Kingdom of Swaziland

# Ex-Post Evaluation of Japanese ODA Loan Project "Northern Main Road Construction Project"



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#### 1.1 Background

The total length of Swaziland' s national road at the time of appraisal (2001) was 2,882 km, which consisted of 1,399 km of Main Road (MR) and 1,483km of District Road (DR). Main road's pavement ratio was 27%, while gravel and earth roads were 59% and 14%, respectively. Although Swaziland's arterial route, which traverses from the border with South Africa to Mozambique via the capital city (Mbabane), industrial center Manzini, and the central region of the country, had been paved, pavement of roads in the country's rural area, such as northern and southern parts of the country, was still undergoing. In addition, efficient road network was considered essential from the perspective of collaboration and partnership under the Southern Africa's regional alliance called Southern African Development Community (SADC), as well as to promote a well-balanced regional development in a medium to long-term basis.

For a small country like Swaziland, the development of its economy, improvement of its domestic employment, and alleviation of poverty were limited through domestic demand expansion. It needs to improve its access with neighboring countries and enhance trade. Improvement of undeveloped arterial roads in the Swaziland's northern area was particularly needed in order to improve access with the Maputo Corridor (a road connecting Pretoria, the capital of South Africa with Maputo, the capital of Mozambique), which is the most important corridor in the neighboring regions. A high priority was given to the road development, especially with the purpose of transporting sugar and citrus in the northern area and wood pulp

in the southwestern area.

# **1.2 Project Outline**

The objective of this project is to promote trade mainly of agricultural products with peripheral countries by paving roads and replacing bridges for MR5 (Mliba – Tshaneni) and MR6 (Madlangampisi – Msahweni) among arterial roads in the Swaziland's northern region, thereby contributing to the economic development in Swaziland's northern districts.

The location of the project site is shown in Figure 1.



Figure 1 Location of Project Site

Approved Amount / Disbursed Amount	4,412 million yen / 4,412 million yen	
Exchange of Notes Date / Loan	January 2001 / January 2001	
Agreement Signing Date		
Terms and Conditions	Interest Rate: 2.2%; Repayment Period: 30 years (Grace	
	Period: 10 years) ; Conditions for Procurement: General	
	Untied	
	Consultant:	
	Interest Rate: 0.75%; Repayment Period: 40 years	
	(Grace Period: 10 years); Conditions for Procurement:	
	Bilateral tied	
Borrower / Executing Agency	The Government of the Kingdom of Swaziland / Road	
	Department, Ministry of Public Works and Transport	
Final Disbursement Date	May, 2007	
Main Contractor	Grinaker-LTA (South Africa) • CCIC (Lebanon)	
(Over 1 billion yen)		
Main Consultant	Nippon Koei (Japan) • ED Simelane & Associate	
(Over 100 million yen)	(Swaziland) • STCS (Swaziland)	
Feasibility Study, etc.	F/S by Ministry of Public Works and Transport	
	(MOPWT)	
	F/S for MR5 (Mliba - Tshaneni) (55km) was done in	
	April 1996, F/S for MR6 (Madlangampisi - Msahweni)	
	(48km) was done in February 1997	

# 2. Outline of the Evaluation Study

# **2.1 External Evaluator**

Yasuhiro Kawabata, Sanshu Engineering Consultant

# 2.2 Duration of Evaluation Study

The subject ex-post evaluation assignment was implemented as follows:Duration of the Study:January 2010 to November 2010

Duration of the Field Study: February 28th to March 8th, 2010 and May 23rd to 29th, 2010

# 3. Results of the Evaluation (Overall Rating: B)

## 3.1 Relevance (Rating: a)

3.1.1 Relevance with the Development Plan

Swaziland's National Development Plan (1999/00-2001/02) emphasizes: 1) improvement of arterial roads, and 2) upgrading of irrigation facilities for agricultural development, with improvement of access with the Maputo Corridor as its urgent and top priority. In addition, the Road Sector Development Program formulated in October 1998 aimed at: 1) paving all roads with traffic volume of more than 200 vehicles per day by 2010, and 2) reducing transport costs

and promoting trade with neighboring countries by constructing an arterial road network with sufficient highway capacity in order to link major cities and towns with high population and core economic activities.

