Republic of Kenya

FY2023 Ex-Post Evaluation Report of

Grant Aid Projects

"The Project for Dualling of Nairobi-Dagoretti Corner Road C60/C61 "/

"The Project for Dualling of Nairobi-Dagoretti Corner Road C60/C61 (Phase 2)[1]"

External Evaluator: Shima Hayase, IC Net Limited

0. Summary

The projects were implemented to ease traffic congestion on Ngong Road. This major arterial road connects the center of Nairobi, the capital of the Republic of Kenya, with the city's west by widening it, installing sidewalks, and developing auxiliary facilities, thereby ensuring convenience and safety of travel and smooth flow of people and goods within the city.

The projects were consistent with the development policy of the Kenyan government and the development policy of the Nairobi metropolitan area from the time of planning to the time of ex-post evaluation and with Japan's assistance policy for Kenya. They contributed to the need to ease traffic congestion, an issue at the time of ex-post evaluation. In terms of coherence, the executing agency participated in training on outsourcing road maintenance work through collaboration with JICA technical cooperation projects, which ensured the smooth implementation and sustainability of the outsourcing contract for the maintenance work of this project. Still, there was no particular collaboration with other donors. The scope of Phase 1 was almost halved from the planned area, but this was at the request of the Kenyan side, and appropriate procedures were followed after coordination with the construction plan for public transportation facilities. However, reviewing the project indicators and target values was necessary when the changes were made. As mentioned above, there were issues with the approach in relevance; thus, ratings for relevance and coherence are moderately low. The project output was produced as planned after the changes in Phase 1 and almost as planned in Phase 2. The project period exceeded the plan due to the need to redo the detailed design in Phase 1 and delays in the relocation of utilities such as electricity, communications, and water pipes, which were the responsibility of the Kenyan side in both phases. The project costs for the Japanese side were within the plan but slightly exceeded the plan due to an increase in the cost of relocating utilities, which was on the Kenyan side. Therefore, efficiency is moderately low. As the expected effects were mostly achieved, including easing traffic congestion, ensuring safety, regional development, the efficiency of the movement of people and goods, and improving living. Therefore, the projects' effectiveness and impacts are high.

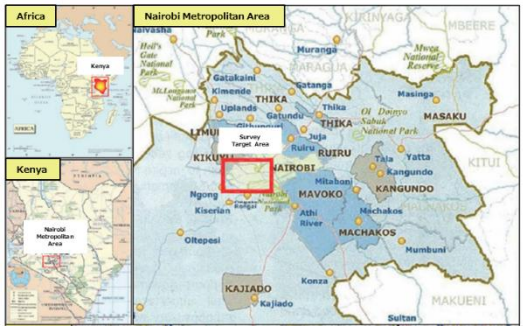
Regarding the operation and maintenance of these projects, there were some issues with the system, preventative measures for risks, and the current status of facility maintenance, and it can be said that there is little prospect of improvement or resolution. Therefore, sustainability is

[1] "The Project for Dualling of Nairobi-Dagoretti Corner Road C60/C61" (hereinafter called "Phase 1"), "The Project for Dualling of Nairobi-Dagoretti Corner Road C60/C61 (Phase 2)" (hereinafter called "Phase 2").

moderately low.

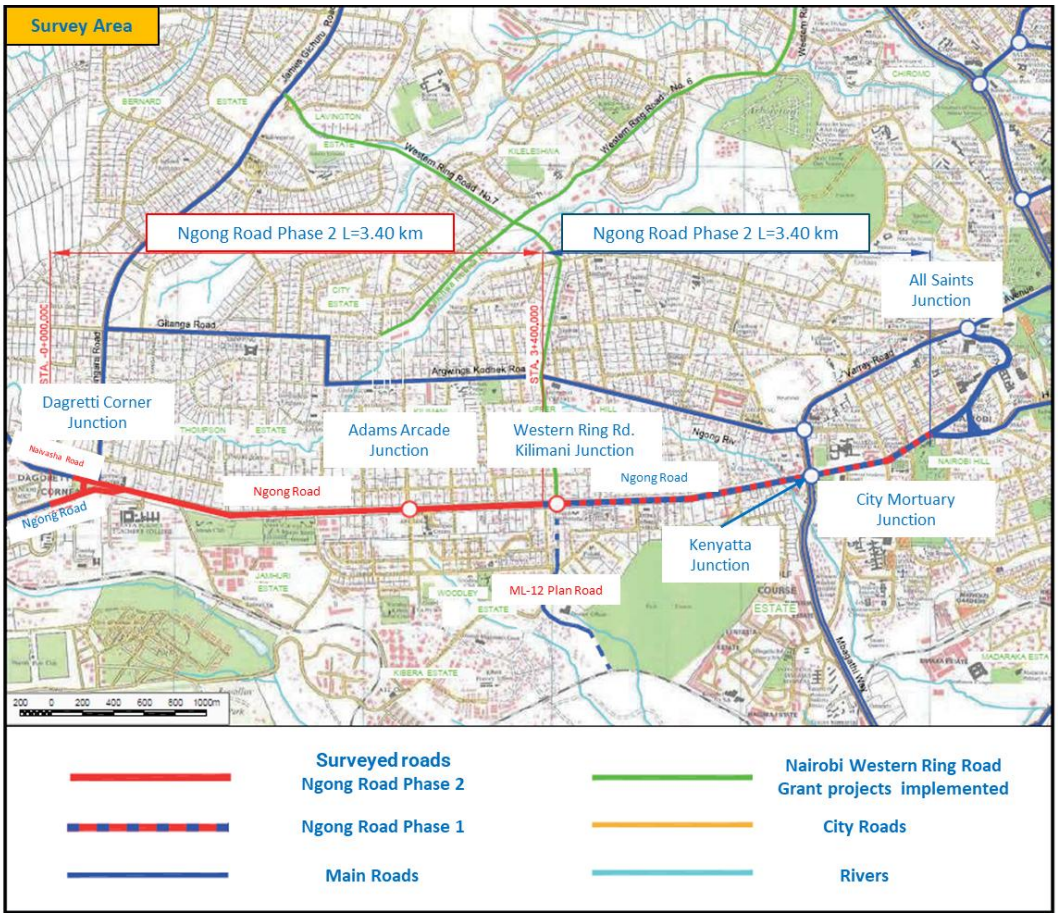
In light of the above, these projects are evaluated to be partially satisfactory.

1. Project Description



Project Location
(Source: Preparatory Study Report)

Ngong Road Constructed by the Project
(Photo by the external evaluator)



Project Location (Source: Preparatory Study Report)

1.1 Background

Nairobi, the capital of Kenya, has been rapidly developing, with a population of 3.3 million in 2010 and expected to grow to 4.3 million by 2025. In addition, the number of new vehicles registered throughout Kenya has remained at around 200,000 per year, and other factors have led to a rapid increase in traffic volume within the city. However, the city's road network and public transportation development were not maintained, and traffic congestion became severe.

The target area of this project, Ngong Road, was a vital road for the movement of goods and citizens from the west of the city to the center and was the area with the most severe traffic congestion. However, the roads in the region were not well maintained, with sidewalks not paved, and there were issues such as hindrances to pedestrian and bicycle traffic, especially during rainy weather.

Due to the background, the government of Kenya requested the grant aid projects from the Japanese government to improve Ngong Road.

1.2 Project Outline

The projects were carried out to ease traffic congestion on Ngong Road. This major arterial road connects the center of Nairobi, the capital of the Republic of Kenya, with the western part of the city by widening the road, installing sidewalks, and developing ancillary facilities, thereby ensuring convenience and safety of travel and contributing to the smooth flow of people and goods within the city.

