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IMPLEMENTATION COMPLETION REPORT
(IDA-29930 TF-29564)

ON A

CREDIT

IN THE AMOUNT OF US\$ 70.0 MILLION

TO THE

REPUBLIC OF ZAMBIA

FOR A

ROAD SECTOR INVESTMENT PROGRAM SUPPORT PROJECT

September 30, 2005

**Transport
Africa Region**

CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2005)

| | | |
|--------------------------|---|-------------------------|
| Currency Unit | = | Zambia Kwacha (K) |
| K1,300.00 at appraisal | = | US\$ 1 |
| US\$ 1 | = | K4,700.00 (project end) |
| K1,767.00 (at appraisal) | = | SDR 1 |
| K7,088 (project end) | = | SDR 1 |

FISCAL YEAR

January December

ABBREVIATIONS AND ACRONYMS

| | | | |
|------|---|---------|------------------------------------|
| CAS | = Country Assistance Strategy | PSRP | = Public Sector Reform Program |
| DISS | = Dept. of Infrast. & Support Services | PSC | = Project Steering Committee |
| ECZ | = Environment Council of Zambia | | |
| EIA | = Environmental Impact Assessment | RD | = Roads Department |
| EIRR | = Economic Internal Rate of Return | RDA | = Road Development Agency |
| EU | = European Union | RDC | = Rural District Council |
| GRZ | = Government of the Republic of Zambia | RMI | = Road Management Initiative |
| GDP | = Gross Domestic Product | ROADSIP | = Road Sector Investment Program |
| HMS | = Highway Management System | RTTP | = Rural Travel & Transport Program |
| ICB | = International Competitive Bidding | RRMP | = Road Rehab. & Maintenance Proj. |
| IDA | = International Development Association | SAR | = Staff Appraisal Report |
| IMT | = Intermediate Means of Transport | SDR | = Special Drawing Right |
| MCT | = Ministry of Transport and Communication | SRP | = Social Recovery Project |
| MFNP | = Ministry of Finance and National Planning | SRPU | = Social Recovery Proj. Unit |
| MWS | = Ministry of Works and Supply | TETAP | = Trans. Eng. & Tech. Asst. Prog. |
| MLGH | = Ministry of Local Government & Housing | VOC | = Vehicle Operating Costs |
| NCB | = National Competitive Bidding | ZNTB | = Zambia National Tender Board |
| NCC | = National Council for Construction | | |
| NGO | = Non-Governmental Organization | | |
| NRB | = National Roads Board | | |
| NRSC | = National Road Safety Council | | |
| NRFA | = National Road Fund Agency | | |

| | |
|--------------------------------|------------------------|
| Vice President: | Gobind T. Nankani |
| Country Director | Hartwig Schafer |
| Sector Manager | C. Sanjivi Rajasingham |
| Task Team Leader/Task Manager: | Davies B. Makasa |

ZAMBIA
ROAD SECTOR INVESTMENT PROGRAM SUPPORT PROJECT

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| <i>Project ID:</i> P003236 | <i>Project Name:</i> ROAD SEC. INVESTMENT PROG. SUPPORT PROJ. |
| <i>Team Leader:</i> Davies Bwalya Makasa | <i>TL Unit:</i> AFTTR |
| <i>ICR Type:</i> Core ICR | <i>Report Date:</i> September 30, 2005 |

1. Project Data

Name: ROAD SEC. INVESTMENT PROG. SUPPORT PROJ. *L/C/TF Number:* IDA-29930; TF-29564

Country/Department: ZAMBIA

Region: Africa Regional Office

Sector/subsector: Roads and highways (89%); Central government administration (8%); Vocational training (2%); General transportation sector (1%)

Theme: Access to urban services and housing (P); Rural services and infrastructure (P); Pollution management and environmental health (S); Participation and civic engagement (S)

KEY DATES

PCD: 10/29/1993
Appraisal: 06/20/1996
Approval: 10/14/1997

| | <i>Original</i> | <i>Revised/Actual</i> |
|-------------------|-----------------|-----------------------|
| <i>Effective:</i> | 03/13/1998 | 03/13/1998 |
| <i>MTR:</i> | 03/31/2000 | 12/12/2000 |
| <i>Closing:</i> | 03/31/2003 | 03/31/2005 |

Borrower/Implementing Agency: GOVT/GRZ

Other Partners:

| STAFF | Current | At Appraisal |
|----------------------------|------------------------|----------------------|
| <i>Vice President:</i> | Gobind T. Nankani | Callisto E. Madavo |
| <i>Country Director:</i> | Hartwig Schafer | Phyllis R. Pomerantz |
| <i>Sector Manager:</i> | C. Sanjivi Rajasingham | Yusupha B. Crookes |
| <i>Team Leader at ICR:</i> | Davies Bwalya Makasa | Stephen J. Brushett |
| <i>ICR Primary Author:</i> | Ehsan Qureshi | |

2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

Outcome: S
Sustainability: L
Institutional Development Impact: SU
Bank Performance: S
Borrower Performance: S

Quality at Entry: QAG (if available) ICR
S
Project at Risk at Any Time: Yes

3. Assessment of Development Objective and Design, and of Quality at Entry

3.1 Original Objective:

The overriding goal of the Government for the road sector was to facilitate economic growth and diversification, particularly in the agriculture sector through appropriate investments in road infrastructure and through a sustainable system for the financing and management of the road network. The Government's medium term program, Road Sector Development Program (ROADSIP), was expected over a 10 year time horizon, with the following specific objectives:

- (a) Bringing a core road network of 33,500 kilometers into maintainable condition;
- (b) Bringing the condition of the road network to at least 50% good and about 10% poor for all type of roads;
- (c) Strengthening the technical and managerial capacity of road authorities;
- (d) Creating employment opportunities in the road sector and alleviating poverty through the creation of 30,000 new jobs in the road maintenance;
- (e) Improving road safety and reducing accidents by at least 20%;
- (f) Improving environmental management in the road sector through establishment of procedures and guidelines;
- (g) Providing an enabling environment for improved road transport services and increasing the truck and bus fleet by 20% in rural areas; and
- (h) Developing a framework for the management of community roads and promoting community participation in road management.

This project addressed the first phase of the program for the period 1997 to 2002, and was expected to contribute to the realization of the program goals. The five specific objectives of the project were:

- (a) **Reform of the road sector policy and institutional framework**, including changes to the legal framework for roads and road traffic management and strengthening and refocusing the roles of sector institutions (NRB, Roads Department, and MLGH), aimed at enhancing capacity, increasing efficiency of the use of resources and improving planning and implementation performance;
- (b) **Strengthening of road sector financing** aimed at ensuring the sustainability of the road maintenance effort and reducing the strain on limited government revenues with the specific targets of streamlining the functioning of the Road Fund and increasing and diversifying road user charges to ensure at maximum 70% coverage of periodic and routine maintenance costs of the core road network by year 2002;
- (c) **Strengthening of the local construction and consulting industry** in line with country objectives of creating greater opportunities for the private sector to participate in the design, construction and maintenance of road and with the specific target of creating 14,000 new jobs by year 2002;
- (d) **Addressing the road maintenance and rehabilitation backlog** through a priority investment program with the specific target of increasing the proportion of main roads in good condition to about 45% and the proportion of feeder roads in good condition to about 15% of the road network by year 2002; and

(e) **Establishing a pilot program for community road management** in at least three districts to test approaches for sustainable improvements in maintenance of these under designed roads and to promote increased usage of non-motorized transport means.

3.2 Revised Objective:

No revisions were made to project objectives

3.3 Original Components:

The project components as outlined in the SAR included:

(a) **Civil Works (79.7% of total project cost)**. The civil works component focused on priority needs for road maintenance and rehabilitation for the period 1997 to 2002, and was expected to cover about 22,000 kilometers of the road core net work. The program also included limited accessibility improvements of about 17,000 kilometers of feeder roads. The specific target was to increase the proportion of main roads in good condition to about 45% and the proportion of feeder roads in good condition to about 15% of the road network by year 2002. The planned maintenance interventions were categorized as follows:

- Routine maintenance. Planned to cover roads in fair and good condition only. Total volume at the start of the project in 1997 was 6,700 kilometers per year, and was expected to increase to 15,700 kilometers per year by the end of the project in 2002, as more roads were expected to be rehabilitated and put on routine maintenance;
- Periodic maintenance. Repair and resealing of about 1,200 kilometers of paved trunk, main, and district roads, and regraveling of about 5,400 kilometers of unpaved trunk, main, and district roads, with periodicity of periodic maintenance ranging from 6 to 10 years;
- Rehabilitation. Rehabilitation of about 1,200 kilometers of paved trunk roads and main roads, and 300 kilometers of paved urban roads;
- Upgrading. Upgrading of about 2,600 kilometers of unpaved district and feeder roads to acceptable engineering standards; and
- Improving accessibility. Planned for selected feeder roads to ensure accessibility all year round. An initially estimate was about 17,000 kilometers and anticipated to fall gradually to 14,000 kilometers by 2002. In short the target was to cover about 3000 kilometers of feeder roads by the end of the project.

(b) **Community Accessibility Program (4.7% of total project cost)**. The component was aimed at improving travel and mobility for the poor in rural communities to the markets and to other essential services. The component was designed to firstly, develop through a pilot program in at least three selected districts, a community based road management framework to help ensure sustainability for maintenance of community roads, and secondly, to encourage use of Intermediate Means of Transport (IMTs). Under the CTI program, the target at appraisal was to carry out about 70 community based projects, including accessibility improvement of about 500 kilometers of feeder roads. Under the IMT program, no specific target was set.

(c) **Construction Industry Development Program (2.3% of total project cost)**. This component was aimed at increasing capacity of local contractors and consultants to meet growing

needs for the road maintenance and rehabilitation, addressing capacity constraints of local contractors, and ensuring fuller involvement of local contractors, particularly small labor based contractors, in road maintenance. Specifically the component comprised: (i) technical assistance for improving Government contracting policies and procedures, including streamlining of contractor registration procedures, and streamlining the legal framework; (ii) training of contractors with particular emphasis on labor based methods, and strengthening capacity at the Roads Training School.

(d) **Institutional Capacity Building (7.7% of total project cost).** The main aim of this component was to strengthen sector capacity through restructuring sector institutions and improving road sector management. The main elements of the component included: (i) policy support – reform of the legal framework for road management and transport, including streamlining of the Road Fund, and development of the Road safety Action Program; (ii) Implementation support- technical support to program implementation agencies, including NRB, Roads Department, and MLGH; (iii) Institutional development – supported development of capacity at NRB, Roads department, and MLGH in the following areas: environmental analysis and monitoring, contracts management, financial management, and establishment of a Highway Management System (HMS).

(e) **Engineering Services (5.6% of total project cost).** This component included technical assistance for feasibility studies, engineering design and supervision of the maintenance and rehabilitation works.

3.4 Revised Components:

Original components were not revised.

3.5 Quality at Entry:

The Quality Assurance Group (QAG) did not review the project at entry. The ICR team has assessed the Quality at Entry and *rated it as satisfactory*, for the following reasons: (i) the project objectives were relevant and consistent with the Government's priorities in the transport sector, with the Bank's Country Assistance Strategy, and with the previous Bank intervention that contributed to the development of the Road Sector; (ii) it was a continuation of the Bank's involvement in the sector through the Transport Engineering and Technical Assistance Project (TETAP 2515-ZA.), which helped to advance preparation of the ROADSIP. Most of the detailed designs and project documents were completed under TETAP. The project was prepared with active participation of government counterparts; (iii) the project's institutional arrangements were identified, and an implementation/ procurement plan was agreed upon during project appraisal; and (iv) the quality of design was appropriate and the preparation took into account the Bank's safeguard policies with special relevance to environmental and resettlement policies.

4. Achievement of Objective and Outputs

4.1 Outcome/achievement of objective:

(a) **Reform of the Road Sector Policy and Institutional Framework.** This component is *rated satisfactory*. Although the achievement of the final outcome was delayed at various stages of project implementation, the final results go well beyond what was anticipated for this objective as

stated in the SAR, as there was no mention of establishment of a completely new sector institutional structure.

Government in May 2002, adopted a National Transport Policy, and enacted the following legislations:

National Road Fund Act No. 13 of 2002 - Establishes and defines the functions of the National Road Fund Agency (NRFA), and the Road Fund; *Public Reform Act No. 12 of 2002* - This establishes the Road Development Agency (RDA), to replace the Roads Department (RD) in the Ministry of Works and Supply (MWS), and the Department of Infrastructure and Support Services (DISS) in the Ministry of Local Government and Housing (MLGH). RDA is now responsible for planning and management of public roads; and *Road Traffic Act No. 11 of 2002* - This establishes and defines the functions of the Road Transport and Safety Agency (RTSA) to replace the National Road Safety Council (NRSC). RTSA is responsible for road safety, traffic management, and motor vehicle licensing.

