

Democratic Republic of the Congo

FY 2020 Ex-Post Evaluation of Japanese Grant Aid Project

“The Project for Rehabilitation and Improvement of the Poids Lourds Avenue
in Kinshasa (Phase 1 and Phase 2)”

External Evaluator: Yoshio Nagamine, Global Group 21 Japan, Inc.

0. Summary

The purpose of the Japanese grant aid, "The Project for Rehabilitation and Improvement of the Poids Lourds Avenue in Kinshasa (Phase 1 and Phase 2)," is to facilitate traffic on the targeted road section by rehabilitating the Poids Lourds Avenue in Kinshasa City, and to thereby contribute to the revitalization of economic activities and the restoration of the capital's functions by improving the city's road network. Road and transportation network improvement is one of the important policies of the Democratic Republic of the Congo (DRC). This project is highly consistent with not only the development policies and needs of the DRC, but also Japan's aid policy at the time of planning. Therefore, the relevance of this project is judged to be high. Initially, a two-lane road was planned for this project. After review and consultation, however, a four-lane road was constructed in response to a renewed request from the DRC. The project cost based on this change in the plan was within the planned amount, but the project period exceeded the plan. The efficiency of the project is therefore judged to be fair. As a result of this project, the traffic capacity of the target road increased by more than five-fold compared to the pre-project level, and the planned traffic capacity was generally reached. The average speed during peak hours did not reach the level targeted at the time of planning, although it increased 2.1 times compared to the pre-project level due to the increase in traffic volume. Companies using the road have praised the improved traffic flow, shortened travel time, and better assurance of safe operation. In addition, increases have been reported in the numbers of gas stations, small businesses, and customers, as well as in the sales by the companies along the road, indicating that the project is contributing to economic and social activities. From the above, the effectiveness and impact of this project are judged to be high. The operation and maintenance activities for the project are organized, and the budget is well allocated. The operation and maintenance activities for the project, however, are not necessarily functioning efficiently and effectively. Effective implementation methods need to be established and human resources need to be developed. Therefore, sustainability of the project effects is fair.

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

1. Project Description



Project Location



The Poids Lourds Avenue

1.1 Background

Since the establishment of the transitional government in 2004 following the period of turmoil and civil war beginning in 1991, the DRC has been moving towards reconstruction and development. The roads in the metropolitan area were not maintained during the civil war, and the severely deteriorated pavement hindered the smooth flow traffic. As a result, serious traffic congestion became the norm, and the function of the capital declined. One of the main roads connecting the airport to the city, the Poids Lourds Avenue, serves as the main artery connecting the provinces of Bas Congo (now Central Congo) in the west and Bandundu (now Mai-Ndombe, Kwilu, and Kwango) in the east, as well as an industrial road for the transportation and manufacturing industries located along its length. The road, however, was severely damaged during the period of turmoil. Normal traffic was almost impossible, especially during the raining season. For this reason, there was a need to repair and renovate the Poids Lourds Avenue.

Given the above background conditions, the Government of DRC requested the Government of Japan to provide grant aid for the repair and renovation of the Poids Lourds Avenue. A project formulation study had been carried out before the request, and the reconstruction and rehabilitation of the 12 km-long the Poids Lourds Avenue had been confirmed as a grant aid target. Based on the above, a preparatory survey for cooperation was carried out in 2009, and a grant agreement was signed in November 2009 (first phase: covering 4 km, the most severely damaged parts of the road) and June 2010 (second phase: covering the remaining 8 km). The project was then started.



Location of the Poids Lourds Avenue in Kinshasa City

1.2 Project Outline

The project aims to facilitate traffic on a section of road in Kinshasa City by rehabilitating Poids Lourds Avenue (12 km long, of which 4 km is covered in the first phase and 8 km is covered in the second phase) and to thereby contribute to the revitalization of economic activities and the restoration of the capital's functions by improving the city's road network.

