs. 37,737,302.50. ▮ Orders of commence issued on 30th August 1999. ▮ Construction in progress.
(v.)	**Machakos District** Kangundo Town – Kivani (C98) of length 11Km	▮ Awarded to S. S. Mehta and Sons at Kshs. 16,904,298/50 ▮ Order to commence issued on 5th July 1999 ▮ Expected completion in December 1999 ▮ Construction in progress

(vi.) Meru North District

Kagaeni – Mikinduri – Athi Market Road (D482) of length 24 Km could not take off because of a snag. The District Works Officer (DWO) unscrupulously submitted tender to District Tender Board for adjudication. Since there were flaws in the process, EC approval was not obtained for Meru District activities. The tender was cancelled.

4.3 UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID)

The USAID has agreed to fund the projects in 12 Districts for four years. They have set aside Kshs. 800 million (US$ 13.3 million). Procurement of a Consultant for Supervision and Management support for the District Roads Engineers (DREs) is at an advanced stage. The Consultancy Contract was awarded by December 1999.

The Roads 2000 project activities are expected to commence "soon". The Districts where the USAID will implement Roads 2000 are Kiambu, Thika, Siaya, Bondo, Kakamega, Vihiga, Butere/Mumias, Lugari/Malava, Mt. Elgon, Busia, Bungoma and Teso.

4.4 KREDITANSTALT FUR WIEDERAUFBAU (KFW)

The KfW is expected to provide DM 15 million for a period of 5 years while GoK will provide about Kshs. 450 million in the same period. The Germany-GoK agreement was signed in November 1995 while the KfW-GoK agreement was signed in May 1997. The procurement for the Consultant who is going to assist in Supervision and Management of the works is now complete. The Central Tender Board approved the award of Contract for Consultancy Services in May 1999 and the Permanent Secretary to the Treasury signed the agreement on 6th September 1999. The Consultant is expected to start work before November as soon as approval for their engagement is obtained from the KfW.

The Districts for KfW support are Bomet, Nyamira, Bureti, Nakuru, Nandi and Kericho (originally five but now six Districts due to subdivision of Bomet).

4.5 SWEDISH INTERNATIONAL DEVELOPMENT AGENCY (SIDA)

Sida is already actively supporting Roads 2000 in some Districts of Central Province, namely Nyeri and Kirinyaga. This is a continuation of their support for Minor Roads Programme (MRP) since July 1997.

Sida is providing 35 million Swedish Kroner (about Kshs. 270 million) for 3 years while GoK is expected to provide Kshs. 263 Million in the same period. The progress in the last 2 years has been very slow due to problems of disbursement of funds from the Treasury to the District. This was mainly caused by the requirement that GoK spends its funds first and claims it from the Sida. A mid-

term review was conducted in April 1999. These problems were fully covered in the Review Report.

MORPW has written to Treasury to ask the Sida to amend the existing 2 agreements to allow for *pre-financing* by the Sida from this financial year (1999/2000). The Treasury has mentioned that the Sida has yet to give their response on the request.

The total funds set aside by the Sida for fields activities may not be absorbed by the end of the agreements in June 2000. Thence, the MORPW ask Treasury to request the Sida for extension of the agreements. This was done between January and March 2000. During the Annual Sida-GoK consultations expected held in April 2000 Sida granted time extension for counterpart funding.

4.6 DANISH INTERNATIONAL DEVELOPMENT AGENCY (DANIDA)

Danida signed an agreement for support of the Roads 2000 project in Coast Province from 1999/2000 financial year and they have set aside 81.6 million Danish Kroner. The GoK will provide counterpart funding from the Road fund of about Kshs. 530 Million. The GoK contribution will be provided on an increasing scale starting from 20% of the cost of works and training in the first year to 60% in fifth year, increasing in 10% steps each year.

The Project Co-ordinator has been recruited for the job. Danida has recruited for a Mechanical Advisor. The field activities commenced in October 1999.

A two-phase approach has been adopted. Phase I of the agreement is for 2 years and will cover the existing Minor Roads Program Transition Project Districts in Coast Province (Kilifi, Kwale, Taita Taveta and Malindi). Phase II will cover all districts in Coast Province and will extend over a further three years.

4.7 SWISS DEVELOPMENT COOPERATION (SDC)

The SDC is principally involved with supporting the Kenya Institute of Highways and Building Technology (KIHABT) which includes the Kisii Training Centre (KTC) for labor-based technology.