Grant Limit / Actual Grant Amount	(Phase 1) 1,566 million yen / 1,566 million yen (Phase 2) 2,680 million yen / 2,534 million yen
Exchange of Notes Date / Grant Agreement Date	(Phase 1) June 2012 / June 2012 (Phase 2) July 2017 / July 2017
Executing Agency	Kenya Urban Roads Authority: KURA
Project Completion	(Phase 1) January 2018 (Phase 2) April 2020
Target Area	Ngong Road, Nairobi City
Main Contractor	World Kaihatsu Kogyo
Main Consultant	Katahira & Engineers International
Preparatory Survey	<Phase 1> Preparatory Survey for Cooperation (Basic Design Survey (part 1) September 2009, Preparatory Survey for Cooperation (Basic Design

	Survey (part 2) May-June 2010), Preparatory Survey for Cooperation (Basic Design Overview Explanation Survey) March 2011, Detailed Design November 2015 <Phase 2> Outline Design Survey: September- October 2016, Outline Design Discussion: March 2017, Detailed Design: July - October 2017
Related Projects	<Technical Cooperation> Development Study: The Study on Master Plan for Urban Transport in the Nairobi Metropolitan Area) (2003-2005), The Project for the Capacity Building of Road Maintenance (2006-2010), Development Study-Type Technical Cooperation Project on Integrated Urban Development Master Plan for the City of Nairobi (2012-2014), Project for Strengthening of Capacity on Road Maintenance Management through Contracting(Phase 1-3）(2010-2019) <Grant Aid> The Project for the Construction of Nairobi Western Ring Road (G/A February 2010)

2. Outline of the Evaluation Study

2.1 External Evaluator

Shima Hayase, IC Net Limited

2.2 Duration of Evaluation Study

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

Duration of the Study: December 2023 - February 2025

Duration of the Field Study: May 12 - June 9 and September 29 - October 12, 2024

2.3 Constraints During the Evaluation Study

For Phase 1 and 2, the operation and effect indicators measurement conditions were inconsistent between the planning time and the ex-post evaluation. This made comparing target and actual

values difficult based on precise quantitative data. In addition, although the scope was changed in Phase 1, the indicators were not revised to reflect the change. This made it impossible to analyze the data on actual and target quantitatively. Instead, the projects' achievements were determined by comparing the project sites before and after implementation.

3. Results of the Evaluation (Overall Rating: C[2])

3.1 Relevance/Coherence (Rating:②[3])

3.1.1. Relevance (Rating:②)

3.1.1.1 Consistency with the Development Plan of Kenya

Kenya's long-term national development plan, *Vision 2030 (2008-2030)*, aims to become a middle-income country by 2030 and positions infrastructure development as the foundation for growth in the "economic," "social," and "political" sectors. In the road sector, strengthening efforts are indicated, including road construction, improvement of maintenance capacity, measures to combat congestion in urban areas, and the increase in overloaded vehicles. The first to fourth Medium-Term Plans[4](MTPs) are based on the long-term national development plan, which corresponds to the project planning to ex-post evaluation time, the expansion of the road network, and the improvement of existing roads have been consistent priorities.

The importance of road infrastructure development for the Nairobi metropolitan area is indicated in the *Road Sector Investment Programme*[5], which is based on the above-mentioned medium-term plan, the Nairobi Integrated Urban Masterplan (formulated through the JICA technical cooperation the Project on Integrated Urban Development Master Plan for the City of Nairobi (November 2012 to December 2014)), and the *County Integrated Development Plan 2023-2027*, which was formulated at the time of the ex-post evaluation.

The projects contribute to developing the road network in the Nairobi metropolitan area. They are highly consistent with the national and Nairobi metropolitan area development plans at the time of planning and ex-post evaluation.

3.1.1.2 Consistency with the Development Needs of Kenya

At the time of planning (2010), the population of Nairobi City was 3.3 million and was predicted to reach 4.3 million by 2025. The population has been growing much faster than expected. As of 2019, the city's population already exceeded 4.3 million and was predicted to exceed 5 million by 2027[6]. Kenya has maintained an economic growth rate of 4% to 5%, and the number of registered vehicles, including used cars, in the country has doubled from about 1.05 billion at the time of the

[2] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[3] ④: Very High, ③: High, ②: Moderately Low, ①: Low
[4] the First Medium-Term Plan (2008-2012), the Second Medium-Term Plan (2013-2017), the Third Medium-Term Plan(2018-2022), and the Forth Medium-Term Plan (2023-2027)
[5] The programme has been updated in accordance with each medium-term plan
[6] Nairobi City-County Integrated Development Plan 2023-2027

project planning (2010) to about 2.1 billion by 2021[7].

While this rapid development has been seen, traffic congestion has become more serious, and dangerous behaviors such as driving in the wrong direction into oncoming lanes and driving on sidewalks during traffic jams have also been traffic safety issues. In addition, plans for developing Bus Rapid Transit[8] (BRT) and Light Rail Transit (LRT) systems to accommodate mass transit as public transport emerged frequently during project implementation. Still, these had not been realized at the time of ex-post evaluation.

This project played a part in easing traffic congestion. Still, even at the time of ex-post evaluation, the development of public transport systems such as BRT and LRT had not been realized, and congestion still exists in Nairobi during commuting hours. Therefore, even at the time of ex-post evaluation, there was a need for road development and congestion easing in Nairobi, and it can be said that this project met development needs.

3.1.1.3 Appropriateness of the Project Plan and Approach

(1) Change of Grant Agreement

The Grant Agreement for Phase 1 was extended twice due to delays in the overall process. The leading cause of the delay was reworking the detailed design at the request of the Kenyan side. The process of redoing the detailed plans is explained below.

After the Grant Agreement for Phase 1 was signed in June 2012, plans for LRT and BRT emerged that had not been scheduled at the time of the preparatory survey, and the Kenyan side requested that the design of this project be reconsidered. In November 2012, a detailed design was prepared based on the LRT plan at the request of the Kenyan side. However, the transfer of electrical and communication facilities and water pipes, which are the responsibility of the Kenyan side, was delayed, and it was not possible to select a contractor for Ngong Road. Furthermore, although the Kenyan side requested that the detailed design be reworked based on the BRT plan in November 2014, no specific information was provided about the BRT construction plan that the Kenyan side was planning. Therefore, while the BRT construction plan remained unclear, multiple designs for this project were prepared so that it would be possible to respond in the future, and coordination with the Kenyan side was carried out. In August 2015, a final agreement was reached with the Kenyan side to shorten the project section from 4.29 km to 2.57 km and to prepare a site on the south side of the road in preparation for future BRT construction. This was a compromise taken to continue the project without being trapped by the progress of the BRT plan, which had been shelved due to a lack of progress on the partner country's part. This was an unavoidable change in response to an unforeseen need. The change

[7] Kenya National Bureau of Statistics

[8] A system that combines the installation of bus lanes and boarding/disembarking platforms, as well as the introduction of bus priority signals, to improve bus transport's punctuality, speed, and frequency.

was made appropriately after sufficient consideration of the content, discussions with the Kenyan side, and the necessary procedures for approval from JICA.

(2) Appropriateness of the Project Plan

The project plan needed to be revised for 1) to 3).

1) Setting of Operation and Effect Indicators

For Phase 1, because of reviewing the plan in response to a request from the Kenyan side, the construction section of the project was shortened from 4.69 km to 2.57 km. The "average travel time during peak hours on the target route (4.69 km)" was still applied to indicate effectiveness. Still, to accurately measure the effectiveness of the project, the review of indicators and target values commensurate with the shortening should have been considered. Before the project was implemented, the reasons for congestion varied depending on the location, such as intersections and road surface conditions, so the average speed and average travel time would change if the target section changed. For example, these indicators would improve simply because the bottleneck section was removed from the construction target, which would not accurately represent the project results. In addition, it would have been desirable to set data such as traffic volume and driving speed at each location to grasp the traffic improvement status due to the widening work.

2) Definition of Operation and Effect Indicators and Data Measurement Method

For both Phase 1 and Phase 2, the definition and measurement method of operation and effect indicator data should have been set at the time of planning. Because these settings were not made clear, it is difficult to confirm the effectiveness of the project by comparing the data at the time of the ex-post evaluation with the data at the time of planning. When setting the indicators, it seems necessary to specifically indicate the target points, sections, and periods for collecting data on traffic volume and required time.

