

Ex-Post Evaluation of Japanese Grant Aid Project
“The Project for Reconstruction of Athi Bridge and Ikutha Bridge”

External Evaluator: Nobuyuki Kobayashi, OPMAC Corporation

0. Summary

The replacement of Athi Bridge and Ikutha Bridge, carried out by this project, was consistent with the development strategy of Kenya with its emphasis on the maintenance of the existing road network. It was intended that the bridges improve access to Mombasa port, a major port in the East African region, from landlocked areas such as Ethiopia and the northern part of Kenya. As the project implementation was efficient, both project costs and the project period were within the original plan. The comparison of “before” and “after” project implementation showed a substantial increase in traffic volume, in particular those of “Medium Goods” and “Heavy Goods” trucks, and the maximum weight of vehicle also achieved its target. Local residents were fully aware of the improvement in transport and business conditions. In addition, in the agricultural sector, an improvement in the availability of agricultural inputs such as pesticides and fertilizers was found. No serious damage negatively affecting the project effects was observed as a result of the site survey. However, in the long run, the lack of fund remains a sustainability issue as the budget allocation to the implementing agency was insufficient. In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description



Project Location



Athi Bridge

1.1 Background

Kenya, located in eastern Africa, is approximately 1.5 times as large as Japan in terms of national territory. In 1999, a road network of 150,000 km was developed across the country. In the last half of the 1990's, road transport accounted for approximately 90 % of passenger travel and freight, playing a vital role in domestic logistics. Because of Kenya's Mombasa port, a prominent African port in terms of cargo handling, the road network in Kenya was logistically important not only for Kenya but for neighbouring countries as well. The B7 road, where this project was implemented, is one of the trunk roads connecting the northern part of Kenya to Mombasa port.

Road maintenance had not been properly implemented since the 1970's and for this reason road damage prevented the smooth flow of traffic. Although the deterioration of bridges was apparent, constraints in budgets and technological capability had hampered rehabilitation and

the replacement of long bridges. Considering the substantial need for the rehabilitation of bridges, Japan had supported the repair and replacement of bridges through the provision of grant aid and ODA loans (Yen loans). Between 1997 and 1998, weather conditions related to El Nino had caused extraordinary storms which damaged many bridges including the Athi Bridge replaced by this project. The storms caused considerable damage in the Rift Valley Province, the Coast Province, and the Eastern Province, where this project was implemented.

In order to cope with the deterioration of bridges and disaster recovery, the Kenyan government requested that the Japanese government assisted with major rehabilitation of bridges in the Eastern Provinces. Out of all the damaged bridges in the Eastern Province, the Athi Bridge and the Ikutha Bridge, both of which were on the B7 road, were selected to be replaced by this project.

1.2 Project Outline

The objective of this project is to ensure safe and efficient road traffic, by the reconstruction of two bridges (Athi Bridge and Ikutha Bridge) on the B7 road in the Eastern Province.

Grant Limit / Actual Grant Amount	1,092 million yen / 1,019 million yen
Exchange of Notes Date	January 2002 (Detailed Design) March 2003 (Civil Works)
Implementing Agency	Kenya National Highways Authority
Project Completion Date	August 2005
Main Contractor	Sumitomo Mitsui Construction Co., Ltd.
Main Consultants	Oriental Consultants Co., Ltd (Japan) • Japan Bridge and Structure Institute, Inc.(Japan) (JV)
Basic Design	September 2001
Related Projects	ODA loan “Tana Basin Road Development Project (I)/(II)”, ODA loan “ Kilifi Bridge Construction Project”, Grant aid “Project for the Maintenance of Roads”, Grant aid “Project for maintenance of Roads and Bridges”, Grant aid “Project for Reconstruction of the Sabaki Bridge”, Grant aid “The Project for Improvement of New Nyali Bridge and New Mtwapa Bridge”, World Bank “Northern Corridor Development Project”, AfDB “Mombasa-Nairobi-Addis Ababa Corridor II Project”

2. Outline of the Evaluation Study

2.1 External Evaluator

Nobuyuki Kobayashi, OPMAC Corporation

2.2 Duration of Evaluation Study

Duration of the Study: November 2010 – November 2011

Duration of the Field Study: March 27 – April 9, 2011 and June 18 – June 24, 2011

2.3 Constraints during the Evaluation Study

Due to the reorganization of the implementing agency, records on counterpart finance taken by the Kenyan government together with land acquisition and resettlement records were dispersed. The source of information on these topics was limited to interviews with stakeholders and local residents. As the sector strategy in Kenya at the time of the ex-ante evaluation could not be obtained, judgment on evaluation results was based on the information in the basic design study report.