This component was highly successful, even though it is conservatively rated as satisfactory. The reforms are expected to greatly contribute to improving management and financing of the road sector in Zambia. The reforms are in line with the RMI reform program and the Bank's strategy to "bring roads into the market place, put them on a fee-for-service basis, and manage them like a business".

(b) Strengthening Road Sector Financing. This component is *rated moderately satisfactory*. At the beginning of the project in 1998, the target was to ensure that by project end, the Road Fund would contribute 70% of the total funding requirements for the road network (routine, periodic and rehabilitation). By project end the actual Road Fund contributions amounted to about 23% of the total funding requirements.(see Annex 1).

It should be noted that, even though, the above target was not met, Government met the total funding contribution as estimated at appraisal through budgetary support. It exceeded its commitment on some activities such as periodic maintenance where it contributed US\$136.1 million against a planned estimate at appraisal of US\$60.0 million. This said, the objective of the project was to create a sustainable flow of funds through a Road Fund, supported by diversified road user charges. Government contribution from budgetary allocation can therefore not be substituted for a sustainable flow of maintenance funds through a dedicated Road Fund. However, the Road Fund has created a strong basis for achieving this under the follow up RRMP project.

(c) Strengthening Local Construction Industry. This component is *rated satisfactory*. During project implementation, an average of about 15,000 new jobs per year were created, exceeding the target in the SAR, estimated at 14,000 new jobs per year. The jobs are likely to be sustainable as the new Road Development Agency will be out sourcing maintenance works on performance based contracts to small and medium scale contractors. Out of the planned 300 contractors targeted for routine and periodic maintenance training, about 265 were trained. The number of local civil engineering consulting firms increased from 10 to 15. The local consultants participated in the design and supervision of rehabilitation works, and benefited from joint ventures with foreign consulting firms, through technical skills transfer.

Although greater opportunities were created for the local construction industry, these could not be effectively exploited under the project, due to delayed or incomplete action by the NCC to address contractor constraints. During project implementation, a comprehensive study was undertaken which reviewed the state of the construction industry in Zambia. The recommendations of the study are now being used by NCC to draw a National Construction Strategic Plan for development of the construction industry, under the RRMP project.

(d) Addressing the Road Maintenance and Rehabilitation Backlog. This component is *rated satisfactory*. The target for this component was to increase the proportion of the main roads in good condition to about 45% and the proportion of feeder roads in good condition to about 15% by project end. At the end of the project the condition of the main roads improved to between 57% – 60%, exceeding the forecasted target. The condition of feeder roads in good condition at the end of the project was only 7%. However, it should be pointed out that, during project design, it was anticipated that maintenance interventions on feeder roads would constitute mostly spot improvements as opposed to full improvement. During project implementation most of the feeder roads under this component underwent full improvement. The decision to embark on full rehabilitation instead of spot improvements as planned was dictated by the condition of the road on the ground. Where the road was impassable for a considerable distance, full rehabilitation was recommended, but where the road was accessible for a considerable distance spot improvements were recommended.

Maintenance prioritization for trunk, and main roads were based on economic rate of return (EIRR) rankings. Maintenance prioritizations for feeder roads were based on a Social Economic Justification Index (SEJI). The SEJI took into account network considerations (connectivity), social factors (demographic, intensity of social infrastructure, and employment creation potential), and economic factors (agriculture production potential, planned development activities, and current/ historical agriculture surplus). The maintenance and rehabilitation effort will go a long way in reducing vehicle operating costs (VOCs) on the improved roads, and the savings to the economy accruing from the differentials in VOCs before and after improvement of the roads, especially the trunk roads are likely to be substantial as is depicted under economic analysis, (section 4.3).

(e) Establish Community Based Road Management and Introduce IMTs in three Districts. This component is *rated satisfactory*. The component focused on improving accessibility and mobility in the rural communities to enable the pro-poor access to social-economic amenities, through: (i) improvement of Community Transport Infrastructure (CTIs), including introduction of community based road maintenance management; and (ii) introduction and encouragement of the use of Intermediate Means of Transport (IMTs) or non-motorized means of transport.

Community based road management pilot program – Pilot projects were set up in three districts in which communities participated in improvement of community roads, and trained in basic road maintenance skills. Once the works were completed, tools were left with the participating communities for their use, as and when need arise. The results in the first three districts were quite

overwhelming such that, the program was introduced in six other districts. The program is likely to improve community transport infrastructure at village levels, and greatly improve accessibility and mobility in rural communities. However, even though communities are willing to repair their roads, the government has not put in place a coherent structure at village or community levels that would stimulate and support the continuity of community participation in road management. Thus the exercise remains largely voluntary on the part of communities.

Non-motorized means of transport (IMT) pilot program – An IMT pilot program was set up in Mpongwe district and an external review on the pilot program indicate that: (a) with the introduction of IMTs in the district, households have increased their carrying tonnage compared to head loading. Women are now able to carry more firewood, and more agricultural produce to the markets. Households owning IMTs have been able to hire out IMTs within the community for transportation purposes. This has improved the levels of household disposable incomes; (b) the beneficiaries have reported that, with the acquisition of IMTs, it has been easier to follow-up on agricultural extension services, and this has improved the yield of agricultural production in comparison to times when there were no IMTs. To assure sustainability of the IMT program in Mpongwe, a Trust Fund has been created, where IMTs, are loaned to the beneficiaries. However, loan repayments are very low, and pose serious challenges to the sustainability of IMTs. Following the successful implementation of the program in Mpongwe district, the program was rolled out to 4 other districts, namely, Zambezi, Kalabo, Chibombo, and Sinazongwe.

4.2 Outputs by components:

In this section, the planned targets set at the beginning of the project, are compared with actual outputs under each of the components. These comparisons are also itemized in Annex 1, under key performance indicators (KPI). Financing for each component is presented in Annex 2.

(a) Civil Works (SAR US\$347.3 million, ICR US\$428.6 million, 79.7% of total project).

The civil works component is overall *rated satisfactory*. As mentioned earlier, the civil works component focused on the priority needs for road maintenance and rehabilitation for the period 1997 to 2002, and was expected to cover about 22,000 kilometers of the road network, including limited improvement of about 17,000 kilometers of feeder roads, and upgrading of selected feeder roads to minimum engineering standards. All earmarked activities under the civil works component were completed except for the Chingola – Kasumbalesa road which was not rehabilitated as planned because of delays in the preparation of the engineering designs. This was in part due to delays by the consultant in preparing the engineering designs and also due to the inconsistent comments from the team which caused the consultant to continually revise the designs. The resources earmarked for Chingola-Kasumbalesa road civil works were reallocated to periodic maintenance of the Siavonga road, Lusaka - Makeni road, Makeni - Kafue road and the Lusaka-Kabwe road (up to km 55). These periodic maintenance works were successfully completed under the project.

The out puts under various maintenance interventions are as follows:

Routine Maintenance (SAR US\$70.1 million – ICR US\$47 million): This sub-component focused on roads in good and fair condition. The program was not financed by IDA, but was financed through the Road Fund. At the start of program, it was estimated that, the Road Fund would be

able to finance routine maintenance of about 6,700 kilometers per year of the core road net work. It was further estimated that, by the end of the project, the Road Fund would be able to finance routine maintenance for about 15,700 kilometers per year. However, at project end, the Road Fund supported an average of about 10,246 kilometers road length per year of routine maintenance, which is about 65% of the originally planned routine maintenance. This subcomponent *is rated satisfactory*.

Periodic Maintenance (SAR US\$74.4 million, ICR US\$38.7 million): This subcomponent focused on preserving the road network from further deterioration. IDA financed US\$13.7 million against the appraisal estimate of US\$8.3 million, and the Borrower funded US\$25 million out of the estimated US\$66.1 million forecasted at appraisal. Out of the planned target of 6,600 kilometers, at the start of the project about 1,802 kilometers of the core road network under went periodic maintenance, about 27% of what was originally planned at appraisal. The target could not be met probably due to the fact that, Government increased its contribution under the rehabilitation subcomponent. However, in terms of the target set at appraisal, this subcomponent *is rated moderately unsatisfactory*.

Rehabilitation (SAR US\$145.0 million, ICR US\$326.1 million): A total of US\$145 million was allocated for this subcomponent out of which IDA financed US\$23.70 million against US\$35.00 million estimated at Appraisal, and the Borrower contributed US\$136.1 million against US\$60 million estimated at appraisal, and other donors contributing US\$166.3 million against US\$50 million forecast at appraisal. Out of a planned total length of 1,500 kilometers of roads at appraisal, a total length of 3,129 kilometers of the core road network under went rehabilitation, about 209% of what was originally planned at appraisal. This subcomponent exceeded the planned target because Government and other donors contributed more funding than estimated at appraisal. This subcomponent *is rated satisfactory*.

Feeder Road Upgrading (SAR US\$33.8 million, ICR US\$14.5 million): This subcomponent focused on upgrading non-engineered feeder roads to acceptable engineering standards before placing them under routine maintenance. IDA financed US\$9.50 million against an appraisal estimate of US\$10.40 million. Out of a planned length of 2,600 kilometers, a total of 3,601 kilometers length of feeder roads underwent upgrading to minimum engineering standard. This is about 139% of the originally planned estimate at appraisal. This sub component *is rated satisfactory*.

Accessibility Improvement (SAR US\$24.0 million, ICR US\$2.3 million): This subcomponent focused on improving accessibility through spot improvements for non-engineered feeder roads which were not covered under upgrading subcomponent. IDA financed US\$2.30 million against an appraisal estimate of US\$4.20 million. At the start of the program, about 17,000 kilometers length of feeder roads was expected to be placed under spot accessibility improvements, and the volume of spot improvements was expected to fall to 14,000 kilometers as some of the selected feeder roads were being upgraded during the program. At the end of the project, it was not clearly known as to how many kilometers of feeder roads were made accessible through spot improvements. It is expected that, a portion of the length of feeder roads made accessible through spot improvements may have been mistakenly captured under the subcomponent on feeder road

upgrading and or vice versa. This problem is attributed to lack of a coherent monitoring and evaluation system during project implementation. The subcomponent is *rated moderately satisfactory*.

(b) Community Accessibility Program (SAR US\$6.3 million, ICR US\$3.4 million, 4.7% of total project cost). This component is overall *rated satisfactory*. A total of US\$ 3.4 million was financed by IDA against Appraisal Estimate of US\$2.10 million. As mentioned under paragraph 4.1 (e), this component focused on improving accessibility and mobility in the rural communities to enable the pro-poor access to social-economic amenities, through: (i) improvement of Community Transport Infrastructure (CTIs), including introduction of community based road maintenance management; and (ii) introduction and encouragement of the use of Intermediate Means of Transport (IMTs) or non-motorized means of transport.

Under the CTI program, about 70 community based projects were planned at appraisal, which included improving accessibility of about 500 kilometers length of community roads. However, due to a limited funding envelope, only 56 projects were approved. All the 56 planned projects were carried out, and about 496 kilometers of community roads were made accessible, about 99% of the originally planned target at appraisal. Initially the program was carried out in districts in the Luapula Province. However, due to demand by other communities in other districts the program was rolled out to three other provinces, namely, Northern Province, North Western Province, and Western Province respectively. Additionally, the communities were trained in basic road management to ensure that they continued maintaining CTIs in their respective communities. This subcomponent is *rated highly satisfactory*.

Under the IMT program, a pilot was set up in Mpongwe district, where various IMTs were introduced, including donkeys and donkey carts, oxen and oxen carts, and bicycles. It should be noted that under this program, there was no baseline information on poverty in the district, therefore, it's success is only speculative in terms of community accessibility to social economic amenities or increase in agricultural productivity. However, in spite of the above short comings, the IMT program was extended to four other districts, Kalabo, Zambezi, Chibombo, and Sinazongwe. This subcomponent is *rated satisfactory*.

(c) Construction Industry Development (SAR US\$2.8 million, ICR US\$5.4 Million, 2.3% of total project cost). This component is *rated satisfactory*. The component was aimed at increasing capacity of the contractors and consultants. IDA financed US\$0.4 million against US\$1.6 million estimated at appraisal. Major output included: establishment of NCC, training of about 265 small to medium scale contractors in routine road maintenance, out of 300 planned. Under creation of opportunities to the local small and medium scale contractors, an average of 15,000 jobs per year were created in the road sector, against 14,000 planned jobs per year at the start of the project. Additionally, consultancy firms increased from 10 to 15.