The current Swaziland National Development Plan (1999/00-2001/02) is still valid, and upgrading of arterial roads remains its priority. MOPWT's current basic principle is to provide, maintain, and improve a safe, reliable and environmentally sustainable road network that will stimulate socio-economic development, create jobs, and reduce road user costs.

Development of an arterial road network was/is one of the National Development Plan's top priority both at the time of appraisal and post evaluation, and this project is consistent with MOPWT's development plan for the project area.

# 3.1.2 Relevance with the Development Needs

At the time of appraisal (2001), roads were mostly unpaved in the country's northern districts, where major exporting products (i.e., sugar and citrus) were produced. This created obstacles in trade promotion and economic development. Development/upgrading of arterial roads were also a major issue in enhancing accessibility with the Maputo Corridor. The project contributed in promoting distribution of goods within the country and to neighboring countries and industrial development, as well as in the establishment of efficient transport network in the Southern Africa under the Maputo corridor comprehensive development initiatives. The project with the objective to enhance the road network in the northern Swaziland area was in accordance with Swaziland's development needs.

The objective of the project is to enhance the road network and accessibility to the Maputo Corridor by improving arterial roads (MR5 and MR6) in the northern districts. Thus, the project is in accordance with the current development needs at the time of post evaluation.

# 3.1.3 Relevance with Japan's ODA Policy

The Overseas Economic Cooperation Implementation Policy (December, 1999) emphasizes that assistance to development of fundamental infrastructure would contribute to poverty alleviation and adjustment of disparity, as a foundation for attaining stability of Africa. Thus, the project was consistent with the Japan's ODA policies at the appraisal.

This project has been highly relevant with the Swaziland's development plan and needs, as well as Japan's ODA policies, therefore its relevance is high.

## **3.2 Efficiency (Rating: c)**

## 3.2.1 Project Outputs

The project outputs (original and actual) are summarized in Table 1.

Item	Planned	Actual
①MR5:		almost as planned
Mliba - Tshaneni	<ul> <li>Total length: 55km</li> </ul>	<ul> <li>Total length: 54km</li> </ul>
	Asphalt pavement (thickness 50mm, two-	Asphalt pavement (thickness 40mm, two-
	lane highway with a 3.65m carriageway	lane highway with a 3.65m carriageway
	and a shoulder $(2m+0.85m)$	and a shoulder $(2m+0.85m)$
	<ul> <li>drainage ditch (excluding rocky areas)</li> </ul>	<ul> <li>drainage ditch (excluding rocky areas)</li> </ul>
2)MR6:		almost as planned
Madlangampisi -	<ul> <li>Total length: 48km</li> </ul>	<ul> <li>Total length: 48km</li> </ul>
Msahweni	Asphalt pavement (thickness 50mm, two-	Asphalt pavement (thickness 40mm, two-
	lane highway with a 3.65m carriageway	lane highway with a 3.65m carriageway
	and a shoulder $(2m + 0.85m)$	and a shoulder $(2m+0.85m)$
	<ul> <li>drainage ditch (excluding rocky areas)</li> </ul>	<ul> <li>drainage ditch (excluding rocky areas)</li> </ul>
	• 6 bridges (totaling about 250m)	• 4 bridges (totaling about 200m) 2 bridges
		were changed to box culverts (about 50m)

Table 1	Comparison	of project	outputs	(original/actual)
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Source: JICA Appraisal documents and Responses to the questionnaire

The major changes in the project output (construction work) were: 1) at the time of appraisal, the planned thickness of the pavement in the F/S was 50mm (SADC standard), however at the detailed design phase, after the design was re-examined, the thickness was changed to 40mm (standard pavement thickness for Swaziland arterial roads), 2) for MR6, the bridge structure was switched to culverts (2 locations) because the bedrock for bridge support was not found.