3) Coordination with Related Organizations

It seems that coordination was necessary between KURA and related organizations such as Nairobi City, police, and power companies from the project planning stage regarding the division of responsibility for the maintenance of the right-of-way (ROW) and surrounding areas of Ngong Road and the jurisdiction for the use and maintenance of the road after the project is completed. KURA is responsible for road construction plans and maintaining roads, gutters, medians, and green spaces. Still, the division of responsibility for maintenance is unclear because the role of approval and management of the surrounding area of the road, bus stops, and advertising towers is not specified. For example, street vendors operating on the ROW and sidewalks of Ngong Road were relocated due to the construction of the projects. Still, they returned and opened their businesses after the construction was completed. In interviews, it was revealed that the street vendors and advertising towers built on the ROW were installed without the knowledge of KURA

and the contractors responsible for the maintenance and management of Ngong Road, including the ROW. There are problems, such as the obstruction of pedestrians and the abandonment of garbage, but the response has been delayed.

(3) Evaluation Results of Past Similar Projects and Lessons Learned for the Projects

In the plan for Phase 1, the lesson learned for this project was that the resident relocation, which was the responsibility of the recipient government, should be completed before the start of construction and the project should proceed without delay. The resident relocation was carried out smoothly and did not hinder the start of construction. However, there were delays in relocating utilities such as electricity, communication, and water pipes, which were one of the recipient government's responsibilities. Based on this lesson, in Phase 2, KURA outsourced the relocation of utilities to a specialist contractor, but it was unable to procure the budget or coordinate with related organizations, such as the electricity company and the City of Nairobi, on time.

The Phase 2 plan noted that there had been cases in grant aid projects in other African countries where quality deterioration, such as rutting and cracking, had occurred after completion and that attention should have been paid to design conditions, such as setting planned traffic volumes and pavement composition. Based on this, Phase 2 included measures such as pavement design that assumed a future influx of heavy vehicles and identifying areas of soft ground and replacing them with better-quality soil. Defect inspections showed no deterioration in quality.

Efforts were made to utilize two lessons learned from similar past projects, but the first did not yield the expected results.

3.1.2 Coherence (Rating:③)

3.1.2.1 Consistency with Japan’s ODA Policy

The Japanese government's *Country Assistance Policy for the Republic of Kenya* (April 2012) listed economic infrastructure development as a priority area of support in line with Kenya's national development plan *Vision 2030* and positioned this project as one of the Nairobi Metropolitan Area Transport Network Improvement Program projects. *JICA Country Analysis Paper for the Republic of Kenya* (April 2011) also analyzed the issue of "transport infrastructure development" as a priority. In particular, the *Nairobi Integrated Urban Masterplan* (NIUPLAN), which was formulated with JICA's assistance, listed this project as a priority project in the urban transport facilitation plan, as Ngong Road is the most congested road in the city and is an essential road for transporting goods and people to the city center. Therefore, it can be said that this project is highly consistent with Japan's development cooperation policy at the time of planning.

3.1.2.2 Internal Coherence

The JICA technical cooperation project, *Project for Strengthening Management Capabilities for*

Outsourcing of Road Maintenance Work[9], strengthened KURA staff's procurement and contract management capabilities regarding outsourcing. Maintenance work for this project is outsourced under a Performance Based Maintenance Contract[10] (PBC). In collaboration with the JICA technical cooperation project, the executing agency participated in training on PBC for road maintenance work. This resulted in the smooth implementation of the PBC contract and contributed to ensuring the project's sustainability by outsourcing and supervising appropriate contractors.

3.1.2.3 External Coherence

In the Nairobi metropolitan area, road development projects were being implemented by donors such as the World Bank, the African Development Bank, the European Union, and China. JICA and other donors coordinated to avoid overlaps between projects, but there was no plan or track record for collaboration.

The projects were consistent with the development policy of the Kenyan government, the development policy of the Nairobi metropolitan area at the time of planning and ex-post evaluation, and Japan's assistance policy for Kenya at the time of planning. Development needs for road development and congestion relief existed up until the time of ex-post evaluation. Regarding internal coherence, the effects of collaboration were apparent, but collaboration with other donors was not observed. There was a significant change in the scope of the project plan and approach based on a request from the Kenyan side, and this was carried out through appropriate consideration and procedures, but the indicators were not revised. In addition, it was necessary to clarify the definitions and measurement methods of the data for operation and effect indicators so that the projects' effects could be compared quantitatively and to confirm the maintenance system after completion, including related organizations.

Therefore, its relevance and coherence are moderately low.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs (for details, see Attachment 1)

As noted in the section on relevance, the target section for Phase 1 was nearly halved. After the grant agreement was signed, plans for public transport in the Nairobi metropolitan area were

[9] Phase 1: May 2010 (3 years), Phase 2: November 2013 - November 2015, Phase 3: December 2016 - November 2019

[10] The client specifies the performance required for the roads and their associated facilities to be managed in the contract (flatness of the road surface, number of potholes, height of roadside vegetation, etc.). The specific work content for achieving that performance is left to the judgment and discretion of the contractor, with the payment amount being determined according to the level of achievement (full payment will be made if 100% of the required performance is achieved).
(Source: Final Report of the Study on Technical Cooperation for Performance-Based Road Maintenance Management in Developing Countries and Around the World, February 2023)

revised, and the detailed design was reconsidered at the request of the Kenyan side, making this an unavoidable change.

Compared to the revised plan, it can be said that the project went as planned. As for the output of Phase 2, the road development section was slightly extended to adjust for connections with other roads but was constructed almost as planned.

3.2.2 Project Inputs

3.2.2.1 Project Cost[11]

The project costs for both Phase 1 and Phase 2 were slightly higher than planned. The planned total cost for Phase 1 was 1,698 million yen (1,565 million yen for the Japanese side and 133 million yen for the Kenyan side), while the actual total cost was 1,927 million yen (1,565 million yen for the Japanese side and 362 million yen for the Kenyan side), 113% of the planned cost. The construction costs for the Japanese side were reduced to reduce the scope, but the design and construction management costs increased due to redesign and extension of the period, so the planned and actual costs were almost the same. The cost of relocating utilities for the Kenyan side was not estimated properly, so it actually cost six times more than planned, which resulted in an increase in the total project cost.

The planned total project cost for Phase 2 was 2,900 million yen (2,680 million yen for Japan and 220 million yen for Kenya), but the actual cost was 3,034 million yen (2,549 million yen for Japan and 451 million yen for Kenya), 105% of the plan. Japan's share of the cost came in within the plan, but the cost of relocating utilities, which was Kenya's share of the cost, exceeded the estimate, and this increase led to an increase in the total cost.

The total cost for both phases was 4,961 million yen (108% of the plan), slightly exceeding the planned cost of 4,598 million yen.

3.2.2.2 Project Period[12]

The project period for Phase 1 was planned to be from June 2012 to May 2014 (24 months), but the actual period was from June 2012 to January 2018 (68 months), which was 283% longer than planned. Phase 2 was planned for June 2017 to June 2019 (24 months), but the actual period was from July 2017 to April 2020 (34 months), which was 142% longer than planned.

---

[11] At the time of planning, the following project costs were estimated as the share of the Kenyan side, but these expenditures were not incurred. Phase 1: Land acquisition costs 50 million Kenyan shillings (61 million yen), relocation compensation costs 3 million Kenyan shillings (3.7 million yen). Phase 2: Relocation compensation costs 37 million Kenyan shillings (40.3 million yen), and environmental monitoring costs 3.8 million Kenyan shillings (4.1 million yen). Relocation compensation costs were estimated at the time of planning for both phases. Still, after discussions with the people to be relocated, the relocation was voluntary, so no compensation was incurred. Land acquisition costs estimated for Phase 1 did not result in expropriation for construction. In addition, the environmental monitoring survey for Phase 2 was approved as an additional survey based on the Phase 1 survey.

[12] The project period was defined from the Grant Agreement (G/A) to when the planned sections are put into service (= completion date).