3. Results of the Evaluation (Overall Rating: A¹)

3.1 Relevance (Rating: ③²)

3.1.1 Relevance with the Development Plan of Kenya

The national development strategy at the time of the ex-ante evaluation was the Eighth National Development Plan 1997-2001. It was admitted in the strategy that inadequate maintenance had caused the deterioration of road assets for more than the last decade. In addition, it was also mentioned that inadequate maintenance had resulted in an increase in vehicle operating costs, unreliable delivery schedules and, eventually, a fall in productivity. In light of these issues, the maintenance and rehabilitation of the existing road network was the most important task in road sector policy. The sector plan at the time of the appraisal was the Strategic Plan for the Roads Sector 1997. This plan regarded the maintenance and rehabilitation of the existing network as one issue of the highest priority, which was in accordance with the national strategy.

The national development strategy at the time of the ex-post evaluation was the First Medium Term Plan 2008-2012. The strategy regarded the backlog of maintenance works as one road sector issue and it was planned that a program to conduct maintenance works for the existing road network be launched. As for the sector plan, the Sessional Paper No.5, which was approved in 2006, recognized that delayed implementation of maintenance works had caused the deterioration in road conditions and, as a result, heavy maintenance, including periodic maintenance and rehabilitation, was required. The Road Sector Investment Programme and Strategy 2010-2024 (RSIP 2010-2024)³, under preparation, assessed that approximately 30% of the total road sections of classified roads was “Poor”. For this reason, RSIP planned to conduct capital works including periodic maintenance or upgrading for a length of 15,644 km in total from 2010 to 2014. During this period, it was planned that resurfacing of the section between Kangondi and Embu (approximately 82 km) of the B7 road would be implemented.

At both the times of the ex-ante and the ex-post evaluations, the Kenyan government recognized the delay in the implementation of maintenance works as an issue in the road sector

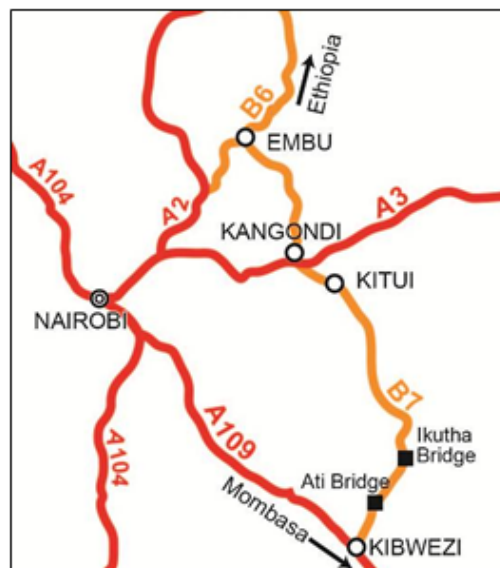


Figure 1: Road Network in Central Kenya

¹ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

² ③: High, ② Fair, ① Low

³ RSIP was still under preparation at the time of the ex-post evaluation. Nevertheless, this important plan was assessed in this ex-post evaluation because it set directions for the development and maintenance of roads in the future.

and made efforts towards periodic maintenance and rehabilitation. Moreover, rehabilitation works on the B7 road were planned. As this project replaced two old bridges on the B7 road, it was consistent with the development strategies

3.1.2 Relevance with the Development Needs of Kenya

At the time of the ex-ante evaluation, support for the rehabilitation of five bridges damaged by the extraordinary storms of 1997-1998 was assessed. Out of these bridges, the Athi Bridge and the Ikutha Bridge were selected because of their high classification⁴ and their importance in the road network. The Athi Bridge and the Ikutha Bridge, located between Kibwezi and Kitui on the B7 road, were at risk of collapsing should driftwood score or collide with them in the case of a flood. The B7 road was a major route crossing Kenya in a north-south direction avoiding the capital city, Nairobi. It was expected that the improvement of the highway would control through-traffic via Nairobi and cut travel time from the northern part of Kenya to Mombasa port.