Six items were included in the consulting services: 1) to assist in procurement activities (review of detailed designs, preparation for tender documents, and bid evaluation); 2) to assist in project management (construction supervision); 3) to assist in coordination between MOPWT and JICA, and submit reports; 4) to assist the executing agency in capacity building (institutional strengthening); 5) to advise on bidding documents focusing on environmental aspects; and 6) to monitor the environmental impacts and provide advice on countermeasures during construction and installation work. All these items, except for item 4), were implemented almost as planned. The assistance of the executing agency in capacity building comprised: 1) assessment of practices for the Road Department; and 2) provision of recommendations and undertakings of training on six items regarding capacity building. Except for implementation of the training program, the capacity building subcomponent was completed as planned and the achievement made is summarized in a completion report/manual of March 2004. Staff were initially interested in the training programs (six items), but attendance to the training programs gradually decreased due to overloaded routine works, and most of the programs were not completed. Twenty persons were originally enrolled in the spreadsheet preparation course, but

by the second week the attendance became zero. One staff member was enrolled at the start of the road management system course; however the student had to drop out to attend a university. Without any substitute participants, the course had to be terminated.

The original plan for consulting services input were 102M/M by foreign experts and 150M/M by local experts for construction supervision, and 48M/M by foreign experts for other technical assistance. However, the actual input were 114M/M by foreign experts and 180M/M by local experts for construction supervision, and 48M/M by a foreign expert for other technical assistance.



MR5/MR6 branching point (Madlangampisi) Before the project



MR5/MR6 branching point (Madlangampisi) After the project

## 3.2.2 Project Inputs

# 3.2.2.1 Project Period

The project period was significantly longer than planned. The planned project period was from January 2001 (Loan Agreement signing) to April 2005 (civil work completion) with a total period of 52 months. The actual project period was from January 2001 (Loan Agreement signing) to October 2007 (civil work completion) with a total period of 82 months, or equivalent to 158% of the planned period.

The main reasons for the delay were: 1) selection of a consultant took longer than expected; 2) preparation of civil works bidding documents (including detailed designs) was delayed by 14 months because the MOPWT staff was unfamiliar with preparation of international competitive bidding documents, 3) selection of contractors was greatly delayed from 12 months to 24 months mainly because the bidding price for construction works substantially exceeded its planned price. As a result, JICA held its concurrence to the bid evaluation results until Swaziland government confirmed that



MR5 Mliba Area Starting point of the project

it would locally fund the cost overrun portion. Though the land acquisition (resettlement compensation) in some sections (additional construction work of 3 access roads along MR6) required some time for negotiation, it did not affect the construction work overall schedule.

## 3.2.2.2 Project Cost

The total project cost estimated at appraisal was 5,882 million yen (of which the Japanese ODA loan amount was 4,412 million yen and the rest was to be locally funded). The actual total project cost was 10,660 million yen (of which the Japanese ODA loan amount was 4,412 million yen and the rest was locally funded), which was significantly higher than planned, or equivalent to 181% of the planned project cost. The main reasons for cost increase were:

1) exchange rate rose by 9% toward yen appreciation;

- 2) price escalation of material, machine, labor costs, and fuel price. The contract stipulated that contract price would be increased by multiplying the price escalation of commodity to the price as of March 2003 (baseline). The price escalation rate from September 2004 to May 2007 was 6.24% 22.7% with a high average rate of approximately 20%;
- 3) the project description in the appraisal documents is a simple improvement and pavement work of the existing roads. However, almost new roads (including additional land acquisition) had to be constructed, resulting in substantial increase in construction volume. In addition, the earth volume in the mountainous area had increased due to inaccuracy of the topographic maps used in the Feasibility Study (1997-1998). These maps, with a scale of 1/5,000, were prepared based on aerial photos taken in 1976 and the detailed designs conducted during January November 2002 were also based on these same topographic maps. The design speed applied for both roads to be improved was 100 km/hour and the planned route was off the existing route, particularly in the mountainous area. The less-accurate topographic maps could be a major factor for changes in construction work volume; and
- as a part of compensation for land acquisition and resettlement, three additional access roads (with a total length of approximately 2km) were constructed along MR6 for local residents and public facilities.



