

**AFRICAN DEVELOPMENT BANK GROUP**



**BOTSWANA**

**RURAL ROADS II PROJECT**

**Project Performance Evaluation Report (PPER)**

**OPERATIONS EVALUATION DEPARTMENT  
(OPEV)**

**25 November, 1999**

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## EQUIVALENTS AND ABBREVIATIONS

### Currencies Equivalents

#### Botswana Currency Unit

#### Botswana Pula (BWP)

1 UA =BP 2.24	4 <sup>th</sup> Quarter 1986 (Appraisal)
1 UA =BP 2.14	2 <sup>nd</sup> Quarter 1987(Commencement of Works)
1 UA =BP 2.57	4 <sup>th</sup> Quarter 1988
1 UA =BP 2.55	4 <sup>th</sup> Quarter 1989
1 UA =BP 2.62	4 <sup>th</sup> Quarter 1990
1 UA =BP 2.75	4 <sup>th</sup> Quarter 1991
1 UA =BP 3.09	4 <sup>th</sup> Quarter 1992
1 UA =BP 3.08	1 <sup>st</sup> Quarter 1993 (Completion of Works)

### Weight and Measures

1 metric ton (t)	=	2,205 lbs.
1 kilogramme (kg)	=	2.2 lbs
1 metre (m)	=	3.281 ft.
1 foot (ft)	=	0.305 m
1 kilometre	=	0.621 mile
1 mile	=	1,609 km
1 square kilometre (km <sup>2</sup> )	=	0.386 square mile
Hectare (ha)	=	0.01 km <sup>2</sup>

### Fiscal Year

1 April - 31 March

**Abbreviations**

ADB	:	African Development Bank
ADF	:	African Development Fund
ADI	:	African Development Institute
ADT	:	Average Daily Traffic
BWP	:	Botswana Pula
CTO	:	Central Transport Organization
EIRR	:	Economic Internal Rate of Return
GDP	:	Gross Domestic Product
GNP	:	Gross National Product
GOB	:	Government of Botswana
MWTC	:	Ministry of Works, Transport and Communication
PHN	:	Public Highway Network
PPER	:	Project Performance Evaluation Report
RD	:	Roads Department
RSA	:	Republic of South Africa
TAF	:	Technical Assistance Fund
TOR	:	Terms of Reference
UA	:	Unit of Account
VOC	:	Vehicle Operating Cost.

## PREFACE

1. This Project Performance Evaluation Report (PPER) is concerned with the Rural Roads II Project in Botswana.
2. In March 1987 an ADB loan No: B/CS/BSW/TR (RD)/87/013 and an ADF loan No: F/CS/BSW/TR (RD)/87/8 in amounts of UA 10.65 million and UA 7.40 million respectively were approved for the project. The first disbursement was made on 30 June 1988 and at the end of the project in March 1993 the total amount of the ADB loan had been fully disbursed. Out of the ADF loan, an amount of UA 6.74 million was disbursed, leaving a balance of UA 0.06 million which was cancelled. The loans were used to finance the foreign costs of improving four rural roads to bitumen standard. The Government financed the totality of the local costs of the project.
3. The project was completed and the roads fully opened to traffic in March 1993. The Country Department (South) prepared a Project Completion Report (PCR) in May 1996, following a mission to Botswana in November 1994.
4. The project has achieved its main objective which was to integrate the rural population in remote areas into the main economic and social network of the country by providing reliable all-weather road links between the rural areas and the major activity centres. The rural roads have provided improved and easy access to vast areas, which were hitherto isolated. Vehicle operating costs on the new roads are lower than on the old sand tracks and operators are now able to serve rural communities.
5. The PCR has broadly covered the implementation experience on this project. This evaluation report looks deeper into this experience and clarifies, amplifies and complements the findings of the PCR. It provides additional lessons, which are designed to enhance the effectiveness of the Bank Group operations in Botswana and in other member countries of the Bank.
6. This project performance evaluation report is a result of a post-evaluation mission undertaken in Botswana in December 1998. It is based on discussions with Botswana Government officials, visits to the project sites, and information from Bank files and project documents. It is a full evaluation report, containing an assessment of several aspects, including fulfilment of loan conditions; attainment of project objectives; implementation and institutional performance; performance of the parties, sustainability; and the environmental, gender and social-economic impacts.
7. The overall assessment in both PCR and this evaluation report shows a satisfactory project outcome.
8. The draft of this report was submitted for comments to the operations departments of the Bank and to the Borrower; comments received were taken into account in the final version of the report.

**SUMMARY DATA SHEET**

1. Country	:	Botswana
2. Project	:	Rural Roads II Project
3. Loan Number	:	B/CS/BSW/TR (RD)/87/013
	:	F/CS/ BSW/TR (RD)/87/8
4. Borrower	:	Government of Botswana
5. Executing Agency	:	Ministry of Works, Transport and Communications (Roads Department)

**A1. BASIC LOAN DATA**

	<u>Appraisal Estimate</u>	<u>Actual</u>
1. Request for Loan		October 1986
2. ADB Loan Amount (UA million)	10.65	10.65
3. Amount Cancelled (UA million)	0	0
4. Interest Rate (% annum)	7.64	--
5. Repayment Period (Years)	20	--
6. Grace Period (Years)	5	--
7. Loan Negotiation Date		17-19 February, 1987
8. Loan Approval Date	--	23 March, 1987
9. Loan Signature Date	--	3 October, 1987
10. Loan Effectiveness Date	--	25 April, 1988

**A2. BASIC LOAN DATA**

1. Request for Loan		October 1986
2. ADF Loan Amount (UA million)	7.40	7.40
3. Amount Cancelled (UA million)	0	0.06
4. Service Charge (% annum)	0.75%	0.75%
5. Repayment Period (Years)	50	--
6. Grace Period (Years)	10	--
7. Loan Negotiation Date		17-19 February, 1987
8. Loan Approval Date	--	23 March, 1987
9. Loan Signature Date	--	3 October, 1987
10. Loan Effectiveness Date	--	25 April, 1988

**B. PROJECT DATA**

	<u>Appraisal Estimate</u>				<u>Actual</u>			
	<u>F.E.</u>	<u>L.C.</u>	<u>TOTAL</u>		<u>F.E.</u>	<u>L.C.</u>	<u>TOTAL</u>	
1. Total Cost (UA million)	17.45	6.66	24.11		17.39	8.91	26.30	
2. Financing Plan (UA million)	<u>F.E.</u>	<u>L.C.</u>	<u>TOTAL</u>	<u>%</u>	<u>F.E.</u>	<u>L.C.</u>	<u>TOTAL</u>	<u>%</u>
ADB	10.65	----	10.65	44.17	10.65	----	10.65	40.49
ADF	6.80	----	6.80	28.20	6.74	----	6.74	25.63
GOB	----	<u>6.66</u>	<u>6.66</u>	<u>27.63</u>	----	<u>8.91</u>	<u>8.91</u>	<u>33.88</u>
<b>Total</b>	<u>17.45</u>	<u>6.66</u>	<u>24.11</u>	<u>100.00</u>	<u>17.39</u>	<u>8.91</u>	<u>26.30</u>	<u>100.00</u>
3. Deadline for first Disbursement				30 June 1988			----	
4. Effective Date of first Disbursement			----				30 June 1988	
5. Deadline for Final Disbursement				31 December 1993			----	
6. Effective Date for last Disbursement			----				31 December 1993	

7. Commencement of Implementation Activities	January 1988	June 1987
8. Completion of Project Implementation Activities	December 1992	March 1993

### C. PERFORMANCE INDICATORS

Cost overrun/ underrun (UA million)	----	2.19
Time overrun		None
Slippage on effectiveness	----	7 months
Slippage on first disbursement	----	6 months
Slippage on last disbursement	----	None
No of extensions of last disbursement	----	----
Slippage on start-up of works	----	None
Slippage on completion of works		None
Project implementation status		Completed

### D. MISSIONS

N°	Type of Mission	N° of Missions	Date	N° of Persons	Persons/Days
1	Identification	----	----	----	----
2	Preparation	----	----	----	----
3	Appraisal	1	18/10 – 8/11/86	2	36
4	Follow-up	5	16/11 – 9/12/88 14/04 - 30/04/89 21/01 - 28/01/90 15/03 - 31/03/91	1 2 2 1	14 32 14 16
5	Supervision	2	22/05 - 09/06/89 11/06 - 28/06/93	3 2	54 34
6	PCR	1	21/11 - 17/12/94	2	28
7	PPER	1	18/11 – 3/12/98	1	18

### E. ADB AND ADF LOAN DISBURSEMENTS (UA MILLION)

	<u>Appraisal</u>		<u>Actual</u>	
	<u>ADB</u>	<u>ADF</u>	<u>ADB</u>	<u>ADF</u>
Total disbursed	10.65	6.80	10.65	6.74
Undisbursed balance	---	----	None	0.06
Amount cancelled	---	----	None	0.06

**ADB and ADF Loan Annual Disbursements (UA Million)**

	Projected at		<u>Actual</u>	
	<u>Appraisal</u>		<u>ADB</u>	<u>ADF</u>
	<u>ADB</u>	<u>ADF</u>		
1987	0.56	0.35	----	----
1988	1.54	0.99	0.21	0.14
1989	2.48	1.58	1.23	0.73
1990	2.54	1.62	1.81	1.21
1991	1.81	1.22	4.01	2.90
1992	1.32	0.85	1.42	0.59
1993	<u>0.33</u>	<u>0.19</u>	<u>1.97</u>	<u>1.17</u>
	<u>10.65</u>	<u>6.80</u>	<u>10.65</u>	<u>6.74</u>

**F. CONTRACTOR**

1. Name	:	Government of Botswana, MWTC (Roads Department)		
2. Responsibility	:	Execution of the construction works through Rural Roads Branch Units		
			<u>Appraisal</u>	<u>Actual</u>
3. Date of commencement of contract			January 1988	June 1987
4. Date of completion of contract			December 1992	March 1993
5. Duration of contract (months)			48 months	57 months
6. Amount of contract (BWP million)			54.01	73.18

## 1. EVALUATION SUMMARY

### 1.1 Project Objective and Scope

1.1.1 The objective of the Rural Roads II Project was to integrate the rural population in remote areas into the main economic and social network of the country by providing reliable all-weather road links between those areas and the major activity centres. There were four roads in the project and these were Sekoma - Makopong, Sebina - Kalakamate, Maun - Sehitwa, and Gumare – Sepopa. The roads were originally sand tracks and were constructed under the project to bitumen surface standard.