(d) Institutional Capacity Building (SAR US\$7.0 million, ICR US\$8.2 million, 7.7% of total project cost). This component is *rated satisfactory*. IDA financed US\$8.2 million towards this component against an appraisal estimate of US\$3.4 million. Major outputs include: (i) *Policy Support* – a national transport policy was compiled and adopted by government in May 2002;

road authority legislation was drafted and enacted by Government in 2002; (ii) *Road Safety Action Plan and support to NRSC* – A Road Safety Action Plan was compiled, although the proposed actions were not effected. This was attributed to lack of capacity at NRSC to execute the program. Support to the NRSC included procurement of traffic patrol vehicles, road safety education, publicity materials, speed traps, and first aid kits; (iii) *Setting up of a Highway Management System (HMS)* - The HMS did not function according to expectations, however, the road network condition and geometry data base created during the project implementation is still very useful and can be coupled to other road decision model software such as dTims and HDM4; (iv) *setting up of an Environmental Management Unit (EMU) in the Roads Department*; (v) Training of Staff – several key staff in the implementing agencies were trained in financial management, procurement, project management, and pavement management systems (PMS). The success of the outputs of the above components vary, however, the interventions have formed a strong skills base for staff who will be absorbed in the new Road Agencies.

(e) Engineering Services (SAR US\$20.8 million, ICR US\$20.6 million, 5.6% of total project cost). This component is *rated satisfactory*. All activities planned under consultancy services were completed successfully. Outputs include: several civil works feasibility studies, engineering designs, and civil works supervision services.

4.3 Net Present Value/Economic rate of return:

In calculating the economic benefits, the main assumption is that the main direct benefit from paved road improvements is the reduction in vehicle operations costs (VOCs) before and after improvements. The differential in VOCs therefore constitutes a saving to the economy which in turn should translate in reduced transportation costs for people and goods, when there is a competition in the road sector.

VOCs for the first year were calculated using HDM4 algorithms. Input data included Average Daily Traffic (ADT) for the vehicles plying a given road, road length and roughness index (IRI) of the improved and non-improved road. The ADT used is the actual observed traffic counts on the given roads obtained from RDA. The economic benefits, and thus the economic rate of return (EIRR) have been computed using actual construction costs, life cycle maintenance costs over a 20 year design period, and savings in VOCs before and after road pavement improvement. The savings arising from VOCs before and after road improvements have been increased by 5% for each year of the road design period. All costs and benefits streams over the 20 year life of the projects have been expressed in prices at the beginning of ROADSIP I (1998), discounted at 12% to work out the EIRR.

The ICR economic analysis results indicate an NPV of US\$16.72 million, and EIRR of 29.9%. The strong evaluation results of the road maintenance program confirm the high economic justification of the maintenance works. The SAR economic analysis results indicated an NPV of US\$14.0 million and EIRR of 17.25%. The results support the robust economic justification of the project.

4.4 Financial rate of return:

Financial analysis was not applicable.

4.5 Institutional development impact:

Institutional development impact is *rated as substantial*. The Government adopted in May 2002, a transport policy, which among others set objectives and strategies for the transport sector aimed at investing in appropriate transport infrastructure and particularly in the road infrastructure to support a sustainable and diversified economic growth. The policy has set a foundation for improvement of various transport modes in Zambia including the road transport sub sector.

With particular reference to the road transport sector, Government has enacted a new legislation which has ushered in the establishment of Road Agencies, namely the NRFA, RDA, and the RTSA as described elsewhere in this report. The legislation has strengthened sector institutions, and will ensure among others: Responsibility – establishes clear roles and responsibility among the sector institutions; Strengthened road sector financing – established a Road Fund based on road user charges to ensure sufficient revenue towards road maintenance. Most importantly, the establishment and management of the Road Fund outside the Government budgetary system is a step further in ensuring a sustainable flow of funds towards road maintenance. Currently, fuel levy is the only source of the Road Fund, however, the Fund is expected to grow as Government introduces other road user charges to the Road Fund, such as motor vehicle, road licensing, international freight charges, and weighbridge fines; Ownership - encourages road users and the general public to take an active role in the management of the road network; and Strengthened road network management – ensure effective management by employing sound business practices such as outsourcing of maintenance works to optimize usage of available resources.

The Road Agencies are in a process of becoming fully operational. As such, the impact of the reforms is not yet fully effective. However, the reforms have certainly formed a center stage for a long term strategic management and financing of the road sector in Zambia, and it is expected that, the impact of the reforms in the medium to long term is likely to be substantial.

5. Major Factors Affecting Implementation and Outcome

5.1 Factors outside the control of government or implementing agency:

Lack of local capacity in the construction industry negatively impacted on the implementation progress and in some cases quality of work especially on the feeder roads maintenance. For example there were about 250 contracts on improvement of feeder roads shared among few contractors and consultants. This resulted in inadequate supervision of contractors on the part of consultants and as a result some roads were not constructed to expected standards.

5.2 Factors generally subject to government control:

Irregular provision of counterpart funding by government seriously constrained the execution of the civil works program. Non-payment of the required 10% counter part funding led in some cases to some contractors to go slow on the works. This contributed to slow execution of the subprojects.

Erratic releases of the fuel levy to the Road Fund at the beginning and in mid stream of the project, constrained the targets to be met under routine maintenance.

Government did not exercise its role as a coordinator of external funding diligently enough. This is because, even though NRB was/is the ROADSIP I coordinator, not all donors channeled the funds through NRB. This made it very difficult for NRB to track and capture for monitoring and evaluation purposes, parallel periodic maintenance and rehabilitation road works which were carried out by donors through other Government Ministries and Agencies, such as MLGH, Roads Department, Ministry of Agriculture, and ZAWA. However, this has since changed with the implementation of the new road reform legislation. Under the RRMP project, funding for road maintenance and rehabilitation from all donors in the sector, and from Government is channeled through the NRFA.

5.3 Factors generally subject to implementing agency control:

The Monitoring and Evaluation (M&E) system for the project was ineffective. There was no base-line information on most of the project activities, except for major roads. This adversely affected the comparability, usability and integrity of the data generated on the project. However, this anomaly is being addressed under the RRMP project, where a consultancy is under way to design and implement an effective monitoring and evaluation system.

The implementing agency staff was neither pro-active in supervising consultants and contractors nor in quickly following up agreed actions with the Bank task team. This *laissez-faire* attitude on the part of implementing agency staff, contributed to the slow progress of implementation of the project activities.

However, within the above constraints, considerable effort was made by NRB to provide regular reports on the project and to provide sufficient information to provide a comparison of target and actual performance against certain key indicators.

5.4 Costs and financing:

At appraisal, the total program cost estimated was US\$384.2 million, IDA contributing US\$70.0 million (SDR 51.5 million), borrower contributing US\$251.6 million, and donors contributing US\$62.6 million.

At the end of the project, the actual cost for the program was US\$466.2 million. IDA contributed US\$69.2 million (SDR 51.46 million) about 100%, precisely 99.92%, of the original estimate. The borrower contributed US\$185 million and other donors contributed US\$212 million. The details of the project components and the comparison of each of the components between the SAR stage and the actual are shown in **Annex 2**.

The Government did not meet their portion of contribution estimated at appraisal, due to fiscal constraints. However, the donors in the sector exceeded the contribution estimated at appraisal. This was attributed to increased confidence in the ROADSIP program derived mostly from the IDA supported, Government led road sector reforms. Towards the end of the project, a sector financial strategy was undertaken to set up new targets for the domestic funding of periodic maintenance, and the recommendations are now being implemented under RRMP follow-up project.

The project was extended twice from March 2003, the initial closure date, for 1 year to March

2004, and again for another year from March 2004 to March 2005. Similarly, the DCA was extended twice, and amended three times to reallocate credit proceeds amongst different categories. The reasons for reallocation were: (i) revisions in the scope of civil works and cost increases; (ii) extension and amendment of small works ceiling from US\$50,000 to US\$100,000 per contract in order to commission works under the Emergency Drought Recovery Program; and (iii) to enable the borrower to finance all expenditures for civil works for periodic road maintenance at 90% instead of the prevailing arrangement of reducing IDA funding from 90% to 30% depending on the level of withdrawals under Category 1A, as it was recognized that the Government was not able to fund progressively higher proportion of expenditures as projected at appraisal. The details of the project components and the comparison of each of the components between the SAR stage and the actual are shown in **Annex 2**.

6. Sustainability

6.1 Rationale for sustainability rating:

The sustainability of the project is *rated likely*. As mentioned earlier, although the impact is not yet effective, the enactment of the new road reform legislation, which establishes new Road Agencies, has set a center stage to revolutionize the way the road sector will be managed and financed in Zambia.

The creation of the Road Fund outside the Government budget system is likely to strengthen financing of the road sector maintenance requirements. The creation of the three Road Agencies will help to ensure that key players in the road sector have clear roles and responsibilities. This will bring about efficiencies in the management of roads, and economic utilization of resource.

The involvement of the road users (private sector) at Board level in the Road Agencies is likely to provide the required ownership and acceptability by the road users. The road users are now becoming increasingly aware on the connection between road condition and vehicle operating costs (VOC), and about the benefits of having a road in good condition.

Staff of the new Road Agencies will be exempted from civil services conditions of service. This is likely to motivate the staff of the new Road Agencies in applying themselves to the cause of road management and preservation of the road network. Additionally, the agencies are moving away from for example the traditional force account way of doing business, and are being encouraged to out source works to the private sector so as to get competitive prices and value for money on road maintenance projects.

However, with the current emphasis on poverty reduction, continued future funding for the road infrastructure is going to depend more than ever, on a demonstrated poverty reduction impact of sector investment and maintenance. This is going to obviously have implications in future transport policy formulations, as well as for the way in which road sector institutions are managed, and the way in which they present their results.

6.2 Transition arrangement to regular operations:

The transition from Government traditional departments to new Road Agencies was smooth, and no major bottlenecks were experienced. This is because: staff and resources under the former

NRB continued to work under the newly formed NRFA; staff and resources under the former Roads Department continued to work under the newly RDA; and staff under the former NRSC continued to work under the newly formed RTSA. However, all positions in the Agencies will be advertised to the open labor market.

At the time, of compiling the ICR, former Directors of the Roads Department, NRB, and NRSC, and agencies had already been appointed interim Directors of the new Road Agencies, pending appointment of directors from the labor market. Overall, there was continuity in the operations of the agencies as almost the same institution continued to operate, only this time, in a different legal framework, and probably with much more autonomy.

7. Bank and Borrower Performance

Bank

7.1 Lending:

Lending is *rated satisfactory*. During identification, the task team ensured that development objectives and project scope were consistent with the Government's PRSP and the Bank's Country Assistance Strategy (CAS). The project preparation team complied with all relevant safeguard policies. An Environmental Management Committee (EMC) was put in place with public and private sector participation and an action plan, including an environmental mitigation plan, was drawn up and adopted by Government. The economic evaluation correctly assessed the project's viability for the major works. Bank staff appraised the project thoroughly and in close coordination with the Borrower. The project objectives were clear and specific and the development stage appropriate. All the components of the project supported the project objectives. However, though monitoring indicators were identified at appraisal, baseline data were not established, nor proper Monitoring and Evaluation system put in place to measure the impact of project interventions.

7.2 Supervision:

Bank supervision is *rated satisfactory*. Bank supervision team, both from Washington and Country Office attributed greatly towards the success of the project. The supervision was regular, focused, inclusive and proactive throughout the implementation period. The Team connected well with their counterparts and other stakeholders. Given the identified risks, early Bank's supervision missions carefully monitored the counterpart funding situation and proactively sought to solve key problems. Technical decisions regarding the project were made with due consultations with all parties concerned (Implementing Agencies & Donors).

7.3 Overall Bank performance:

Overall Bank's performance is *rated satisfactory* for the reasons outlined above.

Borrower

7.4 Preparation:

Project preparation is *satisfactory*. The Bank under an efficient and intense collaboration with government, led the project preparation, while the Government provided all required information and other inputs. The Government performance overall during the project preparation is assessed

satisfactory.

7.5 Government implementation performance:

Government implementation performance is *rated moderately satisfactory*. Government showed a lot of commitment in initiating reforms through adoption of an enabling transport policy, enactment of new road sector legislation, and actual establishment of the new Road Agencies. These road reforms are expected to impact positively on the management and financing of roads. However, Government performance is rated moderately satisfactory for the following reasons: Government did not meet its financing obligations in a timely manner, counterpart funding releases were irregular resulting in delays in payments to contractors, a situation which resulted in some contractors slowing down on major civil works; even though Government budgetary support to the project was satisfactory, it did not diversify the road user fees as planned at the beginning of the project to ensure a steady and sustainable funding through the Road Fund for maintenance purposes.

7.6 Implementing Agency:

Performance of the implementing agencies is *satisfactory*. The main coordinating agency, NRB, had a fully dedicated team of professional accountants, procurement specialist, and engineers, and did everything possible to work within the counterpart funding constraints. However, the other implementing agencies, Roads Department, and MLGH, implemented project activities at a slow pace. This was mainly attributed to lack of capacity, to supervise consultants and contractors effectively. However, even though the pace of implementation was slow, the implementing agencies did manage to execute all the planned activities under their jurisdictions. Capacity of the new Road Agencies is being enhanced under the RRMP project, to ensure that the agencies carry out their mandate effectively.