MR6 Access road (additional work)



MR6 Route changed section

Both project period and project cost significantly exceeded the plan, therefore efficiency of the project is low.

## 3.3 Effectiveness (Rating: a)

3.3.1 Quantitative Impacts

3.3.1.1 Results from Operation and Effect Indicators

(1) Average Daily Traffic

Table 2 shows the project section's average daily traffic.

				(Unit: vehicle/day)	
Year	2000	2002	2000 ase year 2002	2004	2009
Road	Base year			2004	(2 yrs after completion)
MR5	763	888		2,057	
				(1,300)	
MR6	459		582	1,366	

Table 2 Average Daily Traffic

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Source: Documents provided by Ministry of Public Works and Transport (MOPWT)

Note 1: A counting station for MR5 is near Sihoye, and that for MR6 is almost the halfway point of the subject project road section

Note 2: Traffic counting was not implemented during the construction work period(2004 – 2007)

Note 3: Figures in ( ) are the estimated traffic volumes taken from F/S (August, 1998) Table 3.3.4-2

The subject roads, MR5 and MR6, are both arterial roads located in the north of the country connecting with the Maputo Corridor. Increase of traffic volume on both roads is an indicator to measure status of trade promotion with SADC (Southern African Development Community). Compared to the traffic volume in the base year (2000), the average daily traffic of the MR5 and MR6 after project completion in 2009 has increased by approximately 2.7 and 3 times, respectively. The growth rate of registered vehicle during the same period (2000-2009) was 6 percent per annum and registered vehicles increased by 1.7 times during the same period. The number of registered vehicles as of 2009 was approximately 153,000 (including 4,700 motorcycles). Based on the above figures, the effectiveness is considered high. The main reason for increase of traffic volume could be that the travel time was substantially shortened (approximately by half) since the existing earth road was paved.

# (2) Travel Time

Table 3 shows the changes in project section's travel time.

# Table 3 Travel Time

		(Unit: minutes)
	2000	2009
	Base year	(2 yrs after completion)
MR5	73	33
MR6	64	29

Note 1: MR5: Average running speed (passenger vehicle) between Mliba and Tshaneni (55km) before the project was assumed at 45 km/hour, while after the project assumed at 100 km/hour.

Upon completion of the project, the travel time on both roads (traveling the entire stretch) was reduced by about half.

(3) Traffic Accidents (number of cases)

Table 4 shows changes of traffic accidents in the project road sections.

				(Unit: r	number of ac	cidents)
Year	Route	Fatal	Serious	Minor	Damage	Total
	MR5	5	22	14	31	71
2001	MR6	1	8	9	19	16
	Total	6	30	23	50	87
	MR5	6	14	10	41	71
2002	MR6	2	12	9	31	54
	Total	8	26	19	72	125
	MR5	4	11	13	31	59
2003	MR6	3	6	5	14	28
	Total	7	17	18	45	87
	MR5	1	12	8	34	57
2004	MR6	2	5	8	11	26
	Total	3	17	16	45	83
	MR5	3	24	22	26	75
2005	MR6	0	8	5	9	22
	Total	3	32	27	35	97
	MR5	9	17	19	45	90
2006	MR6	1	2	11	10	23
	Total	10	19	30	55	113
	MR5	6	16	10	46	78
2007	MR6	5	11	6	23	45
	Total	11	27	16	69	123
	MR5	6	16	26	34	82
2008	MR6	3	8	10	37	58
	Total	9	24	36	71	140
	MR5	7	17	31	61	116
2009	MR6	4	8	14	33	59
	Total	11	25	45	94	175

Table 4 Traffic Accidents

Source: Commissioner of Police

Note 2: MR6: Same assumption used for MR5 used for the section between Madlangampisi and Msahweni (48km).