The SDC funds are channeled through MORPW. The KIHABT is an organ of the MORPW. All training is the responsibility of the MORPW's Kenya Institute of highways and building Technology (KIHABT) to organize and manage according

to the project needs. A portion costs (4% of works) is transferred to the department for this purpose. Most of the training works is institute by staff of Kisii Training Centre (KTC), who have the mandate for all labor-based training and involvement in the development of small scale contractor training in the technology.

A three-phase training program is undertaken at KTC. The curriculum includes: -

(i.) courses in managing contractors for the ministry staff

(ii.) a site orientation courses for lengthmen contractors involved in road maintenance

(iii.) later more substantial re-orientation courses for existing contractors in labor based construction techniques.

A limited number of special courses and study tours are provided. These are managed by KIHABT under the training provision.

4.8 AFRICAN DEVELOPMENT BANK (AFDB)

The AfDB has agreed to fund the Roads 2000 project from the financial year 2000/2001. The pre-appraisal mission visited Kenya in April 1999. About US$ 14 million (approximately Kshs. 1090 million) will be provided by the AfDB for the project in four years to finance works in Eight Districts in the Rift valley Province. The contribution from the GoK contribution for the same project will be Kshs. 188.5 Million.

The Districts earmarked for this aid are Kajiado, Trans Mara, Narok, Uasin Gishu, Trans Nzoia, West Pokot, Keiyo and Marakwet.

The appraisal mission came to Kenya in February 2000 for further consultations and negotiations with the MORPW.

4.9 DISTRICTS WITHOUT DONOR FUNDING

Districts without funding are Nairobi, Kitui, Mwingi, Isiolo, Marsabit, Moyale, Garissa, Wajir, Mandera and Turkana.

GoK will continue funding Roads 2000 in these Districts in NorthEastern, Eastern and Rift Valley Provinces where Donor support has not been forthcoming. About Kshs. 134 million will be used in the 10 Districts in the 1999/2000 Financial Year.

4.10 GENERAL DONOR-GOK IMPLEMENTATION AGREEMENTS

Discussions and agreements with the GoK about implementation arrangements for the Roads 2000 including the counterpart agency and undertaking of GoK and the Donor co-ordination have had common conditional approaches. Identical conditions include the under listed: -

(i.) the establishment of Roads Works Inspectorate

(ii.) the support to a common Donor audit

(iii.) the approval by Government of the Strategic Plan

(iv.) increased use of employment intensive technologies

(v.) the principal of a sliding scale of funding support of maintenance, during the period in which the Fuel Levy will steadily be increased.

Gender and environmental concerns have been supported by a number of Donor-funded studies and initiatives. This has now been accepted in the Strategic Plan to set up an Environmental/Social Impact Assessment Unit in the Roads Department (MORPW). Gender issues are flagged for a gender equity strategy for the public and private sectors, but solid proposals have not yet been drawn up. JICA could champion environmental-socioeconomic studies and draw guidelines.

5: PRIVATE CONTRACTORS

Kenya is endowed with very high expertise in the use of labor-based methods in the construction and maintenance of rural roads. This has been possible as a result of implementation of two major road programs and also through training and financial and technical support by the Donors.

The opportunity exists to use the experience gained in the previous road programs (Rural Access Road Programme and Minor Road Programme) to assist in the creation of sustainable road maintenance set up by making use of the existing private sector in the province or trained labor-based contractors from other provinces. The resistance to private sector small-scale contractors has been removed with the Roads 2000 expressing the intention of positive discrimination in favor of labor based contracting. This should ensure employment opportunities

for the many workers trained on the RARP and small MRP over the years. The technology they have learned will now be a marketable skill.

The private sector is not well developed, particularly in labor based road works, and will require considerable support in the early stages. However, the investment in private sector development is expected to be inherently more effective, with better prospects in terms of longer-term efficiency, flexibility and sustainability.

However, there are a small number of small-scale private contractors who are presently in minor roads construction works based on competitive bidding. These Contractors can be utilized on road 2000 Programme if they are convinced that there will be long term benefit to them if they change their methodology of doing the work from usual machinery-based approach to labor-based. Given the prevalent economic situation in Kenya, there is very high likelihood of participation of small-scale private contractors the Road 2000 Program if proof is given that benefit will be two ways - both to the private sector and the local labor force. Assurance to the private contractors can be realized via holding workshops and works seminars to educate all stakeholders in this Program.