At the time of the ex-post evaluation, the road section between Kibwezi and Kitui was still part of the B7 road which held the same road classification. Furthermore, the need to improve the B7 road had emerged in light of the logistics of the East African region. The East African Community, of which Kenya is a member country, selected important road corridors in terms of regional integration and the section of Kibwezi-Kitui-Mwingi-Isiolo was added to the list of regionally important roads in 2003. This section links Corridor No.1 (Kenya-Uganda-Rwanda) with Corridor No.5 (Tanzania-Kenya-Ethiopia) and strengthens the connection of the international corridors. In addition, improvement of the B7 road was expected to enhance the convenience of Mombasa port for landlocked countries, especially Ethiopia. Provided that work on the pavement of the section between Kibwezi and Kitui progresses, it is expected that heavy vehicles traffic will increase and, thus, bridges allowing the traffic of heavy vehicles will play a more vital role.

Mombasa port is a major international port in East Africa at the times of both the ex-ante evaluation and the ex-post evaluation and the amount of cargo handling and the number of passengers at the port has been on the rise. As the B7 road is one of the main routes to Mombasa port from the northern part of Kenya and Ethiopia, maintaining safe and smooth traffic by the replacement of Athi Bridge and Ikutha Bridge was quite meaningful. For this reason, it was concluded that this project was in line with the development needs not only of Kenya but also those of neighbouring countries at both the times of the ex-ante and the ex-post evaluations.



Photo 1: Ikutha Bridge

⁴ At the time of the ex-ante evaluation, the classification of roads was A: international trunk roads (roads linking centers of international importance, crossing international boundaries, and terminating at international ports), B: national trunk roads (roads linking nationally important centers), C: primary roads (roads linking provincially important centers), D: secondary roads (linking locally important centers), E: minor roads linking minor centers in rural areas, and Others: special purpose roads. At the time of the ex-post evaluation, the classification of roads used a similar definition.

Table 1: Cargo Handling and Passengers at Mombasa port

	Before Project Implementation (2001)	After Project Completion (2008)
Ship call	1,582	1,686
Passengers	11,917	18,680
Container Handling (TEUs)	290,500	615,733

Source: Kenya National Bureau of Statistics "Statistical Abstract 2010"

3.1.3 Relevance with Japan's ODA Policy

At the time of the ex-ante evaluation, Japan's Official Development Assistance (ODA) Charter, the preceding charter, which was approved in 1992, placed special emphasis on the development of infrastructure through ODA. The charter defined infrastructure as a basic condition of social and economic development and it prioritized assistance in infrastructure investment. The Country Assistance Strategy for Kenya of 2000 recognized the importance of transport infrastructure which was directly linked to the improvement of living conditions (such as small bridges in rural areas). As background to this policy, it has been pointed out that the infrastructure in many sectors, including transport, was inadequate with deteriorating conditions.

It was concluded that this project was consistent with Japan's ODA policies as it supported the replacement of bridges in rural areas of Kenya and intended to remove a logistical bottleneck.

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

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

As for the main output of this project, the two bridges were constructed as planned. There was no significant change in output negatively affecting the project effects. However, due to the lack of counterpart funds on the Kenyan side, the substructures of both the old bridges, which were supposed to be demolished completely, still remained at the time of the ex-post evaluation. For the same reason, improvements in the approach roads on the left bank of the Athi Bridge were not implemented⁵.

Table 2: Project Output (Plan and Actual)

Japanese Side	
Plan	Actual
(1) Bridges · Athi Bridge: PC Bridge, length 120m, width 11m (carriage way 8m, foot walk 3m - both sides) · Ikutha Bridge: PC Bridge, length 75m, width 9.5m (carriage way 8m, foot walk 1.5m - one side)	(1) as planned
(2) Approach roads · Athi Bridge: total 540m · Ikutha Bridge: total 445m	(2) as planned
(3) Revetment	(3) as planned

⁵ According to the implementing agency, this work was to be implemented in 2011/12.

Kenyan Side	
Plan	Actual
(1) Demolition of old bridges (2) Improvement of roads on the left bank of the Athi Bridge	(1) Superstructures of the bridges were removed. (2) Implementation planned

Source: Basic Design Study Report, Project Completion Report, Report on Inspection against Hidden Defect

3.2.2 Project Inputs

3.2.2.1 Project Cost

It was difficult to precisely compare the planned amount with the actual amount of project costs borne by the Kenyan side. In addition, the project costs of the Kenyan side were relatively minor and accounted for less than 2% of total costs. For these reasons, the analysis covers only the project costs taken by the Japanese side. As a result of the analysis, the actual project costs were lower than planned (94% of the original plan). Both the cost of civil works and that of design and supervision were below the plan. The difficulty behind making a precise comparison of the project costs borne by the Kenyan side was due to two reasons. First, it was difficult to estimate the costs for the civil works directly carried out by the implementing agency. Secondly, the relevant information was dispersed and lost due to the reorganization of the implementing agency.