The significant extension of Phase 1 was due to a request from the Kenyan side to reconsider the LRT and BRT public transportation systems plans, which led to reconsidering the scope. After discussions with the Kenyan side, construction of the project started at February 2015, which was a significant delay. In both phases, the delay was also due to the time for coordination with the electricity and power companies and the Nairobi city government regarding the relocation of utilities, which was the responsibility of the Kenyan side.

The total duration of both phases was 102 months (213% of the plan), significantly longer than the planned 48 months.

The scope of Phase 1 was reduced due to coordination with the public transport construction plan, and the output was changed but implemented as planned. Phase 2 was constructed almost as planned. The project cost exceeded the plan slightly due to an increase in the Kenyan side's share of the burden in both phases. The project period also exceeded the plan due to the need to redo the detailed design in Phase 1 and delays in the relocation of utilities in both phases.

Therefore, efficiency of the project is moderately low.

3.3 Effectiveness and Impacts[13] (Rating:③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

The indicators set at the time of planning and their respective standard values, target values, and actual values are shown in Table 1.

As shown in the section on relevance, the definitions and measurement methods were not clearly stated, so it is not possible to quantitatively analyze the achievement status by comparing the data from the time of the ex-post evaluation with the targets. However, it can be said that each indicator was primarily achieved based on the reasons explained below.

Note that indicators (a) to (d) were set at the time of planning Phase 2, and no target values were set for the Phase 1 section. Still, Ngong Road is a major road connecting the west and center of the Nairobi metropolitan area, and the Phase 2 section is located on the west side. In contrast, the Phase 1 section is on the metropolitan area side. Therefore, commuting to the metropolitan area always passes through the Phase 1 section, so the evaluation judgment assumes they had the same effect. (e) and (f) were set at the time of planning Phase 1, but as explained in the section on relevance, they were not reviewed in response to the scope reduction, so they are used for reference.

[13] When providing the sub-rating, Effectiveness and Impacts are to be considered together.

Table 1: Operation and Effect Indicators

Indicators	Baseline	Target	Actual	Actual /Target Ratio
	2016	3 years after project completion 2022	3 years after project completion 2023	
(a)Annual Average Daily Traffic Volume (vehicles/day per lane)	14,100	18,600	30,711 (Note 2) 26,018 (Note 3) 31,153 (Note 4)	◎165% ◎140% ◎168%
(b)Transportation Volume Passenger (person/year)	43,970,000	57,883,000	74,111,000 (Note 5)	◎128%
(c)Transportation volume Freight Volume (ton/year)	2,531,000	3,344,000	1,696,520 (Note 6)	△51%
(d) Travel Time (minutes) (Note 7)	40	6.4	7	○91%
(e)Average Travel Speed of peak time (km/hr)	10 (Measurement year: 2010)	About 30 (Target Year: 2014)	Morning Peak Hours 26.5 Afternoon Peak Hours 24.5 Off-peak Hours 43.0	○88% ○82% ◎143%
(f)Average Travel Time of project target road (4.69 km) at the peak time (minutes)	29 (Measurement year: 2010)	9 (Target Year: 2014)	12 (2024)	○75%

Source: The source of the actual values are materials provided by the JICA Kenya Office, and KURA provides the actual values in (f).
(Note 1) The numerical comparison of the target and actual values is indicated according to the percentage: ◎ = over 100%, ○ = 70% to 100%, △ = 50% to less than 70%.
(Note 2) Dagoretti Corner Junction (Intersection located at the western end of the target section of Phase 2)
(Note 3) Kilimani Junction (Intersection located at the border between Phase 1 and 2)
(Note 4) Kenyatta Junction (Junction located at the midpoint of the Phase 1 section)
(Note 5) Calculated based on the average number of passengers for each vehicle (2.5 passenger cars and 4WDs, 13.5 mini-buses, 21.6 buses, two mini to large trucks, 1.25 motorbikes).
(Note 6) Calculations are based on the assumption that the average cargo volume of each vehicle (2-ton small truck, 4-ton medium truck, 15-ton large truck, 20-ton trailer) will remain unchanged from the time of the 2016 survey.
(Note 7) Equivalent to the Phase 2 section (between Kilimani Junction and Dagoretti Corner Junction)

(a) Annual Average Daily Traffic Volume

The traffic volume per lane exceeded the target value at all three measurement points in the Phase 2 section. This is due to improvements at intersections, road surface improvements, and the change from one lane in each direction at the time of planning (2016) to two lanes in each direction, allowing vehicles to travel without being blocked by parked vehicles.

(b) Transportation Volume: passenger volume

It can be said that the passenger volume has increased significantly. In interviews with bus operators, they responded that the projects had improved the road surface and changed the road from one lane in each direction to two lanes, increasing transportation efficiency and allowing them to operate more buses. Ngong Road is a major road connecting the west and center of the Nairobi Metropolitan Area, and many buses transport commuters and students operate on it. The

presence of major hospitals and extensive religious facilities in the Nairobi Metropolitan Area around Ngong Road also has an impact.

(c) Transportation Volume: Freight Volume

The actual transport volume is lower than the benchmark value. The JICA Kenya Office provided the data, but the increase in traffic volume after project completion and the increase in commercial facilities around Ngong Road does not match the actual situation. The calculation method for the estimated cargo volume may be different. In addition to Ngong Road, improvements are also being made to other roads in Nairobi, such as the Nairobi Southern Bypass and the flow of trucks and other cargo vehicles may have changed.

(d) Travel Time

A vehicle's actual travel time to the project section in Phase 2 was 7 minutes, a significant reduction from the planned 40 minutes. In addition to the widening of the road and the improvement of the road surface, the problem of on-street parking when buses were getting on and off, which was a problem before implementation, was solved by making the road two lanes on each side and establishing bus stops and bus bays[14], which no longer block the road when buses are stopped.

(e) Average Travel Speed of peak Time

This is an indicator set at the time of planning Phase 1, and the standard and target values were the average travel time for the entire section before the scope was reduced. The peak-hour travel speed at the time of planning was 10 km/h, but the actual speed was about 25 km/h, showing an improvement. Although the target section of this project was reduced by about half, the two-lane road on each side prevented traffic jams caused by roads being blocked when buses were getting on and off, and the road surface was improved, so it is assumed that areas outside the scope also benefited.

(f) Average Travel Time during Peak Hours on the Target Route (4.69 km)

This is an indicator set during the planning of Phase 1 and is the time required for vehicles to travel the 4.69 km section during peak hours before the scope was reduced. Compared to the baseline value of 29 minutes, the data provided by the implementing agency at the time of the ex-post evaluation (2024) was 12 minutes, meaning there has been an improvement, including in- and out-of-scope areas.

[14] Bus parking spaces cut into the sidewalk

Photo 1: Before the Project

(Source: Project Completion Report)

Photo 2: Upon completion, Ngong Road has two lanes instead of one, with drainage ditches on both sides and sidewalks separated from the road. (Source Project Completion Report)

(Note) Road lanes are indicated by red arrows pointing in the direction of travel, and blue semicircles indicate sidewalks.

3.3.1.2 Qualitative Effects (Other Effects)

The following qualitative effects were aimed for in each phase:

Phase 1 (a) Constructing sidewalks and bicycle paths will enable pedestrians and cyclists to travel safely and comfortably. (b) The construction of streetlights will significantly improve nighttime safety at bus stops and crosswalks with a lot of pedestrian traffic. (c) Benefits for the poor (eliminating extra charges for shared buses, improving the living environment by reducing exhaust fumes caused by congestion, etc.).
Phase 2 (a) Improving the efficiency of logistics. (b) Ensuring the safety of pedestrians and cyclists by developing sidewalks and bicycle paths

Summarizing the qualitative effects aimed for in both phases, this evaluation concludes that (a) ensuring traffic safety through the installation of sidewalks, roads, streetlights, and traffic lights, (b) consideration for the poor, and (c) improving the efficiency of the movement of people and goods. As these correspond to the overall goal, they will be dealt with in the impact section in the next section.

