United Republic of Tanzania

FY2016 Ex-Post Evaluation Report of Japanese Grant Aid Project

"The Project for Widening of Kilwa Road (Phase 1/2 and Phase 2/2)"

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0 Summary

The objective of the Project for Widening of Kilwa Road is to ensure its smooth and steady traffic through upgrading the section between Bandari junction and Rangi Tatu on Kilwa Road—which is a trunk road in the Dar es Salaam metropolitan area—to a two-lane road in each direction, thereby contributing to the enhancement of traffic convenience for local residents and the development of the local economy.

Because the Project was consistent with Tanzania's development policy and development needs in the road sector at the times of planning and ex-post evaluation as well as Japan's aid policy at the time of planning, its relevance is high. However, the project cost and the project period both exceeded their plans despite that the target road section had been reduced from the initial plan and some auxiliary facilities had also been excluded from the final one. Thus, its efficiency is low. As a result of widening Kilwa Road, the average speed in peak hours has significantly exceeded the target value set at the time of planning, and the travel time has been substantially reduced for road users, even though traffic volume increased beyond expectations. Moreover, there were large improvements in user satisfaction compared to before the project implementation including that on the convenience of public bus services. And positive impacts such as the development of the areas along the road, as evidenced by the construction of large-scale modern buildings and the improved living standards of residents, have been observed. Therefore, the effectiveness and impact of the Project are high. As for the operation and maintenance of Kilwa Road, the executing agency has been conducting a wide-range of repair works on its own, and no problems have been identified in its institutional, technical, and financial aspects as well as the current status of operation and maintenance. Therefore, the sustainability of the Project is high.

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

1 Project Description

Project Site

Road Improved by the Project

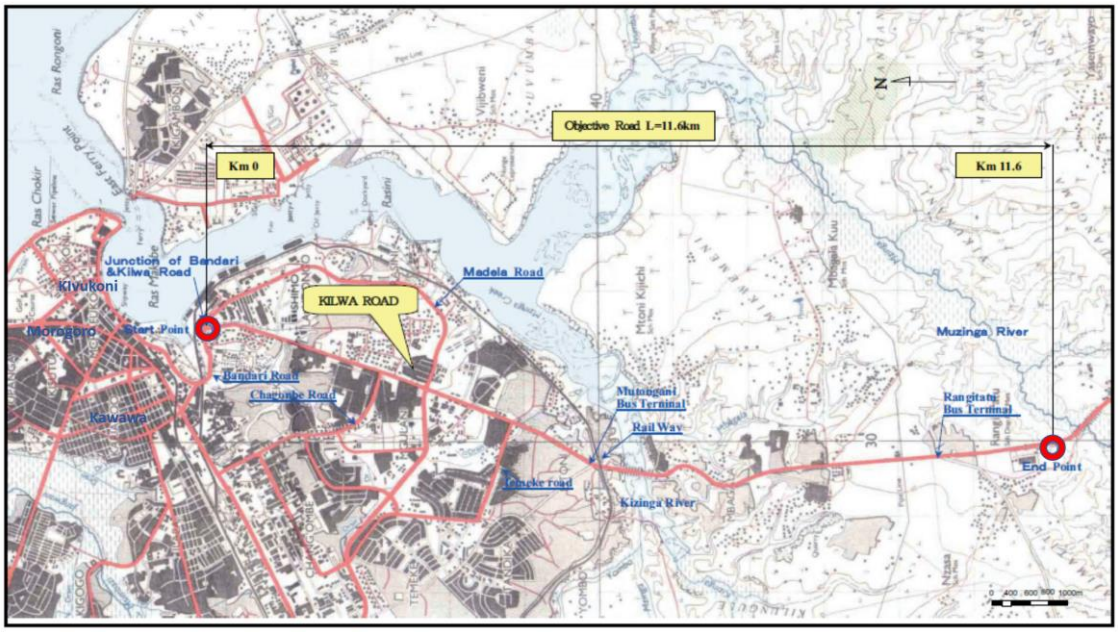
1.1 Background

As demand for urban traffic expanded dramatically in response to the recovery of the Tanzanian economy, traffic volume on roads in the Dar es Salaam metropolitan area[1] increased rapidly in the 2000s. Subsequently, concentrations of traffic in the urban areas deteriorated because of severe congestions caused in some road sections where traffic volume exceeded the capacities of the existing two-lane roads, as well as problems of underdeveloped bypass routes. To address these issues, the Government of Tanzania prioritized the widening of major roads in the Dar es Salaam metropolitan area as well as the improvement of the existing radially extending trunk road network and its interconnected circular roads, and listed the Project for Widening of Kilwa Road as one of its priority projects. Kilwa Road, a major trunk road in the area, was facing a dire situation at the time of planning with a daily traffic count of more than 10,000 vehicles. During peak commuting hours in the morning and evening, it took about two hours to travel a distance of roughly 13–14km from near the end point of the target road section of the Project to the center of Dar es Salaam. Therefore, mitigating traffic congestion through the widening of the road was a pressing issue.

Against this background, the Government of Tanzania made a request for grant aid on the Project for Widening of Kilwa Road in May 2002 and submitted a written request to the Government of Japan in July 2004 after having conducted a review on traffic volume and an environmental screening. Initially, the Development Study (March 1995) of the Japan

[1] City of Dar es Salaam and Dar es Salaam Region, which include the Municipalities of Temeke, Ilala, and Kinondoni.

International Cooperation Agency (JICA) had considered just a 3.2km long section of Kilwa Road as a subject of its survey. Yet the request for grant aid extended the distance of the section to be surveyed by the Basic Design Study to be 11.2km long. On top of this, an additional section of 400m was included as part of the project target section partly because the necessity of alleviating road congestion near Rangi Tatu—the end point of the target road—was recognized through a field study and also because the starting point of construction by the Government of Tanzania to upgrade a two-lane road turned out to be at the 11.6 km point. (See Figure 1)



Source: *Basic Design Study Report* (Target Road Map)

Figure 1: Target Section of the Project for Widening of Kilwa Road

1.2 Project Outline

The objective of the Project is to ensure smooth and steady traffic between Bandari junction and Rangi Tatu through upgrading Kilwa Road to a two-lane road in each direction and constructing a median strip, thereby contributing to the enhancement of traffic convenience for local residents and the development of the local economy.

G/A Grant Amount / Actual Grant Amount	Phase 1/2: 1,152 million yen / 1,125 million yen Phase 2/2: 1,497 million yen / 1,495 million yen
Exchange of Notes Date / Grant Agreement Date	Phase 1/2: June 2006 / -- Phase 2/2: May 2007 / --
Executing Agency	Tanzania National Roads Authority (TANROADS)
Project Completion	Phase 1/2: August 2008 Phase 2/2: September 2009
Main Contractor	Phase 1/2: Kajima Corporation Phase 2/2: Kajima Corporation
Main Consultant	Phase 1/2: Construction Project Consultants, Inc.