Table 3: Project Costs

	Plan	Actual
Civil works	995.9 million yen (Japanese side: 974 million yen)	932 million yen (Japanese side only)
Design and Supervision	115.0 million yen (Japanese side: 115 million yen)	87.9 million yen (Japanese side only)
Total	1,110.9 million yen (Japanese side: 1,089 million yen)	1,019.9 million yen (Japanese side only)

Source: Basic Design Study Report, Project Completion Report

3.2.2.2 Project Period

The Exchange of Notes was made twice for this project and one year was passed between them. Once was for detail design and the second time for civil works. For a precise comparison of the planned and actual periods, the analysis took only the periods required for detailed design and civil works into consideration. The actual project period was shorter than planned (88% of the original period) as both the detailed design and civil works required shorter periods in actual implementation. Land acquisition was completed before the commencement of civil works and contributed to the smooth project implementation.

Table 4: Project Period

	Plan	Actual
Detailed Design	8 months	7 months (March 2002 - September 2002)
Civil Works	24 months	21 month (December 2003- August 2005)
Total	32 months	28 months

Source: Basic Design Study Report, Project Completion Report

Both project cost and project period were within the plan, therefore efficiency of the project is high.

3.3 Effectiveness⁶ (Rating: ③)

3.3.1 Quantitative Effects

As this project intended to cope with the risk of bridge collapse and to ensure the smooth flow of traffic, the judgment for Effectiveness rested mainly on traffic volume and the maximum weight of vehicles allowed to use the bridges. The comparison of “before” and “after” project implementation shows a substantial increase in traffic volume, in particular those of “Medium Goods” and “Heavy Goods” trucks, and the maximum weight of vehicle was also on target.

3.3.1.1 Results from the Operation and Effect Indicators

(1) Traffic Volume

The implementing agency periodically collected traffic data at the Athi Bridge and the Ikutha Junction and a traffic survey was held at the Athi Bridge and the Ikutha Bridge at the time of the basic design study. However, due to the reorganization of the implementing agency, no traffic survey was held after 2007. For this reason, a traffic survey was conducted at the Athi Bridge⁷ during this ex-post evaluation.

At the time of the ex-ante evaluation, the forecast for traffic volume had not been prepared and, thus, there was no target for traffic volume after the project completion. The comparison of traffic volumes both “before” and “after” project implementation showed that the traffic volume in 2011 was three times as much as that in 2001. In particular, a remarkable increase was recorded in traffic volume for “Medium Goods” and “Heavy Goods” trucks, both of which had been uncommon before the replacement of the bridges. In the site survey, traffic of trailer trucks, which had not been allowed to use the bridges, was observed. While traffic volume increased in general, that of “Light Goods” trucks, including pickup trucks, remained at the same level. This suggested that more efficient vehicles such as “Medium Goods” and “Heavy Goods” trucks had become more prevalent in cargo transport.

Table 5: Traffic Volume per Day at the Athi Bridge and the Ikutha Bridge

Survey point	Year	Passenger Car	Light Goods	Medium Goods	Heavy Goods	Buses	Total
Athi Bridge	2001*	7	28	4	4	2	46
	2001**	6	33	2	0	6	47
	2007**	6	30	5	3	0	44
	August 11-12, 2011**	25	29	45	12	23	133
	August 15-16, 2011**	23	23	80	9	28	161
Ikutha Bridge	2001*	-	-	-	-	-	64
Ikutha Junction	2001**	6	30	6	8	6	56
	2007**	6	19	2	3	0	30

Source: Basic Design Study Report, KeNHA, Traffic survey conducted by this ex-post evaluation

Note: * Seven day times plus one night time, ** Two day times plus one night time

The section between Kibwezi and Kitui on the B7 road was a gravel road and the maintenance of this section had not been sufficient. Muddy spots and puddles on the road

⁶ For the judgment for Effectiveness, the findings in Impact were also taken into consideration in the rating.