1.1.2 The project has achieved its objective of opening up and connecting rural communities to the national road network. The new roads, which are located in three separate districts, have provided improved, all-weather access to vast areas, which were hitherto isolated. Although they were conceived strictly as rural roads, they now constitute part of the country's trunk road network. They have also acquired regional status as they facilitate connections to the neighbouring countries of Namibia, RSA, and Zimbabwe.

### 1.2 Project Implementation

1.2.1 There were delays of 19 months between the dates of loan approval and effectiveness, and 13 months between the date of Loan Agreement signature and the date of its effectiveness. The delay of 13 months is considerable compared to the deadline of 6 months now in force and prescribed by the General Conditions: Sections 15.01 (a). The delays were largely due to poor co-ordination between the Executing Agency and the Ministry of Finance in the fulfilment of the conditions precedent to first disbursement.

1.2.2 Changes were made to the original rural road standard during the implementation of the project. The changes concerned the realignment of some sections of the roads, sealing of shoulders, and widening of the carriageways. The changes were improvements to the rural road design standard and were justified; they resulted in good roads being built. The changes are however a reflection of the fact that the roads were not fully surveyed and/or designed at the time of project appraisal. The changes were in part responsible for the cost overruns of the project.

1.2.3 A comparison between the appraisal and the actual implementation schedules shows that the overall project activities were delayed by 12 months. The delays occurred largely during the pre- construction and not so much during the actual construction phase. Nevertheless, the construction units experienced difficulties in the execution of the works. The difficulties were: the delay in procurement of equipment for the construction units; shortage of water for construction; shortage of road construction materials in designated borrow pits; and the process of "design and build" which was adopted on this project. Some of the difficulties could have been avoided had the detailed engineering designs been completed before the start of construction

1.2.4 The four rural roads in the project were conceived and constructed as a single package and therefore the cost of the individual roads was not separately identified. The total project cost estimate at appraisal in November 1986 was (UA 24.08 million), net of taxes and duties. At project completion in March 1993 the cost was UA 26.30 million, net of taxes and duties. While the changes made in respect of design account for a large proportion of the cost overrun, inflation and devaluation of the local currency during the implementation period are also responsible for the for the cost overrun.

1.2.5 The ADB disbursed the totality of its loan of UA 10.65 million and the ADF disbursed an amount of UA 6.74 million out of its loan of UA 6.80 million; the balance was cancelled. Government's share of the project costs was substantially increased from UA 6.66 million at appraisal to UA 8.91 million in actual project cost.

1.2.6 The procurement of goods and services was undertaken in accordance with Bank Group rules and procedures and no major problems were encountered; the Executing Agency had previously implemented a similar project, Rural Roads I project. The origin of goods and services were from ADB member countries.

### 1.3 Compliance with Loan Conditions and Covenants

1.3.1 The fulfilment of loan conditions of effectiveness presented no major problems to the Borrower, as these were simple and reasonable. Still however, these conditions were fulfilled some 7 months after loan signature. The period of 12 months from loan approval (27 March 1987) through loan signature (3 October 1987) to effectiveness (25 April 1988) was a bit too long, considering that the loan conditions were not particularly hard.

1.3.2 The executing agency found it difficult to comply with the condition relating to the appointment of a project co-ordinator. Throughout the project implementation period, the executing agency could not maintain an appointee in position for long. At least four project co-ordinators were appointed and most of them stayed for less than one year. This adversely affected project supervision and reporting. The general shortage of qualified staff in Roads Department accounted for this situation.

1.3.3 A condition under which Government gave an undertaking to have all rural roads gazetted, and to hand over the same for maintenance purposes to the Roads Maintenance Division of the Roads Department was not fulfilled. The roads were never gazetted, even though the Maintenance Division is now maintaining the roads. The policy on gazetting of roads for development and maintenance purposes was subsequently abolished following the recommendations of a road maintenance study.

1.3.4 The condition of the loan relating to staffing of the Direct Labour Branch of the Roads Department with suitably qualified and experienced personnel was only partially fulfilled. The Direct Labour Branch constructed the roads under severe staff constraints; the Branch always had only one qualified engineer, its Head – and no more engineering staff were assigned to the Branch. The Branch is currently being disbanded in anticipation of reform measures whereby construction of rural roads will be entrusted to private contractors.

### 1.4 Institutional Performance

The Roads Department as a whole has a serious shortage of qualified manpower. Most of its experienced engineers are leaving the Department for the private sector, and there are many vacant positions (40%) at senior engineer levels. The challenge is for Government to attract and retain qualified staff in the Roads Department. Currently, Government is considering proposals from an institutional study of road agencies for the establishment of a Road Fund and an independent Road Authority, which are expected to provide optimum conditions for the solution of existing staffing problems, and the development of the road sub-sector.

## 1.5 Performance Evaluation

1.5.1 Three Direct Labour Road Construction Units of the Roads Department were assigned to construct the four rural roads. Although the units had executed the works under the Rural Roads I project, they encountered difficulties with this project. The main problems were: inadequate plant as acquisition of new equipment was delayed; lack of suitable construction materials in identified borrow pits; lack of suitable sources of construction water; and logistical problems for sites located in remote areas. All the problems were eventually overcome and on completion of the project, the units delivered products of good quality. The overall performance of the units was satisfactory.

1.5.2 Overall, the Borrower performed satisfactorily on this project, although it took some time to fulfil the loan conditions and reporting on the project was inadequate. The Borrower showed full commitment to the project and met the full share of its contribution to the project, including the cost overruns.

1.5.3 The performance of the Bank was also satisfactory. The Bank gave quick responses to Government's correspondences, made timely disbursements and supervision missions from the Bank, though few, were of assistance to the Executing Agency.

1.5.4 The actual growth rates on these roads are above 10%, which is much more than appraisal expectations. This rate demonstrates the importance of these roads to the public; the roads were conceived as rural roads and therefore expected to carry low volumes of traffic.

## 1.6 Project Sustainability

1.6.1 The project roads were completed and opened to traffic at different periods – some 6-8 years ago. All the roads are generally in a good condition. They are being adequately maintained, and several sections have had their surfaces resealed. However, the gravel shoulders on the first section of Sekoma - Makopong (approximately 22km) and the Etsha 6 access of the Gumare - Etsha - Sepopa roads needs repair. Also, since the roads are being used as trunk roads, they should in the medium-term be reconstructed to full primary road standards. With the improved institutional framework of the Roads Department to be put in place in the future, the project roads will continue to provide sustainable benefits to the economy of the country.

1.6.2 Upon completion of the rural roads project, settlement has taken place along the roads, and traffic on the roads has been increasing in response to the travelling needs of the residents of the roads' impact areas. The roads have also enabled government to provide social amenities in the settlements along the roads. Today, almost all population centres have electricity and water supplies. There are also educational, health and cultural centres in these settlements.

1.6.3 The actual traffic growth rates on these roads are above 10%, which are higher than the appraisal expectations. The roads were conceived as rural roads and therefore expected to carry low volumes of traffic; but the expectations have been surpassed. The rates demonstrate the importance of the roads to the public.

1.6.4 The economic internal rate of return which was calculated at PCR (5.2%) is much lower than that calculated at appraisal (11%). These compare with 12.1% at PPER. This result is accounted for by the moderate traffic growth rates adopted on all the four roads during the later years of the project.

## 1.7 Conclusions, Feedback and Recommendations

### 1.7.1 Conclusions

1.7.1.1 The four rural roads represent a significant investment effort; they should be preserved. After 6 – 8 years of service, the roads are still standing well and they now form part of the backbone of the country's road network. They are at present being adequately maintained. They are supporting the social-economic development and integration of the country.

1.7.1.2 The project as a whole was successfully implemented despite the difficulties encountered during the construction works. Nevertheless, the construction of the roads has provided useful lessons for implementing development projects in remote corners of the country. The final outcome is due to the satisfactory performance of all concerned parties.

1.7.1.3 With the exception of the discussion on the loan conditions and their fulfillment, and the recalculation of the EIRR, the present PPER accepts the analysis and conclusions of the PCR. In addition, the PPER, formulates the following conclusions and recommendations:

- a) The four rural roads were constructed to a modified rural road standard, with good geometric characteristics and good riding quality of surfaces, which make vehicle travel on the roads easy and comfortable.
- b) Some technical problems were encountered during construction because the project was not adequately prepared and changes in design had to be made during the construction stage. The changes were improvements to the original rural road standard. Even though the scope of works was increased and despite the difficulties, the roads were constructed and completed within reasonable delays.
- c) The project has fully met its objective and its outcome is rated as satisfactory.
- d) The performance of the three Direct Labour Construction Units during the implementation of the project was satisfactory. The performance of the Borrower, executing agency and the Bank Group was also found satisfactory.

### Lessons

1.7.2 The following lessons can be drawn out of the project:

- a) adequate project preparation with early involvement of Bank's Group in the project cycle can contribute to reducing technical problems and minimise changes in project design during construction, (paras 3.2.3 and 6.1.2).
- b) a launching mission sent to the Borrower soon after loan signature can contribute to accelerating the fulfilment of loan conditions (para 3.1.1).
- c) frequent training seminars on loan administration and procurement for the benefit of officers involved in Bank Group projects would contribute to reducing delays in project implementation (paras 3.3.1).
- d) the implementation schedules drawn at appraisal are not always realistic and detailed enough on

procurement activities and do not always contain certain critical implementation elements such as deadlines for loan signature and loan effectiveness (paras. 3.1.1 and 3.3.1).

- e) shortage of staff in the Roads Department constitutes constraints in road management in general, and particularly in road maintenance activities (para. 2.2.13).

#### Recommendations

1.7.3 The following recommendations are formulated for the consideration of the Government and the Bank:

##### For Government

- a) the Government should acquaint itself with the Bank's General Conditions Applicable to Loan Agreements and Guarantee Agreements and particularly on deadlines set for the loan signature and their effectiveness (para. 3.1.1)
- b) the Government should make concerted efforts to resolve the chronic shortage of staff at high and medium levels in Roads Department, which constitutes a constraint to efficient road management, project supervision and road maintenance activities (para. 2.2.13 and 2.2.15).
- c) The government should take appropriate action to redress the negative environmental impacts on the project roads (Para 4.6)

##### For the Bank

- a) the Bank should always get actively involved early in the project cycle and contribute effectively to project identification, formulation and preparation in order to minimize technical problems during construction and delays in project implementation (paras 3.2.3 and 7.1.3).
- b) the Bank should always undertake a launching mission soon after loan signature in order to assist Borrowers in accelerating the fulfilment of loan conditions (para. 3.1.1).
- c) Bank staff should ensure that implementation schedules drawn at appraisal are realistic and detailed enough to contain crucial elements such as deadlines for loan signature and loan effectiveness and for procurement activities (paras. 3.1.1 and 3.3.1).
- d) the Bank should follow-up the preparation and issuing of annual audited financial statements on on-going projects (para. 3.4.2).
- e) The Bank should follow-up on the remedial measures for the protection of the environment on the project roads (Para 4.6).