	Phase 2/2: INGÉROSEC Corporation
Basic Design	July 2005 – March 2006
Related Projects	Technical Cooperation: ・ Study of Dar es Salaam Road Development Plan (1995) Grant Aid Projects: ・ Salender Bridge Widening Project (1980) ・ Morogoro Road Improvement Project (1984) ・ Project for the Improvement of the Road Network in the Metropolitan Area (1991) ・ Project for the Improvement of Road Repair Equipment (1993, 1995) ・ Dar es Salaam Road Improvement Project (1997) Other International Organizations and Aid Organizations, etc.: ・ World Bank "Integrated Roads Project I & II" (1990, 1994) (Loan) ・ European Union (EU) "Backlog Maintenance Programme for the Central Corridor" (Grant aid) (2006) ・ Denmark "Dar-Mlandizi Road Project" (Grant aid) (1997) ・ Kuwait Fund / OPEC / Saudi Fund/Government of Tanzania "Mkuranga-Kibiti Road Project" (Loan) (2001)

2 Outline of the Evaluation Study

2.1 External Evaluator

Tomoyuki Sho, IC Net Limited

2.2 Duration of Evaluation Study

The ex-post evaluation study was conducted with the following schedule.

Duration of the Study: October 2016 – October 2017

Duration of the Field Study: January 21 – February 4, 2017, May 6 –17, 2017

2.3 Constraints during the Evaluation Study

The target value (20 km/h) of the effect indicator "average speed in peak hours," which was set at the time of planning, had been calculated assuming that the traffic volume on Kilwa Road would grow at an average annual rate of 4.5% for the period from 2006 to 2009. Because the actual traffic volume had increased at a rate higher than originally expected, the target value should have become lower than 20 km/h had it adjusted the rate by considering the accurate amount of traffic increase. Yet it was not clear on which specific model the calculation of the target value had been based, nor it was possible to obtain time-series data on the traffic volume on Kilwa Road. Therefore, the target value set at the time of planning had been kept as it is for

use as the target value for the time of project completion. In addition, because traffic volume had increased significantly from the time of project completion in 2009 to the time of ex-post evaluation in 2017, this increase in traffic volume should have been taken into account when comparing the actual value at the time of ex-post evaluation with the target value for the time of project completion. However, the traffic volume data on Kilwa Road between 2009 and 2017 were not available, either. Consequently, it was decided to make a simple comparison of the actual value at the time of ex-post evaluation with the target value set at the time of planning, keeping the higher-than-expected traffic growth in mind.

3 Results of Evaluation (Overall Rating: B[2])

3.1 Relevance (Rating:③[3])

3.1.1 Consistency with the Development Plan of Tanzania

At the time of planning, the *National Strategy for Growth and Reduction of Poverty* (target years: 2005/2006–2009/2010) put high priority for the road sector on the improvement of access between urban and rural areas and the enhanced services relating to the movement of people and goods, as well as the upgrading of trunk and rural roads and the implementation of maintenance management for the rehabilitated trunk and rural roads. In addition, the *2nd Five-Year Strategic Plan* (target years: 2003/2004–2007/2008) and the *3rd Five-Year Strategic Plan* (target years: 2008/2009-2012/2013) of Tanzania National Roads Agency (hereinafter referred to as "TANROADS") stated the plan to widen trunk roads in the Dar es Salaam metropolitan area as one of its top priorities and listed the Project for Widening of Kilwa Road as one of its priority projects.

Even at the time of ex-post evaluation, the *2nd Five-Year Development Plan* (target years: 2016/2017-2020/2021) of the Government of Tanzania and the *4th Five-Year Strategic Plan* of TANROADS (target years: 2013/2014–2017/2018) regarded the expansion and modernization of the road network in Dar es Salaam as a priority area, being essential for growth.

In light of the above, the Project is highly relevant to the development policy and road sector policy of Tanzania.

3.1.2 Consistency with the Development Needs of Tanzania

According to the 2002 census, the population of Dar es Salaam was about 2.48 million, of which about 0.77 million (about 31%) lived in Temeke Municipality in its southern suburban area where Kilwa Road runs through. The poverty rate (14.1%) of the Dar es Salaam

[2] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[3] ③: High, ②: Fair, ①: Low

metropolitan area at the time of planning (2006) was relatively low—about 40% of the national average.[4] However, because about 8% of the population of mainland Tanzania was concentrated in Dar es Salaam, it had as many poor as any other regions (over 400,000 people), despite that it has been geographically the smallest administrative region in the country. Therefore, selecting Kilwa Road as the target of the Project was reasonable from the standpoint of poverty reduction as well, as the road runs through Temeke Municipality that has had a large concentration of the population of the poor.

The population of Dar es Salaam has been rapidly increasing even at the time of ex-post evaluation[5] due to, among others, inflows from other areas. Thus, it remains to be a challenge to alleviate chronic traffic congestion by developing urban road networks thatcan meet the demands of population and economic growth. Kilwa Road is one of the major trunk roads in the Dar es Salaam metropolitan area, which connects the center of Dar es Salaam and the Port of Dar es Salaam to the southern region. Since the road was widened to two lanes in each direction by the Project, the importance of Kilwa Road has become much higher than that before the project implementation.

Road development in the Dar es Salaam metropolitan area has long been carried out based on the Master Plan (1995) developed by JICA through donor coordination mainly between JICA and the World Bank. And any new planning of road improvement and rehabilitation has been required to incorporate a possibility of exclusive Bus Rapid Transit (hereinafter referred to as "BRT") lanes to be expanded onto it in the future. This Project also set aside reserved spaces in the median strip for the construction of exclusive BRT lanes as BRT lanes are expected to get extended into the project road section. This demonstrates coordination among projects as the construction of the BRT Phase 2 section (covering the entire project road section to Kivukoni and Kawawa for 19.3 km) is scheduled to start in 2017, with an aid from the African Development Bank (AfDB). The completion of the BRT Phase 2 section would make possible rapid mass transportation across Municipalities of Temeke, Ilala, and Kinondori in Dar es Salaam.

In light of the above, the Project is consistent with the development needs of Tanzania.

[4] Source: World Bank, *Tanzania Mainland Poverty Assessment* (2015)
[5] According to the 2012 census, the population of Dar es Salaam was about 4.36 million and that of Temeke Municipality was about 1.39 million.

3.1.3 Consistency with Japan's ODA Policy

At the time of planning, the *Country Assistance Program for Tanzania* (2000) stated the establishment of a transportation system for domestic goods, connecting rural and urban areas through the improvement of roads and other means, is one of the primary objectives. Also, its Priority and Sectoral ODA Policies section specifically mentioned that the government considers providing an aid in the road sector so that Dar es Salaam, the nation's de facto capital, would be able to fulfill its functions adequately.

Thus, the consistency between the Project and Japan's ODA policy is high.

In light of the above, the implementation of the Project is fully consistent with the development policy and development needs of Tanzania as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating:①)

3.2.1 Project Outputs

For budget reasons, the Project was implemented in two phases, and pavement for the section from Km 0 point to Km 5.0 was originally planned to be completed in Phase 1 and the section from Km 5.0 to Km 11.6 to be completed in Phase 2. However, after the unsuccessful tendering for Phase 2 construction, the contents of construction were reviewed and the target road section was shortened from 11.6 km to 10.1 km, as shown in Table 1. The remaining 1.5 km-long section was completed in June 2012 by the Tanzanian side with its own financing.[6]

Table 1: Planned and Actual Road Sections

(Unit: km)

Phase	Road Section	Plan	Actual	Actual/Plan
Phase 1	Km 0 - Km 5.0	5.0	5.0	100%
Phase 2	Km 5.0 - Km 11.6	6.6	5.1	77.3%
Total Period	Km 0 – Km 11.6	11.6	10.1	87.1%

Source: Materials provided by JICA, Interviews with TANROADS officials

With regard to the specifications of the road, the outputs had been mostly completed as originally designed, as shown in Table 2.