3.3.2 Impacts

3.3.2.1 Intended Impacts

The expected impacts of this project were "ensuring convenience and safety of mobility" in Phase 1 and "smooth flow of people and goods within Nairobi city" in Phase 2. Although specific indicators were not set, based on the qualitative effects envisaged at the time of planning[15], the project's impacts were categorized into (a) Ensuring Safety, (b) Contribution to Poverty Reduction, (c) Improving the Efficiency of the Movement of People and Goods, and (d) Contribution to Improving Living Conditions, and the manifestation of the project's impacts was analyzed from the perspectives shown in Table 2.

Information on the manifestation of impacts was obtained through qualitative surveys, on-site reconnaissance, and interviews with the implementing agency.

Table 2: Intended Impacts and Evaluation Points

Items	Evaluation Points
(a) Ensuring Safety: Safety for Pedestrians, Cyclists and Drivers	・ Effectiveness of sidewalks, bicycle paths, bus stops, traffic lights, signs ・ Effectiveness of pavement, intersection improvements, drainage facilities, etc. ・ Contribution to nighttime safety through the provision of streetlights (public safety, road safety) ・ Contribution to the number of accidents and casualties
(b) Contribution to Poverty Reduction	・ Additional charges for buses during traffic jams, and the impact of improved access to urban areas on household finances ・ Examples of contributions to slum safety
(c) Improving the Efficiency of the Movement of People and Goods	・ Changes in commute times and convenience of transportation (buses and trucks)
(d) Contribution to Improving Living Conditions	・ Changes in the impact of road exhaust gases, noise, vibration, etc. ・ Effects of greening roads by installing roadside trees and drainage facilities

(a) Ensuring safety: The expected effects of ensuring safety have been realized mainly, but there are still some issues.

・ In the qualitative survey[16], 34 respondents (80%) out of 43 answered that Ngong Road has become safer for pedestrians and drivers.

[15] The qualitative effects expected from Phase 1 of this project were: 1) the construction of sidewalks and bicycle paths will enable safe and comfortable passage for pedestrians and cyclists, 2) the construction of streetlights will significantly improve nighttime safety at bus stops and crosswalks where there is a lot of pedestrian traffic, and 3) benefits to the poor (elimination of extra charges for shared buses, improvement of living environment through reduction of exhaust gas caused by congestion, etc.). Phase 2 aimed to 1) improve the efficiency of logistics, and 2) ensure the safety of pedestrians and cyclists through the construction of sidewalks and bicycle paths.

[16] The qualitative survey was conducted in the form of interviews based on a questionnaire targeting 23 business owners (shopping malls, restaurants, sports facilities, car dealerships, schools, medical facilities, religious facilities, etc.) and 20 drivers (bus, matatu, motorbike taxi, school bus drivers, etc.) around Ngong Road. Although it was not possible to select subjects randomly, we selected roughly the same number of subjects from Phase 1 and Phase 2 areas, and by obtaining responses from subjects in a wider range of business sectors, we were able to incorporate a diverse range of opinions.

- Roadside facilities that ensure safety were listed as sidewalks, bus stops, traffic lights, signs, pavement, intersection improvements, and drainage ditches. No one answered that bicycle lanes contribute to safety. In the field survey at the time of the ex-post evaluation, there were almost no bicycles on the bicycle lanes and cases where motorcycles were using the bicycle lanes.
- The effects of streetlights were improving visibility, especially at night, and it was answered that they contributed to improving safety for both pedestrians and drivers and public safety. However, the field survey found that many streetlights were not functioning because their electric cables had been stolen.
- The increase or decrease in traffic accidents was almost equal, with 18 respondents (41%) reporting an increase and 20 respondents (46%) reporting a reduction. The reasons for the increase included increased speeding and reckless driving due to road widening, a lack of U-turn lanes, and problems with intersection design. The reasons for the decrease in accidents included road improvements, road widening to accommodate traffic volume, and the implementation of road safety measures such as traffic signals and pedestrian crossings.
- According to a separate survey conducted by the JICA Kenya Office, the number of traffic accidents on Ngong Road was 763 before the start of Phase 2 (2016). Still, it decreased to 531 after the project's completion (2021).
- In interviews during the reconnaissance and qualitative surveys, roundabout[17] intersections (Figure 1) were cited as dangerous intersections with many accidents. In interviews, it was pointed out that there are many cases where drivers entering an intersection from a straight road mistake a roundabout for a gentle curve and enter the intersection while maintaining their speed, resulting in collisions with vehicles in the intersection where priority passage should be given. According to nearby business owners, near-collisions occur almost daily, and collisions occur at least once a week. As safety is negatively affected, KURA is also considering measures to address the issue.

[17] A type of circular intersection with a circular area (central island) in the center of the intersection.

Figure 1: A roundabout where accidents frequently occur
(Source: Google Maps with arrows overlaid by the external evaluator)

(Note) Blue arrows indicate vehicles heading straight into an intersection, and red arrows indicate vehicles exiting an intersection onto a side street.

- In the qualitative survey, there were opinions requesting the completion of the footbridge (which was left half-constructed and outside the scope of this project) to allow safe passage for wheelchair users, the elderly, pregnant women, and others, as there are many hospitals along Ngong Road, repainting of the fading sidewalk markings, and reinstallation of the stolen road signs indicating pedestrians have the right of way and stop signs.

Photo 3: Sidewalk in front of the hospital
(Photo by the external evaluator)

Photo 4: A pedestrian bridge still under construction (Photo by the external evaluator)

(b) Contribution to Poverty Reduction: The project has promoted local businesses and employment.

- Effects of job creation: Road improvement has led to an increase in the opening of commercial facilities, companies, and street stalls (including non-regular businesses), which has led to an increase in employment.
- Improved access: Access to commercial areas, markets, medical facilities, educational

institutions, and religious facilities along Ngong Road has improved. The increase in users has also increased demand for motorbike taxis and taxis.

- Drivers responded that the easing of congestion has reduced travel time and helped them save on gasoline.
- Surcharge for buses during congestion: The reduction in surcharge for buses during congestion, which was expected at the time of planning, could not be confirmed as it had become a fixed rate at the time of the ex-post evaluation.

(c) Improving the Efficiency of the Movement of People and Goods: The project has contributed to the efficiency of movement, but the problem of inefficient traffic due to congestion remains.

- In the qualitative survey, 36 respondents (84%) answered that they could travel faster/much faster on Ngong Road, and 39 respondents (90%) responded that it had become easier to travel and drive.
- Even at the time of the ex-post evaluation, there were traffic jams in the mornings and evenings. Respondents cited increased traffic volume, too many intersections on the road, and an installed median strip, making it a two-lane, one-way road. Still, there is no dedicated lane for U-turns, and the lack of development of roads connecting to Ngong Road are factors that cause traffic jams.

(d) Contribution to Improving Living Conditions: The expected effects have mainly been realized.

- In the qualitative survey, 38 respondents (88%) answered that the project had improved their living and natural environments. The improvements included reduced traffic congestion, fewer exhaust fumes and noise, less dust from paved roads, improved drainage, pedestrians no longer having to deal with puddles and mud, fewer foul odors from drains, and improved water quality. In addition, some people said that these effects have contributed to reducing health damage and that installing streetlights has helped prevent crime and reduce traffic accidents. Two respondents (5%) each said that the situation has remained the same or worsened, and the reason for this was that traffic congestion still exists after completion.
- 27 respondents (63%) said that greening and beautification works have contributed to environmental improvement. Specific effects included improved aesthetic scenery, improved air quality from greening, unofficial construction prevention, and biodiversity promotion. On the other hand, some people said that the effects have not yet been fully realized, that greening projects are being neglected, that the impact on the environment is minimal, and that tree planting and landscaping are insufficient.

Photo 5: Before the project
Before the drain was installed
(source: Preparatory Study Report)

Photo 6: After the project
A drainage ditch between the sidewalk and the road
(Photo by the external evaluator)

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Environment

This project was classified as Category B in the road sector of the International Organizations Guidelines for Environmental and Social Considerations (issued in April 2010) because it was not a large-scale project, the adverse impacts on the environment were not deemed to be significant, and the project did not fall within the characteristics or areas that are prone to impacts listed in the guidelines.