##### Follow-up Action Matrix

1.7.4 A summary of recommendations and follow-up actions is given in Annex 2 of this report.

## 2. **BACKGROUND**

### 2.1. Macro-Economic Context

2.1.1 The Republic of Botswana straddles the tropic of capricorn in the centre of the Southern Africa plateau. It is a landlocked country, bordered by Namibia on the west, Zimbabwe on the north-east, South Africa on the south and south-east, and by Zambia at the junction of the Caprivi Strip.

2.1.2 Botswana has a total land area of 582,000 km<sup>2</sup>, equal in size to Kenya or France. The country is relatively flat, with hilly areas along the eastern side and isolated groups of hills elsewhere. Deep Kalahari sands cover about two-thirds of the country (in the centre, south and west), and rock formations are exposed only in the east.

2.1.3 In the north-west, the perennial Okavango river drains inland from Angola to form the Okavango delta, an extensive swamp area of some 10,000 km<sup>2</sup>. Most of the water brought into Botswana by the Okavango river is lost through evaporation and transpiration in the swamps. Apart from the Okavango delta, surface water in Botswana is scarce.

2.1.4 Set at an average altitude of 1000 m above sea level, Botswana is a semi-arid country, and rainfall is both erratic and unevenly distributed. Most of the rainfall (over 90%) comes during the summer months, from November to April. The northern areas receive up to 700 mm while the Kalahari desert receives as low as 225 mm. Average daily maximum temperatures are around 33°C. During the winter months, from May to October, temperatures may drop to an extreme -7°C, more commonly near zero. In general, temperatures vary from region to region.

2.1.5 Botswana has a low population, currently estimated at 1.4 million people, about 80% of whom are concentrated in the eastern part of the country where population densities are high. Population growth is about 3.5% per annum, one of the highest in Africa. About 70% of the population is rural and is largely dependent on rainfed agriculture.

2.1.6 At independence in 1966, Botswana was ranked among the poorest nations of the world. However, thanks to successful prospecting, diamonds were discovered in the late 60s and early 70s, and today, the country is the third largest producer, and diamonds contribute, on the average, 44% to GDP and account for 75% of exports.

2.1.7 The key sectors of Botswana's economy are mining, agriculture and tourism. After mines and minerals, cattle and cattle products are the next biggest foreign exchange earners followed by tourism. Agriculture is based on both commercial and communal farming. Large-scale farmers practise commercial farming, and concentration is on sorghum, maize, beans, watermelons and sunflower. Arable crops are cultivated extensively in the communal areas, and intensively in the commercial areas, which are more fertile and less arid. About 60% of the rural population own some kind of livestock (cattle, sheep, and goats), but cattle are the most important resource and accounts for about 3% of GDP and about 28% of total agricultural product.

2.1.8 Tourism in Botswana has become an important foreign exchange earner. It is based on the country's extensive and diversified wildlife resources. The transport network and other tourist infrastructure (hotels and lodges) are being expanded to cater for the needs of tourism.

2.1.9 The economy of Botswana has registered impressive growth rates in recent years. Growth in GDP has averaged 13% per annum since 1965; the growth rate in other economic indicators has been higher. The factors contributing to this impressive economic performance include sound economic policies, careful management of the nation's fiscal and monetary affairs, and the very rapid

growth in mineral revenues, especially diamonds. The mineral sector has been a major engine for economic growth and has generated substantial growth in the non-mineral sectors, often as the result of increases in Government expenditures. Much of the mineral revenues accruing to Government has been invested in social and economic infrastructure. These investments have created employment opportunities and have improved the health, education and skills of the population and the productivity of those in employment.

2.1.10 Despite the impressive growth rates, the structure of the Botswana economy has remained undiversified, largely dependent on the mining sector. This dependence on a single sector—mining especially diamond, whose prices fluctuate widely on the world market, makes the economy vulnerable to external factors. This, combined with other problems such as unfavorable climate, the landlocked position of the country which occasion heavy transport costs for imports and exports, shortage of skilled manpower, prospect of droughts etc. call for special policy measures. Such measures as interest rate and exchange rate adjustments, wage restraints; budgetary restraints and incentives to the private sector should lead to increased production. For the immediate future, the mining sector will continue to dominate the economy, though good prospects exist for diversifying into agriculture, particularly in livestock farming and manufacturing for exports.

## 2.2. The Road Sub-Sector

2.2.1 In 1972, Botswana had only 80 km of surfaced roads and during the following decade, the north-south communication artery, essentially comprising a highway running down the eastern side of the country, from the Zimbabwean border to the border with South Africa dominated the road network.

2.2.2 In 1992, the Public Highways Network (PHN) consisted of some 18,327 km of roads classified on a functional basis into four categories, which are Primary, Secondary, Tertiary and Access Roads. The PHN of which 8,761 km (Primary and Secondary Roads) are maintained by the Roads Department and 9,566 km by the District Councils, links all settlements with population of over 100 people which represent over 90% of the national population. The Primary and Secondary Roads include 3,663 km of paved roads and 4,303 km of gravel roads.

2.2.3 Road Transport is the major mode of surface travel in Botswana, covering 93% of the total volume of passengers transported. Bus service, mostly run by private companies, accounts for 60% of all road passengers travel; the railway, a single line which runs from South to North on the eastern side of the country is responsible for about 7% of passenger transportation.

2.2.4 The number of motor vehicles in use has increased rapidly since the early seventies from 5,000 vehicles to approximately 8,100 vehicles in 1991 of which 7,300 were Government vehicles, 1,700 were buses and 12,280 were trucks (more than 5 tons). The average vehicle growth rate during 1985/90 was 8.9% per year. Passenger and light delivery vehicles were responsible for approximately 65% of total private vehicle fleet in 1991. Road traffic has an annual average growth rate of about 12% (1984/90) for the bitumen surfaced main road network carrying up to 4,300 vehicles daily; 14% of these are heavy vehicles. The growth rate for unpaved roads was 7% (1984 -1990) and 11.5% per annum for paved roads.

2.2.5 The traffic growth rate figure changes dramatically when a gravel or earth road is upgraded to a bitumen road in rural areas. Indicative figures illustrating the changes are as follows: 20% increase during the year of bitumenization; 8% per year during the following 5 years; 6% per year during the next 5 years; and 3% per year during the next 10 years. In general, however, the traffic growth rate is related to GNP with 1% rise in GNP producing a 1% traffic growth rate. For this reason, high traffic growth rates are not expected to continue after 1997.

2.2.6 During the period leading up to the National Plan (1991/92 - 1996/97), investments in roads dominated all Development Plans and amounted to BP 709.00 million. Consequently, the maintenance cost has also increased rapidly as shown in Annex 6. However, it is planned that following the completion of the Trans-Kgalagadi Road, the volume of new investment in roads will decrease while maintenance cost will continue to rise.

2.2.7 The Roads Department under the Ministry of Works, Transport and Communications is responsible for the maintenance of Primary and Secondary roads. Its organization and structure summarized in the PCR (Sections 6.1 and 6.2, and Annex 4) is still in force. One of the six Divisions of the Roads Department is in charge of the maintenance of the National Network (Primary and Secondary roads). It is headed by the Principal Roads Engineer (Maintenance) and its functions are to: carry out all routine and periodic maintenance tasks; maintain road signs and roads markings; implement control measures on axle overloading by heavy vehicles through the use of reliable weigh bridges located at strategic points within the national road network; and liaise with District Councils to give technical advice on road maintenance.

2.2.8 For the purposes of maintenance, the country are divided into three regional divisions, North (Francistown), South (Gaborone), and West (Maun) headed by Senior Road Engineers. Each Division is further divided into 10 districts comprising several maintenance units, technical staff and a number of industrial class staff. In addition, there is a fourth Senior Roads Engineer in headquarters who is in charge of contracts section, traffic and weigh bridge section; and Planning and budget section.

2.2.9 The Maintenance Division at the Headquarters is also directly responsible for heavy maintenance works such as road rehabilitation; re-gravelling and periodic resealing through contracts to private enterprises.

2.2.10 Plant and Equipment for maintenance are allocated through the Central Transport Organization (CTO), a national administrative entity, which is responsible for both the purchase and repair of all equipment. In addition, each Maintenance Division has a number of its own workshops with mechanics seconded from the CTO.

2.2.11 As the National Network extends, the availability of the most basic equipment decreases rapidly with time. However, it is expected that the situation will improve after completion of the on-going reorganization of the CTO and when new workshops and spare-part stores will be constructed at all depots.

2.2.12 The maintenance operations are based on programmes funded and executed on a yearly basis. Annex 5 shows the rapid improvement and development of the National Road Network, the revenue generated by road users and the funds allocated by the Government for construction and maintenance; the budget has increased substantially since 1980/82 and has been subsidized by the GOB. For instance, for the three years (1995-1997), the yearly allocation for maintenance is BWP 57 million or about 140% of the total direct revenue generated by road users. It can therefore be concluded that maintenance funding has not been a crucial issue in Botswana.

2.2.13 As indicated in the PCR (Section 6.2), there is a serious chronic shortage of staffing levels for engineers and technicians in the Roads Department, and in particular, several Senior Maintenance Engineers and Technician posts are vacant at the regional level as well as in the Headquarters. For the total establishment of 39 professional engineers for the Roads Department, 42% are locally filled while expatriates currently hold 18% and 40% are vacant. Some progress has been made in identifying potential candidates for employment at the Roads Department. However, the

recruitment process is taking longer than anticipated and indeed, the number of 12 vacant positions are increasing. Several donors including ADB contributed to the effort of reducing the staffing shortage either through funding training courses or programmes for the benefit of nationals at the Road Training Centre in Gaborone or abroad. The Bank funded a big training component under the now completed Trans-Kgalagadi Road Project comprising 56 man-years of training.

2.2.14 With the rapid development of the National Network, it was felt that a comprehensive study was necessary in order to propose improvements in the maintenance operations. A study was financed by ADF (TAF) and some of its key recommendations are now being implemented.

2.2.15 The introduction of the Road Maintenance System into the Roads Department will have a significant impact on the Department. A comprehensive institutional/organizational study, undertaken with the assistance of the World Bank, was completed in March 1998; modalities are currently being discussed for implementing the recommendations of the study. The main objective of the study was to evaluate alternative institutional framework within which the Roads Department might operate in future including at the extremes (a) remaining a Government Department, and (b) becoming an autonomous Roads Authority.