There exists a pool of mechanized contractors who are specialized in machinery based approaches. This category includes locally based contractors and multinational contractors. They have vast experiences in major road constructions and maintenance. However, their overheads are extremely high. The cost of hiring their services is high.

6: LOCAL CONSULTANTS INFORMATION

There is a pool of qualified consultants in the market for road maintenance projects.

6.1 THE ROLE OF CONSULTANT

The Consultant will act as the Principal technical advisor to the Project. He will be in constant liaison with the MORPW officers who have overall responsibilities of roads in a selected province. The Consultant will act as advisor to the Kenyan Provincial Roads Engineer. To accomplish this undertaking, the Consultant shall have his representative in each district where works are to be undertaken. He will also work hand-in -hand with the roads Engineer from the Districts. Further, the Consultants shall be in constant liaison with the JICA Nairobi office and the

Permanent Secretary of MORPW to ensure the works sponsored by Japan are executed in harmony with the Roads 2000 initiative undertaken by other Donors elsewhere in the Republic of Kenya.

Specifically, the consultant should accomplish the following duties, among other things.

(a.) Identify areas that require spot improvement and spot repair and give engineering solutions that will ensure cost effectiveness. His design solutions should embrace labor-oriented methods.

(b.) Prepare works Contracts and precise condition surveys including accurate quantification of cost implications of the suggested engineering interventions:

(c.) Propose and test a standard methodology to identify and quantify engineering endeavors required to bring the roads to a predetermined level of service. Thence, he shall propose in-house costing systems based on the engineering activities and bills of quantities that are determined therein.

(d.) Conduct trial road condition quarries on selected roads using the methods proposed together with the engineers from MORPW as part of the cooperation.

(e.) Identify future work required to improve road condition surveys and estimation based on experience gained during the first year.

(f.) Supervise construction works and prepare and satisfy certificates for contractor payments.

In addition to the above obligations, the consultant shall perform the following: -

- The Consultant shall take cognizance of the importance of environmental protection. He shall critically address the following issues: -

(i.) ***Protection of water sources***

In mountainous areas, it is important to ensure that the construction or rehabilitation of roads does not impede the natural drainage of upland water catchments. These catchments often feed streams and springs that are important sources of water for mountain villages. Care will also be taken in selection of site, as marshy areas and small streams may not be evident during the dry season.

(ii.) *Protected flora, fauna and relics*

Certain species of flora, fauna and certain types of historical relics are protected by law in Kenya. It will be important in designing road works to avoid damage to such species and relics.

(iii.) *Quarry Rehabilitation*

Quarries that are left open can be a hazard to animals and humans as well as undermining the aesthetics of the area. The Engineer will propose cost effective ways in which small quarries that are no longer required shall be back-filled and contoured to remove steep slopes and other vegetation to become established.

(a.) Preparing periodic reports outlining the methods of identifying, prioritizing, quantifying and costing of the work to be done on each road unit.

(b.) A computer application for cost analysis in *Mackintosh-based* environment

(c.) On completion of the works a schedule of periodic maintenance work to be carried by DRE shall be prepared to promote properly road maintenance in the future

6.2 REMUNERATION TO THE CONSULTANT

The scales of fees for engineering Consultancy services shall be based on any or a combination of the following: -

(1.) The legal documents recognized by the Government of Kenya known as the **Conditions of Engagement and Scales of Scales of Fees for Professional Services for Building and Civil Engineering Works (1987 Edition, Part II: Civil Engineering Works)**.

(2.) The international legal document (in English version) known as the **Conditions of Contract for Works of Civil Engineering Construction prepared by Federation Internationale des Ingenieurs Conseils (FIDIC), Fourth Edition**.

(3.) **Consultant bidding for the services to be provided as a Financial Proposal**.

(4.) **Client-Consultant negotiations** where appropriate.