7.7 Overall Borrower performance:

Borrower performance is *rated satisfactory*. Even though the Borrower was slow at implementing the project, all planned activities under the project were completed, and in some cases targets surpassed. The most important achievement made by the Borrower under the project has been its satisfactory adoption and implementation of the transport sector policy, and in particular the road reforms and institutional framework, and streamlining of the Road Fund to operate outside the budget system. This has clearly set a strong foundation for among others: strengthening of the road sector financing; strengthening of sector institutions; and involvement of road users or private sector in the management of roads. The impact of these reforms in the road sector is likely to be substantial.

8. Lessons Learned

Monitoring and Evaluation System should be emphasized early in the project. The absence of an M&E system made tracking of the project's physical progress very difficult. It was also difficult to be pro-active in resolving potential project activity problems because of lack of reliable information. Later during compilation of the ICR, it was difficult to retrieve some key performance indicator data, and in instances where information was captured, data integrity was not assured. The inability of a project to demonstrate its broader impact on the economy and society could have negative consequences for future funding. It is therefore, recommended that,

an M&E system and baseline information for project activities should be emphasized upon early in the project. This will greatly enhance project management, such as tracking the implementation progress, as well as quantifying either qualitatively or quantitatively the impact of the project on the economy and stakeholders.

Output Indicators should be realistic. Target output indicators should be realistic and attainable. In this project, the target for the Road Fund to cover 70% of all road network maintenance requirements was un-attainable against the background of the road maintenance backlog deferred over decades. This was realized by the Borrower and acknowledged by the Bank task team towards the end of the project. The impact of over estimating targets is inherent in the wrong estimation and rating of effort expended in a project activity by the Borrower. From the project experience, it is recommended that, every opportunity should be seized when ever possible, and reasonably so, to rebase or refocus targets, perhaps at mid-term review in order to create realistic, and achievable, and updated output and outcome targets.

Reform process should be consultative, and transparent. Design and implementation of institutional reforms is a lengthy process and demands a sustained dialogue among all stakeholders, including public institutions, donors, private sector, and civil society. Government and road users should own the reform process and most importantly, the process should be as transparent as possible. A deliberate campaign and education of various stakeholders should be embarked upon. This is important as stakeholders should be able to accept for example the road levies that Government may impose on them to meet road network maintenance requirements.

CTI and IMT programs should be synchronized, simple and focused complete with baseline information on poverty and accessibility. From the project experience, the following lessons can be drawn from the community accessibility program: small focused infrastructure improvements can have significant local level benefits for which communities are prepared to help fund improvements, either in cash or in kind; infrastructure improvements are not likely to be sustainable, unless corresponding improvements in transport services, including access to IMTs are provided in a parallel manner; and where there are limited resources, spot accessibility improvements to critical sections of the feeder roads, especially at river or stream crossings is more strategic, and optimizes usage of resources compared to full rehabilitation. This strategy could probably be extended to district roads under local authorities. Finally, but not least, the project has demonstrated that, it is virtually impossible to have a feel of the impact of the CTI and IMT programs without base line information, and properly thought out poverty and accessibility assessment tools.

Bank task teams should be consistent with their comments on Borrower's design works to avoid delays in starting and/or completing works. Under this project, the Chingola – Kasumbalesa road, one of the inter-territorial trunk roads, was not rehabilitated. This was attributed to the slow responses by the consultant engineer to the team comments, but more importantly, due to the team's inconsistent comments, thus causing the consultant to continually revise the designs. Based on this experience, it is recommended that, in the event that task teams are changed, the comments of the previous task team should, as much as possible and within reason, be maintained in the spirit of moving the project forward. Task teams should by all means

endeavor to help the Borrower complete project tasks expeditiously, and not to be seen as impending progress.

9. Partner Comments

(a) Borrower/implementing agency:

Borrower Project Evaluation Report and comments are presented in **Annex 8**

(b) Cofinanciers:

N/A

(c) Other partners (NGOs/private sector):

N/A

10. Additional Information

Additional comments on the background of ROADSIP and the evolution of the Road Fund in Zambia is presented in **Annex 9**.

Annex 1. Key Performance Indicators/Log Frame Matrix

| Objectives | Performance Indicators | Unit | 1998 | | 1999 | | 2000 | | 2001 | |
|--|---|-------------|------------|----------|-------------|----------|-------------|-----------|-------------|-------------|
| | | | Forecast | Actual | Forecast | Actual | Forecast | Actual | Forecast | Actual |
| Input Indicators | | | | | | | | | | |
| To increase road sector financing | Funding made available (annual) | US\$M | | | | | | | | |
| | 1. Real Levy | | 13.0 | 6.6 | 17.9 | 6.0 | 23.0 | 8.6 | 28.5 | 12.9 |
| | 2. Other Road User Charges | | 3.3 | 0.0 | 3.3 | 0.0 | 3.3 | 0.0 | 3.1 | 0.0 |
| | 3. Budget | | 4.6 | 15.7 | 5.2 | 20.4 | 5.1 | 25.5 | 4.1 | 32.0 |
| | 4. IDA Funding | | | | | | | | | |
| | - ROADSIP | | 8.00 | 2.51 | 10.00 | 9.80 | 15.00 | 23.61 | 26.00 | 12.92 |
| - Other | | 2.0 | | 1.5 | | 1.0 | | 0.0 | | |
| 5. Donor Funding | | 18.8 | 24.1 | 29.4 | 23.3 | 26.9 | 23.1 | 9.0 | 25.5 | |
| To bring the core road network into a maintainable condition | Civil Works contracts awarded | | | | | | | | | |
| | 1. Periodic Maintenance | US\$M | 13.74 | 0.00 | 13.50 | 4.50 | 14.59 | 1.10 | 14.94 | 21.20 |
| | | K\$m | 1,576.0 | 0.0 | 954.0 | 4.5 | 1,229.0 | 1.1 | 1,308.0 | 1,117.2 |
| | 2. Rehabilitation | US\$M | 15.0 | 65.8 | 30.0 | 25.0 | 33.0 | 6.7 | 25.0 | 123.2 |
| | K\$m | 125.0 | 339.0 | 250.0 | 922.0 | 300.0 | 530.9 | 233.0 | 584.0 | |
| Output Indicators | | | | | | | | | | |
| To improve road transport services and reduce transport cost | Completion of road works | K\$m | | | | | | | | |
| | 1. Routine Maintenance (annual) | | 6,730.0 | 0.0 | 8,946.0 | 3,530.0 | 10,821.0 | 4,483.0 | 13,134.0 | 5,050.0 |
| | 2. Periodic Maintenance (cumulative) | | 1,691.0 | 527.0 | 2,716.0 | 1,054.0 | 4,029.0 | 2,096.0 | 5,381.0 | 3,062.0 |
| | 3. Rehabilitation (cumulative) | | 125.0 | 50.8 | 375.0 | 490.0 | 675.0 | 1,218.2 | 908.0 | 1,729.3 |
| To address improved community | 4. Feeder Road Upgrading (annual) | | 400.0 | 0.0 | 600.0 | 503.7 | 700.0 | 1,088.8 | 900.0 | 1,139.6 |
| | Completion of community road projects and Kilometres opened up | No. K\$m | 10 70.0 | 0 0.0 | 25 160.0 | 1 2.0 | 40 280.0 | 9 84.0 | 56 400.0 | 12 104.6 |
| Outcome Indicators | | | | | | | | | | |
| To bring the condition of road network at least 50% good | % of road network in good condition | % | | | | | | | | |
| | 1. Paved roads | | 29.0 | 31.0 | 37.0 | 35.0 | 39.0 | 40.0 | 41.0 | 46.0 |
| | 2. Unpaved roads | | 8.0 | | 9.0 | | 8.0 | | 17.0 | |
| To alleviate poverty through creation of new jobs | 3. Feeder roads | | 2.0 | | 5.0 | | 7.0 | 5.0 | 11.0 | 5.0 |
| | Create employment opportunities in the labor-based construction works | No. | 2,000 | 3,000 | 5,000 | 7,000 | 8,000 | 10,000 | 11,000 | 14,000 |
| Impact Indicators | | | | | | | | | | |
| To improve road safety by reducing road accidents by at | Accident data per year | No. | | | | | | | | |
| | 1. Road accidents | | 8,200 | 6,634 | 7,800 | 6,092 | 7,500 | 7,434 | 7,200 | 4,481 |
| | 2. Fatalities | | 870 | 799 | 830 | 811 | 800 | 847 | 770 | 585 |
| To strengthen local construction industry | Number of contractors trained | No. | | | | | | | | |
| | 1. Routine Maintenance | | 60 | 44 | 300 | 18 | 300 | 0 | 300 | 50 |
| | 2. Rehabilitation | | 5 | | 20 | | 30 | 0 | 50 | 0 |
| | Elapsed time between invoice submission | Days | 14 | 16 | 10 | 14 | 10 | 14 | 10 | 14 |
| | Elapsed time between invoice submission | | -- | -- | -- | -- | -- | -- | -- | -- |

| Objectives | Performance Indicators | Unit | 2002 | | 2003 | | 2004 | | End of Project | |
|--|---|-------|----------|---------|----------|----------|----------|----------|----------------|----------|
| | | | Forecast | Actual | Forecast | Actual | Forecast | Actual | Forecast | Actual |
| Input Indicators | | | | | | | | | | |
| To increase road sector financing | Runding made available (annual) | US\$M | | | | | | | | |
| | 1. Real Levy | | 32.2 | 19.6 | | 10.4 | | 16.2 | 114.60 | 80.3 |
| | 2. Other Road User Charges | | 3.1 | 0.0 | | | | | 16.10 | - |
| | 3. Budget | | 8.1 | 22.8 | | 9.4 | | 25.0 | 27.10 | 150.8 |
| | 4. IDA Runding | | | | | | | | | |
| | - ROADSIP | | 11.00 | 5.35 | | 5.50 | | 9.51 | 70.00 | 69.2 |
| - Other | | 0.0 | | | | | | 4.50 | | |
| 5. Donor Funding | | 32.0 | 24.0 | | 46.1 | | 18.4 | 116.10 | 184.5 | |
| To bring the core road network into a maintainable condition | Civil Works contracts awarded | | | | | | | | | |
| | 1. Periodic Maintenance | US\$M | 14.81 | 20.10 | | 22.40 | | 3.00 | 71.58 | 72.3 |
| | | Km | 1,379.0 | 302.0 | | 298.0 | | 79.0 | 6,446.0 | 1,801.8 |
| | 2. Rehabilitation | US\$M | 42.1 | 141.2 | | 0.0 | | 0.0 | 14.508 | 361.9 |
| | Km | 526.0 | 1,065.0 | | | | | 1,434.0 | 3,460.9 | |
| Output Indicators | | | | | | | | | | |
| To improve road transport services and reduce transport cost | Completion of roadworks | Km | | | | | | | | |
| | 1. Routine Maintenance (annual) | | 15,619.0 | 3,283.0 | | 17,030.0 | | 10,246.0 | 55,290.0 | 43,622.0 |
| | 2. Periodic Maintenance (cumulative) | | 6,807.0 | 5,379.0 | | 8,251.0 | | 10,499.0 | 6,807.0 | 9,971.0 |
| | 3. Rehabilitation (cumulative) | | 1,434.0 | 2,197.7 | | 2,715.9 | | 3,129.0 | 1,434.0 | 3,129.0 |
| | 4. Feeder Road Upgrading (annual) | | 1,000.0 | 766.3 | | 102.6 | | 0.0 | 3,600.0 | 3,600.9 |
| To address improved community | Completion of community road projects | No. | 70 | 20 | | 4 | | 6 | 70 | 52.0 |
| | and Kilometres opened up | Km | 500.0 | 169.6 | | 49.2 | | 86.9 | 500.0 | 496.3 |
| Outcome Indicators | | | | | | | | | | |
| To bring the condition of road network at least 50% good | % of road network in good condition | % | | | | | | | | |
| | 1. Paved roads | | 47.0 | 59.0 | | 56.0 | | 57.0 | 47.0 | 57.0 |
| | 2. Upgraded roads | | 33.0 | | | | | | 33.0 | |
| | 3. Feeder roads | | 15.0 | 7.0 | | | | | 15.0 | 7.0 |
| To alleviate poverty through creation of new jobs | Create employment opportunities in the labor-based construction works | No. | 14,000 | 16,000 | | 20,000 | | 22,000 | 14,000 | 22,000.0 |
| Impact Indicators | | | | | | | | | | |
| To improve road safety by reducing road accidents by at | Accident data per year | No. | | | | | | | | |
| | 1. Road accidents | | 7,000 | 5,340 | | | | | 7,000 | 9,588.0 |
| | 2. Fatalities | | 750 | 1,000 | | | | | 750 | 1,046.0 |
| To strengthen local construction industry | Number of contractors trained | No. | | | | | | | | |
| | 1. Routine Maintenance | | 300 | 28 | | 14 | | 96 | 300 | 265.0 |
| | 2. Rehabilitation | | 70 | 0 | | 0 | | 0 | 70 | - |
| | Elapsed time between invoice submission and payment | Days | 10 | 14 | | 14 | | 14 | 10 | 14.0 |