The number of traffic accidents has almost doubled from before the project (2004) to 2 years after the project completion (2009). However, there is no significant change in traffic accident ratio since the traffic volume (MR6) has also doubled during the same period. The increase in fatal accidents and the total number of accidents are becoming the subject of discussion within the police authority and actions are being taken to tackle these issues. The two major factors in traffic accidents are excessive speed and drunk driving. The police authority and the road department are enhancing its patrol and installing road speed humps near the neighborhoods.

#### 3.3.1.2 Results of Calculations of Internal Rates of Return (IRR)

## Economic Internal Rate of Return (EIRR):

Economic Internal Rate of Return (EIRR) at post evaluation was calculated assuming that construction costs, maintenance costs, and reinvestment capital costs are considered "cost" and savings of vehicle operating costs, travel time savings, and reduction of maintenance costs are considered "benefit", and that the project life is twenty years. It was estimated at 15.5%, which is slightly lower than the EIRR (16.6%) at appraisal. The traffic volume exceeded the projected estimates (in the case of MR5, the estimate was 1,300 vehicles/day in 2009 and actual was approximately 2,000 vehicles/day), while the project cost had significantly increased (181% of the planned). Thus, EIRR at post evaluation is slightly lower than at appraisal (see Table 5).

	, ,
	EIRR
At appraisal	16.6%
At post evaluation	15.5%
DCD	

Table 5 Economic Internal Rate of Return (EIRR)

Source: PCR

# 3.3.2 Qualitative Effects

Beneficiary surveys were conducted, through interviews, in 7 villages (4 along MR5, and 3 along MR6). The number of respondents was 166 persons and the classification of respondents by sex was 36% female and 64% male.

The major results of the beneficiary surveys are described as follows. With regards to promoting the smooth distribution of goods and enhancing transport capacity, 94% perceived that the travel time was shortened. Amongst these, 44% said the reduced travel time was 25 minutes on average, while 32% said 30 minutes or more, and only 15% said 15 minutes. In addition, some respondents appreciated the increased frequency of the mini-bus operation on the project roads because it improved the lives of the local residents upon completion of the project. Moreover, 67% stated that the project (road improvement) contributed to the improvement of accessibility to the major cities (Manzini and Piggs Peak) for marketing agricultural products.

Regarding alleviation of traffic congestion, 86% of respondents identified alleviation of traffic congestion in the market, social services, and hospital at 81%, 80% and 78%, respectively. In addition, 75% stated that the project contributed to reduction of traffic accidents.

Through improvement of the existing road from earth road to paved road, the travel time was significantly shortened. It was also noted that distribution of goods and transport capacity have improved. It was confirmed, through the beneficial survey interviews, that the public transport system along the corridor, as well as the accessibility to public services such as hospitals has improved.

This project has largely achieved its objectives, therefore its effectiveness is high.

# 3.4 Impact

3.4.1 Intended Impacts on Economy

The Swaziland's population was 1,185,000 as of 2008, while the population along the MR5 and MR6 corridor was approximately 127,000 (as of 2007), which is about 10% of the nation's population.

In Swaziland, diversification of the manufacturing industry had been promoted since mid 1980s, however at present sugar and citrus are still the major exporting items to acquire foreign currency. The major market for sugar is South Africa. The secular change on sugar export is shown in Table 6.