Grant Limit/Actual Grant Amount	5,103 million yen/4,849 million yen [1,751 million yen (First Phase), 3,352 million yen (Second Phase)/1,604 million yen (First Phase), 3,245 million yen (Second Phase)]	
Exchange of Notes(E/N Date/Grant Agreement G/A) Date	November 2009 (First Phase), May 2010 (Second Phase)/November 2009 (First Phase)/June 2010 (Second Phase)	
Executing Agency	Ministry of Infrastructure, Public Works and Reconstruction	
Project Completion	June 2014	
Target Area	The Poids Lourds Avenue, Kinshasa City	
Engaged parties	Contractor	Kitano Construction Corp.
	Consultant	INGEROSEC Corporation
Preparatory Survey	February 2009 - October 2009 (Additional project of installation of streetlights: December 2014 – May 2015)	
Related projects	Emergency urban and social rehabilitation project including rehabilitation of priority urban roads (World Bank: 2002-2008),	

	<p>Rehabilitation and maintenance work for 4 roads in Kinshasa City (Development Cooperation and Humanitarian Aid of Belgium: 2006-2008), Multisector project for rehabilitation of socioeconomic infrastructure (African Development Bank: 2008-2009), Liberation Avenue Project in Kinshasa (Kuwait Fund: 2008-2009), the Project of road network rehabilitation and main roads construction and improvement in Kinshasa (China-Africa Development Fund: 2008-2012), Road infrastructure maintenance and rehabilitation project (EU: 2010-2015), Strategic Orientation Plan for the Kinshasa Agglomeration (AFD: 2013), Project for Reinforcement of maintenance capacity of roads (JICA: 2016-2018), Project for urban transport master plan in Kinshasa City (JICA: 2017-2019), Project for improvement of road maintenance equipment in Kinshasa City (JICA: 2018-2019)</p>
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2. Outline of Evaluation Study

2.1 External Evaluator

Yoshio Nagamine, Global Group 21 Japan, Inc.

2.2 Duration of Evaluation Study

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

Duration of the study: November 2020-November 2021

Duration of the field survey: First survey--April 5, 2021-May 11, 2021 (of which 25 days),
 Second survey--August 13, 2021-August 25, 2021 (of which 10 days) (These surveys were conducted through a local survey assistant.)

2.3 Constraints during the evaluation study

COVID-19 spread worldwide during the survey period, including the target country, the DRC. The study team thereby decided to conduct this ex-post evaluation remotely and engaged a local survey assistant to perform the field survey. Due priority was given to safety and consideration for the coronavirus during the field survey, and no particular restrictions or obstacles were encountered. The same local survey assistant collected data and information in the field, but the final evaluation decision was made by the evaluator.

3. Results of the Evaluation (Overall rating: B¹)

3.1 Relevance (Rating: ③²)

3.1.1 Consistency with the Development Plan of the DRC

President Kabila, who took office in 2006, listed infrastructure development as one of the top priorities in his inaugural address. The DRC's Strategic Document on Growth and Poverty Reduction (2006) also lists infrastructure development as a priority under the item "macroeconomic stabilization and growth."

The Strategic Document on Growth and Poverty Reduction 2 (2011), a continuation of the previous strategic document, emphasizes the need for road development as part of transportation infrastructure development, and the National Plan for Development Strategy (2019-2023) includes infrastructure rehabilitation and maintenance of infrastructure in the road network. In addition, the Kinshasa Development Strategy Policy (2015) is based on the concept of transport network development and infrastructure facility development in line with the progress of urban development, and the Urban Transport Master Plan in Kinshasa City (JICA 2019) identifies this road as part of the road network in the area of the planned transport network in central Kinshasa.

As a result, this project is consistent with the development policy of the DRC at both the time of planning and the time of the ex-post evaluation.

3.1.2 Consistency with the Development Needs of the DRC

As mentioned above, the roads within the Kinshasa metropolitan area were not maintained during the civil war. The aging pavement on the main arterial roads hindered smooth traffic flow, resulting in serious traffic congestion and a decline in the functioning of the capital. One of the main roads connecting the airport to the city, the Poids Lourds Avenue, served as an important artery connecting the east and west provinces, and also as an industrial road for the transportation and manufacturing industries along its length. However, due to the severe deterioration caused by the aging of the pavement, especially during the rainy season, normal traffic was almost impossible. Therefore, there was a great need to repair and rehabilitate the Poids Lourds Avenue.

In addition, as mentioned above, the DRC's Strategic Document on Growth and Poverty Reduction 2 (2011) emphasizes the need for road development as part of DRC's transportation infrastructure development, and the National Plan for Development Strategy (2019-2023) includes infrastructure rehabilitation and development in the road network. "The Urban Transport Master Plan in Kinshasa City (JICA 2019), a plan based on the Kinshasa Development Strategy

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

² ③: High, ②: Fair, ①: Low

Policy (2015) (the concept of which is to develop transport networks and infrastructure facilities), also places this road as part of the road network in the area targeted for transport network planning in the city center of Kinshasa.