Annex 2. Project Costs and Financing

Project Cost by Component (in US\$ million equivalent)

| Component | Appraisal Estimate US\$ million | Actual/Latest Estimate US\$ million | Percentage of Appraisal |
|--|------------------------------------|--|-------------------------|
| A. Civil Works | | | |
| - Routine maintenance of the core network | 70.10 | 47.00 | 67 |
| - Periodic maintenance of the core network | 74.40 | 38.65 | 51.9 |
| - Rehabilitation of selected roads | 145.00 | 326.15 | 224.9 |
| - Upgrading of feeder roads | 33.80 | 14.50 | 42.9 |
| - Accessibility improvement for feeder roads | 24.00 | 2.30 | 9.6 |
| B. Community Accessibility Program | 6.30 | 3.40 | 53.9 |
| C. Construction Industry Development Program | 2.80 | 5.40 | 192.8 |
| D. Institutional Capacity Building | 7.00 | 8.20 | 117.1 |
| E. Engineering Services | 20.80 | 20.60 | 99 |
| Total Baseline Cost | 384.20 | 466.20 | |
| Physical Contingencies | | | 121.3 |
| Total Project Costs | 384.20 | 466.20 | |
| Total Financing Required | 384.20 | 466.20 | |

Project Costs by Procurement Arrangements (Appraisal Estimate) (US\$ million equivalent)

| Expenditure Category | Procurement Method ¹ | | | N.B.F. | Total Cost |
|-------------------------|---------------------------------|------------------|--------------------|------------------|-------------------|
| | ICB | NCB | Other ² | | |
| 1. Works | 46.90 (41.30) | 17.30 (15.10) | 5.00 (3.60) | 283.40 (0.00) | 352.60 (60.00) |
| 2. Goods | 0.60 (0.50) | 0.60 (0.50) | 0.00 (0.00) | 0.00 (0.00) | 1.20 (1.00) |
| 3. Services | 0.00 (0.00) | 0.00 (0.00) | 9.00 (9.00) | 21.40 (0.00) | 30.40 (9.00) |
| 4. Miscellaneous | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| 5. Miscellaneous | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| 6. Miscellaneous | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| Total | 47.50 (41.80) | 17.90 (15.60) | 14.00 (12.60) | 304.80 (0.00) | 384.20 (70.00) |

Project Costs by Procurement Arrangements (Actual/Latest Estimate) (US\$ million equivalent)

| Expenditure Category | Procurement Method ¹ | | | N.B.F. | Total Cost |
|----------------------|---------------------------------|-------|--------------------|--------|------------|
| | ICB | NCB | Other ² | | |
| 1. Works | 39.60 | 17.30 | 0.00 | 375.00 | 431.90 |

| | | | | | |
|-------------------------|------------------|------------------|------------------|------------------|-------------------|
| | (36.60) | (16.00) | (0.00) | (0.00) | (52.60) |
| 2. Goods | 0.00 (0.00) | 0.70 (0.70) | 0.00 (0.00) | 0.00 (0.00) | 0.70 (0.70) |
| 3. Services | 0.00 (0.00) | 0.00 (0.00) | 16.00 (15.90) | 17.60 (0.00) | 33.60 (15.90) |
| 4. Miscellaneous | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| 5. Miscellaneous | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| 6. Miscellaneous | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| Total | 39.60 (36.60) | 18.00 (16.70) | 16.00 (15.90) | 392.60 (0.00) | 466.20 (69.20) |

^{1/} Figures in parenthesis are the amounts to be financed by the IDA Credit. All costs include contingencies.

^{2/} Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

Project Financing by Component (in US\$ million equivalent)

| Component | Appraisal Estimate | | | Actual/Latest Estimate | | | Percentage of Appraisal | | |
|---|--------------------|--------|-------|------------------------|--------|--------|-------------------------|-------|-------|
| | IDA | Govt. | CoF. | IDA | Govt. | CoF. | IDA | Govt. | CoF. |
| A. Civil Works | 59.00 | 238.30 | 50.00 | 49.20 | 208.00 | 171.40 | 83.4 | 87.3 | 342.8 |
| B. Community Accessibility Program | 2.10 | 4.20 | | 3.40 | | | 161.9 | 0.0 | |
| C. Construction Industry Development Program | 1.60 | | 1.20 | 0.40 | | 5.00 | 25.0 | | 416.7 |
| D. Institutional Capacity Building | 3.40 | 3.60 | | 8.20 | | | 241.2 | 0.0 | |

Annex 3. Economic Costs and Benefits

| A. Road Basic Data | | | | | | | |
|---|--------------|-------------|--|---------------------|--------------|--------------|----------------------------|
| Province | | | Central | | | | |
| District name | | | Serenje | | | | |
| Name of road | | | Kapiri-Mposhi - Serenje | | | | |
| Road code | | | T2 | | | | |
| Road length | | | | | 200 km | | |
| Standard Conversion factor | | | | 0.9 | | | |
| Area under road zone of influence | | | | | | | |
| Discount rate | | | | | 12% | | |
| Total capital cost of rehabilitation | | | | | Financial | Economic | |
| | | | | | | | 32,000,000.0028,800,000.00 |
| Daily wage rate/ shadow wage rate | | | | | 1.00 | 0.90 | |
| Estimated average road roughness before and after road rehabilitation | | | Good | Bad | | | |
| | | | | | | | 2.508.50 |
| B. VOCs savings (Economic) | | | | | | | |
| Type of vehicle | ADT | Road Length | VOC/ km | VOC/ km | VOC | Daily VOC | Annual Base |
| | | | | Good Road | Poor Road | Savings /km | SavingsYear Benefits |
| | | | | | | | 312.00 |
| Light vehicle | 160 | 200.00 | 0.18 | 0.24 | 0.06 | 1,952.64 | 609,223.68 |
| Taxis | | 120 | 200.00 | 0.19 | 0.25 | 0.06 | 1,555.20485,222.40 |
| Buses | | 50 | 200.00 | 0.26 | 0.40 | 0.14 | 1,350.00421,200.00 |
| Heavy vehicle | 150 | 200.00 | 0.53 | 0.77 | 0.24 | 7,322.40 | 2,284,588.80 |
| Total | | 480 | (Total Annual Base Year Cost Savings (312 days / Year)) | 3,800,234.88 | | | |
| C. Economic Analysis | | | | | | | |
| Year | Project | Routine | Periodic | Total | VOC | Total | Total |
| | Costs | Maintenance | Maintenance | Costs | Savings | Benefits | Net Benefits |
| | | Costs | Costs | | | | |
| 1 | 9,600,000.00 | | | 9,600,000.00 | | | -9,600,000.00 |
| 2 | 9,600,000.00 | | | 9,600,000.00 | 3,800,234.88 | 3,800,234.88 | -5,799,765.12 |
| 3 | 9,600,000.00 | | | 9,600,000.00 | 3,990,246.62 | 3,990,246.62 | -5,609,753.38 |
| 4 | | 192,000.00 | | 192,000.00 | 4,189,758.96 | 4,189,758.96 | 3,997,758.96 |
| 5 | | 288,000.00 | | 288,000.00 | 4,399,246.90 | 4,399,246.90 | 4,111,246.90 |
| 6 | | 384,000.00 | | 384,000.00 | 4,619,209.25 | 4,619,209.25 | 4,235,209.25 |
| 7 | | 480,000.00 | | 480,000.00 | 4,850,169.71 | 4,850,169.71 | 4,370,169.71 |
| 8 | | 576,000.00 | | 576,000.00 | 5,092,678.20 | 5,092,678.20 | 4,516,678.20 |
| 9 | | 672,000.00 | | 672,000.00 | 5,347,312.11 | 5,347,312.11 | 4,675,312.11 |
| 10 | | 768,000.00 | | 768,000.00 | 5,614,677.71 | 5,614,677.71 | 4,846,677.71 |
| 11 | | 864,000.00 | | 864,000.00 | 5,895,411.60 | 5,895,411.60 | 5,031,411.60 |
| 12 | | 960,000.00 | | 960,000.00 | 5,895,411.60 | 5,895,411.60 | 4,935,411.60 |
| 13 | | | 2,400,000.00 | 2,400,000.00 | 5,895,411.60 | 5,895,411.60 | 3,495,411.60 |
| 14 | | 192,000.00 | | 192,000.00 | 5,895,411.60 | 5,895,411.60 | 5,703,411.60 |
| 15 | | 288,000.00 | | 288,000.00 | 5,895,411.60 | 5,895,411.60 | 5,607,411.60 |
| 16 | | 384,000.00 | | 384,000.00 | 5,895,411.60 | 5,895,411.60 | 5,511,411.60 |
| 17 | | 480,000.00 | | 480,000.00 | 5,895,411.60 | 5,895,411.60 | 5,415,411.60 |

| | | | | | | | | |
|---|--------------|-------------|---|--------------|---------------------|--------------|-----------------------|---------------------------|
| | | | | | | 0 | | |
| 18 | | 576,000.00 | | 576,000.00 | 5,895,411.60 | 5,895,411.60 | | 5,319,411.60 |
| 19 | | 672,000.00 | | 672,000.00 | 5,895,411.60 | 5,895,411.60 | | 5,223,411.60 |
| 20 | | 768,000.00 | | 768,000.00 | 5,895,411.60 | 5,895,411.60 | | 5,127,411.60 |
| | | | | | | | EIRR | 16% |
| | | | | | | | NPV | USD 6,102,064.21 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| A. Road Basic Data | | | | | | | | |
| Province | | | | Central | | | | |
| District name | | | | Serenje | | | | |
| Name of road | | | | Serenje | Mpiika | | | |
| Road code | | | | T2 | | | | |
| Road length | | | | | | | | 235 km |
| Standard Conversion factor | | | | | | 0.9 | | |
| Area under road zone of influence | | | | | | | | |
| Discount rate | | | | | | | | 0.12 |
| Total capital cost of rehabilitation | | | | | | | Financial | Economic |
| | | | | | | | | 10,386,937.829,348,244.04 |
| Daily wage rate/ shadow wage rate | | | | | 1.00 | 0.90 | | |
| | | | | | | | | |
| Estimated average road roughness before and after road rehabilitation | | | | Good | Bad | | | |
| | | | | | | | | 3.006.00 |
| B. VOCs servings (Economic) | | | | | | | | |
| Type of vehicle | ADT | Road Length | VOC/ km | VOC/ km | VOC | Daily VOC | Annual Base | |
| | | | | Good Road | Poor Road | Savings /km | Savings Year Benefits | |
| | | | | | | | 312.00 | |
| Light vehicle | | 55 | 235.00 | 0.19 | 0.21 | 0.03 | 352.46109,969.00 | |
| Taxis | | 50 | 235.00 | 0.19 | 0.22 | 0.03 | 342.63106,900.56 | |
| Buses | | 50 | 235.00 | 0.27 | 0.34 | 0.06 | 748.71233,597.52 | |
| Heavy vehicle | | 100 | 235.00 | 0.55 | 0.67 | 0.12 | 2,779.11867,082.32 | |
| Total | | 255 | (Total Annual Base Year Cost Savings (312 days / Year) | | 1,317,549.40 | | | |
| C. Economic Analysis | | | | | | | | |
| Year | Project | Routine | Periodic | Total | VOC | Total | Total | |
| | Costs | Maintenance | Maintenance | Costs | Savings | Benefits | Net Benefits | |
| | | Costs | Costs | | | | | |
| 1 | 4,674,122.02 | | | 4,674,122.02 | | | -4,674,122.02 | |
| 2 | 4,674,122.02 | | | 4,674,122.02 | 1,317,549.40 | 1,317,549.40 | -3,356,572.62 | |
| 3 | | 9,482.44 | | 9,482.44 | 1,383,426.87 | 1,383,426.87 | 1,373,944.43 | |
| 4 | | 140,223.66 | | 140,223.66 | 1,452,598.00 | 1,452,598.00 | 1,312,374.34 | |
| 5 | | 186,964.88 | | 186,964.88 | 1,525,228.13 | 1,525,228.13 | 1,338,263.25 | |
| 6 | | 233,706.10 | | 233,706.10 | 1,601,489.53 | 1,601,489.53 | 1,367,783.43 | |
| 7 | | 280,447.32 | | 280,447.32 | 1,681,564.01 | 1,681,564.01 | 1,401,116.69 | |
| 8 | | 327,188.54 | | 327,188.54 | 1,765,642.21 | 1,765,642.21 | 1,438,453.67 | |
| 9 | | 373,929.76 | | 373,929.76 | 1,853,924.32 | 1,853,924.32 | 1,479,994.56 | |
| 10 | | 420,670.98 | | 420,670.98 | 1,946,620.54 | 1,946,620.54 | 1,525,949.56 | |
| 11 | | 467,412.20 | | 467,412.20 | 2,043,951.56 | 2,043,951.56 | 1,576,539.36 | |
| 12 | | | 1,168,530.50 | 1,168,530.50 | 2,043,951.56 | 2,043,951.56 | 875,421.06 | |
| 13 | | 93,482.44 | | 93,482.44 | 2,043,951.56 | 2,043,951.56 | 1,950,469.12 | |