[6] The construction period was from April 15, 2011 to June 15, 2012 for 15 months.

Table 2: Planned and Actual Road Specifications

Planned Item	Plan	Actual
Pavement structure – surface course	Asphalt concrete 7cm (trunk roads, main access roads, etc.)	Asphalt concrete 7cm (trunk roads, main access roads, etc.)
	Asphalt concrete 4cm (access roads, etc.)	Asphalt concrete 4cm (access roads, etc.)
Pavement structure – road bed	Base course 20cm (sieved macadam – trunk road, main access roads, etc.)	Base course 20cm (sieved macadam – trunk road, main access roads, etc.)
	Base course 15cm (sieved macadam – access road, etc.)	Base course 15cm (sieved macadam – access road, etc.)
	Subbase course 26cm (cement stabilization – trunk road, main access roads, etc.)	Subbase course 26cm (cement stabilization – trunk road, main access roads, etc.)
	Subbase course 15cm (cement stabilization – access road, etc.)	Subbase course 15cm (cement stabilization – access road, etc.)
Width structure – pavement width	Trunk road: 15.0m (7.5m each way x 2 directions of two lanes), median strip: 9.0m, sidewalk: 2.0–5.0m	Trunk road 15.0m (7.5m each way x 2 directions of two lanes), median strip: 9.0m, sidewalk: 1.0–3.0m
Width structure – shoulder width	Standard 0.5 m	Standard 0.5m (at the both ends of roadways)
Repair of transversal drainage	18 sites (including 2 locations of box culvert), side ditches	Box culvert: 2 locations, pipe culvert: 14 sites, side ditches
Other related facilities	Common ditches, retention walls, street lamps, bus stops and main lanes for bus stops, protective fences, traffic signs, etc.	Common ditches, retention walls, street lamps, bus stops and main lanes for bus stops, traffic signs, etc.

Source: Materials provided by JICA, interviews with TANROADS officials, site visits

The following design changes were made in the Phase 2 section. As a result of these measures taken against heavy rain in the rainy season, erosion and rainwater inflow have been prevented, which the Tanzanian side has appreciated as measures ensuring the project effects.

- Addition of countermeasure work against slope erosion in a banking section: As countermeasure work against slope erosion in a banking section (Km 5.9–Km 6.7), asphalt curbs and chutes for longitudinal drainage were added on both sides of the road.
- Addition of countermeasure work against slope erosion in a cliff section: Longitudinal drain pipes were added as countermeasure work against slope erosion, utilizing an existing swamp in a cliff section (Km 8.4).
- Addition of countermeasure work against rainwater inflow behind retention walls in a high banking section: In response to the sliding and sinking of gabion walls in a high banking section (near Km 7.3), concrete covering on slopes with soil cement as well as asphalt curbs and chutes for longitudinal drainage on the sides of the road were added to prevent rainwater from flowing behind the walls.

With regard to other related facilities, however, there are some outputs that had been dropped from the plan developed at the time of the basic design study. Improvement of the Rangi Tatu bus terminal was removed from the final plan and not implemented. Besides, according to TANROADS officials, protective fences (guardrails) were installed not by the Project but by the Tanzanian side (mainly on one side in the direction toward Rangi Tatu in the section between Km 5.8 – Km 6.7, and on both sides in the section between Km 6.9 – Km 7.2) with its own financing. The construction consultant, however, contested that the guardrails had been installed by the Project according to the plan.

Bus stops were constructed in a total of 32 locations on both sides of the road. Street lamps were installed mostly near these bus stops and around roundabouts (a total of seven locations) in addition to near the Mandela junction, and the installation of a total of 63 street lamps was observed at the time of ex-post evaluation.[7] As for traffic signs, a total of about 30 installed signs on both sides of the road were seen. For budget reasons, the number of traffic safety facilities installed by the Project is limited compared to other comparable trunk roads in Dar es Salaam.

For the Phase 2 section of the Project, repair work became necessary after pavement failures, such as rutting, had been found on multiple locations during the one-year defect liability period following the project completion in September 2009. A high-level joint task force was formed with participation from both Japanese and Tanzanian sides for investigating causes and developing countermeasures. After mutual consultation, repair work was carried out by the construction contractor over a period of 6 months in 2012.[8] Moreover, because problems such as rutting, cracks, and collapses of curbs were found in several of the Phase 1 section soon after the expiration of the defect liability period, the Tanzanian side conducted repair work as needed at its own expenses. Furthermore, side ditches, which had been installed by the Project in both Phase 1 and Phase 2 sections, were replaced by the Tanzanian side, which did the design and construction over again at its expenses after the Project completed them to handle heavy rainfall in the rainy season and changes in the drainage environment.[9] For all of these reasons, the Tanzanian side believes that Kilwa Road has more quality problems and is more expensive than those of other JICA projects.[10] The Japanese side including the construction consultant has also been admitting the quality problems of the road.

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[7] The Japanese side explains that the number of street lamps installed was limited because there was a concern about the maintenance capacity of TANROADS. TANROADS officials, on the other hand, are not satisfied with this explanation and believe that the real reason was financial.

[8] The issue of road defects having surfaced in the Project will not be discussed further in this evaluation because it has been resolved by mutual consent at a high level.

[9] TANROADS spent about USD 1.35 million (three billion Tanzanian shillings) to do the side ditches over again.

[10] Yet when the trunk road maintenance budget of TANROADS Dar es Salaam Regional Manager's Office was compared between Kilwa Road and Morogoro Road for the period from 2011/2012 to 2016/2017, no evidence was found that the maintenance cost per km, such as daily maintenance cost, periodic maintenance cost, and total maintenance cost, had been higher for Kilwa Road than for Morogoro Road.

3.2.2 Project Inputs

3.2.2.1 Project Cost

As for the project cost, data on the cost borne by the Tanzanian side could not be obtained.[11] Thus, efficiency in terms of the project cost was evaluated using the cost borne by the Japanese side only. As shown in Table 3, a simple comparison of the planned and actual costs indicates that the actual cost borne by the Japanese side exceeded the plan by approximately 4.9%. The major reasons for this include fluctuations in exchange rates and increases in direct construction costs due to high material prices (cement in particular).[12]

Table 3: Planned and Actual Project Costs (Borne by the Japanese Side)

(Unit: million yen)

Project Cost Category	Plan	Actual			Actual/Plan (%)
		Phase 1	Phase 2	Total	
Construction cost	2,343	1,038	1,438	2,476	105.7
Direct construction cost	1,852	774	1,205	1,980	106.9
Other construction cost	491	263	232	496	101.0
Design and supervision cost	154	87	56	143	92.9
Total	2,497	1,125	1,495	2,620	104.9
Including the project cost borne by TANROADS for the completion of the 1.5 km section dropped from the Project				2,872	115.0

Source: Materials provided by JICA, interviews with TANROADS officials

As mentioned above, the target road section of the Project was shortened, and TANROADS spent a total of approximately USD 2.52 million (5.6 billion Tanzanian shillings) to complete the 1.5 km section dropped by the Project. Because these inputs are considered as essential in achieving the project effects, it is appropriate to add this amount to the cost borne by the Japanese side for the purpose of this evaluation. The actual project cost would then become 115% of the planned amount. Thus, the actual project cost went over the plan.