Therefore, the need for this project is maintained at the time of the ex-post evaluation.

Consequently, this project is consistent with the development needs both at the time of planning and at the time of the ex-post evaluation.

3.1.3 Consistency with Japan's ODA Policy

In the bilateral talks between the DRC and Japan held in February 2007, one of the pillars of Japan's assistance to the DRC was "economic development" with a particular focus on the development of economic infrastructure. Support for infrastructure development in Africa was also identified as one of the priority areas, from the perspective of economic development, in the Yokohama Action Plan for TICAD IV³ held in 2008 and this project is in line with Japan's aid policy.

3.1.4 Appropriateness of project planning and approach

While the DRC initially requested that the project be four lanes, the counterparts later agreed it was to be two lanes in light of the DRC's insistence on starting construction as soon as possible and concerns about the issue of relocation of obstacles and inhabitants. Due to insufficient coordination within the country, however, the President of the DRC later requested that the road be four lanes, necessitating further coordination and negotiations, after the start of the project. In response to this request, the Japanese side decided to proceed with the project as a four-lane road. In order to reduce the burden on the DRC and to facilitate the project, the use of counterpart funds of non-project grant aid⁴ was adopted through consultations. Although the construction period was delayed due to the change to four lanes, the road has been able to accommodate the increased traffic volume and is functioning as a major transportation route in the metropolitan area.

The installation of streetlights was appropriately handled within the framework of the grant, taking into account the situation where the need for the project has increased due to the active development of the roadside, the increase in commuters and the operation of large buses after evening, and the difficulty in obtaining funds from the DRC, though the installation work was

³ TICAD (Tokyo International Conference on African Development) is an international conference on the theme of development in Africa led by the Japanese government. The conference is held regularly in collaboration with the United Nations, the United Nations Development Programme (UNDP), the World Bank, and the African Union Commission.

⁴ A non-project grant is a grant aid that provides funds to purchase items from outside of a country that are procured based on the country's needs, such as materials and equipment, in order to support a developing country that is conducting economic and social development. The domestic funds generated from the sale of goods provided by this grant aid are called counterpart funds.

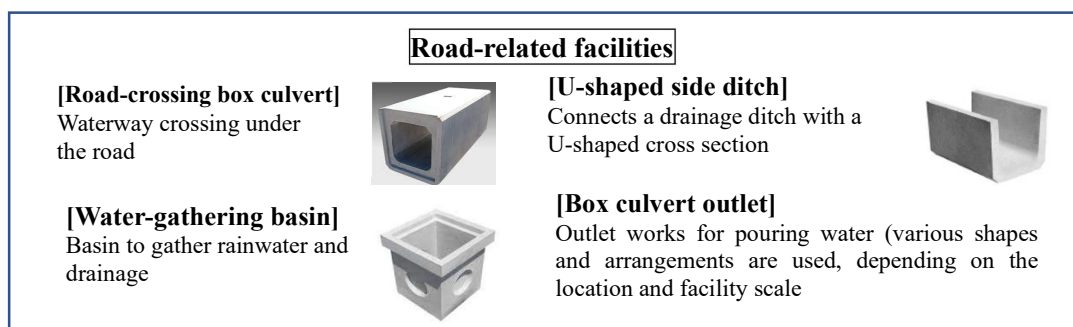
performed after the completion of road rehabilitation and improvement. While the changes in the project plan based on the request from the DRC side were major, they were judged to have been appropriate, as they were very necessary and performed through appropriate coordination and procedures.