Year	To Southern Afri	All export	
	Development Co		
	ton	ton	
2005/2006	316,455	49.7	636,667
2006/2007	318,202	49.9	638,037
2007/2008	307,232	49.0	626,739
2008/2009	319,716	51.7	618,290
2009/2010	325,000	51.7	628,577

Table 6 Sugar Export Amount

Source: Swaziland Sugar Association Website Documents

Since 2007, the gross product has been slightly decreasing, with less exporting amount to South Africa as well. However, from 2008 and especially in 2009 the exporting amount has been increasing with the share of more than 50% to South Africa. The export amount of citrus is shown in Table 7.

Year	Export Amount (ton)
2005	23,900
2006	21,300
2007	33,700
2008	30,000
2009	39,500

Table 7 Citrus Export Amount

Source: Swaziland Citrus Administrative Board

The export amount is greatly influenced by the market price/socio-economic conditions of importing countries. However, the export amount after the project completion has been increasing. According to the Director of the Administrative Board, before the project, products were transported to both Mozambique's Maputo port and South Africa's Durban port for export. However, after the project completion, products were transported to the northern Maputo port via MR5 because of substantial reduction in travel time. He concluded that the project has positively contributed to the country's economy. Major destinations for export are Europe, Russia, and Middle East countries.

The above results indicate that the improved roads (MR5 and MR6) have contributed to enhancement of goods distribution and transport capacity, as well as to the country's economic development (especially in the northern area). In addition, 55% of the beneficiary survey respondents acknowledged that the project contributed to the stimulation of regional economic activities and 70% reflected that the project contributed to the enhancement of business opportunities. Among the respondents who live along the project's corridor, 54% (89 persons) indicated that upon completion of the project their household income has increased. Among these, 27% (24 persons) and 24% (21 persons) stated that their income increased by 50% and 10%, respectively.

## 3.4.2 Other Impacts

(1) Impacts on the surrounding environment

There are settlements scattered along the MR5 and MR6 corridor caused by the low traffic volume and low traffic noise during day time. However, since the existing houses are simple frame houses, some people expressed that traffic noise during nighttime has been causing problems. The speed humps constructed on roads around schools and settlement zones have forced the driving speed to slow down. Since the shoulder of the road is surfaced, it has been effectively used as a commuting road to school by children.

## (2) Land acquisition and Resettlement

The number of affected people due to the subject project was 861. Since the land of the project site is basically state-owned, only compensation for resettlement was paid. Nine

households with 30 persons were originally planned to be resettled, however, 25 households with 150 persons were actually resettled. For each resettled resident, alternate land was provided within the same settlement, and enough compensation was paid to build a new house. The total cost for land acquisition and resettlement was 30 million emalangeni (477 million Japanese yen). In addition, for the regions where access from settlements was deteriorated by construction of the road project, access roads were newly constructed (3 locations along MR6 with a total length of approximately 2km) as a part of the resettlement compensation.

## 3.5 Sustainability (Rating: a)

3.5.1 Structural Aspects of Operation and Maintenance

At the time of the ex-post evaluation, the Road Department of the Ministry of Public Works and Transport (MOPWT) was in charge of planning, design, construction, and operation and maintenance of roads as it was at appraisal. The Road Department is staffed with engineers and management staff at its Mbabane Headquarters. It allocated staff to regional offices and road depots to be in charge of maintenance and repair throughout the country. Among the business undertaken by the Road Department is maintenance, which it carried out directly. Routine maintenance of arterial and district roads is conducted by workers under the Road Department, while periodic maintenance is often entrusted to private firms.



MR5 Road Depot near Sihoye



MR6 Settlement near Madlangampisi

The routine maintenance work of project roads (garbage collection, drainage cleanup, patrol, etc.) is implemented by section on a daily basis. The routine maintenance work for MR5 is undertaken by Tshaneni depot of the Maintenance Division under a manager with 1 supervisor, 2 machine operators, and 8 workers. The MR6, Ndzngeni depot of Maintenance Division under a manager, has 1 supervisor, 2 machine operators, and 8 workers. Periodic maintenance (repair of drainage, guardrails, fences, etc.) is entrusted to a private contractor, who is selected through bidding. Taking into account the current traffic volume (about 2,000 and 1,400 vehicles/day on

MR 5 and MR6, respectively), the current organizational setup and staff assignment are considered appropriate.