3.2.2.2 Project Period

As shown in Table 4, the actual project period exceeded the plan by seven months (21%). It may be mostly attributed to the fact that the tendering for Phase 2 construction was done twice and that some additional construction works were done due to design changes. First, the re-tendering caused a delay in the commencement of construction work for the Phase 2 section

[11] The Tanzanian officials insist that the obligations borne by the Tanzanian side such as the relocation of public utilities, relocation of a mosque and cemeteries, and acquisition of a temporary working and construction yard were all completed according to the plan, whereas the construction consultant contends that the relocation of public utilities was not implemented as planned and partially affected the execution of construction works.

[12] Prices of materials and equipments rose sharply worldwide in 2008 because of surging oil and raw material prices.

for four months. Another three-month delay was caused by the design changes made in Phase 2, such as additions of countermeasure works against slope erosion in a banking section and a cliff section, as well as an addition of countermeasure work against rainwater inflow behind retaining walls in a high banking section.

Table 4: Planned and Actual Project Periods

Plan		Actual		Actual/plan
June 2006 (signing of E/N) – February 2009 (project completion)	33 months	June 2006 (signing of E/N) – September 2009 (project completion)	40 months	+ 7 months 121.2%
Including the project cost borne by TANROADS for the completion of the 1.5 km section dropped from the Project			55 months	+22 months 166.7%

Source: Materials provided by JICA, interviews with TANROADS officials

As the target section of the Project was shortened, the actual project period took per actual level of output must have been much longer than the ratio of the actual project period to the planned period, 121.2%, suggests—which does not take into account the reduction of the target section[13]. Because it took TANROADS 15 months (April 2011–June 2012) to complete the 1.5 km-long section that was dropped from the target section of the Project, and these inputs are considered as essential in achieving the project effects, it is appropriate to add this period to the project period for the purpose of this evaluation. The actual project period would then become 167% of the plan. Thus, the actual project period was significantly longer than planned.

The efficiency of the Project would be adjusted further down if it considers the repair works for pavement failures in the Phase 2 section and the re-dos of design and construction for side ditches by the Tanzanian side.

In light of the above, the project cost went over the plan, and the project period also exceeded the plan significantly. Therefore, the efficiency of the Project is low.

3.3 Effectiveness[14] (Rating:③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

At the time of planning, the "average speed in peak hours" was selected as a direct effect indicator for the Project, and its target value was set to improve the average speed on Kilwa Road during commuting hours (in the morning 6:00 – 9:00 and in the evening 16:00 – 20:00 for seven hours in total) from 7 km/h to 20 km/h.

[13] Just for information, if the extent to which the actual project period exceeding the plan per output was simply recalculated by adjusting the ratio of the actual project period to the plan (121%) with the extent to which the output of the project road section was shortened (87%), it would become 139% (1.21÷0.87=1.39).

[14] Sub-rating for Effectiveness is to be evaluated along with Impact.

Table 5: Effect Indicator: Average Speed in Peak Hours

(Unit: km/h)

Effect Indicator	Baseline	Target	Actual
	2006	2009	2017
	At the time of planning	At the time of project completion	At the time of ex-post evaluation
Average speed in peak hours	7	20	27.5

Source: Materials provided by JICA, site visits
Note: The actual value was measured by the author.

In this evaluation, to measure the actual value at the time of ex-post evaluation, a vehicle followed the traffic flow between Bandari junction and Rangi Tatu (10.1 km) five times in the morning and evening peak hours of weekdays in each direction for a total of 20 times, and the average value on speed was computed. The actual value turned out to be 27.5 km/h and it verifies that the target value of 20 km/h for the time of project completion has been achieved[15]. Out of 20 measurements in total, the target value of the average speed was met 14 times (70%).

The target value for the time at project completion (2009) had been calculated at the time of planning, assuming that the traffic volume on Kilwa Road would grow at an annual rate of 4.5% from 2006 to 2009. Although traffic volume data for the relevant period were not available, the estimated ownership of private vehicles from 2002 to 2008 indicates that the number of private vehicles owned in Temeke Municipality increased at an extremely high annual rate of 45.8% and Dar es Salaam as a whole at an annual rate of 20.0%. (See Table 6) Therefore, the actual traffic volume on Kilwa Road is likely to have grown at an annual rate that was much higher than 4.5%[16]. In this regard, officials at the Ministry of Works, Transport and Communications (hereinafter referred to as "MoWTC") and those at TANROADS also believe that the target value reflecting the accurate traffic volume should have been revised down to a value much lower than 20 km/h.

Table 6: Number of Private Vehicles Owned (Estimates): 2002 and 2008

(Unit: 1000)

Administrative Division	2002	2008	Annual increase rate
Temeke Municipality	2.3	22.1	45.8%
Dar es Salaam	47.0	140.6	20.0%

Source: International Association of Public Transport (UITP)/ African Association of Public Transport (UATP), *Report on Statistical Indicators of Public Transport Performance* (2010).

Moreover, the traffic volume on Kilwa Road has increased significantly from the time of the project completion (2009) to the time of ex-post evaluation (2017). If the traffic count

[15] In 20 measures, the maximum value on the average speed was 47.8 km/h, the minimum value 15.8 km/h, and its standard deviation 8.2 km/h.
[16] The quality issues of the Project such as the repair work may have occurred partly because the road specifications made at the time of planning based on traffic volume projections could not stand the traffic volume that turned out to be much higher than expected.

summaries of 2013 and 2016, which were conducted in relatively close locations on Kilwa Road, are compared just for information, the annual traffic growth rate turns out to be 11% for the period.[17] (See Table 7) Therefore, the average speed immediately after the completion of the Project must have been much faster than the speed measured at the time of ex-post evaluation. In light of the above, the widening of Kilwa Road by the Project has greatly contributed to the reduction of travel time for road users, to an extent that is far beyond initial expectations.

Table 7: Traffic Count Summaries on Kilwa Road: 2013 and 2016 (Secondary Reference)

(Unit: number of vehicles)

Date	Survey Location	Vehicle Type									Total
		Passenger vehicle	Pickup truck/van	Small truck	Medium truck	Large truck	Extra-large truck	Small bus	Large bus	Other (motorcycle and Bajaj)	
Nov. 4, 2013	Sabasaba (About 5.3 km from the starting point)	7,044	2,915	496	720	593	127	179	5,267	7	17,348
Nov. 16, 2016	Police-Kilwa Road (About 8.9 km from the starting point)	8,147	4,612	259	222	195	677	2,768	1,243	5,648	23,771

Source: TANROADS Dar es Salaam Regional Manager's Office (2013, 2016)
Note: Length of a traffic count is for 12 hours per day from 6 a.m. to 6 p.m.

The above conclusions can be corroborated by the results of a beneficiary survey as well. As part of this evaluation, 100 households in Temeke Municipality, the primary target beneficiary area, were randomly sampled for interviews from late January to early February 2017.[18] As shown in Figure 2, when 76 households with household member(s) regularly using Kilwa Road

[17] The Kilwa Road traffic count summaries of November 2013 and November 2016, which were taken after the project completion, however, may not be easily comparable because the locations of traffic counts were different. Besides, most of the observed increase comes from the "Other" vehicle types that include motorcycles and Bajaj (three-wheeler motorbike taxis), and its interpretation needs a further scrutiny.