⁷ The reason for selecting the Athi Bridge as the point for the traffic count was that traffic data for different types of vehicles were available at the Athi Bridge. The Ikutha junction, which was in a town area approximately 3km away from the Ikutha Bridge, met another road (D 508) and, therefore, the traffic at the junction was affected by other factors apart from the project effects.

prevented the flow of traffic, especially in the rainy season. Since there were several drifts⁸ around the bridges, heavy rain often halted traffic. In interviews with drivers in the Kibweze - Athi - Ikutha section, some said that traffic on the bridges was smooth all year round but the improvement of roads near the bridges was not satisfactory and, for this reason, some drivers used other trunk roads. It is presumed that even at the time of the ex-post evaluation a part of the traffic to Embu and Kitui, major cities on the B7 road, was via the Mombasa Road (A109). If the section between Kibwezi and Kitui (in particular pavements and new bridges) is improved in the future, traffic volume is expected to further increase.



Photo 2: Drift

(2) Maximum weight of vehicle allowed to use the bridges.

Before the replacement of the bridges, the maximum weight of vehicle allowed was 25 tons and constraints were placed on heavy vehicles for industrial use. The Basic Design Study for the Athi Bridge and the Ikutha Bridge⁹ assumed a maximum weight of 55 tons under certain conditions. The completed bridges were in line with the technical specifications and technically satisfied the target of maximum weight at the time of the ex-ante evaluation. At the time of the ex-post evaluation, the maximum weight of vehicle was set at 48 tons in accordance with traffic regulations in Kenya. Given the design standards, this limit was within an acceptable level¹⁰. For vehicles with a weight of 48 tons or more, permission to use the bridges must be obtained in advance. It was concluded that the constraints on the traffic of heavy vehicles for industrial use had been resolved at the time of the ex-post evaluation, as the traffic of trailer trucks was then allowed.

Table 6: Maximum Weight of Vehicle

	At the time of the ex-ante evaluation (2001)	Target level (2004)	At the time of the ex-post evaluation (2011)
Maximum Weight of Vehicle	25 tons	55 tons*	55 tons* (48 tons**)

Source: Basic Design Study Report, KeNHA

Note: * As mentioned above, the bearing capacity of the bridges under certain conditions

** Maximum weight of vehicle according to traffic regulations in Kenya (weight per trailer truck)

3.3.2 Qualitative Effects

(1) Uninterrupted Traffic and Traffic Safety

For an assessment of the qualitative improvement in road transport, interview sessions were conducted with seven drivers of heavy vehicles (three bus drivers and four truck drivers) in the Kibwezi-Athi-Ikutha section of the B7 road.

The drivers mentioned uninterrupted traffic in the rainy season and the improvement of traffic safety after project completion. Some said that the water level of rivers had risen and submerged the bridges before replacement. The rise of water level had increased the risk of collapse and, therefore, drivers had waited for several hours - one day – until the water level

⁸ Bridge can be used when the water level in rivers is low but is submerged when the water level is high.

⁹ The design of both bridges satisfied JRA B Live Load, which allows the maximum weight of 55 tons in the case that the load was spread over length 10m and width 5.5 m.

¹⁰ According to KeNHA staff, the maximum weight of vehicle was 56 tons until the revision in 2009.

declined. After this project elevated the super structure of the bridges, traffic was no longer interrupted in the rainy season.

Most of the drivers rarely felt that passing the bridges was dangerous and said that traffic accidents did not occur around the bridges. As the width of the bridges was widened, the passing of oncoming traffic became safer and the instalment of foot walks enabled drivers to keep their distance from pedestrians. One driver pointed out that reflective stickers on guard rails were too small and made it difficult to know the location of guard rails at night.

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

3.4 Impact

3.4.1 Intended Impacts

(1) Impact on local residents' livelihoods and living environment

In order to understand the project effects, focus group discussion (FGD) sessions, one session each for residents near the Athi Bridge and for those near the Ikutha Bridge, were carried out. Voting was held after opinions on the discussion topics had been drawn out in order to quantify qualitative opinions. An outline of the FGD sessions is as follows:

- Location: Ikutha (near the Ikutha Bridge) and Athi/Kailembwa (near the Athi Bridge)
- Date/Time: Ikutha - morning of April 1, 2011 and Athi/Kailembwa - afternoon of April 1, 2011
- Participants: Residents near the Ikutha Bridge - 12 participants (9 male and 3 female) and Residents near the Athi Bridge - 12 participants (7 male and 5 female)
- Discussion topic: "How have the Athi Bridge and the Ikutha Bridge changed your life?"
- Voting method: After consolidating five (or so) opinions, each participant cast three votes. (Multiple votes for the same opinion were allowed if the voter strongly agreed)

As the following table shows, both groups recognized the improvement in transport as most important. This reflected the fact that in the rainy season the rise in water levels had increased risks including that of bridge collapse, thus preventing the use of the bridges. The improvement of business conditions was the opinion second most supported. This result was explained by more frequent use of buses and trucks which now meant that buyers from outside came to people's towns and purchased local products while merchandise could be brought to towns more easily. Since there were few health facilities near Athi/Kailembwa, residents often visited hospitals in Kibwezi. Residents in Athi/Kailembwa considered easier access to hospitals to be a further change brought by the project.