#### 3.5.2 Technical Aspects of Operation and Maintenance

A depot manager must be a vocational school graduate technician; however other staff members and workers are not required to have any qualification. No manuals were prepared for routine maintenance work. In order to enhance the capacity of the staff, training on relevant subject needs to be taken, and manuals on the road maintenance work need to be prepared. Both depots are equipped with 1 grader, 1 bulldozer, and 2-3 trucks, which are considered insufficient in terms of type and number of equipment. Further improvement on maintenance equipment is necessary.

## 3.5.3 Financial Aspects of Operation and Maintenance

The annual budget expenditure of MOPWT and the Road Department for the past 3 years is shown in Table 8.

	(Ui	nit: million (	emalangeni)
	2007	2008	2009
Ministry of Public Works and Transport (MOPWT)	296	312	348
Road Department (DR)	169	183	215
Share of DR to MOPWT (%)	57	59	62
Road Department's operation and maintenance budget	92	97	118
Share of operation and maintenance within Department (%)	54	53	55

#### Table 8 Financial status

Source: Responses to the questionnaire

Note 1: Fiscal year from April 1 to March 31

Note 2: FY2009 is estimated.

The share of operation and maintenance budget against the total Department budget is more than 50 percent, which is significantly higher compared to that of other countries. The reason is that Swaziland has almost completed its upgrading/improvement work of arterial roads (32 routes with a total length 1,400 km). As a result there is no major new construction/improvement work that has been implemented. Currently, the widening and upgrading of MR1 is planned. Should this work be implemented, a reduction in the budget for operation and maintenance work could be made.

Construction work for MR5 and MR6 was completed in October 2007. There was no operation and maintenance budget allocated in 2008 for both roads. Instead, a budget of 300,000 emalangeni (about 3.5 million Japanese yen) was allocated in 2009 for periodic maintenance, and additional works of culverts and drainage ditches were implemented as an erosion control

work. In 2010, three years after the project completion, a budget of 741,600 emalangeni (about 8.7 million Japanese yen) was allocated for regular operation and maintenance. The budget will be used for weeding on the shoulder, cleanup of drainage, and repair of traffic signs. However, the maintenance budget is considered insufficient, therefore further allocation is required.

## 3.5.4 Current Status of Operation and Maintenance

Swaziland's total road length as of 2006 is 3,102km, of which 1,141km (36%) has been paved, and the rest is unpaved. As of 2003, surface of paved road sections was maintained to meet national standards. However, the road sections, not complying with the national standards, have been increasing yearly; 80km in 2005, 117km in 2006, and 145km in 2007. At the time of field inspection, it was observed that the subject project roads of 98km (MR5 and MR6) seemed to be well maintained without any cracks or potholes.

Even though it is noted that the budget for maintenance is not necessarily sufficient, the road surface of both roads is well maintained. No major problems have been observed in the operation and maintenance system, therefore sustainability of the project is considered high.

## 4. Conclusion, Lessons Learned and Recommendations

## **4.1 Conclusion**

This project has been highly relevant to Swaziland's development plan and needs, as well as Japan's ODA policies, and therefore its relevance is high. Both project period and cost have significantly exceeded the plan, therefore efficiency of the project is low. This project has largely achieved its objectives, therefore its effectiveness is high. In addition, no major problems have been observed in the operation and maintenance system, therefore sustainability of the project is considered high.

In light of the above, this project is evaluated to be satisfactory (B).