7: JICA IN ROADS MAINTENANCE PROGRAM

7.1 OPTIONS FOR JICA TECHNICAL SUPPORT TO ROADS 2000

▮ Area Of Co-Operation

The Government of Kenya (GoK) requested the Government of Japan (GoJ) to consider supporting the introduction of Roads 2000 Programme that promotes private sector participation in routine and periodic maintenance of classified and trunk roads. The Government of Kenya has acknowledged that it does not have the adequate resources to effectively introduce Roads 2000 by itself and it has a policy of identifying Donor partners for all districts. Consequently, the GoK has entrusted the Japan International Co-operation Agency (JICA) to implement the *Study on the Utilization of Private Sector in the Road Maintenance System.*

▮ Implementing Options by Current Donors on Roads 2000

Briefly, the following options are being applied in different areas by different Donor agencies: -

(a.) one district pilot for one to two years followed by an expansion to all other districts in the jurisdiction of a Donor

(b.) putting the full Programme in only one district

(c.) putting the full Programme in all the districts

(d.) to concentrate the Donor support on upgrading the priority parts of the network and leaving the Government to make arrangements for routine maintenance

▮ Shortcoming from Current Donor Implementation Options

(1.) Some Donor options are an impedance to the essential feature of Roads 2000, which is to establish network wide basic access for the roads users

(2.) There is emerging danger of attention being diverted towards construction projects at the expense of maintenance and longer-term institution building.

In *Appendix I* an attempt has been done to discuss issues encountered during the field survey of *on-going* Donor-supported Roads 2000 programs.

(3.) Efforts to improve institutional capacity are diluted by Donor agencies continuing to have parallel set-ups and arrangements in different districts and zones. There is no synchronized modus operandi in respect of the current different Donor-GoK counterpart efforts.

It is recommended that JICA pioneer operations which are emphatic on immediate introduction of technical procedures so that benefit is maximized from the investments in the areas of management and technical training. It is also deemed fit that a standardized system should be designed to counter parallel set-up in the Roads 2000 Donor ventures. This will require collective effort of all players in the Roads 2000 Program (that is the Donor agencies and the GoK).

7.2 AREAS FOR COUNTERPART FUNDING

The Government has introduced a Road Levy to ensure that adequate funding will eventually be available for the full maintenance of the road network. The intention is that this funding will not be used for the various upgrading/rehabilitation activities necessary to bring the network to a maintainable level.

Past approaches have been for Donor funds to be only concentrated in the area of rehabilitation and upgrading. However, with limited government funds, the result has been that the meager Government funds are also concentrated in the same area as counterpart contributions, leaving nothing for recurrent activities such as maintenance. The consequence is that maintenance activities are subsumed to a continuous cycle of rehabilitation of failed infrastructure.

The alternative option for Donor support is to make a limited investment in recurrent activities as well as capital works to encourage the development of sustainable approaches. In the case of Roads 2000 this means providing equal support in all activities, whether training, rehabilitation, improvement or routine maintenance. In the discussion with GoK about implementation arrangements for the Study including the counterpart agency and undertaking of GoK and GOJ, it is proposed that the JICA investment be amalgamated to the level of Government funding.

In order to discourage dependency on the part GoK, the JICA funding should be dispensed on a sliding scale, thus giving the GoK the opportunity to gradually increase its road user charges to a realistic level. This kind of financial

intervention plays dual role: bridging funding and an investment into road sector institution building. The objective is that once the road users see that they get real value from the levy they will be less resentful of the charges and will be willing to pay more levy amount. The road network in Kenya is in a dilapidated state, hence, requiring tangible time frame for the trend in road deterioration to be reversed. This scenario has to be considered when drawing the scope of work for JICA involvement in the road sector.

7.3 SCOPE FOR JICA'S ASSISTANCE

Following from need for counterpart financing there are numerous detailed implementation procedures that have to be decided on to institute the Roads 2000 approach for any given network or districts. The following implementation aspects need to be addressed in the formulation of the scope of assistance from JICA: -

(a.) Whether to include paved and unpaved roads

(b.) What level of inputs to be used to bring roads to an acceptable level of service

(c.) What type of maintenance interventions to be used on different levels of road

To ensure an effective transport provision to the rural areas it is now essential that the Roads 2000 Programme be taken up as full network maintenance Programme. Paved roads must be included, as must the access to agricultural areas. The only roads to be excluded should be those that can only be made serviceable by a full rehabilitation Programme.