Photo 3: Focus Group Discussion

Table 7: The Results of Focus Group Discussion

Ikutha (near the Ikutha Bridge)			Athi/Kailembwa (near the Athi Bridge)		
Rank	Opinion	Vote	Rank	Opinion	Vote
1	Improved Connectivity	17	1	Improved Transport	14
2	Improved Business	12	2	Improved Business	12
3	More heavy vehicles bring more goods	6	3	Increased access to health facilities	6
4	Loss of land	1	4	Increased Social Interaction	4
	Total	36		Total	36

(2) Impact on Agriculture

In order to assess the impact on agriculture, interviews with local residents, mostly farmers, were carried out (2 male and 9 female interviewees). These interviews with local residents focused on topics such as changes in the price and availability of agricultural inputs (fertilizers and pesticides) and changes in cropping patterns.

According to the local residents, before the replacement of both bridges, fertilizers and pesticides had not often been available in the rainy season but both were available all year round at the time of the ex-post evaluation. As the prices of fertilizers and pesticides appreciated in line with the inflation of general prices, the impact on the price of agricultural inputs was not clear. While the farmers whose main crops were maize and beans showed little change in their cropping patterns, other farmers expanded the planted areas for vegetables such as peppers and okra, products for which there was a strong demand from outside areas.

3.4.2 Other Impacts

(1) Impacts on the natural environment

It was expected that bridge piles would affect river flow and might increase the water level of rivers in the cases of flood. The bridges were designed so that the river cross-section hindering ratio (bridge piles / the width of rivers) would be less than 5%¹¹. In order to reduce the negative impact on the environment, the contractors took several actions such as measures not to avoid the dumping of concrete chips, debris, oil, and garbage into the rivers and to levelling bowing pits at the project completion were implemented. No significant negative impact on natural environment was observed during the site visit.

(2) Land Acquisition and Resettlement

According to the implementing agency, land acquisition and resettlement were implemented in accordance with the relevant regulations in Kenya. Due to the reorganization of the implementing agency, detailed information on land acquisition (area of acquired land) and resettlement (number of resettled household) was dispersed and unavailable. Based on information obtained from the consultant for the supervision of this project, the resettlement of a few households was carried out on the right bank of the Athi River but land acquisition and the removal of houses were completed by the commencement of civil works.

As shown above, local residents, the final beneficiaries of this project, fully recognized the improvement in transport. It can be concluded that this project contributed to better production conditions for agriculture through an improvement in the availability of agricultural inputs. Based on information provided by the implementing agency and on the site visit, negative impacts on the natural environment and on local residents were presumed to be negligible.

¹¹ Data on the water level of the Athi River could not be obtained by this ex-post evaluation. Therefore, it was not possible to assess the effect on the river cross-section area after project completion using actual data.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

The road administration body in Kenya had been reorganized significantly between the times of the ex-ante evaluation and the ex-post evaluation. While at the time of the ex-ante evaluation the Roads Department of the Ministry of Roads and Public Works was responsible both for long-term strategy for the road sector and for the construction and maintenance of trunk roads, responsibility for the long-term strategy for these areas had been separated by the time of the ex-post evaluation. Based on the long term strategy set by the Ministry of Roads, each road administration, established by road type, was in charge of construction and maintenance under its jurisdiction¹². KRB (Kenya Roads Board) was responsible for the management of a road fund, the audit of maintenance works, annual maintenance programming , etc.