[18] The population of project beneficiaries for the survey is comprised of households in five villages in Temeke Municipality (Mbalala Rangi Tatu, Mtoni Mtongani, Mvinjeni, Kibondemaji, and Mtoni), which were primary target beneficiary areas of the Project. A total of 100 households were sampled after stratifying the villages, and were interviewed face-to-face using questionnaires. Among the respondents, 52% were male, 48% female; 62% were heads of households, 24% spouses of heads of households, and 11% sons/daughters of heads of households. The average age was 49. The 95% confidence intervals of the survey would be about 10% plus or minus the mean, at maximum. The stratified sampling of households was not random in a strict sense of the word because it had to be conducted with authorization of elderly persons in each village, while largely following the advice of local consultants in charge. Therefore, the survey results cannot be generalized beyond the households selected for the survey, and they should be treated as secondary supporting information that supplements other information and data.

were asked whether the speed of public transportation such as public buses (Dala Dala) had improved compared to before the Project, 88% responded affirmatively.[19] Yet only 30% of those surveyed were satisfied with the current situation on the speed of public transportation including bus services[20]. This may be because traffic speed has been getting slower each year after the project completion, with an increase in traffic volume and the number of users, having affected the user satisfaction with the current situation on services. There still exists a need for speeding up travel hours.

(Unit: %)

Figure 2: Beneficiary Survey: User Satisfaction in Public Transportation

3.3.2 Qualitative Effects (Other Effects)

See the "Impacts" section.

3.4 Impacts

3.4.1 Intended Impacts

At the time of planning, the following four points had been laid out as expected indirect impacts, as a result of the project implementation.

- Implementation of safety measures would reduce traffic accidents rate per kilometer and contribute to the enhancement of safety in the daily life of citizens.
- Increased convenience of bus services during commuting hours would benefit low-income groups.
- Improvement of drainage facilities would improve the sanitary conditions and increase the convenience for local residents.

[19] Percentage of the respondents who selected "Significantly Better" or "Better" out of the five response categories of "Significantly Better," "Better," "No Change," "Worse," and "Significantly Worse."
[20] Percentage of the respondents who selected "Excellent" or "Good" out of the five response categories of "Excellent," "Good," "Average," "Fair," and "Poor."

・ The enhanced convenience for transporting agricultural products from the southern region would contribute to local development in the coming years.

This evaluation has examined the extent to which these impacts have been accomplished mainly through the beneficiary survey, interviews with stakeholders, site visits, and administrative data.

(1) Enhanced Safety

As already mentioned, the traffic volume of the road network in the Dar es Salaam metropolitan area and that of Kilwa Road have grown rapidly. Table 8 shows the number of traffic deaths in Dar es Salaam over time.

Table 8: Traffic Deaths: 2006 – 2016

(Unit: number of incidences)

Administrative division	2006		2014	2015	2016
Temeke Municipality	--		118	96	--
Dar es Salaam	415		506	322	325

Source: Tanzania Police Force, *Crime and Traffic Incidents Statistics Report 2015*, *Crime Statistics Report 2014*; *Tanzania Daily News*, January 7, 2017.

According to the beneficiary survey, 67% of the regular users of Kilwa Road responded that the safety of public transportation including bus services had enhanced compared to before the project implementation. This suggests that ensuring smooth and stable traffic through the widening of Kilwa Road as well as installing traffic safety facilities such as street lights and traffic signs have made positive effects to a certain extent. In addition, 50% of the users interviewed responded that they were satisfied with the current situation in safety. (See Figure 2) Because this percentage is higher than those for other satisfaction questions on the speed and affordability of public transportation, etc., it indicates that the user satisfaction with safety is relatively high. However, the number of traffic signs and other traffic safety facilities installed by the Project is rather limited. An increased police presence and the transformation of awareness and behavior on the part of the users may also have influenced on the enhancement of safety.

(2) Increased Convenience

Temeke Municipality where Kilwa Road runs through has the largest concentration of poor households in Dar es Salaam. The percentage of private car ownership among the poor is low and they depend on public buses (Dala Dala) as a means of transportation. (See Table 9)

Table 9: Number of Private Vehicles Owned per 1,000 Residents

(Unit: number of vehicles/1000 residents)

Administrative division	2002	2008
Temeke Municipality	3.0	22.2
Dar es Salaam	18.9	42.6

Source: UITP/UATP, *Report on Statistical Indicators of Public Transport Performance, 2010.*

In 2011, the number of public buses (excluding taxis) operating in Dar es Salaam was estimated at 7,699, and 213 existing bus routes have been confirmed. Among them, 23 routes were along Kilwa Road, making it one of the major roads with a high concentration of bus routes.[21]

According to the beneficiary survey, 96% of the users of Kilwa Road responded that the frequency/availability of public transportation including buses had become better than before the project implementation. In addition, 71% of the users appreciated that the level of comfort had enhanced, and 50% responded that the affordability of tariff (fare) had improved. The users' relative willingness to pay for bus services may have increased as the users became more satisfied with the levels of convenience and comfort offered by the bus services. When asked on the overall satisfaction, considering all the above aspects of public transportation, 90% of the road users responded that their level of satisfaction had increased compared to before the project implementation. Therefore, the Project has greatly contributed to the improved convenience of the bus services. (See Figure 2)

Despite the substantially enhanced convenience, however, there is room for further improvement. User satisfaction with the current situation in terms of the availability of bus services remained at 46% and that with the current situation in terms of comfortability was 21%. Similarly, only 32% of the users were satisfied with the affordability of fare, and the overall satisfaction with the current situation remained at 28%. (See Figure 2) As the construction of the BRT Phase 2 section is scheduled to start in 2017 in the target road section of this Project, it is expected that traffic convenience of public transportation will further improve after the expansion of BRT, which is to be built on the achievements of the Project.

(3) Improved Sanitation

According to interviews with MoWTC and TANROADS officials, incidences such as roadside flooding during rainy seasons has significantly decreased since the implementation of the Project. In the beneficiary survey, 67% of Kilwa Road users responded that the sanitary environment along the road had improved compared to before the project implementation, and

[21] Kyong Dong Engineering Co., Ltd., *Traffic Survey and Demand Forecasting Report* (2017).

40% answered that they were satisfied with the condition of the sanitary environment. (See Figure 2) The repairs of transversal drainage structures and countermeasures against erosion and rainwater inflow made by the Project must have contributed. As mentioned earlier, however, the design and construction of the side ditches made by the Project had been done over again by the Tanzanian side at its own expenses both in Phase 1 and Phase 2 sections, in order to handle heavy rainfall in the rainy season and changes in the drainage environment.

In Tanzania, a national campaign to clean the environment has been promoted under the initiative of President Magufuli since December 2015 with a goal of improving public sanitation, and one Saturday every month has been designated as Cleanliness Day (last Saturday of every month at the time of ex-post evaluation). Although a scene of rubbish dumped into roadside ditches is still not unusual, the president's initiative has been transforming, to a certain degree, the awareness and behavior of the Tanzanian people, including those who live in the areas along Kilwa Road, on the environment and sanitary issues.

(4) Regional Development

From 2007 to 2014, Tanzania's real gross domestic product (GDP) had grown at an annual rate of 6.1%, which exceeded the rate of population growth.[22] In the meanwhile, the poverty rate in Tanzania had dropped by more than 6 percentage points from 34.4% to 28.2% between 2006 and 2012, and the poverty rate in Dar es Salaam improved by almost 10 percentage points from 14.1% to 4.0%.[23] The dramatic decline in the poverty rate suggests that the living standard in Temeke Municipality, which contains a large proportion of the poor in Dar es Salaam, has significantly improved.