Having said that, the level of input used to bring roads up to a serviceable level will vary according to the type of road and the traffic requirements. Based on the field survey done in some Donor-funded Roads 2000 (for full discussions of the field survey refer to *Appendix I*), the following can be said for different types of roads: -

(i.) Gravel and earth, A, B and C roads attract most of traffic therefore safety consideration is important during improvement exercise. Heavy grading and drainage rehabilitation will probably be needed throughout (an observation made from studies on other Donor activities). All maintenance work can be done by labor based methods together with

light equipment (i.e., towed or self-propelled graders) provided by the private sector.

(ii.) Existing MRP and RARP roads and other D and E roads need spot improvement to ensure basic all weather access. Riding quality and traffic speed will be a secondary concern at this level. All such work can be achieved by labor-based methods.

(iii.) Surfaced Roads will not require any major input under this Programme to be brought to a maintainable level. This should be part of separate capital improvement Programme.

(iv.) The level of maintenance required follow from the above. Lengthmen type routine maintenance contracts are in progress on all gravel and earth roads. While maintenance is labor based, the levels of input vary in time and space depending on the road location, materials and traffic level.

(v.) Similarly for off pavement work (i.e. shoulders and drainage) on surfaced roads, simple lengthmen type contracts are put in place. For surface repairs, slightly more experienced contractors are assigned for the work, but the inputs labor, materials and towed trailer transport only.

(vi.) Periodic maintenance in the form of surface grading will only be used on A, B and C road. It is assumed that D, E and RAR road surfaces can be maintained by labor as under the present *lengthmen* system.

7.4 JUSTIFICATION

From the aforementioned it can be inferred that Kenya has potential for labor-based efforts supplemented by light equipment (i.e., compactors, tractor-towed graders and tractor-towed trailers). This scenario is conducive to the introduction of private sector. The activities requiring graders or similar heavy equipment can be acquired through the private sector. Similar approach has been successfully adopted in other countries such as Zimbabwe and Botswana.

It is justifiable that Japan International Cooperation Agency supports the Roads 2000 Program. Technical support from JICA for Roads 2000 is positive towards the plans of Government of Kenya for road sector reform. This will be building on the results of the JICA-GoK development cooperation since Kenya attained her independence nearly four decades ago.

7.5 PROBABLE BOTTLENECKS DURING IMPLEMENTATION

From this the engineering exploratory program in the three Provinces (Coast, Central and Eastern), it was found that the following areas pose unnecessary impedance to processes leading to the success of Roads 2000 Program.

(i.) The probability of success of private sector intervention is currently based on experience in other countries. Although there would appear to be sufficient organizations and individuals interested in working as contractors in the sector, it cannot be guaranteed. The underlying problem lies with the creation of a supportive environment. Procedures can be put in place to assist the road agency to pay in time, to pay market rates and generally not to abuse its privileged monopoly position. But if MORPW staffs choose to disregard procedures, and the private sector cannot make an adequate living, they will withdraw and the project will fail.

(ii.) Reluctance of payments has frequently occurred at all levels of Treasury, especially at the District treasury where local payment for all government sectors are made. This has usually occurred when the aggregate amount of payments exceeds the District's weekly or monthly cash flow limits. Because payments for road works are relatively large, the roads sector has suffered disproportionately from this bottleneck. The risk of delayed payments to contractors and suppliers remain high until such a time that this problem is resolved. This laxity is potentially very damaging for emerging small labor-based contractors. It could spell doom to planned privatization strategy. JICA needs to resolve this problem with GoK.

(iii.) The overall sustainability of the project is dependent on the GoK being able to raise the planned level of funding through the road levy, and then ensuring that it is used for the purpose intended. There is always the risk that the road users may not appreciate the results from the levy and it may prove politically impossible for the government to maintain or increase the level of levy. This should be surmountable by proper involvement of the communities in the maintenance process and by having a transparent system so that the user can appreciate how and where the funds are spent. Of greater concern is the "raiding" of funds to cover other shortfalls, in particular the upgrading or improving of

road links that should be covered by capital funds. Again, transparency and accountability is the only means by which this can be monitored and controlled.

(iv.) The GoK impedance in the counterpart funding with Sida needs to be re-visited. Why did the project delay for so long? What were the bilateral understandings during the April 2000 re-negotiations which resulted into a time extension from Sida?