### 2.3 History of Operations -- Bank Group and Other Donors

2.3.1 As at the end of 1995, seven loans in the transport sector totaling UA 83.31 million under ADB and five loans under ADF amounting to UA 25.52 million had been granted to Botswana. All the projects are now completed. Annex 7 gives the outline of Bank Group intervention in the Transport Sector.

2.3.2 Some of the projects were subject of performance evaluation, the two most recent being Serowe – Orapa and Nata – Maun road projects. The projects were completed successfully in 1991 and 1994 respectively, with all parties having performed satisfactorily. The PPERs in respect of these projects formulated a number of recommendations for consideration of both the Bank and Government of Botswana. The recommendations included the following:

- i) Government to observe general conditions relating to deadlines for loan signature and loan effectiveness;
- ii) Launching missions by the Bank should always be mounted to assist the borrower in fulfilling loan conditions;
- iii) Project implementation schedules should be realistic and be detailed enough to include all major implementation activities;
- iv) Bank to play an active co-ordination role for co-financed projects;
- v) CADI to organize frequent training seminars on loan administration and procurement for staff of the Borrower in view of the high staff turnover in Roads Department;
- vi) Bank to follow up on the preparation and issuing of audited financial statements in respect of future projects;
- vii) Executing Agencies to assign senior and experienced staff to oversee and coordinate the work of consultants during project implementation;
- viii) Government to seek solution to the problem of chronic shortage of staff in Roads Department.

### 2.4 Project Formulation

2.4.1 The Government launched a 10 – year rural roads programme whose objective was to integrate rural dwellers in remote corners of the country into the mainstream of the country's economic and social life through provision of all weather links between rural centres and the national road network. The first phase of the programme under which some 388 km of rural roads were constructed

was completed in 1990, following which the Rural Roads II package was formulated. The roads included under phase II consisted essentially of extensions to the roads constructed under Rural Roads I.

2.4.2 The engineering design studies for Rural Roads II were carried out in house by the Rural Roads Branch, assisted by the Development Branch and by short-term consultants. The new roads were to have a uniform bitumen surface standard, 5m carriageway and 2x 0.75m shoulders intended for roads with low traffic volumes.

2.4.3 The government of Botswana subsequently approached the Bank Group for financial assistance to undertake construction works under the rural roads II package.

2.4.4 For the purposes of easy execution, the project roads were assigned to three Direct Labour Units to work concurrently on the roads. Headquarters of the Direct Labour Branch was to undertake the supervision of the overall construction works.

2.4.5 The Bank was not actively involved in project preparation, but contributed through the review of project documents and prepared a detailed appraisal report.

## 2.5 Project Rationale

2.5.1 The four roads included in the project package were located in three different regions, in remote corners of the country. The districts concerned were Kgalagadi, southern, north-east, and Ngamiland. The roads were intended to disenclave rural dwellers in these districts and to connect them to the national road network as well as to the social facilities located in larger centres of population.

2.5.2 The existing Sekoma-Makopong road (163km) was a heavy sand track traversing both the Kgalagadi and Southern districts. The road was a continuation of the Tsabong-Makopong road, which had been constructed under the Rural Roads I project. The road was to serve two major settlements of Werda and Khakea, which are in Kgalagadi and southern districts respectively. The entire Tsabong-Makopong-Sekoma road would serve settlements with a total population of some 13500 people.

2.5.3 The existing Kalakamate – Sebina gravel road (30km), linked the settlements of Kalakamate and Sebina through Makaleng in northeast district. The road is an extension of the Ramokgwebana – Kalakamate road that had been constructed under the Rural Roads I project. The entire road designated as the loop road running from Ramokgwebana to Sebina (102km) would serve settlements with a total population of 13000 people and would also serve the new district capital at Masinga.

2.5.4 The Maun – Toteng – Sehitwa road (100km) in Ngamiland district was a heavy sand road linking the settlements of Toteng and Sehitwa to the district capital at Maun. The road also leads to the sub – district centre of Gumare via rural road links constructed under the Rural Roads I project, i.e the Sehitwa – Tsau, and Tsau – Gumare rural roads. This axis, Maun- Toteng – Sehitwa – Gumare in Ngamiland district serves settlements with a total population of 19,000 people.

2.5.5 The Gumare – Etsha – Sepopa road (80km) is also located in Ngamiland district and connects 13 Etsha villages with the sub-district centre at Gumare and the village of Sepopa. The road was originally a sand track and part of the longer route Gumare – Muhembo road, which terminates at the border with Namibia.

2.5.6 Before improvement of the roads and during certain periods of the year, the traffic on

these roads was often delayed for days and access to the various settlements was difficult. The continued regravelling of the road over the years had depleted gravel deposits close to the roads, and maintenance costs had increased dramatically with the depletion of these sources. It therefore became vital for the Government to provide the settlements in question with all-weather bituminous surfaced roads.

2.5.7 The roads under the project were recommended for upgrading to bitumen standard in the Botswana Transportation Study of 1983, based upon which, the Government identified them as priority roads and made a formal request to the Bank Group to finance a package of four roads.

## 2.6 Project Objectives and Scope at Appraisal

2.6.1 The objectives of the project as stated at appraisal were: a) to assist in integrating the rural population living in remote areas into the main stream of the country's social and economic life by providing fairly durable, all weather road links between the rural centres of population and activity points and the established road network; and b) to encourage rural dwellers to engage in productive activities and to exploit the potential for development of agricultural production.

2.6.2 The project has achieved its objectives of opening up and connecting rural communities to the national road network. The new roads, which are located in three separate districts, have provided improved, all-weather access to vast areas, which were hitherto isolated. The communities can now gain easy access to administrative, commercial, health and educational facilities located at district and sub-district centres. Although they were conceived strictly as rural roads, the roads now constitute part of the country's trunk road network. They have also acquired regional status as they facilitate connections to the neighbouring countries of Namibia, RSA, and Zimbabwe.

2.6.3 The roads are also playing a vital role in the promotion of agricultural production. The range of benefits to farmers in the project areas, include: i) improved timeliness and reduced costs of inputs, and reduced costs of marketing grain surpluses and of delivering cattle to abattoirs for slaughter; ii) facilitation of agricultural extension work whereby agricultural extension workers can now cover a wider area; previously not all settlements were covered because of poor roads; iii) facilitation of Government assistance programmes by reducing the costs of implementation and administration, and permitting improved efficiency of Government administration, postal services etc; and iv) encouragement for rural retailers to stock a wider variety of goods to the benefit of rural consumers.

## 2.7 Financing Arrangements

2.7.1 The four rural roads were financed jointly by the ADB, ADF and the Government of Botswana. A comparison between the actual financing plan and that drawn up at appraisal is shown in Table 1 below.

Table 1  
Sources of Financing  
Pula (Million)

Source	<u>Appraisal</u>				<u>Actual</u>			
	<u>F.E.</u>	<u>L.C.</u>	<u>Total</u>	<u>%</u>	<u>F.E.</u>	<u>L.C.</u>	<u>Total</u>	<u>%</u>
ADB	10.65	-	10.65	44.17	10.65	-	10.65	40.49
ADF	6.80	-	6.80	28.20	6.74	-	6.74	25.63
GOB	-	<u>6.66</u>	<u>6.66</u>	<u>27.63</u>	-	<u>8.91</u>	<u>8.91</u>	<u>33.88</u>
<b>TOTAL</b>	<b><u>17.45</u></b>	<b><u>6.66</u></b>	<b><u>24.11</u></b>	<b><u>100.00</u></b>	<b><u>17.39</u></b>	<b><u>8.91</u></b>	<b><u>26.30</u></b>	<b><u>100.00</u></b>

2.7.2 On completion of the roads, the financing plan turned out to be somewhat different from that drawn-up at appraisal. It can be observed that the ADB proportion of financing was reduced to 40.50% as against 44.17%; ADF financing was slightly reduced from UA 6.80 million to UA 6.74 million or from 28.20% of total cost to 26.50%. The Government contribution was increased from UA 6.66 million or 27.63% to UA 8.91 million, or 33.60% of the actual cost.

## 2.8 Evaluation Methodology and Approach

2.8.1 The present Project Performance Evaluation Report was prepared following: i) a desk review of the project documents and information available in Bank files; and ii) a post evaluation mission to Botswana, undertaken in December 1998. The documents reviewed included the appraisal report, Project Completion Reports, project documents, progress reports and the correspondences available in the Bank files. In the course of the field mission, additional information was collected and visits to the project sites were effected; a visual inspection of the roads was also carried out. Discussions were held with Government officials and with staff of the Executing Agency.

2.8.2 The PPER presents a retrospective evaluation of the project. In particular, it assesses the degree of achievement of objectives, and the operational, economic, institutional and sustainability aspects of the project. It supplements the PCR, draws additional conclusions and lessons, and puts forward recommendations for both the Bank and Government.

## 3. **PROJECT IMPLEMENTATION**

### 3.1 Loan Effectiveness

3.1.1 The fulfilment of loan conditions presented no major problems to the Borrower. The conditions precedent to first disbursement were fulfilled 7 months after loan signature and the loan became effective on 25 April 1988. However, the period of 12 months from loan approval (27 March 1987) through loan signature (3 October 1987) to effectiveness (25 April 1988) was a bit too long, considering that the conditions were not particularly hard. Such delays could have been reduced had launching missions been undertaken to assist the Borrower.

3.1.2 One condition, which posed problems, related to the appointment of a project coordinator. Throughout the project implementation period, the executing agency could not maintain an appointee in position for long, because of the shortage of qualified staff in Roads Department; most of the incumbents stayed for less than one year.

3.1.3 The Government had also given an undertaking to have all rural roads gazetted, and to hand over the same for maintenance purposes to the Roads Maintenance Division of the Roads Department. However, the roads were not gazetted up to the time the policy on gazetting of roads was changed. A Road Maintenance Study had recommended that the policy on gazetting be abolished and roads be reclassified as Primary, Secondary, Tertiary, and Access. Primary and Secondary roads are the responsibility of the Ministry of Works, Transport and Communications; and Tertiary and Access roads are the responsibility of the Ministry of Local Government, Lands and Housing. This policy change did not affect the maintenance of the project roads as they were all classified as either primary or secondary, and they come under the Maintenance Division for maintenance purposes.

3.1.4 One other condition of the loan was only partially fulfilled. This related to staffing of the Direct Labour Branch of the Roads Department with suitably qualified and experienced personnel during the project implementation period. The required staff were never provided to the

Rural Roads Branch, and the project was implemented with difficulties as evidenced – among other things, by the inadequate and irregular reporting on the project. And for the period leading up to its dissolution in 1998, the Direct Labour Branch had only one qualified Engineer, its Head.