| | | | | | | | |
|----|--|------------|--|------------|--------------|-------------------------|--------------|
| 14 | | 140,223.66 | | 140,223.66 | 2,043,951.56 | 2,043,951.56 | 1,903,727.90 |
| 15 | | 186,964.88 | | 186,964.88 | 2,043,951.56 | 2,043,951.56 | 1,856,986.68 |
| 16 | | 233,702.10 | | 233,702.10 | 2,043,951.56 | 2,043,951.56 | 1,810,249.46 |
| 17 | | 280,447.32 | | 280,447.32 | 2,043,951.56 | 2,043,951.56 | 1,763,504.24 |
| 18 | | 327,188.54 | | 327,188.54 | 2,043,951.56 | 2,043,951.56 | 1,716,763.02 |
| 19 | | 373,929.76 | | 373,929.76 | 2,043,951.56 | 2,043,951.56 | 1,670,021.80 |
| 20 | | 420,670.98 | | 420,670.98 | 2,043,951.56 | 2,043,951.56 | 1,623,280.58 |
| | | | | | EIRR | 15% | |
| | | | | | NPV | USD 1,586,418.89 | |

| | | | | | | | |
|---|--------------|-------------|--|---------------------|--------------|---------------------|--------------------------|
| A. Road Basic Data | | | | | | | |
| Province | | | | Lusaka | | | |
| District name | | | | Lusaka | | | |
| Name of road | | | | Lusaka - Mumbwa | | | |
| Road code | | | | M9 | | | |
| Road length | | | | | | 79.00 km | |
| Standard Conversion factor | | | | | 0.9 | | |
| Area under road zone of influence | | | | | | | |
| Discount rate | | | | | | 0.12 | |
| Total capital cost of rehabilitation | | | | | | Financial | Economic |
| | | | | | | | 6,200,000.005,580,000.00 |
| Daily wage rate/ shadow wage rate | | | | | 1.00 | 0.90 | |
| Estimated average road roughness before and after road rehabilitation | | | Good | Bad | | | |
| | | | | | | | 3.0010.00 |
| B. VOCs servings (Economic) | | | | | | | |
| Type of vehicle | ADT | Road Length | VOC/ km | VOC/ km | VOC | Daily VOC | Annual Base |
| | | | | Good Road | Poor Road | Savings /km | SavingsYear Benefits |
| | | | | | | | 312.00 |
| Light vehicle | | 180 | 79.00 | 0.19 | 0.26 | 0.08 | 1,119,83349,385.40 |
| Taxis | | 100 | 79.00 | 0.19 | 0.27 | 0.08 | 656,96204,972.77 |
| Buses | | 30 | 79.00 | 0.27 | 0.44 | 0.17 | 394,18122,983.66 |
| Heavy vehicle | | 100 | 79.00 | 0.55 | 0.84 | 0.29 | 2,319,28723,615.98 |
| Total | | 410 | (Total Annual Base Year Cost Savings (312 days / Year)) | 1,400,957.81 | | | |
| C. Economic Analysis | | | | | | | |
| Year | Project | Routine | Periodic | Total | VOC | Total | Total |
| | Costs | Mainenance | Maintenace | Costs | Savings | Benefits | Net Benefits |
| | | Costs | Costs | | | | |
| 1 | 2,790,000.00 | | | 2,790,000.00 | | | -2,790,000.00 |
| 2 | 2,790,000.00 | | | 2,790,000.00 | 1,400,957.81 | 1,400,957.81 | -1,389,042.19 |
| 3 | | 55,800.00 | | 55,800.00 | 1,471,005.70 | 1,471,005.70 | 1,415,205.70 |
| 4 | | 83,700.00 | | 83,700.00 | 1,544,555.99 | 1,544,555.99 | 1,460,855.99 |
| 5 | | 111,600.00 | | 111,600.00 | 1,621,783.79 | 1,621,783.79 | 1,510,183.79 |
| 6 | | 139,500.00 | | 139,500.00 | 1,702,872.98 | 1,702,872.98 | 1,563,372.98 |
| 7 | | 167,400.00 | | 167,400.00 | 1,788,016.63 | 1,788,016.63 | 1,620,616.63 |
| 8 | | 195,300.00 | | 195,300.00 | 1,877,417.46 | 1,877,417.46 | 1,682,117.46 |
| 9 | | 223,200.00 | | 223,200.00 | 1,971,288.33 | 1,971,288.33 | 1,748,088.33 |
| 10 | | 251,100.00 | | 251,100.00 | 2,069,852.75 | 2,069,852.75 | 1,818,752.75 |
| 11 | | 279,000.00 | | 279,000.00 | 2,173,345.38 | 2,173,345.38 | 1,894,345.38 |
| 12 | | | 697,500.00 | 697,500.00 | 2,173,345.38 | 2,173,345.38 | 1,475,845.38 |
| 13 | | 55,800.00 | | 55,800.00 | 2,173,345.38 | 2,173,345.38 | 2,117,545.38 |
| 14 | | 83,770.00 | | 83,770.00 | 2,173,345.38 | 2,173,345.38 | 2,089,575.38 |
| 15 | | 111,600.00 | | 111,600.00 | 2,173,345.38 | 2,173,345.38 | 2,061,745.38 |
| 16 | | 139,500.00 | | 139,500.00 | 2,173,345.38 | 2,173,345.38 | 2,033,845.38 |
| 17 | | 167,400.00 | | 167,400.00 | 2,173,345.38 | 2,173,345.38 | 2,005,945.38 |
| 18 | | 195,300.00 | | 195,300.00 | 2,173,345.38 | 2,173,345.38 | 1,978,045.38 |
| 19 | | 223,200.00 | | 223,200.00 | 2,173,345.38 | 2,173,345.38 | 1,950,145.38 |
| 20 | | 251,100.00 | | 251,100.00 | 2,173,345.38 | 2,173,345.38 | 1,922,245.38 |
| | | | | | EIRR | 31% | |
| | | | | | NPV | USD | |
| | | | | | | 6,134,487.97 | |

| A. Road Basic Data | | | | | | | |
|---|-------------|-------------|---|---------------------------------|--------------|---------------------|------------------------------|
| Province | | | | Copperbelt/ North Western | | | |
| District name | | | | Chingoal/ Solwezi | | | |
| Name of road | | | | Chingoala - Slwezi | | | |
| Road code | | | | T5 | | | |
| Road length | | | | | | 101.00 km | |
| Standard Conversion factor | | | | | 0.9 | | |
| Area under road zone of influence | | | | | | | |
| Discount rate | | | | | | 0.12 | |
| Total capital cost of rehabilitation | | | | | | Financial | Economic |
| | | | | | | | 5,600,000.005 ,040,000.00 |
| Daily wage rate/ shadow wage rate | | | | | 1.00 | 0.90 | |
| Estimated average road roughness before and after road rehabilitation | | | Good | Bad | | | |
| | | | | | | | 3.408.00 |
| B. VOCs servings (Economic) | | | | | | | |
| Type of vehicle | ADT | Road Length | VOC/ km | VOC/ km | VOC | Daily VOC | Annual Base |
| | | | | Good Road | Poor Road | Savings /km | SavingsYear Benefits |
| | | | | | | | 312.00 |
| Light vehicle | | 150 | 101.00 | 0.19 | 0.24 | 0.05 | 723.80225,82 5.71 |
| Taxis | | 50 | 101.00 | 0.19 | 0.24 | 0.05 | 255.9079,841. 32 |
| Buses | | 30 | 101.00 | 0.28 | 0.38 | 0.10 | 317.1298,940. 62 |
| Heavy vehicle | | 120 | 101.00 | 0.56 | 0.75 | 0.19 | 2,282.04711,9 96.75 |
| Total | | 350 | (Total Annual Base Year Cost Savings (312 days / Year) | 1,116,604.40 | | | |
| C. Economic Analysis | | | | | | | |
| Year | Project | Routine | Periodic | Total | VOC | Total | Total |
| | Costs | Mainenance | Maintenace | Costs | Savings | Benefits | Net Benefits |
| 1 | 5,040,00.00 | | | 5,040,000.00 | | | -5,040,000.00 |
| 2 | | 100,800.00 | | 100,800.00 | 1,116,604.40 | 1,116,604.40 | 1,015,804.40 |
| 3 | | 151,200.00 | | 151,200.00 | 1,172,434.62 | 1,172,434.62 | 1,021,234.62 |
| 4 | | 206,600.00 | | 206,600.00 | 1,231,056.35 | 1,231,056.35 | 1,024,456.35 |
| 5 | | 252,000.00 | | 252,000.00 | 1,292,609.17 | 1,292,609.17 | 1,040,609.17 |
| 6 | | 302,400.00 | | 302,400.00 | 1,357,239.63 | 1,357,239.63 | 1,054,839.63 |
| 7 | | 352,800.00 | | 352,800.00 | 1,425,101.61 | 1,425,101.61 | 1,072,301.61 |
| 8 | | 403,200.00 | | 403,200.00 | 1,496,356.69 | 1,496,356.69 | 1,093,156.69 |
| 9 | | 453,600.00 | | 453,600.00 | 1,571,174.52 | 1,571,174.52 | 1,117,574.52 |
| 10 | | 504,000.00 | | 504,000.00 | 1,649,733.25 | 1,649,733.25 | 1,145,733.25 |
| 11 | | | 1,260,000.00 | 1,260,000.00 | 1,732,219.91 | 1,732,219.91 | 472,219.91 |
| 12 | | 100,800.00 | | 100,800.00 | 1,732,219.91 | 1,732,219.91 | 1,631,419.91 |
| 13 | | 151,200.00 | | 151,200.00 | 1,732,219.91 | 1,732,219.91 | 1,581,019.91 |
| 14 | | 201,600.00 | | 201,600.00 | 1,732,219.91 | 1,732,219.91 | 1,530,619.91 |
| 15 | | 252,000.00 | | 252,000.00 | 1,732,219.91 | 1,732,219.91 | 1,480,219.91 |
| 16 | | 302,400.00 | | 302,400.00 | 1,732,219.91 | 1,732,219.91 | 1,429,819.91 |
| 17 | | 352,800.00 | | 352,800.00 | 1,732,219.91 | 1,732,219.91 | 1,379,419.91 |
| 18 | | 403,200.00 | | 403,200.00 | 1,732,219.91 | 1,732,219.91 | 1,329,019.91 |
| 19 | | 453,600.00 | | 453,600.00 | 1,732,219.91 | 1,732,219.91 | 1,278,619.91 |
| 20 | | 504,000.00 | | 504,000.00 | 1,732,219.91 | 1,732,219.91 | 1,228,219.91 |
| | | | | | EIRR | 21% | |
| | | | | | NPV | USD | |
| | | | | | | 2,897,474.53 | |

EIRR/ NPV OF SELECTED ROADS AT START OF PROJECT

| Route No. | Proposed Section | Proposed Intervention Type | NPV at 12% Discount Rate (US\$ m) | EIRR | Economic Capital Cost (US\$) | Roughness Range in IRI for the Section |
|-----------|-------------------------------|----------------------------|-----------------------------------|----------------------|------------------------------|--|
| | | Rehab. (Km) | Reconstr. (Km) | Repair / Reseal (Km) | | |
| T1 | Zimbabwe Border - Livingstone | 5 | | 1 | 0.4 | 250.45.2 -6.6 |
| T2 | Chirundu - Kafue | | | 72 | 2.2 | 231.44.5 |
| T2 | Kapiri Mposhi - Serenje | 39 | 96 | 62 | 5 | 1520.72.9 - 7.8 |
| T3 | Serenje Mpika | | | 235 | 2.9 | 1414.22.7 -6.0 |
| T4 | Chingola - Kasumbalesa | 15 | | 13 | 6.1 | 422.62.9 - 7.4 |
| T4 | Km 233 - Km 260 at Kacholola | 11 | 3 | 9 | 0.3 | 161.37.1 - 9.0 |
| T5 | Chingola Solwezi | | 101 | | 2.2 | 183.63.4 - 8.1 |
| M4 | Ndola - Mwanbaeshi | 29 | 3 | 11 | 4 | 123.64.1 - 5.8 |
| M6 | Kafulafuta - Luanshya | 4 | | 30 | 1.3 | 231.14.0 - 6.1 |
| M9 | Lusaka - Mumbwa | 36 | 10 | 33 | 3.9 | 224.94.5 - 10.0 |
| M9 | Mumbwa - Mongu | 27 | 13 | 26 | 1.7 | 184.14.0 - 10.0 |