It is recommended that a dual-phased approach with a well-defined *mid-term* break point in the overall project period be adopted. The mid-term point (end of phase I) will permit scrutiny of the validity of the project assumptions. At this break point JICA can decide to either continue into a wider phase II using the planned *modus operandi*, continue into phase II but with revised technical interventions or to terminate the project.

8: CONCLUSIONS AND RECOMMENDATIONS

8.1 GENERAL

In the first two decades after independence, Kenya demonstrated significant growth (averaging 7% p.a.). This wealth was primarily created by the rapid expansion of agriculture directed to markets in the region and Europe; coupled with a significant rise in living standards, health and education of the population. Unfortunately this growth was not sustained, dropping to 0.4% in 1993. This economic slow-down together with the rapid expansion of population has resulted in almost half the population being classified as living below poverty line and some 2.5 million people unemployed. With half a million people entering the employment market each year, the economy will need to grow at the rate of 8.2% per year over the next two and a half decades to fulfil the expectations of full employment and eradication of poverty.

The Government of Kenya acknowledges that poverty and unemployment are "**the two major challenges that confront the Nation**" and is currently committed to a broad based reform program with specific measures set out in the Policy Framework Paper (PFP) of February 1996. The main points are: -

(i.) Improving efficiency in the civil service and the public sector through a reform Programme aimed at trimming down and streamlining the two sectors.

(ii.) Maintaining macro economic stability by strengthening monetary and public sector finance management.

(iii.) Addressing the socio aspects of development through poverty interventions and increased access for the poor to social services.

(iv.) Eliminating rampant corruption bedeviling the public sector

8.2 SOCIO-ECONOMIC CONTEXT AND NATIONAL POLICIES

Cost-benefit relation should be analyzed for each District in order to come up with true prioritization scale for areas in dire need of maintenance. Relevant data must be tapped for this exercise. Subsequently, a complete idealization of the necessity of certain District roads for development should be evaluated to complete the development priority list of maintenance activities.

Agricultural sector accounts for a dominant share of the Gross Domestic Product (GDP) and it has been playing a leading role in the whole industry of Kenya. The sector is required to secure foods for sustaining a growing population. Improvement of minor roads in such zones will enable agricultural related commodities to effectively move in and out of the production site. Such road improvements will not only support the existing agricultural activities but will trigger the development of newer agricultural exploitation (especially in areas that had erroneously been marginalized during the past development efforts).

From the viewpoint of the agricultural development, the minor roads in Kuria, Transmara, Kisii, Migori, Trans Nzoia, Uasian Gishu, Meru Districts, etc. (known high agricultural potential for maize and other staple food production in Kenya) need to be studied carefully. These regions have high rainfall regimes which normally destroy the unpaved road surfaces every rainy season.

Improvement of roads leading into the tourist zones will create a greater influx of tourist into Kenya. It is needless to mention that the Republic of Kenya has very diverse and spectacular wildlife and landscape that is much sought for by global tourists. It will contribute even greater proportion of foreign exchange earnings to GoK.

8.3 LOCAL HUMAN CAPACITY BUILDING

JICA support for the Republic of Kenya will have a long lasting positive impact if following plan of action is executed: -

(i.) JICA should continue using local consultants (whenever possible) in their effort to establish appropriate methods of executing maintenance works on Roads 2000. Use of foreign experts by some donors agencies during the undertaking of engineering infrastructures has left this country without its own consulting capacity upon the expiry of donor engagement period. This has made the past foreign-funded projects non-self sustaining. It is on this strength that we encourage local capacity building through joint venture between JICA and local consultants.

(ii.) Since the capacity of private enterprise differs among districts, it is of necessity to take stock of their ability especially those who are in remote Districts. It is recommended that training aspect be tailored to equip the new constructors with necessary skills. This should be done at Provincial level and the on-job training. Establishment of middle level institutions similar to the Kenya Institute of Highway and Building Technology (KIHABT) and Kisii Training Centre (KTC) is recommended. However, training on-job is preferred at the beginning of contractors' capacity building.

(iii.) Soft loans should be extended to small contractors to aid in purchasing simple equipment for maintenance purposes (i.e., tractor and tractor-towed trails, hand graders, wheelbarrows, etc). These loans should have low interest rates. If this is done, it will go along way into revitalizing the road maintenance sector in terms of abundant labor-based contractors.