### 3.2 Changes in Project Design and Scope at Appraisal

3.2.1 A number of changes were made to the original rural road standard during the implementation of the project. The changes concerned the realignment of some sections of the roads, sealing of shoulders, and widening of the carriageways. Additional lengths of roads were also constructed to provide access to important village courthouses.

3.2.2 The changes were improvements to the rural road design standard and were justified, but they led to time overruns and increased project cost. The changes in question were the following:

- i. The shoulders on the **Sekoma - Makopong** road were sealed as from km 22 onwards; the final length was 160.4 km instead of 156km;
- ii. The two bridge structures on the **Kalakamate - Sebina** road were withdrawn from the project and were financed separately by Government; the final length on this road was 32.1 km instead of 30km;
- iii. The **Maun - Sehitwa** road was constructed to full national trunk road standard (7.5m carriageway with 2x1m shoulders instead of the rural road standard of 5m carrigeway with 2x0.75m shoulders); the pavement was strengthened and route re-alignments were made on several sections; the final length of this road was 98km instead of 100km;
- iv. The final length of the **Gumare - Etsha- Sepopa** was 76km instead of 80km.

3.2.3 Overall, the design changes were in the right direction and resulted in good roads being built. However, the changes are a reflection of the fact that the roads were not fully surveyed and/or designed at the time of project appraisal. This accounted - in part, for the cost overruns, which occurred on this project.

### 3.3 Implementation Schedule

3.3.1 A comparison between the appraisal and the actual implementation schedules shows that the overall project activities were delayed by 12 months. The delays occurred both during the pre-construction and actual construction periods. The causes of delays were: the time taken to fulfil the loan conditions; the delay in procurement of certain equipment for the construction units; shortage of water for construction; shortage of road construction materials in designated borrow pits; and the process of “design and build” which was adopted on this project. Most of the delays could have been avoided had the detailed engineering designs been available at the start of construction.

3.3.2 However, it needs to be noted that the construction periods foreseen at appraisal for the individual roads were exceeded only in two cases. The Sekoma – Makopong (160.4km) was constructed in 53 months instead of 44 months, and the Maun – Toteng – Sehitwa road (98km) was executed in 48 months as against 46 months. On the other hand, the Kalakamate – Sebina road (32.1km) was constructed in 11 months instead if 12, and the Gumare – Etsha – Sepopa (76km) was undertaken in 32 instead of 40 months.

### 3.4 Reporting

3.4.1 The Executing Agency forwarded to the Bank, on an irregular and belated basis, the monthly and quarterly progress reports on the project. The content of the reports was generally inadequate.

3.4.2 The annual audited financial statements required in the Loan Agreement (Section 6.04 (c)) were not sent to the Bank. Reminded about this clause, the Road's Department stated that they had not been aware of it, but were prepared to fulfill the requirement on future projects.

### 3.5 Procurement

The procurement of goods and services was undertaken in accordance with Bank Group rules and procedures, and no major problems were encountered; the Executing Agency had previously implemented a similar project, Rural Roads I project. Delays occurred only with regard to the procurement of certain construction equipment.

### 3.6 Project Costs

The overall total project cost estimate at appraisal in November 1986 was BWP 54.01 million (UA 24.11 million), net of taxes and duties. At project completion in March 1993 the cost was BWP 73.18 million (UA 26.30 million), net of taxes and duties. Changes made in respect of design, especially the construction of the Maun – Toteng – Sehitwa road to full national design standards, account for a large proportion of the cost overrun, but devaluation of the local currency during the implementation of the project is also an additional reason for the cost overrun. The ADB disbursed the totality of its loan of UA 10.65 million. The ADF disbursed an amount of UA 6.74 million out of its loan of UA 6.80 million and the balance of UA 0.06 was cancelled. Government's share of the project costs was substantially increased from UA 6.66 million at appraisal to UA 8.91 million in actual project cost. The cost of individual roads was not separately identified and therefore no financial records on individual roads.

### 3.7 Disbursement and Financial Sources

3.7.1 The appraisal and actual expenditures for the ADB and ADF loans were as shown in Table 2 below.

**Table 2**  
**ADB and ADF Loan Annual Disbursements**  
**(UA Million)**

	Projected at		Actual		
	<u>Appraisal</u>		<u>Actual</u>		
	<u>ADB</u>	<u>ADF</u>	<u>ADB</u>	<u>ADF</u>	
1987	0.56	0.35	----	----	
1988	1.54	0.99	0.21	0.14	
1989	2.48	1.58	1.23	0.73	
1990	2.54	1.62	1.81	1.21	
1991	1.81	1.22	4.01	2.90	
1992	1.32	0.85	1.42	0.59	
1993	<u>0.33</u>	<u>0.19</u>	<u>1.97</u>	<u>1.17</u>	
	<u>10.65</u>	<u>6.80</u>	<u>10.65</u>	<u>6.74</u>	<u>17.39</u>

3.7.2 Actual disbursements started one year later than predicted at appraisal and this was

largely due to the 12 months delay in the start of project implementation. The appraisal schedule had foreseen that disbursements would be evenly spread out over the implementation period, but the actual schedule shows that the disbursements were concentrated in the last three years of implementation. The differences in the two schedules result from the fact that disbursement applications were delayed within Government services before being sent to the Bank, not individually, but often several of them lumped together to cover several payments.

### 3.8 Compliance with Loan Conditions and Covenants

3.8.1 As indicated in para. 3.1.1 above and in the PCR (para. 4.1.7), all conditions precedent to first disbursement were fulfilled. Most of the other conditions were fulfilled during the construction period, except three of them, which were not fully complied with. These conditions related to: i) the appointment of a project co-ordinator; ii) gazettelement of all rural roads and to hand over the same for maintenance purposes to the Roads Maintenance Division of the Roads Department; and iii) staffing of the Direct Labour Branch of the Roads Department with suitably qualified and experienced personnel during the project implementation period.

3.8.2 One condition, which the executing had difficulties in complying with was that relating to the appointment of a project co-ordinator. Throughout the project implementation period, the executing agency could not maintain an appointee in position for long; most of the incumbents stayed for less than one year. This was largely due to the shortage of qualified staff in Roads Department and departure of experienced engineering staff from the Department.

3.8.3 The Government gave an undertaking to have all rural roads gazetted, and to hand over the same for maintenance purposes to the Roads Maintenance Division of the Roads Department. However, the roads were never gazetted up to the time the policy on gazettelement of roads was changed. A Road Maintenance Study recommended the policy on gazettelement to be abolished and roads to be reclassified as Primary, Secondary, Tertiary, and Access. Primary and Secondary roads are the responsibility of the Ministry of Works, Transport and Communications; and Tertiary and Access roads are the responsibility of the Ministry of Local Government, Lands and Housing. This policy change did not affect the maintenance of any of the project roads as they were all classified as either Primary or Secondary. Maintenance Division is now maintaining all the project roads.

3.8.4 One other condition of the loan was partially fulfilled. This related to staffing of the Direct Labour Branch of the Roads Department during the project implementation period with suitably qualified and experienced personnel. No qualified engineers were assigned to the Director Labour Branch. The project was implemented with difficulties as evidenced – among other things, by the inadequate and irregular reporting on the project. And for the period leading up to its dissolution in 1998, the Direct Labour Branch had only one Engineer, its Head.

## 4. PERFORMANCE EVALUATION

### 4.1 Operating Performance

4.1.1 The project roads were completed and opened to traffic at different periods. The Sekoma - Makopong was fully opened to traffic in 1992; the Kalakamate - Sebina in 1991; Maun - Sehitwa in 1992; and Gumare - Etsha - Sepopa in 1993. The field inspection undertaken by the mission revealed that the roads are generally in a good condition. Only the gravel shoulders on the first section of Sekoma - Makopong (approximately 22km), and the Etsha 6 access of the Gumare - Etsha - Sepopa roads need attention.

4.1.2 Since the completion of the roads, traffic on the roads has been increasing at higher rates than projected at appraisal. But this increase is not seen as a problem in the short-term because some of the roads were constructed to higher design standards than was initially intended. Moreover, given government's continued commitment to funding road maintenance, the performance of the roads should continue to be satisfactory. All the rural roads under the project should eventually be reconstructed to full national trunk road standards.

#### 4.2 Financial Performance

4.2.1 The appraisal report detailed that some 366km of roads would be constructed at a cost (inclusive of contingencies and price escalation) of BWP 54.01 million, or an average of BWP 147,570 per km. At project completion, the final cost was BWP 73.18 or an average of BWP of 199,390 per km, an increase of 35% in the cost over the four years of project implementation.

4.2.2 Some delays in disbursements occurred, due to administrative slowness and poor record keeping. The financing plans changed with ADB and ADF proportions being less and government contribution being more than envisaged at appraisal. The Government had to bear all the cost overruns resulting from the increase in the scope of works.

4.2.3 As indicated above (Para 2.2.12) adequate resources are being generated from road user taxes and budgetary allocations for the maintenance of the road network. There is no shortage of maintenance funds.

#### 4.3 Economic Performance

4.3.1 Upon completion of the rural roads project, settlement has taken place along the roads, and traffic has been increasing in response to the travelling needs of the residents of public. The roads have also enabled government to provide social amenities in the settlements along the roads. Today, almost all population centres have electricity and water supplies. There are also educational, health and cultural centres in these settlements.

4.3.2 The appraisal report for RRII project made a detailed economic analysis of the project roads. The analysis projected that traffic would grow at 5% per annum. This rate of growth was clearly modest in the light of recent traffic growth trends on Botswana roads, which have been over 10%. The rate was also lower than the overall national economic growth in Botswana over the period of the 7<sup>th</sup> National Development Plan (1991 – 1997) which averaged 7% per annum.

4.3.3 The annual average daily traffic at Toteng on the Maun - Sehitwa road grew from 75 vehicles per day in 1988 to 124 vpd in 1993. This represents annual growth rate of 11%. Similar growth rates were noted on the other project roads. Traffic grew from 19 vpd in 1988 to 94 vpd in 1993 on the Sekoma – Makopong road, representing a growth rate of some 38% per annum.

4.3.4 It had been assumed that when the roads would be fully available to traffic, the first year traffic on the Maun-Toteng-Sehitwa road would be 143 vpd and 35 vpd on the Sekoma-Makopong road. The road section from Maun to Toteng was completed in 1992 and by this time the AADT was about 260 vpd . Even at Toteng where the road was not fully finished until 1993, there were already some 133 vpd in 1992.

4.3.5 The Sekoma – Makopong road was completed in November 1991 and by 1992 there some 49 vpd at Khakhea. The projection on this road was that traffic would have grown to a total 36.8 vpd. The actual figures at Khakhea indicate traffic of 89 vpd for Werda section and 95 vpd for the northern Sekoma section.