The transformation of the areas along Kilwa Road from the predominantly poor areas to those increasingly attract the middle class could also be observed through the site visits. New large, modern office buildings and a medical center, which had not been seen before, were under construction. (See Photo 1 and Photo 2) As a result of the widening and improvement of Kilwa Road, the efficiency of logistics has improved, and presumably the areas along Kilwa Road that connect the center of Dar es Salaam and the Port of Dar es Salaam with the southern region have been getting more geographically attractive.[24]

[22] National Bureau of Statistics, *National Accounts of Tanzania Mainland 2007–2014* (2015).
[23] World Bank, *Household Budget Survey 2007, 2011/12* (2013).
[24] According to companies located along the road, their expenses on transportation have decreased thanks to savings on fuel expenses for heavy trucks, made possible by the relief of severe traffic congestion, as well as reduced repair expenses for parts, resulting from the improved pavement condition of the road.

Photo 1: Vendors along the Road

Photo 2: Modern Building under Construction along the Road

Also, a Nigerian cement manufacturing company has built a new factory in Mtwara near natural gas fields in southern Tanzania, and started cement production. Since the company started shipping a large amount of cement to the Dar es Salaam metropolitan area and the Port of Dar es Salaam via Kilwa Road, the cement price in Dar es Salaam market temporarily dropped from about 16,000 Tanzanian shillings per bag (50kg) to 11,000 Tanzanian shillings in 2016. (Due to the soaring prices of natural gas and some other reasons, however, the operation of the factory was suspended at the end of 2016.)

In light of the above, it is certain that the Project has made a large positive impact on the improved efficiency in the transportation of goods from the southern region and on the growth of the local economy.

3.4.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

Through interviews with stakeholders, it was confirmed that TANROADS had conducted Preliminary Environmental Assessment (hereinafter referred to as "PEA") in accordance with the Environmental Management Act of 2004 and the Environmental Impact Assessment and Audit Regulations of 2005, and submitted a *Preliminary Environmental Assessment Report* to the National Environment Management Council. The PEA included an analysis of expected environmental and social impacts from the implementation of the Project, as well as mitigation measures to address negative impacts and the implementation plan for such measures. The PEA concluded that the negative impacts of the Project would be limited and could mostly be offset by the effective implementation of the mitigation measures, which were later implemented as planned[25]. The mitigation measures included a road design made at the time of planning to minimize the impact of construction on vegetation and the monitoring of its

[25] However, the PEA report on the Project has not been provided by TANROADS for the reason that they could not locate the report.

implementation. Through the interviews, no negative impact of the Project on the natural environment has been found.

(2) Land Acquisition and Resettlement

Through site visits and interviews with stakeholders, it was confirmed that the relocation of a mosque and cemeteries as well as the land acquisition had been carried out as planned in accordance with the Tanzanian land management law. The Government of Tanzania had covered not only the relocation cost but also the construction cost of the new mosque, and no serious dissatisfaction with the relocation had been manifested. According to the interviews, about 35 households were forced to resettle for the construction of the Mtongani roundabout. Yet no complaints had been filed by residents as they received adequate compensation.[26]

Because the plan of improving the Rangi Tatu bus terminal, included in the request, was subsequently excluded from the final plan, no markets nor kiosks around the bus terminal had been forced to relocate.[27]

(3) Assessment of Gender-Related Impacts (Employment Conditions of Women)

According to the 2012 census, 57.1% of females aged 10 and above living in mainland Tanzania were employed (excluding household work), which was about seven percentage points lower than males. In Dar es Salaam, 48.3% of those employed persons (both males and females) were engaged in their own business in non-agricultural sectors, and the percentage for females is believed to have been even higher. The most common occupation was the service workers/shop and stall sales workers (19.5%), followed by street vendors (14.2%) and crafts workers (13.8%), and the most common employment sector was manufacturing (12.3%), followed by trade and commerce (11.7%) and raw food sales (11.2%).

This ex-post evaluation has examined whether the enhanced mobility of local residents enabled by the improvement of Kilwa Road has brought any changes in the employment conditions of women. Specifically, labor market outcomes, such as employment status, occupation, employment sector, and income, have been compared between 96 working-age (16–64) women living in the areas along Kilwa Road (treatment group) and 80 working-age women living in the areas away from the road (comparison group).[28] As it turned out, the

[26] The documents on resettlement plans and other related ones have not been provided by TANROADS for the reason that they could not locate the documents.
[27] Most of street vendors who set up shops around the Rangi Tatu bus terminal do not have official permits to do business. Therefore, these vendors would not have been eligible for compensation even if they had been forced to relocate.
[28] Ninety-six working-age women were sampled from 3 villages (Mbalala Rangi Tatu, Mtoni, and Mvinjeni) in the target beneficiary areas of the Project along Kilwa Road, whereas 80 working-age women were sampled from 2

percentage of employed women was 56% both in the working-age women living along Kilwa Road and in those living away from the road. Moreover, no substantial differences were found in terms of other labor market outcomes such as occupation, employment sector, and income. Still, the average number of days the employed women use the road for commuting was about 4 days higher per month for women living along the road than for women living away from the road (22 days and 17 days). This may suggest a possibility that the increased convenience of bus services has made commuting easier for working-age women, and enabled them to work a higher number of days, say, at shops, street stalls, and other places.

Furthermore, households with working-age women were divided into those along Kilwa Road and those away from the road, and the levels of satisfaction were compared between them. As shown in Figure 3,[29] the levels of satisfaction for the users living along the road turned out to be uniformly higher than those living away from the road in all items on bus services and others. When evaluating the level of satisfaction with bus services and others, the users living away from the road may take into account (consciously or unconsciously) additional time and effort necessary to access the road. In any case, it is certain that the Project has played a role in significantly reducing the burden of traveling for frequent road users including women who use buses to commute to work.

villages (Kibondemaji and Mtoni Mtongani) in the areas some distance away from the road (1.2–2.0km from the areas along the road) where the extent of project effects is considered to have been relatively low. Then, by regarding the women living along the road as the treatment group and those living away from the road as the comparison group, a with-without analysis was conducted to examine whether labor market outcomes, such as labor market participation rate, employment rate, and self-reported income levels, were higher for the women in the treatment group than for those in the comparison group. To conduct a survey efficiently with limited time and budget, the sample frame used for the beneficiary survey was also used for the impact survey, and the sampling for the comparison group from the areas away from the road was conducted within the target beneficiary areas of the Project. (Therefore, as in the case of the beneficiary survey, it was not based on random sampling in a strict sense of the word, and thus the same caveat applies that the results cannot be generalized beyond the working-age women who had been selected for the survey.) Although the assessment of impact can be done through the with-without analysis as long as there are large enough differences in beneficiary effects, there was a concern that obtaining statistically significant results would be challenging without increasing a sample size if the differences are small. In the impact survey, however, no differences in labor market outcomes between the treatment group and the comparison group were found. The reason could be the geographical proximity of the two groups. Still, if the comparison group had been selected from outside the target beneficiary areas, factors other than access to Kilwa Road would have been substantially different between the two groups, and thus it would be no longer possible to regard the comparison group as a counterfactual to the treatment group. Moreover, it is difficult to measure the stand-alone effects of a road project because it is not unusual that the effects of a road project would change dramatically after it gets connected to roads outside its project scope. Consequently, infrastructure projects like this one are not likely to be good candidates for a survey that examines precise impacts.