KURA prepared an Environmental Impact Assessment (EIA) report for this project and submitted it to the National Environmental Management Authority (NEMA) for the start of Phase 1. It was approved on March 3, 2011. For Phase 2, NEMA approved the supplementary EIA report for the target section in July 2017.

During construction, the project was carried out under the specified items (air, noise and vibration, water quality, biodiversity) and safety measures, and the construction company also conducted monitoring and reported it to KURA. In addition, KURA conducted an environmental survey three years after the project was completed, and the report was shared with JICA. According to KURA, no complaints were reported.

(2) Resettlement and Land Acquisition

The widening work used the ROW in both phases, so no new land acquisition was required. In Phase 1, Project Affected Persons (PAPs) were identified, including six kiosks, about 20 small-scale merchants, and 12 garden shop owners operating within the ROW, and their stores had to be removed and relocated. In Phase 2, 68 PAPs, including street vendors and garden shop owners, were identified within the ROW. According to KURA, the relocation was decided through discussions between KURA and the PAPs, but since the PAPs relocated voluntarily, no compensation was paid. No problems were identified with the consensus-building process.

After completing the project, businesses resumed on the sidewalks and ROW of Ngong Road. During the site survey, street vendors and garden shops were seen operating, as shown in the photo, and according to interviews, there was no adverse impact on their lives because the relocation of the stores was temporary. On the other hand, during the survey at the time of the ex-post evaluation, problems such as obstruction to pedestrians due to occupation and the abandonment of garbage were identified.

From the top, Photos 7 and 8: Street stalls lined up along the road, Photo 9: Plant shop, Photo 10: Street stall near a bus stop (Photo by the external evaluator)

(3) Gender Equality, Social Systems and Norms, People's Well-being and Human Rights

In both phases, no particular impacts were anticipated, nor were any specific impacts observed.

(4) Marginalized People

Kibera slum, the largest in East Africa, is located to the south of Ngong Road. At the time of planning, it was expected that easing congestion would reduce travel time for residents to urban areas and increase disposable income by eliminating the need to pay extra fares to public buses when congestion occurs. In addition, the expansion of the target road was expected to positively impact people with low incomes, such as making it easier for them to access social services such as schools and hospitals, as well as markets and workplaces.

The project has broadly benefited users of Ngong Road and the surrounding residents, and no impact was seen that was specific to only those who were hindered from participating in society equally.

(5) Unintended Positive / Negative Impacts

At the time of planning, there were concerns among bus and motorbike taxi operators and drivers that the project would force them off Ngong Road and result in job losses[18]. No transport operators were forced out, and in interviews with matatu operators at the time of the ex-post evaluation, they cited positive effects such as increased services, improved fuel efficiency, and easier driving because of the road improvements.

Regarding effectiveness, the project's effect on "alleviating traffic congestion on Ngong Road" was confirmed through the operation effect indicators, the road's utilization status at the time of the ex-post evaluation, and interviews in the qualitative survey. The impact has also been mainly realized as expected. There have been no notable negative effects on the natural environment or resident relocation.

Based on the above, the projects have primarily achieved their objectives. Therefore, effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

In terms of policy, the *Third Medium-Term Plan (2018-2022)* and the *Fourth Medium-Term Plan* (2023-2027)" created under the long-term national development policy *Vision 2030* and the *Nairobi Metropolitan Area Development Plan* continue to place importance on the development and maintenance of road infrastructure, so the sustainability of the policy is guaranteed.

On the other hand, in terms of the system, there is a gap between the system and practice. There is a contradiction between the Constitution and the Kenya Road Act in the division of roles in road management between KURA and local governments. According to KURA, since municipal roads and urban roads defined in the Road Act are equivalent to National Truck Roads under the Constitution, it is proposed that the names be unified and placed under the jurisdiction of KURA[19]. ROW is a part of the road, so KURA has the authority and responsibility to manage its maintenance. However, since specific systems and regulations have not been clearly stated, there is a gap in practice. For example, during the field surveys conducted in this study, it was found that there was no clear division of responsibilities between Nairobi City and the handling of street stalls on the ROW, business permits, or permits to install advertising boards. As a result, stalls have been set up in large numbers without permission or registration, and it was also unclear who was responsible for supervising them.

[18] At stakeholder meetings held in 2016-2017, transporters expressed the view that relocation away from Ngong Road would mean job losses and inconvenience to customers, and that they would prefer to continue operating within the ROW during construction and after the road is opened.

[19] KURA Strategic Plan 2023-2027

3.4.2 Institutional/Organizational Aspect

(1) Executing Agency

KURA, the executing agency, is one of the four public corporations[20] established by the Kenya Road Act (promulgated in 2007). It was fully launched in 2009 when the Ministry of Roads (MoR) was the competent authority. When planning Phase 1, it had jurisdiction over a total length of 8,863 km.

At the time of the formation of Phase 2, the competent authority became the Ministry of Transport, Infrastructure, Housing and Urban Development (MoTIH and UD), which was subordinate to the State Department for Infrastructure.

At the time of the ex-post evaluation, there was a reorganization of ministries and agencies by the *Executive Order No.1 of 2023*, and the competent authority became the Ministry of Roads and Transport (MoRT). In January 2016, the country's roads were reclassified, and KURA now manages 12,549 km of roads in Kenya.

KURA's organizational structure was changed from four bureaus (Planning & Environment, Design & Construction, Maintenance, and Accounting) at the time of planning to six bureaus (Road Planning & Design, Development, Road Asset & Corridor Management, Policy & Compliance, Corporate Services, and Audit) at the time of ex-post evaluation.

For road maintenance in this project, the Regional Urban Roads Coordination Division of the Road Asset & Corridor Management Bureau formulates the annual plan. It is responsible for outsourcing and supervising external contractors. At the time of ex-post evaluation, the lead government agency had changed, and the internal organization had also been restructured. Still, the roles and scope of each department have been clarified.

Table 3: KURA Maintenance Department and its Role

KURA Department Name	Maintenance Role in the Projects	Role
Road Asset and Corridor Management Authority	Regular inspection and repairs	· Preparation of road asset inventory and condition inspections · Preparation of annual maintenance plans · Preparation of bidding documents for road maintenance · Supervision of maintenance contractors
Regional and Urban Road Coordination Division within the same bureau	Inspecting and cleaning the road surface; Inspecting and cleaning drainage and other facilities; Unscheduled maintenance and repairs; Sealing and repairing cracks in pavement, repainting road markings; Repairing other damage	

(Source: KURA's answers to the Questionnaire)

KURA was expected to have a staff 500 when Phase 1 was planned. At the time of ex-post evaluation (2023), the number of staff is significantly insufficient, at 322 compared to a fixed staff of 638 (satisfaction rate of approximately 50%). The Road Asset Corridor Management Bureau,

[20] The other three are Kenya Highways Authority, Kenya Regional Roads Authority and Kenya Urban Roads Authority.

which is responsible for the maintenance and management of this project, has only two staff members (50%) compared to a fixed staff of four, while the Regional Road Coordination Department, which is responsible for the maintenance and management of this project, has only 13 staff members (87%) compared to a fixed staff of 15. An external audit[21] of KURA pointed out that there is a significant shortage of staff compared to the fixed staff and that there is a possibility that the mission and objectives may not be accomplished.

(2) Maintenance Contractors

The maintenance of roads and related facilities is outsourced to private contractors. KURA conducts competitive bidding and enters PBC contracts with private companies selected from over 20 companies. The details of the agreement are shown in Table 4. KURA audits the work every month and makes payments to private contractors if they meet the standards set out in the contract.

Table 4: Outsourced Duties from KURA

Maintenance work based on PBC: Cleaning of roads and sidewalks, maintenance of vegetation, cleaning of drains and culverts, removal of obstacles
Work-based on instructions from KURA: Repairing potholes, repairing pavement, repairing sidewalks, repairing median fences, repairing drainage channels and culverts, repairing road signs

(Source: Interview with Shawasha Company Ltd, the maintenance contractor)

The contractor entrusted with the supervision of Ngong Road has secured 10 inspectors and 120 to 150 part-time staff for cleaning and other tasks to carry out maintenance work. Specialized engineers oversee work based on instructions from KURA. According to the contractor, there is no shortage of personnel.