4.3.6 The construction of the four roads has yielded two sets of quantifiable economic benefits: i) the annual savings in vehicle operating costs (VOC savings) as a result of improving the roads from heavy sand/gravel to bitumen standard; and ii) the annual savings in maintenance costs on the upgraded roads as compared to the situation without the project. The VOC savings are shown in Annex 9 and the cost and benefit streams in annex 10.

4.3.7 The upgrading of the roads has also given rise to a range of unquantifiable benefits, and these are enumerated below:

- i) Reduced costs of marketing grain surpluses or of delivering cattle to abattoirs for slaughter. It can be assumed that some of the benefits of reduced transport costs are passed on the farmers and this raises the return to farm production. And is an incentive to greater production;
- ii) Improved timeliness and reduced costs of inputs: as not all benefits from reduced transport costs go to transport owners, the reduced costs to farmers should again encourage increased production.
- iii) Facilitation of Government assistance programmes by reducing the costs of implementation and administration, and permits improved efficiency of Government administration, postal services, etc.
- iv) Facilitation of agricultural extension work: the upgrading of the four rural roads is permitting agricultural extension workers to cover a wider area; previously not all settlements were covered because of the unimproved roads.
- v) Improved access to public facilities: upgrading of the roads has allowed hitherto isolated communities to gain easy access to administrative and commercial centres and to health and educational facilities located at district and sub-district centres;
- vi) Encouragement for retailers in rural areas to stock a wider variety of goods, and for new retailers to emerge. Where new retailers are encouraged to set up, consumers will benefit from increased competition, exerting downward pressure on prices so that some of the benefits of lower transportation costs will be passed on to the rural consumers.

4.3.8 While the roads were found economically viable at appraisal with lower traffic growth rates, the analysis at PPER tends toward an even stronger result. The EIRR at PPER is only 12.1% as compared to 11% at appraisal because of the moderate rates assumed in the later years of the roads' economic lives, but also because of the increased cost during project implementation. The rate of return of 5% obtained at PCR results the adoption of much lower traffic growth rates that are not in line with current traffic trends on Botswana roads in general.

#### 4.4 Institutional Performance

4.4.1 The Roads Department as a whole has a serious shortage of qualified manpower. Most of its experienced engineers are leaving the department for the private sector, and there are many vacant positions (40%) at senior engineers level. The Department has had to rely heavily on expatriate staff for senior managerial positions; these are usually engaged on short-term contracts. Nevertheless the Department has undertaken a major effort to train national engineers but experienced engineers end up leaving the Department in search of better pay in the private sector. The Bank has assisted in this

training effort but the shortage of qualified engineers is still being felt. More has still to be done, though it has to be recognized that the manpower problem is pervasive throughout the Botswana administration.

4.4.2 Today, the challenge is for Government to attract and retain qualified staff in the Department. Currently, Government is considering proposals from an institutional study of road agencies for the establishment of a Road Fund and an independent Road Authority, which are expected to provide optimum conditions for the solution of existing staffing problems, and the development of the roads sub-sector.

#### 4.5 Impact on Gender

4.5.1 The Rural Road II project has had a significant impact on women. The roads have supported crop cultivation and livestock herding, activities in which most women in rural areas engage. The roads are facilitating the supply of agricultural inputs and the marketing of crops and livestock, with a consequent improvement in the incomes of women. Also the daily tasks undertaken such as cooking, water and firewood collection, have been considerably eased. Improved access has meant that gas and kerosene and other supplies are now generally available in the trading centres which have sprung up along the alignments of the roads; women have secured employment in shops, clinics, restaurants and petrol stations in these centres. It is commendable that government has also responded positively by providing utilities - water and electricity in these otherwise remote areas.

4.5.2 The implementation of the project presented an opportunity for rural women to secure paid employment during the construction period. Women were hired directly to work on road construction sites and they have since proved to be good and reliable workers in road construction and maintenance operations. They are hired regularly to take part in road maintenance activities.

#### 4.6 Environmental Performance

The rural roads exhibit some negative impacts. The borrow pits for all the roads were not redressed. Also the posted maximum speed limits (120km) on these rural roads are higher than the design speed (80km). Further, the roads were not fenced and cattle are freely roaming the roads; they constitute a hazard to road users. Government recognized the shortcomings and undertook to effect remedial measures.

#### 4.7 Performance of Consultant, Contractor and Borrower

4.7.1 Overall the Borrower performed satisfactorily on this project, although it took some time to fulfil the loan conditions of effectiveness, and not all the other conditions were fully complied with. Also reporting on the project was inadequate. But the Borrower showed full commitment to the project and met the full share of its contribution together with the cost overruns.

4.7.2 The Direct Labour Road Construction Units of the Roads Department constructed the roads under the project; three units were involved in the works. Although the units were involved in the construction of the roads under the Rural Roads I project, they encountered difficulties with the Rural Roads II project. The main problems were: inadequate plant - the units initially operated with defective and ageing equipment as procurement of new equipment was delayed; lack of suitable construction materials in identified borrow pits; lack of suitable sources of construction water; and logistical problems for sites located in remote areas. All the problems were eventually overcome and on completion of the project, the units delivered products of good quality. The overall performance of the units can therefore be rated as satisfactory.

4.7.3 The performance of the Bank was also satisfactory. The Bank gave quick responses to

Government's correspondences, made timely disbursements and supervision missions from the Bank, though few, were of assistance to the Executing Agency.

## 5. **PROJECT SUSTAINABILITY**

The rural roads are being adequately maintained, and many sections have already had their surfaces resealed. Other improvements recommended by a road Maintenance Study are being introduced into the Road Maintenance System and these will certainly affect the project roads positively. With the improved institutional framework of the Roads Department to be put in place in the future, there is every chance that the project roads will continue to provide sustainable benefits to the economy of the country. Meanwhile, the gravel shoulders of the first section of the Sekoma - Makopong road (approximately 22km), and the Etsha 6 access of the Gumare - Sepopa road have deteriorated and need to be repaired. Also, since the roads are being used as trunk roads, they should all in the medium-term be reconstructed to full primary road standards.

## 6. **PERFORMANCE RATING**

6.1 The implementation performance has a score of 2.0 points, which is just satisfactory. It has to be noted however that the overall delay in implementing the project was 12 months; the actual costs were higher than expected at appraisal, and compliance with loan conditions was inadequate. Also progress reporting was inadequate.

6.2 The performance of the Bank has a score of 2.5 points, which is also satisfactory. The project was of high priority to the Government and was a follow-up on the Rural Roads I project which the Bank had financed earlier. Adequate support was given to the project at various stages through the review of project documents and through follow-up and supervision missions during construction.

6.3 The outcome has a score of 2.68 points, which is satisfactory. Though the institutional framework needs improvement in terms of organizational set up and provision of adequate human resources at high and medium levels, the project will continue to provide sustainable benefits to the economy as evidenced by its satisfactory EIRR.

6.4 The implementation performance, Bank performance and project outcome ratings are presented in Annex 3 of this report.

## 7. **CONCLUSIONS, FEEDBACK AND RECOMMENDATIONS**

### 7.1 **Conclusions**

7.1.1 The rural roads, which were constructed under the project, represent a significant investment effort. After 6 – 8 years of service, the roads are still standing well and form part of the backbone of the country's road network. They are supporting the social-economic development and integration of the country. They are being adequately maintained.

7.1.2 The project as a whole was successfully implemented despite the difficulties encountered during construction of the roads. Nevertheless, their construction has provided useful lessons for implementing development projects in remote corners of the country. The final outcome is due to the satisfactory performance of all concerned parties.

7.1.3 With the exception of the discussion on the loan conditions and their fulfillment, and the recalculation of the EIRR, the present PPER accepts the analysis and conclusions of the PCR. In addition, the PPER formulates the following conclusions and recommendations:

- a) The four rural roads were constructed to a modified rural road standard, with good geometric characteristics and good riding quality of surfaces, which make vehicle travel on the roads easy and comfortable.
- b) Some technical problems were encountered during construction because the project was not adequately prepared and changes in design had to be made during the construction stage. The changes were improvements to the original rural road standard, but they led to an increase in quantities and cost.
- c) The project has fully met its objective and its outcome is rated as satisfactory.
- d) The performance of the three Direct Labour Construction Units during the implementation of the project was satisfactory. The performance of the Borrower, Executing Agency and the Bank Group was also found satisfactory.

## 7.2 Lessons

The following lessons can be drawn out of the project:

- a) Adequate project preparation with early involvement of Bank's Group in the project cycle can contribute to reducing technical problems and minimise changes in project design during construction, (para.3.2.3 and 6.1.2).
- b) A launching mission sent to the Borrower soon after loan signature can contribute to accelerating the fulfillment of loan conditions (para 3.1.1).
- c) Frequent workshops on loan administration and procurement for the benefit of officers involved in Bank Group projects would contribute to reducing delays in project implementation (para. 3.3.1).
- d) The implementation schedules drawn at appraisal are not always detailed enough on procurement activities and do not always contain certain critical implementation elements such as deadlines for loan signature and loan effectiveness (para. 3.1.1 and 3.3.1).
- e) Shortage of staff in the Roads Department constitutes a constraint in Roads management, in particular Road maintenance activities (para. 2.2.13).

## 7.3 Recommendations

The following recommendations are formulated for the consideration of the Government and the Bank:

### For Government

- a) The Government should acquaint itself with the Bank's General Conditions Applicable

to Loan Agreements and Guarantee Agreements and particularly on deadlines set for the loan signature and their effectiveness (para. 3.1.1).

- b) The Government should make concerted efforts to resolve the chronic shortage of staff at high and medium levels in Roads Department, which constitutes a constraint to efficient road management, project supervision and road maintenance activities (para. 2.2.15).
- c) The Government should take appropriate action to redress the negative environmental impacts on the project roads (Para 4.6).

#### For the Bank

- a) The Bank should always get actively involved early in the project cycle and contribute effectively to project preparation in order to minimize technical problems during construction and delays in project implementation (para. 3.2.3 and 7.1.3).
- b) The Bank should always undertake a launching mission soon after loan signature in order to assist Borrowers in accelerating the fulfilment of loan conditions (para. 3.1.1).
- c) Bank staff should ensure that implementation schedules drawn at appraisal are detailed enough to contain crucial elements such as deadlines for loan signature and loan effectiveness and for procurement activities (para. 3.1.1 and 3.3.1).
- d) The Bank should follow-up the preparation and issuing of annual audited financial statements on on-going projects (para. 3.4.2).
- e) The Bank should follow-up on the remedial measures for the protection of the environment on the project roads (Para 4.6)

#### 7.4 Folow-up Action Matrix

A summary of the recommendations and follow-up actions is given in Annex 2 of this report.