In summary, this project has been highly relevant to the country’s development plan and development needs, as well as Japan’s ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Output

In addition to repairing and rehabilitating the 12-km-long Poids Lourdes Avenue in Kinshasa, the project also included the construction of new U-shaped side ditches, road-crossing box culverts, water-gathering basins, a box culvert outlet, and other road-related facilities. (Please refer to the following column for an outline of each facility.) While it was initially agreed that the road would be two lanes during the project planning, a new request to make the road four lanes was made as a result of renewed coordination between the relevant ministries and the President of the DRC. Through discussions and coordination on the same held with Japan, it was agreed to construct four lanes at the expense of the DRC⁵ in parallel with the two-lane rehabilitation work under grant aid (see Chart 1). It was also decided that the DRC would bear the cost of removing the existing streetlights and installing new streetlights along the four-lane road. After that, the DRC requested additional cooperation for the installation of new streetlights, a work that had been originally slated to be carried out by the DRC side, after the completion of the main road rehabilitation and improvement. This request was necessitated by difficulties faced in securing a budget for the project in the DRC, and by the increased need for streetlight installation due to the active development of the roadside accompanying the increase in the traffic volume, the increase in the number of commuters after evening, and the operation of large buses. An agreement was reached after a survey mission was dispatched and the examination was made in response to the request, and the streetlight installation was carried out at the expense of the Japanese side.



⁵ It was agreed that the DRC would bear the cost for the portion of road beyond the originally designed two-lane parts.

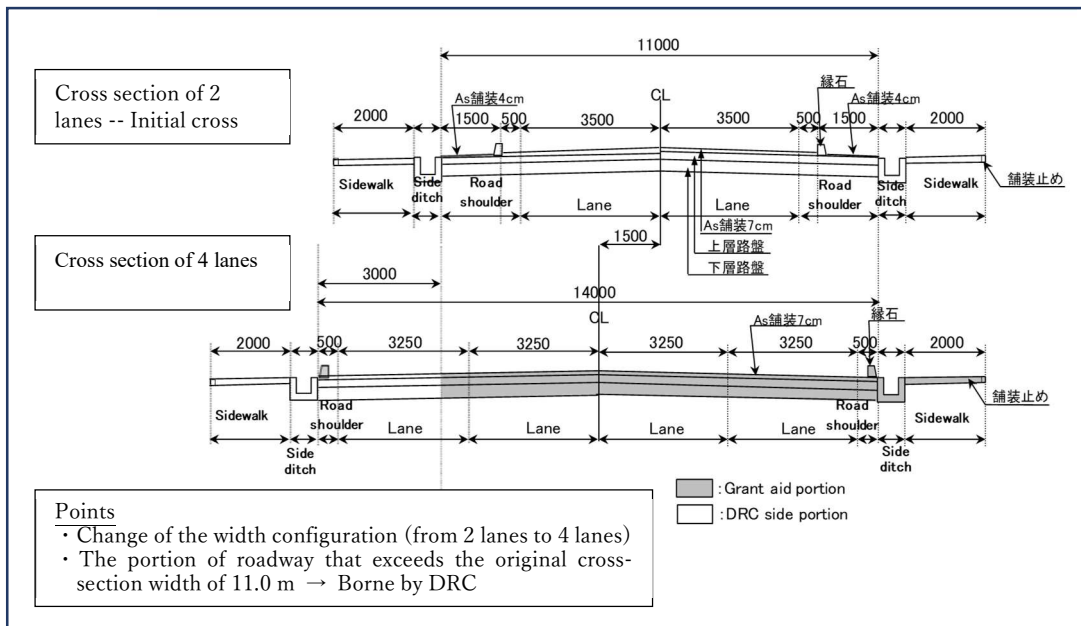


Chart 1 Road cross-section showing the cost burden of the change from two lanes to four lanes (when the initial cross-section width is 11 m)

Source: JICA material



sidewalk, side ditch, road-curb



streetlights

3.2.2 Project Inputs

3.2.2.1 Project Cost

The project cost in the initial plan was to be 5,160 million yen, of which 5,103 million yen was to be borne by Japan and 57 million yen was to be borne by the DRC. The actual project cost was 6,994 million yen, of which 4,849 million yen was borne by Japan and 2,145 million yen was born by the DRC. The actual project cost on the Japanese side was 95% of the plan, whereas the total project cost was 136% of the plan, with the DRC absorbing all of the increase. The increase in the DRC's share of the cost was a result of the change in the plan from two to four lanes. Out of the DRC's share of the project cost, 868 million yen was covered by the counterpart fund of

non-project grant aid.

Although the total project cost considerably exceeded the plan, the increase in the project cost is considered to be commensurate with the increase in the output, since the project cost borne by the Japanese side, the side responsible for the two-lane section, was within the plan, and the project was converted to four lanes using a common construction unit price. Therefore, the efficiency of the project cost is judged to be high.