[29] Except for travel speed, however, the differences between the areas along the road and those away from the road are not statistically significant.

(Unit: %)

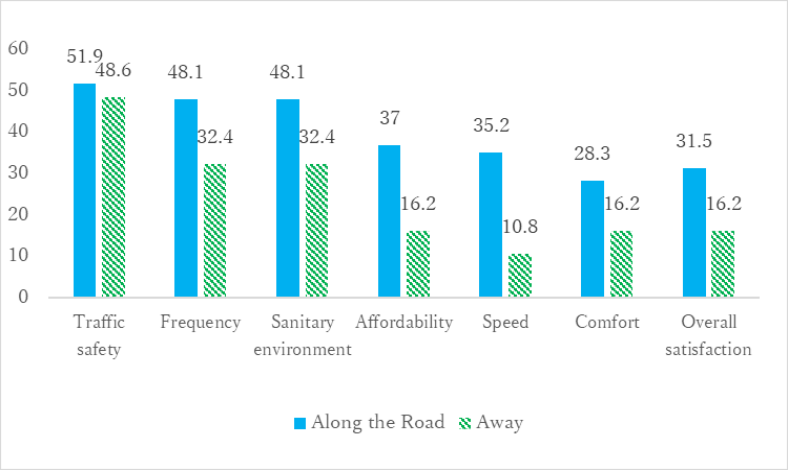

Figure 3: Beneficiary Survey: Comparison of User Satisfaction between Areas along the Road and Areas Away from the Road

The following is a summary of effectiveness and impacts: With regard to effectiveness, the average speed in peak hours was 27.5 km/h at the time of ex-post evaluation, and the 20 km/h target for the time of project completion has been achieved. Because the traffic volume on Kilwa Road had substantially increased from the time of project completion to the time of ex-post evaluation, it is certain that the average speed in 2009, immediately after the completion of the Project, had been much higher than the speed at the time of ex-post evaluation. Therefore, the Project has significantly reduced the travel time on Kilwa Road.

With regard to impacts, the beneficiary survey results show that 67% of the Kilwa Road users perceived that the road safety had improved compared to before the project implementation. Besides, at least a half of the users appreciated that the convenience of the bus services had increased in terms of traffic speed, frequency/availability, comfort, and fare affordability. Furthermore, 67% perceived that the sanitary environment had improved. Thus, it is certain that the Project has had positive impacts on every aspect such as road safety, the convenience of bus services, and the sanitary environment along the road.

As for the contribution of the Project to regional development, a significant increase in investment and the construction of large office buildings have been observed since the completion of the Project. Interviews with local businesses and others suggest that the widening and improvement of Kilwa Road have contributed, to a certain extent, to a reduction in the transportation cost of materials and agricultural produce, and so on. Therefore, the impact of the Project on the development of the local economy is judged to be significant.

In light of the above, it was confirmed that the Project has ensured smooth and safe traffic between Bandari junction and Rangi Tatu, which in turn has brought the enhanced traffic convenience for local

residents and the stimulation of local development. Therefore, the effectiveness and impact of the Project are high.

3.5 Sustainability (Rating:③)

3.5.1 Institutional Aspects of Operation and Maintenance

TANROADS, the executing agency of the Project, was established in July 2000 and has jurisdiction over the development, maintenance, and management of the road networks under the auspices of the MoWTC. TANROADS has the board of directors which comprises of 9 directors, including the chief executive officer who serves as the secretary to the board of directors. As shown in Table 10, the number of employees at TANROADS at the time of ex-post evaluation was 786, and it had not changed a lot since the time of planning. The Dar es Salaam Regional Manager's Office of TANROADS, which has administrative jurisdiction over Kilwa Road, had 15 technical staff members at the time of ex-post evaluation, indicating no shortage of manpower. In light of the above, there is no particular problem observed in the institutional aspects of operation and maintenance with regard to Kilwa Road.

Table 10: Number of Employees of TANROADS

(Unit: number of employees)

Year	Department	No. of Staff
2006	Total	791
2017	Maintenance	621
	Business Support	61
	Procurement & Contracts	9
	Planning	53
	Projects	21
	Internal Audit	14
	Legal Services	7
	Total	786

Source: TANROADS

3.5.2 Technical Aspects of Operation and Maintenance

As mentioned above, TANROADS has carried out repair work in many parts of the Phase 1 section of the Project as need arises. Besides, TANROADS has improved side ditches by doing their design and construction over again after the Project completed them. Interviews with stakeholders including the construction consultant and local private consultants indicated no problems with the technical level of TANROADS, either.

It has been confirmed that TANROADS has referred to and used the operation manuals and as built drawings provided from the construction contractor as necessary when conducting repairs and maintenance. In light of the above, there is no particular problem observed in the technical aspects of operation and maintenance with regard to Kilwa Road.

3.5.3 Financial Aspects of Operation and Maintenance

As shown in Table 11, the major revenue sources of TANROADS are the Road Funds and the budget through MoWTC, which account for over 95% of the total revenue. Road maintenance also depends on the revenue from the Road Funds.[30] The Road Funds are mainly financed by gasoline tax and overload charges, and 63% of the collected amount is allocated to TANROADS, 30% to municipalities and 7% to MoWTC. Yet the contribution amount varies from year to year depending on the economy and other factors. Although a tight fiscal policy has been pursued in Tanzania since President Magufuli took office in November 2015, the infrastructure sector has been considered as a priority area in the National Development Plan, and both the initial TANROADS budget and actual amounts for 2015/2016 significantly increased.

As shown in Table 12, the Dar es Salaam Regional Manager's Office's regular maintenance budget for paved trunk roads also increased by 35% for 2015/2016 and by 7% for 2016/2017 from a year earlier.

Table 11: Changes in TANROADS Budget and Actual Amounts over Time

(Unit: million Tanzanian shillings)

	Item	2013/2014		2014/201		2015/2016	
		Initial Budget	Actual	Initial Budget	Actual	Initial Budget	Actual
Revenue	Road Funds Board	314,536	315,010	469,495	191,369	541,281	454,676
	Development Funds	-	-	-	-	251,653	767,979
	MoWTC Consolidated Funds (Personal Emolument)	9,384	10,767	10,925	11,595	15,912	16,117
	Direct Donor Fund	4,500	1,245	-	-	-	-
	Finance Income	950	950	900	413	391	709
	Other	9,060	9,060	5,760	9,844	4,271	14,977
	Total	338,430	337,032	487,080	213,221	813,508	1,254,458
Expenditure[31]	Wages, Salaries and Employee Benefits	25,922	28,153	22,925	30,596	45,681	41,461
	Administration Costs	17,675	22,700	34,384	20,622	28,952	23,502
	Maintenance Management Expenses	9,720	11,421	23,553	10,025	486,831	270,571
	Maintenance Construction Costs	278,080	290,274	405,318	240,623		
	Development	-	-	-	-	251,653	1,012,990

[30] The Development Funds are financed by the Consolidated Funds of the Ministry of Finance, which are allocated to TANROADS through the MoWTC. In audited financial statements, the Development Funds and the Development Expenses have been treated as independent items since 2015/2016.