**BOTSWANA**  
**RURAL ROADS II PROJECT**  
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**RECOMMENDATIONS AND FOLLOW-UP ACTION MATRIX**

MAIN FINDINGS & CONCLUSIONS	RECOMMENDATIONS	FOLLOW-UP ACTIONS	RESPONSIBILITY
<p>a) <u>Preparation</u>                      Inadequate project documents can lead to lead to changes in project design during construction, delays in project implementation, and to cost overruns</p> <p>b) <u>Loan Effectiveness</u>                      Poor coordination between the Ministry of Finance and Executing Agency may cause delays in the fulfillment of loan conditions.</p> <p>c) <u>Implementation Schedule</u>                      The Implementation Schedule drawn up at appraisal was not detailed enough</p> <p>d) <u>Disbursement Schedule</u>                      Disbursement schedules are not followed because they are not realistic</p>	<p>The Bank should get actively involved early in project preparation in order to minimize technical problems during construction and delays in project implementation</p> <p>Soon after a loan agreement is signed, a Launching Mission should be sent to the Borrower in order to assist in the fulfillment of conditions of effectiveness and the other conditions</p> <p>Project officers should ensure that implementation schedules drawn up at appraisal are detailed enough to contain crucial elements such as deadlines for Loan Signature and Loan Effectiveness and for procurement activities</p> <p>Disbursement schedules should be based on detailed and realistic implementation schedules</p>	<p>Project preparation activities to be intensified</p> <p>Adopt a Launching Mission as a normal and regular procedure after a loan is signed</p> <p>Prepare and adopt guidelines in a standard format</p> <p>Prepare guidelines on disbursement schedule to assist project officers.</p>	<p>Bank and Borrower</p> <p>Country Departments</p> <p>Country Departments</p>
<p>e) <u>Training</u>                      High turnover of staff render Executing Agencies unfamiliar with loan administration problems and Bank Group procedures</p> <p>f) <u>Financial Statements</u>                      Annual audited financial reports were not sent to the Bank because the Executing Agency was not aware of the requirement</p>	<p>CADI should organize frequent workshops on loan administration and procurement for staff of Executing Agencies</p> <p>The Bank should remind Executing Agencies of this requirement</p>	<p>Workshops to be programmed and participants to be identified</p> <p>Roads Department to be asked to comply with the requirement on all future projects.</p>	<p>CADI</p> <p>Country Departments</p>

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**Implementation Performance Rating**

COMPONENT	SCORE (1 – 4)	REMARKS
1. Adherence to Time Schedule	2	There was an overall delay of 12 months in the implementation of the project; most delays occurred during the pre-construction phase.
2. Adherence to Cost Schedule	2	There was a slight cost increase due to increase in scope of works and the fluctuations in the value of the Pula.
3. Compliance with Covenants	2	There was substantial compliance. Certain conditions were not fully complied with.
4. Adequacy of Monitoring & Evaluation and Reporting	1	There was inadequate reporting; progress reports were not regularly issued. Audited financial statements were not prepared.
5. Satisfactory Operations (if applicable)	3	The road structures are performing very well and have improved transport conditions in remote areas.
<b>Overall Assessment of Implementation Performance</b>	<b>2.0</b>	<b>Satisfactory</b>

**Bank Performance**

Component Indicators	Score (1-4)	Remarks
1. At Identification	3	The project originated from the Rural Roads I project, which had earlier been financed by the Bank. The project was a priority one, integrated in the Public Investment Programme.
2. At Preparation of Project	2	The Bank only reviewed and commented on project documents.
3. At Appraisal	3	The appraisal was of good quality and contained detailed analyses.
4. At Supervision	3	Processing of project documents at the Bank was good; several follow-up and supervision mission were mounted.
<b>Overall Assessment of Bank Performance</b>	<b>2.5</b>	<b>Satisfactory</b>

**Project Outcome**

<b>No.</b>	<b>Component Indicators</b>	<b>Score (1-4)</b>	<b>Remarks</b>
<b>1</b>	<b>Relevance and Achievement of Objectives*</b>	<b>3.0</b>	The main objective of linking remote areas to the national road network has been attained. Reduction in road maintenance and vehicle operating costs has been achieved, and agricultural development is being promoted.
i)	Macro-economic Policy	3	The priority given to the rural roads conformed to the macro-economic setting.
ii)	Sector Policy	3	The construction of the roads was in conformity with the sector policy of extending the road network to reach major population centres in remote areas..
iii)	Physical (incl. production)	3	The physical construction of the roads has been achieved; appropriate design standards were adopted.
iv)	Financial	N/A	
v)	Poverty Alleviation & Social & Gender	3	The construction of the roads has improved the social-economic conditions in their impact areas, permitting easy movement of goods and persons.
vi)	Environment	3	The road works occasioned some visible negative impacts on the environment; borrow pits were not redressed and posted speed limits exceed the design speed of the roads.
vii)	Private Sector Development	3	Road has provided excellent opportunity for private sector development in their impact areas.
viii)	Other (Regional Integration)	3	The project has achieved the objective of integrating and linking the hitherto isolated rural communities to the more populated and urban centres of the country.
<b>2</b>	<b>Institutional Development (ID)</b>	<b>2.25</b>	<b>Satisfactory</b>
i)	Institutional Framework incl. restructuring	2	Institutional framework and human resources are still constraints in the management of the road sub-sector.
ii)	Financial and Management Information Systems including Audit Systems	2	Systems need improvement; plans are underway to effect necessary improvements.
iii)	Transfer of Technology	3	Construction of the roads has provided Roads Department with valuable experience in constructing roads in remote desert conditions.
iv)	Staffing by qualified persons (incl. turnover), training & counter-part staff	2	More training is needed to equip the Roads Department with more qualified staff.

<b>3</b>	<b>Sustainability ***</b>	<b>2.5</b>	
i)	Continued Borrower Commitment	3	Government is committed to providing adequate funding for the development and maintenance of the road network.
ii)	Environmental Policy	3	Good policy but more efficient and coordinated implementation needed.
iii)	Institutional Framework	2	Framework needs further improvement.
iv)	Technical Viability and Staffing	3	Good state of maintenance, but there is a human resource constraint.
v)	Financial Viability including cost recovery systems	2	Improvement in institutional framework should result into increased generation of revenues from road users.
vi)	Economic Viability	2	Project is economically viable; re-calculated EIRR is .....
vii)	Environmental Viability	2	More action needed on part of Government to ensure environmental viability.
viii)	O&M facilitation (availability of recurrent funding, foreign exchange, spare parts, workshop facilities etc.)	3	The availability of required equipment not always guaranteed.
<b>4</b>	<b>Economic Internal Rate of Return ***</b>	<b>3</b>	The EIRR is acceptable.
	<b>Overall Assessment of Outcome</b>	<b>2.68</b>	<b>Satisfactory</b>

**RETROSPECTIVE LOGICAL FRAMEWORK MATRIX**

Project : **Rural Roads II**  
 Completion Date : **March 1993**  
 PCR Date : **December 1994**  
 Date of Evaluation : **December 1998**  
 Post-Evaluation Team : **W. Byaruhanga**

Hierarchy of Objectives	Objectively Verifiable Indicators		Means of Verification	Assumptions/Risks
	At Appraisal	At Evaluation		
<u>Sectoral Objectives</u>				
1. To improve and provide greater accessibility to remote rural populations centres and connect them to the national road network and economic centres.	1.1 Increase in total length of rural roads upgraded to bitumen standard. 1.2 Increased in traffic flow; growth in number of motorized transport on rural roads. 1.3 Reduction in journey times. 1.4 Opening up of new marketing/shopping centres.	Increase in upgraded road network. Overall growth in traffic. Increased mining revenues. Increased agricultural and livestock production.	1.1 Annual construction statistics from the Roads Department. 1.2 Traffic Statistics. 1.3 `Annual accounts from the Roads Department. 1.4 Agricultural statistics	Adequate maintenance of roads through sustained budgetary provisions and availability of maintenance capacity and capability.
<u>Project Objectives</u>				
1. To provide all weather road links between rural areas in Southern, Eastern and Ngamiland districts and connecting them to the national road network. 2. To promote agricultural and livestock development.	1.1 Traffic growth. 1.2 Increase in road length.	Reduced VOCs upon opening the roads to traffic in March 1993.	1.2 1.1 Re-calculated ERR is 12.1%. 1.3 Traffic count: average daily traffic in 1994 above appraisal predictions.	Effective application of necessary institutional reforms Traffic predictions will materialise. Sustained budgetary allocations are available. Maintenance capability and qualified personnel are available.