3.2.2.2 Project Period

The project period for the main construction was planned to be 34 months, from the grant agreement in November 2009 to August 2012, including the periods for detailed design and procurement. The actual project period was 56 months, extending up to June 2014 (165% of the planned period). The main reason for the extension was aforementioned switch from the initial construction of a two-lane road to the construction of a four-lane road, based on requests after the start of the project, and the time-consuming coordination work involved. The construction work was suspended for nine months over this period. Design changes associated with the four-lane construction also had to be completed (borne by the DRC), and roadside facilities had to be moved. As for the installation of streetlights, as already mentioned, it became difficult to secure a budget from the DRC side. A situation arose where the roadside development became more active due to the increase in traffic volume, the increase in commuters after evening, and the operation of large buses. An additional request was therefore made after the completion of the main project, and the additional work requested was implemented with this grant aid (March 2016 to May 2017).

Even taking into account the increase in the output from two lanes to four lanes, the efficiency of the project period is judged to be moderate, because the construction suspension period, coordination period, and project period all exceeded the periods that would have been required if a contractor had been publicly procured to construct four lanes from the beginning.

As described above, the project cost was within the plan, but the project period exceeded the plan. Therefore, the efficiency of the project is judged to be fair.

3.3 Effectiveness and Impacts⁶ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Effect Indicators)

⁶ The sub-rating for Effectiveness is to be assigned in consideration of the Impacts.

Table 1 Achievement of Indicators

Indicator	Baseline	Target	Actual	Actual/Target Ratio
Traffic capacity	1,100 vehicles/h (2 lanes total)	6,840 vehicles/h* (4 lanes total)	6,080 vehicles/h (4 lanes total)	89%
Average speed during peak hours	8 km/h	30 km/h	17 km/h	57%

(Note)* The traffic capacity was calculated based on the original planned figure corresponding to the four-lane system.

(Source) Project preparation survey report and survey by a local survey assistant during the ex-post evaluation.

The project was expected to improve the traffic congestion on the Poids Lourds Avenue, the main road in Kinshasa, and to ensure safe and smooth traffic. The traffic capacity⁷ and average speed during peak hours were set as indicators.

The traffic capacity is calculated as the number of vehicles that can be transported per hour, taking into account the road structure and roadside conditions. In the ex-post evaluation, the planned figure (6,840 vehicles/hour) was calculated using the same method applied for the calculation for the road planned with two lanes, reflecting the side margin design figure when the road was designed with four lanes, and then compared with the actual value. The actual value, calculated by reflecting the actual roadside conditions at the time of the ex-post evaluation, was 6,080 vehicles per hour, or about fivefold the baseline figure of 1,100 vehicles per hour. This was 89% of the target figure, representing a high level of achievement. The slightly lower than planned figure can be explained by a slight deterioration of roadside conditions due to an increase in the numbers of stores and companies along the road, and the associated increase in the loading and unloading of goods and the getting on and off of people. The background of this is that, in addition to the importance of the Poids Lourds Avenue as a major transportation route, residential areas have been developed on the Congo River side, and the area has developed into a mix of industrial and residential areas.

The average speed during the peak hours was set as the baseline figure (8 km/h) based on the results obtained during the peak hours on weekdays and Saturday mornings and evenings (3 hours each) at the time of planning, and the target figure was set at 30 km/h based on the road design speed. According to measurements taken during the ex-post evaluation under the same conditions used at the time of planning, the actual average speed during the peak hours was 17 km/h (57% of the target figure), about twice the baseline figure. A significant increase in the traffic volume, an increase well exceeding the expectations, is thought to explain why the average speed during peak hours fell short of the target figure in spite of the more than fivefold increase in the traffic capacity. The congestion caused by this increase in traffic could not have been anticipated in the

⁷ The traffic capacity is not measured directly, but calculated by taking into account the road structure and roadside conditions, as described above. In the case of this road, the calculation focused on the width, side margins, roadside conditions, and inclusion of large vehicles.

forecast.⁸ This reflects the importance of the Poids Lourds Avenue as a key road in Kinshasa. On the other hand, however, it can be pointed out that the road does not sufficiently respond to various situations arising from the rapid increase in traffic volume, such as the insufficient number of traffic lights installed on the Poids Lourds Avenue, the heavy traffic congestion mainly at intersections caused by the failure of some of the already installed traffic lights, and the frequent parking on the road due to the lack of parking spaces along the road. The concentration of traffic during peak hours on this road, moreover, is thought to have eased the traffic congestion on other arterial roads in Kinshasa.