From the above, while the organization of the implementing agency is well established, there is a significant shortage of personnel. However, since maintenance work is outsourced to private contractors under a PBC contract, no practical problems have been found regarding organization and structure.

3.4.3 Technical Aspect

(1) Executing Agency

When planning both phases, KURA's technical level was deemed feasible due to its track record in implementing the grant aid project "Nairobi Western Ring Road Construction Project." In addition, it was assumed that no significant problems would arise since KURA had been assigned

[21] Kenya-Urban-Roads-Authority-2021-2022.pdf (oagkenya.go.ke) (Accessed July 20, 2024)

to KURA by the MoR, MOTIH, UD, the supervising authorities, and Nairobi City Council road administrative engineers.

On the other hand, in the planning of Phase 2, the need to strengthen KURA's supervision capacity for outsourcing was pointed out, given that in past projects, KURA outsourced maintenance work, but KURA's supervision of contractors was insufficient, and proper maintenance was not carried out, resulting in the road becoming damaged[22]. The lack of capacity for outsourcing was compensated for by the JICA technical cooperation project "Project for Strengthening Supervision Capacity for Outsourcing of Road Maintenance Work" (2010-2019).

At the time of the ex-post evaluation, KURA responded that there were no technical problems with the maintenance capacity of either KURA or the contractors. The reasons cited for this were that KURA regularly provides technical training to staff, hires additional staff or employs temporary staff when there is a budget, outsources maintenance to contractors with maintenance skills at PBC, and that KURA regularly monitors the work of contractors. KURA also responded that there are no technical issues with the outsourced contractors, as they can properly perform all the tasks listed in Table 4 above. We inspected the contractors' daily maintenance work, such as cleaning and plant management, and interviewed their managers but found no significant issues. For large-scale repairs, contractors with the necessary skills are selected through competitive bidding and commissioned by KURA to carry out the work.

Photo 11:Weeding work by the contractor
(Photo by the external evaluator)

Photo 12: Drain cleaning work
(Photo by the external evaluator)

3.4.4 Financial Aspect

At the time of planning, the cost of road maintenance work (regular inspections, routine maintenance, and repairs) for this project was estimated at 6.65 million KES (Kenya shillings) per year for Phase 1 and approximately 5.7 million KES for Phase 2. This was less than 1% of KURA's maintenance budget, so it was determined that there would be no particular financial problems.

[22] Phase 2 Preparatory Study Report p.3-92

KURA's budget and expenditure for the past four fiscal years are shown in Table 5. More than 20% of annual expenditures are allocated to maintenance costs. There have been no financial problems with the maintenance of this project, and it is expected that this will continue in the future. In interviews with contractors, they responded that there had been no delayed payments from KURA for contracted work. Contractors outsourced by KURA will carry out large-scale repairs.

Table 5: KURA's Budget and Expenditure (unit:1 million KES)

Items/ Fiscal Year	2020/2021		2021/2022		2022/2023		2023/2024	
	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
HQ Expenses	1,757	1,514	1,962	1,892	1,992	1,772	2,042	2,017
Maintenance costs (all outsourced)	4,730	6,493	4,760	7,266	9,482	10,517	11,860	12,206
Technical activity expenses	9,815	15,939	14,772	16,848	13,844	12,665	9,541	8,751
Total	**16,303**	**23,946**	**21,494**	**26,005**	**25,318**	**24,954**	**23,443**	**22,975**
Maintenance cost ratio	29%	27%	22%	28%	37%	42%	51%	53%

(Source: Answers to Questionnaire to KURA)

3.4.5 Environmental and Social Aspects

No adverse environmental or social impacts were anticipated during the planning of this project. In the ex-post evaluation, we checked for cases of negative environmental and social impacts throughout the project implementation period and any negative impacts anticipated in the future, but no such information was found.

3.4.6 Preventative Measures to Risks

At the time of planning, no particular risks were anticipated in the ex-ante evaluation table or preparatory survey.

At the time of the ex-post evaluation, KURA listed the points shown in Table 6 below as risks associated with this project that are deemed to have a high probability of occurrence and significant impact and also presented mitigation measures for these risks.

Table 6: Anticipated Risks, Affects, and Mitigation Measures

Risk	Affects	Mitigation Measure
Vandalism of road infrastructure and roadside facilities	High maintenance costs	・Cooperation with relevant agencies and law enforcement agencies ・Cooperation with stakeholders (Nairobi City, police, electricity, and communications companies, surrounding businesses, etc.) and implementation of community-strengthening programs
Infringement of KURA land and proposed roads (unauthorized land use for stalls, etc.)	Loss of infrastructure assets	
Inflation and fluctuations in the global economy	High project costs and unpredictable price fluctuations	・Introduction of low-cost project implementation technology through the introduction of PBC

(Source: KURA Strategic Plan 2023-2027)

The issue of vandalism against roadside facilities, which was listed as a risk, was also pointed out by many drivers and road users in the qualitative survey. On-site surveys revealed that vandalism and theft of streetlight cables, road signs, car stops, traffic signals, and drain covers have occurred in many locations along the road. In particular, almost all streetlight cables are missing. The absence of road signs has also negatively impacted drivers, confusing them. KURA has presented measures to mitigate vandalism against roadside facilities, as shown in Table 6. Still, these measures take time to be effective, and repairs and reinstallations require additional budgets.

From the above, issues can be seen in the risk aspect. Although various mitigation measures have been presented, it doesn't seem easy from a budgetary standpoint to restore all roadside facilities.

3.4.7 Status of Operation and Maintenance

The maintenance status of roads constructed under this project and their surrounding facilities was confirmed by inspecting them. The results of two inspections, the first and second field surveys, are as follows: Asphalt pavement, sidewalks, and bicycle paths were in good condition, but some or many problems were found with other roadside facilities, drainage facilities, and green belts. In particular, streetlights and road signs, which are essential for safety, have remained stolen. For example, efforts have been made to address the problem of developing plastic fiber road signs, as steel signs are prone to theft, and installing them with the cooperation of commercial facilities. However, there are budgetary constraints, and it cannot be said that KURA is in a good position to solve all the problems.

Table 7: Current Status of Roads and Auxiliary Facilities Through the Projects

Work	Checking Points	Status of Use and Maintenance at the Time of Ex-post Evaluation
Road and pavement construction	Asphalt Pavement	○No particular problems. In the qualitative survey, it was stated that road repairs were being carried out promptly.
Sidewalk Improvement	Pavement, Curb	○No particular problems. Some parts of the sidewalk were not paved.
Bike path	Pavement	○No particular problem. There is almost no bicycle traffic, so it is used by motorcycles.
Road Auxiliary Facilities Construction	Road Signs	× There are many problems. Many of the signs have been ripped out and stolen.
	Road Division Lines	×There are many problems. Sidewalks, stop lines, and traffic divisions have disappeared in many places.
	Signal	△There were some problems. Some signals were out of sync, and some were destroyed and unusable.
	Streetlights	×There are many problems. Almost all the streetlights are not working because the cables have been stolen.
	Protective Fence Construction	△There are some problems. The fences installed in the median strip have been stolen in some places.
Drainage Facilities	Catchment Basin	△There are some issues. Lids are being stolen. There are issues with dumping.
	Ditch	○No particular problems. The area was cleaned and ready for heavy rain. △During the second on-site survey, some cleaning issues were found.
	Box Culvert	×There are many problems. Culverts are not being cleaned. The mud is building up.
Plantation works	Green Belt, Plantation	△There are some problems. A maintenance contractor adequately maintains the median strip. Still, the green belt around the sidewalk is subject to issues such as littering, crops being grown without permission, and homeless people settling in.

Regarding the maintenance status, the qualitative survey showed that eight respondents (18.6%) answered "very good," 26 respondents (60%) answered "good," two answered "neither good nor bad," two answered "bad" (4.6%), two answered "very bad" (4.6%), and one (2.3%) answered "no answer." Reasons for answering "good" included that the road surface is maintained and cleaned regularly. Reasons for answering "bad" included that streetlights and road signs are left destroyed.