ROADS ATTENDED TO AT CLOSE OF PROJECT

| Route No. | Proposed Section | Proposed Intervention Type | NPV at 12% Discount Rate (US\$ m) | EIRR | Economic Capital Cost (US\$) | Roughness Range in IRI for the Section |
|-----------|-------------------------|----------------------------|-----------------------------------|----------------------|------------------------------|--|
| | | Rehab. (Km) | Reconstr. (Km) | Repair / Reseal (Km) | | |
| T2 | Kapiri Mposhi - Serenje | 39 | 96 | 62 | 5 | 1520.72.9 - 7.8 |
| T3 | Serenje Mpika | | | 235 | 2.9 | 1414.22.7 -6.0 |
| T5 | Chingola Solwezi | | 101 | | 2.2 | 183.63.4 - 8.1 |
| M9 | Lusaka - Mumbwa | 36 | 10 | 33 | 3.9 | 224.94.5 - 10.0 |

Annex 4. Bank Inputs

(a) Missions:

| Stage of Project Cycle | No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.) | | Performance Rating | |
|---|--|---|--------------------|-------------------------|
| | Month/Year | Count | Specialty | Implementation Progress |
| Identification/Preparation 10/29/1993 | 1 | TTL | | |
| Appraisal/Negotiation 06/20/1996 | 10 | SENIOR OPERATIONS OFFICER (TTL, 1); PRINCIPAL ROADS ADVISER (1); HIGHWAY ENGINEER (1); SR. ENVIRONMENTAL SPECIALIST (1); TRANSPORT PLANNER (1); ECONOMIST (2); CONSULTANTS - ENGR. & HWY ENGR (2); PROCUREMENT & DISBURSEMENT OFFICER | | |
| Supervision 03/13/1998 | 5 | TEAM LEADER (1); TRANSPORT ENGINEER (1); CONSULTANT (CIS) (1); FINANCIAL MANAGEMENT (1); PROCUREMENT/DISBURS. (1) | S | S |
| 10/17/1998 | 5 | TEAM LEADER (1); HIGHWAY ENGINEER (1); REGIONAL ADVISER (1); FIN MGT SPECIALIST (1); PROCUREMENT OFFICER (1) | S | S |
| 02/11/1999 | 2 | TTL/SR OPERATIONS OFF (1); FIN. MGT. SPECIALIST (1) | S | S |
| 05/20/1999 | 8 | TEAM LEADER (1); ENVIRONMENTAL SPECIAL. (1); HIGHWAY ENGINEER (1); RTTP, REGIONAL ADVISER (1); TRANSPORT ENGINEER (1); HIGHWAY ENGINEER (C) (1); FIN MGT SPECIALIST (C) (1); FIN MGT SPECIALIST (1) | S | S |
| 11/05/1999 | 6 | TEAM LEADER (1); HIGHWAY ENGINEER (1); SR HIGHWAY ENGINEER (1); | S | S |

| | | | | |
|------------|----|---|---|---|
| 04/29/2000 | 5 | TRANSPORT ENGINEER (1); REGIONAL ADVISER (1); TRANSPORT ECONOMIST (1) TEAM LEADER (1); HIGHWAY ENGINEER (1); SR. HIGHWAY ENGINEER (1); TRANSPORT ECONOMIST (1); CONSULTANT (1) | S | S |
| 09/28/2000 | 3 | TEAM LEADER (1); HIGHWAY ENGINEER (1); PROCUREMENT OFFICER (1) | S | S |
| 06/05/2001 | 5 | TEAM LEADER (1); ENGINEER (1); FINANCIAL MGT. SPEC. (1); PROCUREMENT OFF. (1); SR. TECHNICAL SPEC. (1) | S | U |
| 09/20/2001 | 5 | TEAM LEADER (1); HIGHWAY ENGINEER (1); RURAL TRANSPORT SPEC. (1); TRANSPORT ECONOMIST (1); PROCUREMENT SPEC. (1) | S | U |
| 05/03/2002 | 3 | SR. OPER. OFFICER(TTL) (1); HIGHWAY ENGR. (CONS) (1); SR. HWY. ENGR. (1) | S | U |
| 10/11/2002 | 6 | TEAM LEADER (1); HIGHWAY ENGR. (CONS) (1); SNR. TRANSPORT SPEC. (1); ENVIRONMENTAL SPEC. (1); OPERATIONS OFFICER (1); PROCUREMENT SPEC. (1) | S | S |
| 03/20/2003 | 10 | TEAM LEADER (1); HIGHWAY ENGR. (CONS.) (1); SNR. TRANSPORT SPEC. (1); TEAM ASSISTANT (1); LANGUAGE PROG. ASSIST. (1); ENVIRONMENTAL SPEC. (1); OPERATIONS OFFICER (1); PROCUREMENT SPEC. (1); FINANCIAL MGMT. SPEC. (1); RMI TRANSPORT ECONOMIS (1) | S | S |
| 10/20/2003 | 7 | OUTGOING TEAM LEADER (1); INCOMING TEAM LEADER (1); OPERATIONS OFFICER (1); LANG. PROG. ASSISTANT (1); HIGHWAY ENGINEER (1); CONSULTANT (1); PROCUREMENT OFFICER (1) | S | S |
| 03/31/2004 | 6 | TEAM LEADER (1); ENGINEER (1); RURAL TRANSPORT (1); TRANSPORT SPECIALIST (1); | S | S |

| | | | | | |
|-----|------------|---|--|---|---|
| ICR | 03/31/2004 | 7 | PROCUREMENT (1); FINANCIAL MANAGEMENT (1) TEAM LEADER (1); TRANSPORT SPECIALIST (1); ENGINEER (2); PROCUREMENT (1); FINANCIAL MANAGEMENT (1); TEAM ASSISTANT (1) | S | S |
| | 10/04/2004 | 5 | TEAM LEADER (1); TRANSPORT SPECIALIST (1); ENVIRONMENTAL SPC. (1); FIN. MGMT. SPEC. (1); TEAM ASSISTANT (1) | S | S |

(b) Staff:

| Stage of Project Cycle | Actual/Latest Estimate | |
|----------------------------|------------------------|-------------|
| | No. Staff weeks | US\$ ('000) |
| Identification/Preparation | 33.3 | 75.5 |
| Appraisal/Negotiation | 69.5 | 212.4 |
| Supervision | 250.6 | 1,031.9 |
| ICR | | |
| Total | 353.4 | 1,319.8 |

Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

| | <u>Rating</u> | | | | |
|--|-------------------------|-------------------------------------|------------------------------------|-------------------------|--------------------------|
| <input type="checkbox"/> <i>Macro policies</i> | <input type="radio"/> H | <input type="radio"/> SU | <input type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Sector Policies</i> | <input type="radio"/> H | <input checked="" type="radio"/> SU | <input type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Physical</i> | <input type="radio"/> H | <input checked="" type="radio"/> SU | <input type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Financial</i> | <input type="radio"/> H | <input type="radio"/> SU | <input checked="" type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Institutional Development</i> | <input type="radio"/> H | <input checked="" type="radio"/> SU | <input type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Environmental</i> | <input type="radio"/> H | <input type="radio"/> SU | <input checked="" type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| | | | | | |
| <i>Social</i> | | | | | |
| <input type="checkbox"/> <i>Poverty Reduction</i> | <input type="radio"/> H | <input type="radio"/> SU | <input checked="" type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Gender</i> | <input type="radio"/> H | <input type="radio"/> SU | <input type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Other (Please specify)</i> | <input type="radio"/> H | <input type="radio"/> SU | <input type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Private sector development</i> | <input type="radio"/> H | <input type="radio"/> SU | <input checked="" type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Public sector management</i> | <input type="radio"/> H | <input type="radio"/> SU | <input type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |
| <input type="checkbox"/> <i>Other (Please specify)</i> | <input type="radio"/> H | <input type="radio"/> SU | <input type="radio"/> M | <input type="radio"/> N | <input type="radio"/> NA |

Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

6.1 Bank performance

Rating

- | | | | | |
|--------------------------------------|--------------------------|------------------------------------|-------------------------|--------------------------|
| <input type="checkbox"/> Lending | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Supervision | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Overall | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |

6.2 Borrower performance

Rating

- | | | | | |
|--|--------------------------|------------------------------------|-------------------------|--------------------------|
| <input type="checkbox"/> Preparation | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Government implementation performance | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Implementation agency performance | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Overall | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |

Annex 7. List of Supporting Documents

1. Implementation Documents
 - Aide-Memoirs
 - Back to office Reports
 - Borrower Quarterly Progress Reports
 - Project Status Reports (PSRs)
2. Preparation Documents
 - Aide-Memoirs
 - Back to Office reports
 - Staff Appraisal Report
3. Mid Term Review Report
4. ROADSIP II Bankable Document

Additional Annex 8. Borrower Project Evaluation Report

ZAMBIA – NATIONAL ROAD FUND AGENCY

EVALUATION COMPLETION REPORT

(IDA 2993 ZA)

PROJECT TO SUPPORT A ROAD SECTOR INVESTMENT PROGRAM

Overall Outline

1. The Road Sector Investment Program (ROADSIP) is a ten-year program initiated by the Government of the Republic of Zambia (GRZ) aimed at facilitating economic growth in all social and economic sectors particularly agriculture through appropriate investment in the road infrastructure. The principal objectives of the programmed are to:

- Improve the condition of a core network of roads;
- Strengthen the management of the road sector;
- Create employment opportunities;
- Improve road safety;
- Improve environmental management;
- Improve rural transport services; and
- Improve community roads.

2. The first phase of ROADSIP, which was five years, was launched in 1998 and completed in 2003. The table below provides an outline of the first five-year program.

3. The support from Donors during the implementation of ROADSIP I was higher than anticipated.

World Bank Support to ROADSIP

4. The World Bank supported the ROADSIP through an IDA Development Credit Agreement no. 2993 ZA, which was signed on 15th December 1997 and became effective on 28th March 1998. The detailed data pertaining the World Bank's support to ROADSIP are tabulated below:

| Item | Details |
|--------------------------------|---|
| Name of Project: | Project to a Road Sector Investment Program |
| Credit Number: | 2993 |
| Credit Amount: | SDR51,5000 (equivalent US\$70 million) |
| IDA Country and Region: | Zambia, Southern Africa |
| Sector: | Transport |
| Dates | Signing 15 December 1997 |
| | Effectiveness 28 March 1998 |

| | | |
|-----------------------------|---|---------------|
| | Original Closing date | 31 March 2003 |
| | Closing date first extension | 31 March 2004 |
| | Closing date 2nd extension | 31 March 2005 |
| Borrower: | Government of the Republic of Zambia | |
| Implementing Agency: | National Roads Board through MWS, MLGH & ZAMSIF | |

IDA ROADSIP Funding

5. During the implementation of IDA ROADSIP project the need to re-align the categories arose due to changes in interventions and scope of works. Reallocations were made at various points as shown in the table below. The last column in the table show the actual disbursements made as at the close of the credit.

| A. Cat | Description | Original DCA SDR | Realloc. 1 02/28/01 SDR | Realloc. 2 12/19/02 SDR | Realloc. 3 06/04/03 SDR | Actual Disb IDA SDR |
|---------------|---------------------------|-------------------------|--------------------------------|--------------------------------|--------------------------------|----------------------------|
| 1a | Periodic Road mtce | 5,800,000 | 8,650,000 | 7,000,000 | 8,655,000 | 9,507,000 |
| 1b | Road Rehab. & upgrad | 35,800,000 | 26,934,500 | 28,000,000 | 26,912,000 | 27,073,000 |
| 1c | Road Rehab. Comm. | 1,500,000 | 1,500,000 | 2,100,000 | 1,905,000 | 2,069,000 |
| 2 | Equipment, Veh. & Mat. | 750,000 | 700,000 | 900,000 | 904,000 | 533,000 |
| 3a | Consult services & train. | 6,000,000 | 11,000,000 | 13,000,500 | 12,617,500 | 11,566,000 |
| 3b | Consult services Comm. | 400,000 | 400,000 | 500,000 | 507,000 | 474,000 |
| Unallocated | 1,950,000 | 100,000 | | | | |
| | Total | 51,500,000 | 51,500,000 | 51,500,000 | 51,500,000 | 51,222,000 |

Performance Ratings

6. There was good cooperation between the World Bank and the borrower during the implementation stage. The Project Coordinator communicated regularly with the Task Team Leader in Washington and this ensured that many issues were being resolved quickly. However, problems were experienced with disbursements due to frequent changes in personnel at the World Bank Headquarters. Items that were previously considered allowable expenses could be disallowed, questions could be raised and additional documentation requested where previously such was not the case. This led to delays in getting replenishments to the Special Account.