3.3.1.2 Qualitative Effects

The Federation of Congolese Enterprises (an organization made up of companies that use the Poids Lourds Avenue), a bus company with routes on this road, and several companies along the road itself have offered the following comments on the effects of the road rehabilitation and improvements achieved by this project.⁹

[Federation of Congolese Enterprises]

- All of the Federation's member companies use this road, and the rehabilitation of the road under this project has shortened travel times and made it possible to drive and pass vehicles safely.

[Bus company]

- The company recognizes that this road is functioning as a main road.
- Based on the needs in Kinshasa, the number of bus routes along this road will be increased from two to three from 2019, and another route is currently under consideration.

[Companies along the road]

(Since most of the comments were the same, the main points can be summarized here. The interviewees were mainly managers in charge of sales, general affairs, etc. at the respective

⁸ The traffic volume diverted to the Poids Lourds Avenue from the connected Lumumba Boulevard was predicted at the time of planning using a simple method. However, no revised prediction of the diverted traffic volume was calculated when the road was converted to four lanes.

⁹ The Federation of Congolese Enterprises has about 3,000 members and 15 sectoral committees representing industry, agriculture, forestry, energy, transportation, telecommunications, and the like. It also functions as a chamber of commerce.

The Bus Company is a public transport company serving Kinshasa City. The company currently operates 580 buses on a total of 40 routes (including long-distance routes), from 5 am to 10 pm.

The following five companies along the road were interviewed. (1) Car sales company (Does business in other African countries; keeps 40 cars in one office.) (2) Construction and civil engineering company 1 (History of 98 years; owns 40 vehicles, including several heavy machinery vehicles.) (3) Construction and civil engineering company 2 (Owns 60 vehicles of various types.) (4) Food import/export and sales company (Does business nationwide, mainly in Kinshasa, with a total of 85 vehicles.) (5) Food and beverage production and sales company (History of 50 years, 2,000 employees, and three distribution centers in the DRC.)

companies. The interviewee from the car sales company was a secretary general of affiliate companies.

- The rehabilitation of this road has led to improved traffic flow, reduced congestion, and shortened operation times.
- The rehabilitation has contributed to the reduction of traffic on other roads, as well.
- The quality of the road is good, and the driving is stable.
- Street lighting has improved the maintenance of public safety.
- (Comments from construction and civil engineering companies) Traffic congestion and the time required to transport materials between quarries and construction sites has been reduced.

In summary, the traffic capacity increased by more than fivefold compared to the plan, and the target achievement level is high. The average travel speed during the peak hours has doubled compared to the baseline figure, but the degree of target achievement is only moderate due to the severe increase in traffic volume. On the other hand, companies and other users of the road have highly evaluated the project for reducing travel times, improving traffic flow, and ensuring safe vehicle operation. Therefore, the project is judged to have achieved its goal of "improving traffic congestion on the Poids Lourds Avenue and ensuring safe and smooth traffic" to a high degree.

3.3.2 Impacts

The impacts of this project were expected to be the promotion of industries along the Poids Lourds Avenue, the revitalization of economic activities of communities, and the restoration of the capital city functions. From the following analysis, the expected impacts of this project are thought to have been realized.

The executing agency has confirmed that the number of gas stations along the road has increased from only two before the project to six after the project. While there are no concrete data on the number of companies, and the degree of increase is unknown, the executing agency and companies interviewed reported a significant increase in the number of companies after the project. There have been many companies and factories along the Poids Lourds Avenue, giving it the features of an industrial road. In addition, a residential area has been developed on the Congo River side of the road, and the area along the road is considered to have been developed as an area where industrial and residential areas are mixed. The population of Kinshasa, moreover, has been steadily increasing (see Chart 2).