[31] Maintenance Management Expenses refer to indirect department costs for the maintenance of the existing roads; Maintenance Construction Costs refer to direct costs necessary for the repair (maintenance) work of the existing roads; Development Expenses refer to costs necessary for constructions to develop new roads.

	Expenses						
	Finance Costs	111	174	900	214	391	226
	Other	-	0	-	-	-	-
	Total	331,508	352,722	487,080	302,080	813,508	1,348,750
Surplus/(Deficit)		6,922	(15,690)	0	(88,859)	0	(94,292)

Source: National Audit Office, *Report of the Controller and Auditor General on the Financial Statements of the Tanzania National Roads Agency for the Year Ended 30th June 2014, 2015, and 2016*.

Table 12: TANROAD Dar es Salaam Regional Manager's Office's Regular Maintenance Budget for Paved Trunk Roads

(Unit: million shillings)

2014/2015	2015/2016	2016/2017
1,217	1,644	1,762

Source: Data provided by TANROADS

As shown in Table 13, negative accumulated surpluses in the balance sheets of TANROADS suggest that TANROADS had substantial deficits in the past. (In recent years, however, TANROADS has had surpluses as its revenues are larger than expenses and had a surplus of 15.8 billion shillings for 2015/16.[32]) Although its low current ratios are a slight concern, all the fixed liabilities are composed of grants, and none of them is an interest-bearing debt. Besides, cash on hand and cash equivalence turned to increase for 2015/16 due to grant revenues (Development Funds), and its closing balance became 206.8 billion shillings. In light of the above, there is no particular problem observed in the financial aspects of operation and maintenance with regard to Kilwa Road.

Table 13: Balance Sheets of TANROADS

(Unit: million Tanzanian shillings)

	2013	2014	2015	2016
Current assets	383,277	383,204	421,325	701,656
Non-current assets	494,653	1,349,979	1,889,109	4,756,596
Total assets	877,930	1,733,183	2,310,434	5,458,252
Current liabilities	454,397	887,435	1,186,291	1,951,295
Deferred income (Grant)	36,061	10,358	27,062	163,667
Non-current liabilities	484,227	896,258	1,163,927	3,530,978
Deferred income (Grant capital)	484,227	896,258	1,163,927	3,530,978
Total liabilities	938,624	1,783,692	2,350,218	5,482,272
Total net assets	(60,694)	(50,509)	(39,785)	(24,020)
Accumulated surplus	(66,880)	(56,696)	(45,971)	(30,206)
Total liabilities and Total net assets	877,930	1,733,183	2,310,434	5,458,252

Source: National Audit Office, *Report of the Controller and Auditor General on the Financial Statements of the Tanzania National Roads Agency for the Year Ended 30th June 2014, 2015, and 2016*.
Note: As of June 30 of each fiscal year.

[32] National Audit Office, Report of the Controller and Auditor General on the Financial Statements of the Tanzania National Roads Agency (TANROADS) for the Year Ended 30th June 2016.

3.5.4 Current Status of Operation and Maintenance

Overall, routine and periodic maintenance of Kilwa Road has been properly made, although some rutting and damaged guardrails are found in some sections of the road. In addition, recommendations made by the Japanese side at the time of defect liability survey have been largely put in practice. For example, rules such as no illegal parking in the median strip, no entry of vehicles to the median strip and pedestrian crosswalks, and no parking at bus stops have all become to be observed. Because of the stricter monitoring and enforcement of traffic police offers during the peak hours in the morning and evening, no vehicles in the median strip have been seen except for some Bodaboda (two-wheeler taxis). Moreover, on the recommendation on the introduction of a reward system for those who report the incidence of damaging roads, the number of cases where residents voluntarily report on traffic violations and accidents to the accident data center of MoWTC's Road Safety Units has been increasing thanks to the diffusion of mobile phones. Furthermore, even on the prohibition of garbage dumping into drainage facilities, the situation has improved appreciably since the project implementation partly influenced by the President's initiative, although garbage dumping continues to be observed in some places. Regarding the reconstruction of guardrails, on the other hand, broken guardrails were found in several locations apparently because the guardrails on the same spots tend to get damaged repeatedly. Finally, the recommendation to make an opening in the median strip to enable emergency vehicles to enter into Mbagala Hospital has not been implemented because it was concluded that the proposed measure would not be cost-effective.

In light of the above, no major problems have been observed in the institutional, technical and financial aspects or the current status of the operation and maintenance system. Therefore, the sustainability of the project effects is high.

4 Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of the Project for Widening of Kilwa Road is to ensure its smooth and steady traffic through upgrading the section between Bandari junction and Rangi Tatu on Kilwa Road—which is a trunk road in the Dar es Salaam metropolitan area—to a two-lane road in each direction, thereby contributing to the enhancement of traffic convenience for local residents and the development of the local economy.

Because the Project was consistent with Tanzania's development policy and development needs in the road sector at the times of planning and ex-post evaluation as well as Japan's aid policy at the time of planning, its relevance is high. However, the project cost and the project period both exceeded their plans despite that the target road section had been reduced from the initial plan and some auxiliary facilities had also been excluded from the final one. Thus, its

efficiency is low. As a result of widening Kilwa Road, the average speed in peak hours has significantly exceeded the target value set at the time of planning, and the travel time has been substantially reduced for road users, even though traffic volume increased beyond expectations. Moreover, there were large improvements in user satisfaction compared to before the project implementation including that on the convenience of public bus services. And positive impacts such as the development of the areas along the road, as evidenced by the construction of large-scale modern buildings and the improved living standards of residents, have been observed. Therefore, the effectiveness and impact of the Project are high. As for the operation and maintenance of Kilwa Road, the executing agency has been conducting a wide-rangeof repair works on its own, and no problems have been identified in its institutional, technical, and financial aspects as well as the current status of operation and maintenance. Therefore, the sustainability of the Project is high.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Effective management of data and information

TANROADS does not have an effective way of managing data and information as an organization, and each employee individually manages these data and information. As a result, during personnel transfers and office relocations, even very basic data and information have often ended up getting misplaced or lost without being properly passed over from one employee to another. Moreover, many paper-based reports have been piled up at the corners of the offices or in storage rooms where no one can easily access. (See Photo 3.) To make use of accumulated data and information effectively for the development and maintenance of roads, it is desirable to establish a system that manages data and information in an organized manner as soon as possible, by promoting the computerization of essential data and information, and storing them in a database on the server.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

More open and candid exchange of opinions between Japanese side and the executing agency

In this Project, the Tanzanian side has done the design and construction of side ditches over again immediately after the Japanese side completed them. Whereas the Japanese side explained that the changes in the drainage conditions from the time of planning due to housing

developments had been the reason, TANROADS officials have a contradicting view that the initial specification design required improvement regardless of changes in the surrounding conditions. The Tanzanian side has not been satisfied either with the explanation offered by the Japanese side that the number of street lamps installed must have been limited in consideration of inadequate maintenance capacity of the executing agency. Although it is beyond the scope of this evaluation to judge which side is more likely to be right than the other on these specific issues, the Project could have been implemented more smoothly if both sides had had more open and candid exchanges of opinions during the course of the Project.

Executing agencies, such as TANROADS, which have had experience in cooperating with JICA and other donors for many years, have become more motivated and capable in the engagement of project activities. When developing a project plan, therefore, it is desirable that the contents of the plan and the specification design would be determined on the basis of more frequent and close consultation between the Japanese side and the executing agency than ever before.