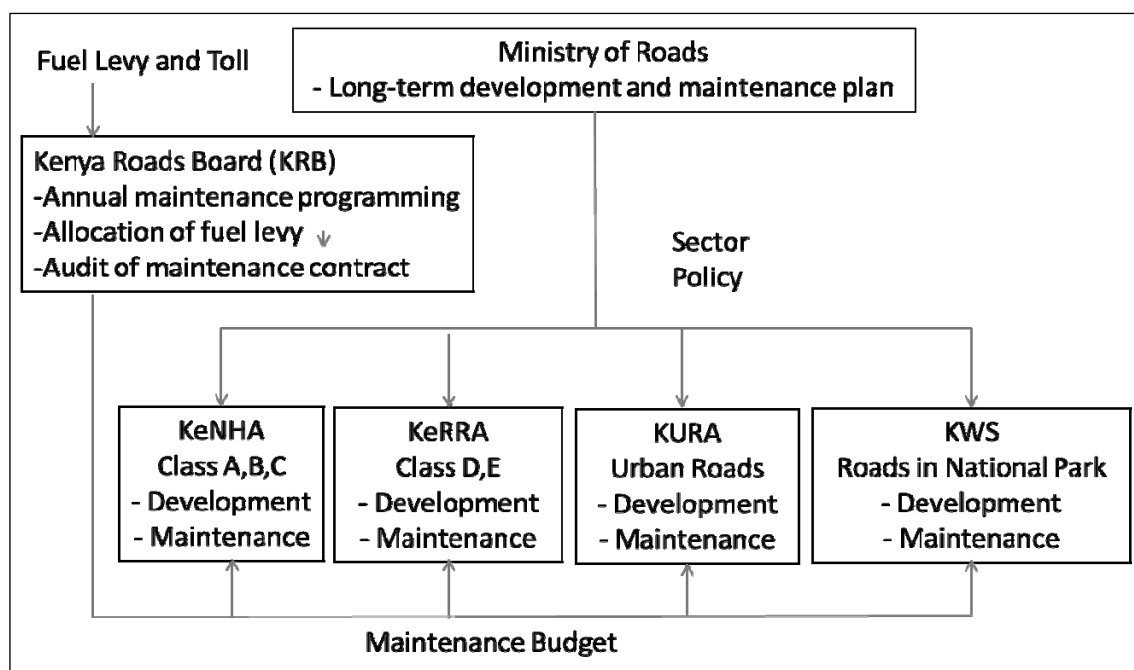


Figure 2: Institutional Arrangement of Road Administration at the Time of the Ex-post Evaluation

KeNHA (Kenya National Highways Authority) was in charge of the construction and maintenance of A, B and C-class roads and had ten regional offices across Kenya in addition to its headquarters in Nairobi. While regional offices prepared maintenance programmes for areas under their own jurisdiction, these were revised and approved by headquarters. Regional offices also conducted inspections and contract management of maintenance works. After the establishment of KeNHA, the implementation of maintenance works was contracted out to private companies. As maintenance works were no longer directly conducted by the implementing agency, there was no office below the regional offices. The maintenance of the Athi Bridge and the Ikutha Bridge fell into the jurisdiction of the Lower Eastern Regional Office. The number of staff in the Lower Eastern Regional Office was 15, out of which engineers and surveyors numbered 6, with 1 person assigned as bridge inspector in a concurrent post. As the number of inspectors for roads and bridges was limited, efficient implementation became an issue.

¹² Four governmental administrations: Kenya National Highway Authority (KeNHA), Kenya Rural Roads Authority (KeRRA), Kenya Urban Roads Authority (KURA), Kenya Wildlife Service (KWS)

3.5.2 Technical Aspects of Operation and Maintenance

In 2010/11, training on bridge maintenance for bridge inspectors was conducted with the support of JICA. As equipment for inspections was limited and inspections relied on visual inspection, advanced equipment was not used at the time of the ex-post evaluation. In tandem with the outsourcing of maintenance works, the need for training for contract management, such as in procurement and monitoring of maintenance works became stronger. A computer system for the management of budgeting, payment for civil works, and the processing of completion reports was installed in regional offices and training for the use of this system conducted. According to the implementing agency, manuals for inspection and maintenance of bridges were readily available.

KRB had a computer system for the programming of maintenance activities but data on road conditions had not been updated adequately since 2004. It was planned that data on road conditions would be updated after 2011/12.

3.5.3 Financial Aspects of Operation and Maintenance

The major funding source of the maintenance budgets was fuel levies and KRB allocated budgets to four road administrations in charge of the maintenance of roads. RSIP 2010-2024 assumed that routine maintenance would require KSh 2.1 -2.3 billion per year from 2010 to 2014 and that periodic maintenance for the same period would require KSh 48.7 billion (KSh 9.7 per year). In 2010/11, the budget allocation from KRB to KeNHA was KSh 10 billion, out of which the maintenance budget was KSh 7.1 billion. Given the required budget, the actual allocation for the maintenance budget was not sufficient.