7. Project performance rating of the IDA ROADSIP project from the borrower's point of view is shown in the table below:

| | Item | Rating | Comment |
|---|----------------------------------|---------------|--|
| 1 | Outcome | Satisfactory | No of local contractors and consultants increased, Transport Policy in place, Acts in place |
| 2 | Sustainability | Likely | Capacity building, increase in fuel levy releases |
| 3 | Institutional Development Impact | Satisfactory | Restructuring achieved, three road agencies, NRFA, RDA & RSTA in place. Implementation in progress |
| 4 | Bank Performance | Satisfactory | Had excellent team leader who was supportive and issued 'no objections' timely |
| 5 | Borrower Performance | Satisfactory | Had qualified staff in the PIU and understood IDA procurement requirements fairly well |

Practical Achievements

8. Due to the use of International Competitive Bidding more foreign companies particularly from South Africa took part in bidding for works in the road sector thus increasing competition. This resulted in lower prices being charged for undertaking rehabilitation works. A direct benefit of this was that significant savings were realized on the Great North road making it possible for the Government to undertake additional periodic maintenance works on the Siavonga road, Lusaka – Kafue road and Lusaka – Kabwe road. The following table summarises the achievements attained under ROADSIP compared with the original list of targets identified for the project.

| Cat. | Item Description | IDA Funds USD '000' | Target (SAR) | Achieved by end of project | Comments |
|-------------|-------------------------|----------------------------|---------------------|-----------------------------------|---|
| | Routine Maintenance | GRZ | 11,050km/yr | 12,500 km | Placed over 6,880 km of roads on performance contract for regular mtce |
| 1a | Periodic Maintenance | 8,300 | 6,807km | 10,499 km | Lusaka-Kabwe, Lusaka-Makeni, Siavonga Road, and various periodic mtce funded by the Road Fund |
| 1b | Rehabilitation | 35,000 | 1,434 km | 2,333 km | Great North Road divided into three lots, |

| | | | | | |
|----|--|--------|-----------------------|--|---|
| | | | | | including urban roads in Mpika |
| 1b | Feeder Roads upgrading | 10,400 | 1,000 km | 1,662 km | Mostly full improvement works funded by IDA |
| 1b | Access Improv. Feeder Rds | 5,300 | | 1,912 km | Due to shortage of funds some projects could not be completed |
| 1c | Rehab. of Community Rds | 2,100 | 70 projects 500 km | 52 projects 496 km | Spot improvements; culvert, bridge and drift construction were done |
| 2 | Equipment, MV & Materials | 1,000 | | | Motor vehicles, motor bikes, office furniture & computers were procured |
| 3a | Engineering design & sup | 3,900 | | | All feasibility and design services were completed |
| 3a | Intermediate Means of Transport | 600 | | 312 donkeys 179 bicycles 35 Carts 5 w/barrows | Pilot project in Mpongwe successfully implemented and replicated in 4 other districts |
| 3a | NCC | 1,600 | | | Local contractors trained, established NCC secretariat, Act enacted |
| 3a | Policy Support | 500 | | | Transport Policy formulated in 2000 & 3 Acts enacted in 2002, |
| 3a | Implementation Support & capacity building | 1,000 | | EMU developed procedures manual, resettlement policy framework and an Environmental Contract Clause. Agencies created (RDA, RTSA and NFRA) | |

| | | | | | |
|----|---------------------------|--------|--|--|--|
| 3b | Institutional Development | 300 | | | Study to support institutional reforms commenced |
| | TOTAL | 70,000 | | | |

ROADSIP IDA Project Costs and Financing

9. The financing as per component compared to the SAR estimate is shown in the table below:

| Component | Appraisal Estimate USD million | Actual/ Latest Estimate USD million | % of Appraisal |
|---|--------------------------------------|---|-------------------|
| A. Civil Work | | | |
| Periodic Maintenance | 8.3 | 13.7 | 15.0% |
| Rehabilitation | 35.0 | 23.7 | 69% |
| Upgrading of Feeder Roads | 10.4 | 9.5 | 91% |
| Accessibility Improvement of Feeder Roads | 2.1 | 2.3 | 110% |
| B. Community Accessibility Program | 3.3 | 3.4 | 94% |
| C. Construction Industry Development Program | 1.6 | 0.4 | 19% |
| D. Institutional Capacity Building | 5.4 | 8.2 | 111% |
| E. Engineering Services | 3.9 | 8.0 | 246% |
| Total Project Cost | 70.0 | 69.2 | 99% |

Lessons Learnt during Implementation

10. During the implementation of the various components of the projects a number of lessons have been learnt which would be used on the follow on ROADSIP II.

10.2 Civil works

- a) Technical audits should be carried out during implementation in order to ensure that the Contractors and the Consultants are giving the client value for money.
- b) Lack of Counterpart funding caused a lot of delay in the implementation of some civil works contracts, therefore it is recommended that the counterpart requirement should be removed on all World Bank financed projects.
- c) The period between completion of the design report and commencement of civil works

should be as short as possible to prevent further deterioration of the pavement thereby necessitating changes to scope of works.

d) Procurement of consultant through ICB does not always assure that the client will get the best consultant as seen in the engineering design of Chingola – Kasumbalesa road that took more than 4 years to complete.

e) In the implementation of the full and access improvement of feeder roads the implementing agency was not provided with supervision vehicles hence making it difficult for them to carry out monitoring activities. In future adequate supervision vehicles should be made available.

10.1 Community Accessibility Program

This was a poverty alleviation program based on the understanding that geographical isolation is a fundamental cause of poverty. The implementation of the accessibility program involved the participation of the community. During implementation it was learnt that value for money could be achieved if a contractor undertook long stretches of road, large bridges and spot improvements. Where the community contributed in the rehabilitation or repair of roads community ownership of the road or project was enhanced.

Local authority involvement on the implementation and promotion of IMTs should be part of the project implementation framework.

10.2 Construction Industry Development

A lot of foreign firms were awarded civil works contracts. This was mainly due to favorable prices offered by these firms. This emphasized the need to build technical capacity in the local contractors to prepare realistic cost estimates as some of their bid prices were almost double that offered by foreign firms.

A number of small to medium sized contractors lacked equipment to undertake road works or collateral to use to obtain loans for financing road works. A need was identified to have a plant pool from where they could hire the equipment.

10.4 Institutional Development and Capacity Building

Environmental Management

- There is a need to have an environmental specialist on the project implementation team to ensure that in carrying out any rehabilitation work environmental clauses are enforced
- Environmental specialist should be involved in the planning and formulation of projects so that it is easier to follow up the environmental concerns through out the life cycle of the project
- There is a need to build capacity in environment assessment activities among the contractors in order to reduce duplication, delays in meeting deadlines and completing projects

Road Safety

- there is a need to build capacity in terms of equipment, human resources and training;
- There is need for close cooperation between the traffic police and the Road Transport and

Safety (formerly NRSC) to ensure that road safety equipment acquire is being utilized properly and the accident statistics are provided.

Technical Assistance

In order for any technical assistance to succeed in building capacity in the local counterpart it is important that the Technical Assistance allows the counterpart to be in the ‘driving seat’. If at all possible the TA should share the same office with the counterpart staff.

10.5 Engineering Design

Procurement of consultant through ICB does not always assure that the client will get the best consultant as seen in the engineering design of Chingola – Kasumbalesa road which has taken more than 4 years to complete. Procurement of the design engineers to undertake supervision through single sourcing reduces the procurement lead time and cost. In addition design changes as implementation of the civil works contracts proceeds are minimal.

10.6 Donor Coordination

Following the mid-term review of ROADSIP a closer cooperation and coordination began to be seen among the Donor community supporting the Road Sector. Regular Joint Donor missions with the EU as chairperson were undertaken in conjunction with the World Bank supervision missions. This helped to speed up implementation of donor-funded projects and foster closer cooperation among the donors. The donors that were actively involved in the Joint Donor missions included EU, Danida, Norad, Kfw and JICA. Danida is one of the donors who funded routine and periodic maintenance on some roads and does not take too long when it comes to approving funds for projects.

Additional Annex 9. Additional Information

ROAD SECTOR INVESTMENT PROGRAM IN ZAMBIA

Background to ROADSIP: During the 1980s it became obvious that in spite of the efforts by Governments in the sub-Saharan Africa (SSA) supported by the World Bank and other donors over a period of twenty five years to build roads, the condition of the roads in SSA countries continued to deteriorate. A survey done by the World Bank in about 26 countries (1984 – 1997/88) reviewed that approximately 56% of the paved roads were in poor condition, and of these half were close to failure or had failed. The position with unpaved roads was worse. Less than 70% of the network was reported as receiving regular maintenance with expenditure at only 16% of that necessary to maintain a good standard road.

To address the road maintenance problems in SSA, it was decided to institute the Sub-Saharan Africa Transport Program (SSATP), under the aegis of the World Bank, and as part of this, the Road Maintenance Initiative (RMI) was set up. Many SSA countries agreed to abide by the RMI principals, which were/ are: (a) to concentrate available resources on road maintenance, rather than on new road construction, and direct maintenance efforts on the essential road network; (b) to encourage greater use of non-governmental organizations (NGOS) in road maintenance; and (c) to increase effectiveness of Government and donor resources in the road maintenance effort.

Road Reforms in Zambia: Traditionally, transport policy in Zambia was based on the premise that, road infrastructure was a public utility, that was essential and necessary to meet the needs of the Zambian people, and therefore the policy was to generate social benefits as opposed to profits. As such, the maintenance of the road network in Zambia was under the ownership and control of the central government. In 1991, it was asessed that only 20% of the road network in Zambia was in good condition, and upto 80% of the network was in un-maintainable conditions due to differed maintenance.

With the awareness of the SSATP program, the following factors were diagnosed to have contributed to the deplorable condition of the road network in Zambia, viz: (a) inadequate financing of road maintenance by Government; (b) poor management by line Ministries involved with the management and maintenance of the road network, usually executing maintenance works on force accounts; (c) duplication and wastage of resources through the use of several road agencies and ministries in the management of the road network, with un-clear responsibilities and roles; and (d) Governments inability to retain qualified staff in the line Ministries due to un-attractive conditions of service.

Recognizing the above, Government in February 1993 held a stakeholders conference at which it was expected to make recommendations on how to reform the road sector to address the question of road financing and management. One of then primary recommendations arising from the conference was the creation of a Road fund, subsequently the National Roads Board (NRB) and the Road Fund were established in 1993, and the fuel levy was introduced by a statutory instrument No. 42 of 25 February 1994 to feed into the Road Fund.

Fuel Levy and Structure of the Fuel price: Fuel levy is charged as a percentage of the whole sale price (15%), and is collected from the oil marketing firms by the Ministry of Finance and national Planning through the Zambia Revenue Authority (ZRA). The levy is then released to the Road Fund. NRB then allocates the funds to the Roads Department for maintenance of trunk, main, and district roads and to the Ministry of Local Government and Housing for maintenance of urban and feeder roads. The fuel levy and taxes expressed as a percentage of the wholesale prices is indicated in Table below.

Fig. 3 Taxes and Levies expressed as a percentage of wholesale price

| Levies and Taxes | Percentage of Wholesale Price |
|----------------------|-------------------------------|
| VAT | 17.5 |
| Excise Duty | 45.0 |
| Road Levy | 15.0 |
| Total Charge on fuel | 77.5 |

To expand the Road Fund, the Government is currently considering channeling to the Road Fund other road user charges, such as the international transient fee, road license fees, and weigh-bridge fines to the Road Fund.

Transport Policy: In May 2002, Government adopted a national transport policy that aimed at addressing gaps in the transport sector in general and the road sub sector in particular. Through this policy, Government dedicated itself to strengthening the financing aspects and the institutional framework in the road sector.

Legal reform and establishment of Road agencies: In October 2002, parliament enacted three essential legislations necessary to effect the required institutional reforms as follows: *The National Road Fund Act No. 13 of 2002* – Establishes and defines the functions of the National Road Fund Agency (NRFA), and the Road Fund. This Act repeals and dissolves the National Roads Board (NRB), which was created under section 55 of the Roads and Road Traffic Act. *The Public Road reform Act. 12 of 2002* - Establishes a Road development Agency (RDA) as a sole agency responsible for planning and management of public roads, to replace the Roads Department (RD), in the Ministry of Works and Supply (MWS), and the Department of Infrastructure and Support services (DISS) in the Ministry of Local and Housing (MLGH). The ACT has designated public roads as all inter-territorial and territorial main roads, district roads, branch roads, urban roads, rural roads, estate roads, and Park Roads. *The Road Traffic Act No. 11 of 2002* – Establishes and defines the functions of the Road Transport and Safety Agency (RTSA), to replace the National Roads safety Council (NRSC).

Composition and funding of the Agencies: The agencies comprise representatives from the private sector, and public sector, and reports to the committee of Ministers on the Road Maintenance Initiative (RMI), with regard to policy directives, approval of programs, funding, and progress on defined programs. The committee is responsible for the preservation of the road network in Zambia. The agencies are also expected to provide quarterly reports, and consolidated annual reports to the committee in order to promote accountability and transparency. The

administrative cost of these agencies is a percentage (equal or less than 5%) of the total annual program.

The committee of Ministers comprises the Minister of Communications and transport (chairman), Works and Supply, Finance and National Planning, Ministry of Local Government and Housing, Ministry of Tourism, Environment and Natural Supply, Ministry Agriculture and Co-operatives, and Ministry of Justice.