8.4 ENVIRONMENT ISSUES

Since Roads 2000 Programme is not concerned with new road construction, it is necessary to study the prevalent environmental problems caused by existing roads. The environment issues to be considered in the road maintenance program should include soil erosion, deforestation, desertification, conservation of wildlife and other environmental pollution along roads. The JICA study should clarify whether a control measure or other remedial measures must be taken to arrest these issues.

Areas that are likely to incur environmental problems will be as follows: -

(i.) National Parks and Reserves

(ii.) Forest area

(iii.) Areas of critical soil erosion

(iv.) Densely populated areas

(v.) River and coastal areas

8.5 POVERTY ALLEVIATION STRATEGY

Alternative measures of poverty measures must be developed since income measures of poverty obscure important aspects of human well being. We propose the following parameters as better litmus paper for poverty indications: -

(i.) Participatory Poverty Assessment (PPA)

(ii.) Human development Index (HDI)

(iii.) Gender-related Development Index (GDI)

(iv.) Gender Empowerment Measure (GEM)

8.6 WHERE DID IMF STRUCTURAL ADJUSTMENT PROGRAMME GO WRONG?

During the last 37 years of independence the population growth rate outstripped the GDP growth which has resulted into aggravation of the quality of living. Granted, this scenario is not unique to Kenya, but is the norm in other developing nations in Africa. Kenya has experienced several economic hiccups precipitated by erratic rise and fall of world prices for its cash crops (tea, coffee, etc), the rise of OPEC oil prices and natural extreme events (i.e., droughts and El Nino floods). The cyclic economic rise and falls have created a fluid economic pattern in Kenya. In the early 1990s the IMF and related world bodies imposed the structural Adjustment Programs (SAPs). These SAP policies are documented in the *Sessional Paper No.1 (1996) on Economic Management for Renewal Growth.* This Paper had suggested various privatization and liberalization policies which should counter a high population growth. Its milestones have not been realized to this day. Instead Kenya is much poorer now. Thence, it is proposed that the JICA experts should do the following: -

JICA should study the IMF Session Paper No.1 on SAPs and discard any over-ambitions targets. More realistic suggestions should then emerge at the end of the day.

The Economic Survey 2000 prepared by Central Bureau of Statistics Ministry of Finance and Planning should be studied carefully. It has a summary of the resources of this Republic. It also unveils the GoK economic plans amidst its cash-strapped coffer.

8.7 OBJECT-ORIENTED ROAD NETWORK CLASSIFICATION

Existing road classifications by MORPW are based on a level of transport linkage much as the connection with neighboring countries and access to major urban centers. While we do not wish to discard the existing road classification, we recommend an object-oriented road network classification which will act as a useful analysis tool to study the necessity for maintenance and design. From the view point of road network sustainable maintenance, it is imperative for JICA experts to re-classify roads taking cognizance of attributes such as traffic characteristics and agriculturally potential areas that are closely inclined to eradication of hunger and poverty in the nation.

8.8 MINOR ROADS DESIGN RECOMMENDATIONS

S. R. Manga and Associates has made construction detail proposals which form part of this report for JICA to consider. A brief summary of our proposals in Appendix II can be tabled as follows: -

(1.) In Kenya the major function of minor road is to provide all-weather access. In many developing countries the adoption of design speeds for various terrain types are the major determinants for establishing horizontal and vertical design parameters. The most important factor is that tertiary roads are designed for the safe operation of most vehicles using the roads. Thus, it is important to understand the volume and composition of traffic using the roads and provide adequate maintenance standards to accommodate this traffic.

(2.) Researches have revealed that terrain types have a strong linear relationship with accident rate and we stress the need for minimum roadway width to be maintained to ensure safe accommodation of vehicles.

(3.) A basic consideration is design standards that fit the alignment sympathetically into the terrain. This calls for realistic horizontal and vertical geometrical standards. Good engineering design specifications reduce the risks of soil erosion and side slope instability caused during the maintenance construction process and later with the dispersal of storm runoff.

(4.) For minor roads one of the most economical culvert structures is that using slabs either in sandstone or made from reinforced concrete supported by masonry piers with a concrete invert. This is also a favored drainage structure where access to private properties is required over side drains.

(5.) Further to the above, the use of labor as the principal input in the construction process demands that longitudinal and borrow pit haul distances are kept to a minimum. Careful formulation of road alignments will often significantly

reduce the need for excessive earthwork quantities, where possible particularly in rocky soils.