As mentioned above, the operation and maintenance of the projects are outsourced to a company contracted through competitive bidding and after technical review. KURA secures the budget, so there are no particular concerns. However, there are some problems with the system, risk response, and facility maintenance, and it can be said that the prospects for improvement and resolution are low. Therefore, the sustainability of the effects of this project is moderately low.

(Clockwise from top left) Photo 13: A road sign cut off at the base, Photo 14: A stolen sign, Photo 15: A stolen drain cover, Photo 16: A destroyed traffic light, Photo 17: A knocked-down concrete pole, Photo 18: A cut and stolen street light cable (Photo by the external evaluator)

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The projects were implemented to ease traffic congestion on Ngong Road. This major arterial road connects the center of Nairobi, the capital of the Republic of Kenya, with the city's west by widening it, installing sidewalks, and developing auxiliary facilities, thereby ensuring convenience and safety of travel and smooth flow of people and goods within the city.

The projects were consistent with the development policy of the Kenyan government and the development policy of the Nairobi metropolitan area from the time of planning to the time of ex-post evaluation and with Japan's assistance policy for Kenya. They contributed to the need to ease traffic congestion, an issue at the time of ex-post evaluation. In terms of coherence, the executing agency participated in training on outsourcing road maintenance work through collaboration with JICA technical cooperation projects, which ensured the smooth implementation and sustainability of the outsourcing contract for the maintenance work of this project. Still, there was no particular collaboration with other donors. The scope of Phase 1 was almost halved from the planned area,

but this was at the request of the Kenyan side, and appropriate procedures were followed after coordination with the construction plan for public transportation facilities. However, reviewing the project indicators and target values was necessary when the changes were made. As mentioned above, there were issues with the approach in relevance; thus, ratings for relevance and coherence are moderately low. The project output was produced as planned after the changes in Phase 1 and almost as planned in Phase 2. The project period exceeded the plan due to the need to redo the detailed design in Phase 1 and delays in the relocation of utilities such as electricity, communications, and water pipes, which were the responsibility of the Kenyan side in both phases. The project costs for the Japanese side were within the plan but slightly exceeded the plan due to an increase in the cost of relocating utilities, which was on the Kenyan side. Therefore, efficiency is moderately low. As the expected effects were mostly achieved, including easing traffic congestion, ensuring safety, regional development, the efficiency of the movement of people and goods, and improving living. Therefore, the projects' effectiveness and impacts are high.

Regarding the operation and maintenance of these projects, there were some issues with the system, preventative measures for risks, and the current status of facility maintenance, and it can be said that there is little prospect of improvement or resolution. Therefore, sustainability is moderately low.

In light of the above, these projects are evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

The completion notices and defect inspection reports for Phases 1 and 2 pointed out the need to repair damaged road structures such as concrete vehicle stop poles, raise awareness of the prohibition of drunk driving through traffic police, and install signs calling for improved manners such as not depositing waste in drainage facilities and not littering. Awareness-raising activities, which do not require a large budget, are expected to affect the preservation of ancillary facilities and the prevention of accidents in the future, so it is desirable to start them early.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

From the project planning stage, it is necessary to hold discussions and considerations with related organizations regarding the method of maintenance and the division of responsibilities, with an eye on the post-project completion stage.

Regarding the maintenance of Ngong Road, the roles of KURA and the City of Nairobi are unclear. KURA is responsible for road construction plans and the maintenance of roads, gutters,

medians, and green belts, but its role in maintaining the ROW and surrounding areas is unclear. For example, street stalls and gardening shops operating on the ROW of Ngong Road were temporarily relocated from Ngong Road to implement this project but reopened after the construction was completed. According to interviews, many shops were unlicensed, but some businesses had business permits from the City of Nairobi. We were told that advertising towers on the ROW were also installed without KURA's knowledge or the businesses contracted to maintain Ngong Road. Considering the problems of pedestrian obstruction due to the occupation of sidewalks and the abandonment of garbage, it seems that discussions should have been held with the City of Nairobi, the police, and other relevant agencies regarding how commercial activities and other activities on the ROW would be approved and managed after completion.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

None

5.2 Additionality

None

(End)

Attachment 1: Plan and Actual of the Project's Output

Phase 1: Construction of Main Facility and Auxiliary Facility		Plan (2012)	Amended Plan (2015)	Actual (2020) PCR
Civil Engineering / Paving	Road Construction Work Adams Arcade Junction to Kenyatta Road Junction	4.69 km	2.57 km Section from Kilimani Junction to the National Library	2.57 km
	Paving (Roadway)	83,968 m^2	52.808 m^2	52.808 m^2
	Paving (Access Road)	8,925 m^2	1.459 m^2	1.459 m^2
	Paving (Overlay)	4,500 m^2	900 m^2	900 m^2
	Paving (Cycle Path Section)	11,526 m^2	5,781 m^2	5,781 m^2
	Sidewalk (Interlocking Block)	26,179 m^2	9,271 m^2	9,271 m^2
	Excavation Work	52,862 m^2	29,135 m^2	29,135 m^2
	Embankment Work	18,768 m^3	7,821 m^3	7,821 m^3
Auxiliary Facility	Pedestrian/ Vehicle Boundary Block	17,142 m	8,134 m	8,134 m
	Road Sign	264 sets	165 sets	165 sets
	Road Like Marking	43,467 m	24,124 m	24,124 m
	Safety Facilities (Lighting)	190 sets	109 sets	109 sets
	Hand Hole[23] 650X850X1800	195 locations	102 locations	102 locations
	Guard Fence H=1050	283 m	21 m	21 m
	Guard Fence H=600Φ150	797 sets	322 sets	322 sets
	Stone Retaining Wall	1,835 m^2	235 m^2	235 m^2
Drainage Facility	Water Collection Basin	171 sets	35 sets	35 sets
	U-shaped Gutter	676.4 m	161 m	161 m
	V-shaped Gutter	7,875.5 m	4,520 m	4,520 m
	V-type Gutter Cover 1100/1400X600X150	149 sets	117 sets	117 sets
	RC Pipe Installation	2,105.3 m	544 m	544 m
	Box Culvert	13.5 m	12.7 m	12.7 m

Phase 2: Construction of Main Facility and Auxiliary Facility		Plan (2017)	Actual (2021) PCR
Road Extension	Road Construction (Dagoretti - Kirlimani Junction)	3.4 km	3.42 km
Pavement Repair Works	Asphalt Paving (100 mm thick)	73,331 m^2	71,350 m^2
	Upper Roadbed Construction (Grain-adjusted Crushed Stone 200 mm Thick)	73,331 m^2	75,783 m^2
	Lower Roadbed Construction (Cut-crushed Stone 250 mm Thick)	57,665 m^2	60,548 m^2
Improvement of Intersection	Cross-intersection with Traffic Lights	2 locations	2 locations
	T-intersection with Traffic Lights	2 locations	2 locations
	Roundabout	1 location	1 location
	T-intersection	4 locations	4 locations
Sidewalk	Interlocking Block Construction	18,828 m^2	23,630 m^2
Bicycle Road	Asphalt Paving	13,044 m^2	13,044 m^2
Drainage	U-shaped Gutter	4,923 m	6,040 m

[23] An underground burial box used for connecting cables and protecting connections.

	V-shaped Gutter	5,312 m	181 m
	RC pipe installation (Inner Diameter φ300-600 mm)	1,472 m	1,783 m
	Water Collection Basin		34 locations
Stonework	Sidewalk Boundary Block	20,969 m	1 set
	Boundary Block	12,450 m	1 set
Road Sign	Warning Signs and Regulatory Signs	167 locations	1 set
Center Line	Center, Outside, Crosswalk, Stop Line, etc.	34,160 m	34,160 m
Streetlights	Streetlight	158 sets	163 sets
Traffic Lights	Traffic Lights for Vehicles and Sidewalks	37 sets	41 sets
Protective Fence	Guard Fence	3,000 m	3,014 m