## 4.2 Recommendation

4.2.1 Recommendations to the Executing Agency

The rating on project's efficiency is rated "c", since the project cost was 181% and the project period was 158% against the plan, respectively. The substantial increase in the project cost was due to the actual construction volume which was much higher than estimated. It is considered that the inaccuracy of the topographic maps, which were the basis for the detailed designs, was the contributing factor. For future similar projects, before starting the detail designs, the center line of the proposed alignment should have been marked on the ground, and detailed supplemental topographic surveys should have been carried out along the alignment,

particularly in the sections where construction volume would greatly affect the project cost and implementation.

# 4.2.2 Capacity Building

The capacity building (institutional strengthening) of the executing agency was one of the project components, and the training program by foreign experts was included in the project. However, majority of the programs were not implemented due to the burden on the staff to perform daily work. Proposals for implementing the training program more effectively should be reviewed in detail at the project preparation stage. It is recommended that for future similar projects, staff should undertake short/mid-term training programs being offered in South Africa and the budget for training be included in the project cost.

	Item	Original	Actual
1.	Project Outputs		
1)	MR5:		Mostly as planned
	Mliba - Tshaneni	• Total length 55km	• Total length 54km
		• Asphalt pavement (thickness50mm,	• Asphalt pavement (thickness40mm,
		two lanes each way 3.65m,	two lanes each way 3.65m, shoulder
		shoulder $(2m + 0.85m)$	(2m + 0.85m)
		• Culvert (exclude rock area)	• Culvert (exclude rock area)
2)	MR6:		Mostly as planned
_/	Madlangampisi -	• Total length 48km	• Total length 48km
	Msahweni	• Asphalt pavement (thickness	• Asphalt pavement (thickness 40mm,
		50mm, two lanes each way 3.65m,	two lanes each way 3.65m, shoulder
		shoulder $(2m + 0.85m)$	(2m + 0.85m)
		• Culvert (exclude rock area)	• Culvert (exclude rock area)
		• Bridge 6 (total approximately	• Bridge 4 (total approximately 200m),
		250m)	2 were changed to box culvert
			(approximately 50m)
2.	Project Period	January 2001- April 2005 (52 months)	January 2001- October 2007(82 months)
3.	Project Cost		
	Amount paid in	3,621 million yen	4,697 million yen
	Foreign currency		
	Amount paid in	2,261 million yen	5,963 million yen
	Local currency	(132 million emalangeni)	(374 million emalangeni)
	Total	5,882 million yen	10,660 million yen
	Japanese ODA	4,412 million yen	4,412 million yen
	loan portion		
	Exchange rate	1 emalangeni=17.09 yen	1 emalangeni=15.74 yen (civil work)
		(As of January 2000)	1 emalangeni=19.32 yen (consulting
			service)
			1 emalangeni=15.99 yen (other)
			(fixed rate determined in the contract
			with contractors)

Comparison of the Original and Actual Scope of the Project

# EX-POST EVALUATION OF JAPANESE ODA LOAN PROJECT: NORTHERN MAIN ROAD CONSTRUCTION PROJECT – SECOND OPINION

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The road construction project's objective embodies Swaziland's National Development Plan (NDP). Its ex-post evaluation by JICA enshrines the project's economic sustainability in line with NDP. The project met its objectives in terms of relevance (in line with NDP) and effectiveness in terms of speed, travel time and traffic volumes. The methodology and data utilised comprised Average Daily Traffic (ADT), Travel Time (TT), and the Internal Rate of Return (IRR) featuring the economic internal rate of return (EIRR). The qualitative procedures used comprised the beneficiary surveys using personal interviews. Though the sampling frames and size were not stated for the beneficiary surveys, the methods used for evaluation are standard and valid for such projects. The conclusion, lessons learned and recommendations made were thus informed and reached using valid methodology.

The project was driven by objectives in line with the NDP. It will contribute significantly to the local economy in terms of travel time and speed which will expedite ease of timeously reaching produce markets and inputs within Swaziland and beyond (through the N4; South Africa and Mozambique).