Table 8: Budget Allocation from KRB to KeNHA

Unit: billion Kenyan schillings

	Budget Allocation	Expense within Fiscal Year
2009/10*	10.56	9.22
2010/11	10.00	7.25**

Source: KRB

Note: * Including the budget for the Roads Department before reorganization,

** By expense until the third quarter

The budget allocation at the time of the ex-post evaluation had noticeably decreased from that at the time of the ex-ante evaluation, though the change in maintenance from direct implementation to contracting out did not allow rigorous analysis. Before project implementation, the maintenance budget for the B7 roads had been KSh 48.9 million (approximately JPY 71.5 million at the exchange rate at that time) in 2001/02. However, at the time of the ex-post evaluation, the maintenance budget for the B7 roads was KSh 23.3 million in 2009/10 and KSh 6.6 million in 2010/11. In 2010/11, the fiscal deficit was expected to surpass 7% of GDP for two consecutive fiscal years. For this reason, the Kenyan government made efforts to control expenses and postponed until the next fiscal year graveling on unpaved sections of the B7 roads, although this had been included in the budget at the beginning of the fiscal year. At the time of the ex-ante evaluation, it had been expected that periodic maintenance would be conducted every five years but periodic maintenance on both bridges had not been implemented since the completion date because of insufficient budget.

3.5.4 Current Status of Operation and Maintenance

The site visit revealed some damage on the bridges including cracks on the road surface, vegetation on the carriageway, and a collapse of slopes and shoulders. Nevertheless, it was considered that this damage was minor and unlikely to negatively affect the project effects. No

serious scouring was observed on either bridge. The implementing agency decided that the shrinking of concrete through temperature changes had caused the cracks on the road surface as they were alligator cracks and their width was narrow. To prevent the growth of vegetation and the collapse of slopes and shoulders, it is desirable that routine maintenance be conducted more frequently. Periodic maintenance, including the detailed inspection of cracks at earlier opportunity, is also advisable.

As a result of the site visit, it was confirmed that the substructures of the old bridges had not been demolished at either the Athi Bridge or the Ikutha Bridge. If the old bridges were not removed, this could lead to a critical situation where the collapse of the piles of the old bridges would reduce the river cross-section area and affect water flow. It could also happen that the piles of the old bridges would trap driftwood and prevent the smooth flow of the river. These problems would likely cause scouring at the new bridges. Given these problems, the Kenyan government was requested to demolish the old bridges at inspection as a measure against hidden defects.

Some problems have been observed in terms of the financial aspects, therefore sustainability of the project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The replacement of Athi Bridge and Ikutha Bridge, carried out by this project, was consistent with the development strategy of Kenya with its emphasis on the maintenance of the existing road network. It was intended that the bridges improve access to Mombasa port, a major port in the East African region, from landlocked areas such as Ethiopia and the northern part of Kenya. As the project implementation was efficient, both project costs and the project period were within the original plan. The comparison of “before” and “after” project implementation showed a substantial increase in traffic volume, in particular those of “Medium Goods” and “Heavy Goods” trucks, and the maximum weight of vehicle also achieved its target. Local residents were fully aware of the improvement in transport and business conditions. In addition, in the agricultural sector, an improvement in the availability of agricultural inputs was found. No serious damage negatively affecting the project effects was observed as a result of the site survey. However, in the long run, the lack of fund remains a sustainability issue as the budget allocation to the implementing agency was insufficient.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

At the time of the ex-post evaluation, the substructures of the old bridges had not been removed either at the Athi Bridge or the Ikutha Bridge. As this project had assumed the removal of the old bridges in its design the Kenyan government was requested to demolish the old bridges at inspection against hidden defects. If the old bridges were not removed, this might lead to scouring at the new bridges. Therefore, the demolition of the old bridges at the earliest opportunity is desirable. If it is difficult to obtain funds to demolish the bridges, it is advisable that garbage entangled in the bridge piles is periodically removed.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

The implementing agency of this project did not collect data on the key performance indicators selected at the time of the ex-ante evaluation. It is advisable that a monitoring mechanism is established in the Basic Design Study with measures such as identifying indicators collected by the implementing agency for project delivery and the management of organization and selecting indicators which can be continuously obtained.

End