<p><u>Outputs</u></p> <p>A two-lane, bitumen surfaced roads (368 km) between:</p> <p>i) Makopong-Sekoma (163km)</p> <p>ii) Kalakamate-Sebina (30km)</p> <p>iii) Maun-Toteng-Sehitwa (100km)</p> <p>iv) Gumare-Etsha-Sepopa (75km).</p>	<p>Four rural roads (368km) completed to bitumen standard by December 1992</p>	<p>Four bitumen surfaced rural roads (366km) including village access roads constructed.</p>	<p>Progress reports. Project supervision reports. Project completion reports. Maintenance certificates issued in March 1993 and roads handed over to Maintenance Branch.</p>	<p>Government allocates sufficient funds for road maintenance. Completion of roads within budget.</p>																																																																		
<p><u>Activities</u></p> <p>i) Procurement of road construction equipment</p> <p>ii) Actual construction of four project roads by Direct Labour Units.</p>	<p>Inputs/Resources:</p> <p><u>Appraisal Cost Estimate (UA million)</u></p> <table border="1"> <thead> <tr> <th><u>Component</u></th> <th><u>FE</u></th> <th><u>LC</u></th> <th><u>Total</u></th> </tr> </thead> <tbody> <tr> <td>Total cost</td> <td>17.45</td> <td>6.66</td> <td>24.11</td> </tr> </tbody> </table> <p><u>Appraisal Financing Plan</u></p> <table border="1"> <thead> <tr> <th><u>Source</u></th> <th><u>FE</u></th> <th><u>LC</u></th> <th><u>Total</u></th> <th><u>%</u></th> </tr> </thead> <tbody> <tr> <td>ADB</td> <td>10.65</td> <td>----</td> <td>10.65</td> <td>44.17</td> </tr> <tr> <td>ADF</td> <td>6.80</td> <td>----</td> <td>6.80</td> <td>28.20</td> </tr> <tr> <td>GOB</td> <td>-----</td> <td><u>6.66</u></td> <td><u>6.66</u></td> <td><u>27.63</u></td> </tr> <tr> <td>Total</td> <td>17.45</td> <td>6.66</td> <td>24.11</td> <td>100.00</td> </tr> </tbody> </table>	<u>Component</u>	<u>FE</u>	<u>LC</u>	<u>Total</u>	Total cost	17.45	6.66	24.11	<u>Source</u>	<u>FE</u>	<u>LC</u>	<u>Total</u>	<u>%</u>	ADB	10.65	----	10.65	44.17	ADF	6.80	----	6.80	28.20	GOB	-----	<u>6.66</u>	<u>6.66</u>	<u>27.63</u>	Total	17.45	6.66	24.11	100.00	<p><u>Actual Project Costs</u></p> <table border="1"> <thead> <tr> <th><u>Component</u></th> <th><u>FE</u></th> <th><u>LC</u></th> <th><u>Total</u></th> </tr> </thead> <tbody> <tr> <td>Total cost</td> <td>17.39</td> <td>8.91</td> <td>26.30</td> </tr> </tbody> </table> <p><u>Actual Financing Plan</u></p> <table border="1"> <thead> <tr> <th><u>Source</u></th> <th><u>FE</u></th> <th><u>LC</u></th> <th><u>Total</u></th> <th><u>%</u></th> </tr> </thead> <tbody> <tr> <td>ADB</td> <td>10.65</td> <td>----</td> <td>10.65</td> <td>40.49</td> </tr> <tr> <td>ADF</td> <td>6.74</td> <td>----</td> <td>6.74</td> <td>25.63</td> </tr> <tr> <td>GOB</td> <td>-----</td> <td><u>8.91</u></td> <td><u>8.91</u></td> <td><u>33.88</u></td> </tr> <tr> <td>Total</td> <td>17.39</td> <td>8.91</td> <td>26.30</td> <td>100.00</td> </tr> </tbody> </table>	<u>Component</u>	<u>FE</u>	<u>LC</u>	<u>Total</u>	Total cost	17.39	8.91	26.30	<u>Source</u>	<u>FE</u>	<u>LC</u>	<u>Total</u>	<u>%</u>	ADB	10.65	----	10.65	40.49	ADF	6.74	----	6.74	25.63	GOB	-----	<u>8.91</u>	<u>8.91</u>	<u>33.88</u>	Total	17.39	8.91	26.30	100.00	<p>Monthly progress reports. Audit reports. Disbursement statements. Detailed final accounts.</p>	<p>Availability of counterpart funds Compliance with performance deadlines</p>
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**NATIONAL ROAD NETWORK**  
**(KMS)**

<b>YEAR</b>	<b>BITUMEN</b>	<b>GRAVEL</b>	<b>EARTH/SAND</b>	<b>TOTAL</b>
1980	1,121	1,627	5,278	8,026
1981	1,209	1,698	5,119	8,026
1982	1,495	1,529	5,002	8,026
1983	1,723	1,349	4,954	8,026
1984	1,848	1,285	4,893	8,026
1985	1,885	1,266	4,875	8,026
1986	2,039	1,024	4,973	8,036
1987	2,156	940	5,010	8,106
1988	2,320	932	4,734	7,986
1989	2,483	932	4,631	8,046
1990	2,565	932	4,589	8,086
1991	2,831	932	4,371	8,134
1992	3,663	2,950	2,148	8,761
1993	3,874	2,739	2,148	8,761
1994	4,177	2,632	1,957	8,766
1995	4,761	2,087	1,957	8,805

**Source:** Roads Department.

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**Road Transport: Revenue and Expenditure**  
**(BP'000)**

REVENUE				ROAD EXPENDITURE				
YEAR	VEHICLE & DRIVER LICENSES	ROAD TRANSPORT PERMITS	FUEL TAXES (PETROL & DIESEL)	TOTAL REVENUE	MAINTENANCE	CONSTRUCTION	TOTAL EXPENDITURE	REVENUE AS % OF EXPENDITURE
1980/81	1,319	124	.....	1,443	1,226	15,200	16,426	8.8
1981/82	1,337	125	.....	1,462	2,976	20,102	23,078	6.3
1982/83	1,324	203	.....	1,527	6,313	32,000	38,313	4.0
1983/84	1,384	179	4,176	5,739	8,560	19,130	27,690	20.7
1984/85	1,550	196	1,974	3,719	6,869	16,360	23,229	16.0
1985/86	2,016	278	2,413	4,707	9,883	26,210	36,093	13.0
1986/87	2,315	374	9,798	12,486	25,869	20,400	46,269	27.0
1987/88	2,674	777	14,155	17,606	23,762	17,913	41,675	42.2
1988/89	2,977	458	11,837	15,272	28,583	32,965	61,548	24.8
1989/90	2,921	425	14,810	18,156	37,241	64,370	101,611	17.9
1990/91	4,026	309	20,285	24,620	45,101	104,620	149,721	16.4
1991/92	2,250	1,300	22,078	25,628	47,500	150,117	197,617	13.0
1992/93	4,700	2,044	-----	-----	47,538	133,704	181,242	-----
1993/94	4,543	2,176	31,244	37,963	42,372	122,148	164,520	23.1
1994/95	-----	-----	-----	-----	48,462	-----	-----	-----
1995/96					57,000			
1996/97					57,000			
1997/98					57,000			

**Source:** Roads Department.

**Notes:** Maintenance expenditure includes utilization of plants, labour and material in support of road maintenance.

----- Not available, .... Zero

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**Transport Projects Financed by the Bank Group in Botswana**  
**(Amount in UA Million)**

NAME OF PROJECT	SOURCE OF FINANCE	LOAN AMOUNT	DATE OF APPROVAL	STATUS AND DATE OF COMPLETION
<b><u>Completed Projects</u></b>				
1. Lobatse-Kanye Road	ADF	5.00	1975	1979
2. Selebe Airport Study	ADB	0.65	1978	1979
3. Gaborone International Airport	ADB	8.00	1979	1986
4. Nata-Maun Road Study	ADF	1.38	1985	1989
5. Feasibility Study - Nata Maun	ADF	---		
6. Rural Road I	ADB	15.00	1983	1990
7. Serowe-Orapa	ADB	22.74	1984	1991
8. Rural Road II	ADB ADF	10.65 7.40	1988	1993
9. Nata-Maun Road	ADB	7.77	1989	1994
10. Road Maintenance Study	ADF (TAF)	1.15	1990	1994
11. Trans-Kgalagadi Road	ADB ADF	18.50 10.59	1991 1991	1998
<b>TOTAL:</b>	<b>ADB ADF</b>	<b>83.31 25.52</b>		

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**REVISED TRAFFIC FORECAST**

Year	Sekoma – Makopong Road (160.4km)	Kalakamate – Sebina Road (32.1km)	Maun – Toteng – Sehitwa Road (98km)	Gumare – Etsha – Sepopa Road (76km)
1990	-	102	-	-
1991	-	113	-	-
1992	49	125	-	-
1993	98	139	-	56
1994	90	155	158	62
1995	77	172	174	69
1996	107	191	256	75
1997	101	212	215	82
1998	111	236	236	91
1999	122	252	260	100
2000	134	270	286	110
2001	144	289	314	121
2002	154	309	346	133
2003	165	331	370	142
2004	176	354	396	152
2005	188	379	424	163
2006	201	405	454	174
2007	215	434	485	187
2008	230	464	519	199

Source: Roads Department and ADB mission

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**Traffic Composition (% - age)**

Road	Cars & Pickups	Light Goods Vehicle	Medium Goods Vehicle	Heavy Goods Vehicle	Buses
Sekoma – Makopong Road	23	65	8	2	2
Kalakamate – Sebina Road	65	15	2	2	16
Maun – Toteng – Sehitwa Road	23	65	8	2	2
Gumare – Etsha – Sepopa	23	65	8	2	2

**Traffic growth rate:** The actual traffic growth rate on all the roads (and Botswana as a whole) was above 10%. Traffic has been projected to grow at 10% up to year 2000; and 7% up to the end of the 15-year life of the roads. This latter growth is line with current overall national growth rate in Botswana and is sustainable.

**Vehicle Operating costs:** As in the PCR (Annex 6).

**Construction Completion Dates:**

Road	Appraisal	Actual
Sekoma – Makopong Road (160.4km)	May 89 → December 92 (44 months)	June 87 → November 91 (53 Months)
Kalakamate – Sebina Road (32.1km)	March 88 → February 89 (12 Months)	May 88 → March 89 (11Months)
Maun – Toteng – Sehitwa (98km)	January 88 → October 92 (46 Months)	April 89 → March 93 (48 Months)
Gumare – Etsha – Sepopa (76km)	May 89 → August 92 (40 Months)	February 90 → September 92 (32 Months)

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**Vehicle Operating Cost Savings**  
**(BP '000)**

Year	Sekoma – Makopong Road (160.4km)	Kalakamate – Sebina Road (32.1km)	Maun – Toteng – Sehitwa Road (98km)	Gumare – Etsha – Sepopa Road 76km	Total
1990	-	185	-	-	185
1991	-	205	-	-	205
1992	1649	228	-	-	1877
1993	3998	252	-	576	4826
1994	3030	281	3249	634	7194
1995	2591	312	3577	705	7185
1996	3600	345	5263	769	9977
1997	3400	283	4421	837	8941
1998	3737	427	4853	929	9946
1999	4106	456	5345	1021	10928
2000	4510	489	5880	1124	12003
2001	4846	523	6456	1236	13061
2002	5181	560	7114	1358	14213
2003	5553	599	7608	1450	15210
2004	5924	641	8142	1556	16263
2005	6327	-	8718	1665	16710
2006	6764	-	9335	1778	17877
2007	-	-	9972	1912	11884
2008	-	-	10673	-	10673

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**STREAMS OF COSTS AND BENEFITS**  
**(BP '000)**

Year	Investment Costs	Benefits			Net Benefits
		Maintenance Cost Savings	VOC Savings	Total	
1987	820		-	-	-820
1988	4170		-	-	-4170
1989	1080		-	-	-1080
1990	23350	15	185	200	-23150
1991	19230	15	205	220	-19010
1992	12450	81	1877	1958	-10492
1993	2870	218	4826	5044	2174
1994		193	7194	7387	7387
1995		-164	7185	7021	7021
1996		193	9977	10170	10170
1997		161	8941	9102	9102
1998		-72	9946	9874	9874
1999		-1756	10928	9172	9172
2000		193	12003	12196	12196
2001		-582	13061	12479	12479
2002		-793	14213	13420	13420
2003		-164	15210	15046	15046
2004		193	16263	16456	16456
2005		107	16710	16817	16817
2006		193	17877	18070	18070
2007		-18	11884	11866	11866
2008	(15992)	193	10673	10866	10866

The rate of return is 12.1%