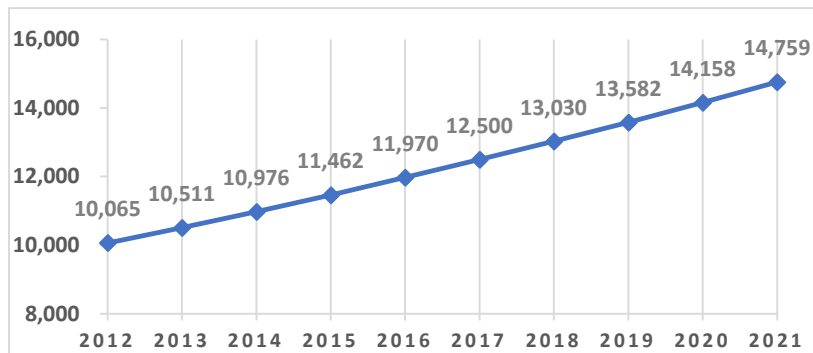


Chart 2 Population of Kinshasa City (In thousands persons)

(Source) Data prepared by OVD based on the Kinshasa Urban Transport Master Plan

The interviewed companies along the road offered comments such as the following: "The factories and companies along the road are connected to the rest of the country; the road is contributing to the economic development of the whole country"; "The number of customers and sales have increased." The companies, the Federation of Congolese Enterprises, and the bus company share the common opinion that, "The good road traffic brought by this project has had a positive impact on business and economic activities." According to another comment, the installation of streetlights had improved the maintenance of public safety at night. On the other hand, some companies pointed out the recent increase in traffic volume and resulting traffic congestion. Future measures to ease traffic congestion are therefore thought to be required.



Corporate store along the road



Streetlights at night



Traffic jam during peak hours (around 9:00 a.m.)

Congo-Japan Boulevard

The Poids Lourds Avenue was officially named as "Boulevard Congo-Japon" by Mr. André Kimbuta Yango, then Governor of Kinshasa Province, in 2014, and a monument was erected as a sign of friendship between the Democratic Republic of the Congo and Japan. Since then, this road has been very popular and used by the citizens of Kinshasa as "Congo-Japan Boulevard".



3.3.3 Other positive and negative impacts

3.3.3.1 Impact on the natural environment

In the preparatory survey report, this project was considered to have little impact on the natural environment. The executing agency has not reported any particular impact on the natural environment due to the project. During the ex-post evaluation, however, it was confirmed that garbage and weeds had accumulated in the drainage ditches of road-related facilities in certain parts of the road. As this is a drainage ditch condition in only certain parts of the road, it is not thought to have a serious impact on the environment. Measures to cope with and improve the situation, however, are thought to be necessary.

3.3.3.2 Resettlement and Land Acquisition

Although this project did not result in the resettlement of any residents, it did result in the relocation of kiosks¹⁰, acquisition of land (for small and medium-sized businesses and part of the site of a housing estate), and relocation of facilities (buried facilities and corporate facilities).

Of the total 378 kiosks along the road, 35 kiosks that needed to be relocated were identified prior to the start of the project, and the relocation was carried out as scheduled. The number of kiosks that could be simply moved to nearby areas was 326, and the remaining 17 kiosks did not need to be relocated. The cost of relocating the kiosks was borne by the national treasury. No information on the amount was available.

Table 2 Kiosk relocation status

Classification	Number
Number of kiosks that did not need to be relocated	17
Number of relocated kiosks (The kiosks which were unable to relocate to the nearby areas)	35
Number of kiosks moved to surrounding spaces (Not applicable for relocation)	326
Total number of kiosks along the road	378

Source: OVD

A total of about 26 million yen was spent for the acquisition of land for 15 sites of small and medium-sized enterprises and residential areas along the road. (A precise record was not available.) For the relocation of facilities (buried facilities and corporate facilities), a total of about 490 million yen was required for buried cable facilities, corporate warehouses, protective walls,

¹⁰ A kiosk is a simple store that can be moved. Kiosks that were operating against walls and facing the road could not be moved to the nearby areas, and thus had to be relocated to another location.

conduit facilities, and other facilities, as well as railway-related facilities.

Relocation and land acquisition have been carried out in accordance with the procedures prescribed under national laws such as the Expropriation Law for Public Facilities, the General Property System, and the Land and Real Estate System. The actual implementation of resettlement and acquisition of land has been handled by an acquisition (relocation) team consisting of the City of Kinshasa, the Ministry of Urban Planning and Housing, the Ministry of Infrastructure, Public Works and Reconstruction, etc. A compensation team composed of the Ministry of Finance and the same members of the acquisition team has also been formed to take charge of compensation policy formulation and implementation. There have been no particular problems with these processes in the project.

As described above, this project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional / Organizational Aspect of Operation and Maintenance

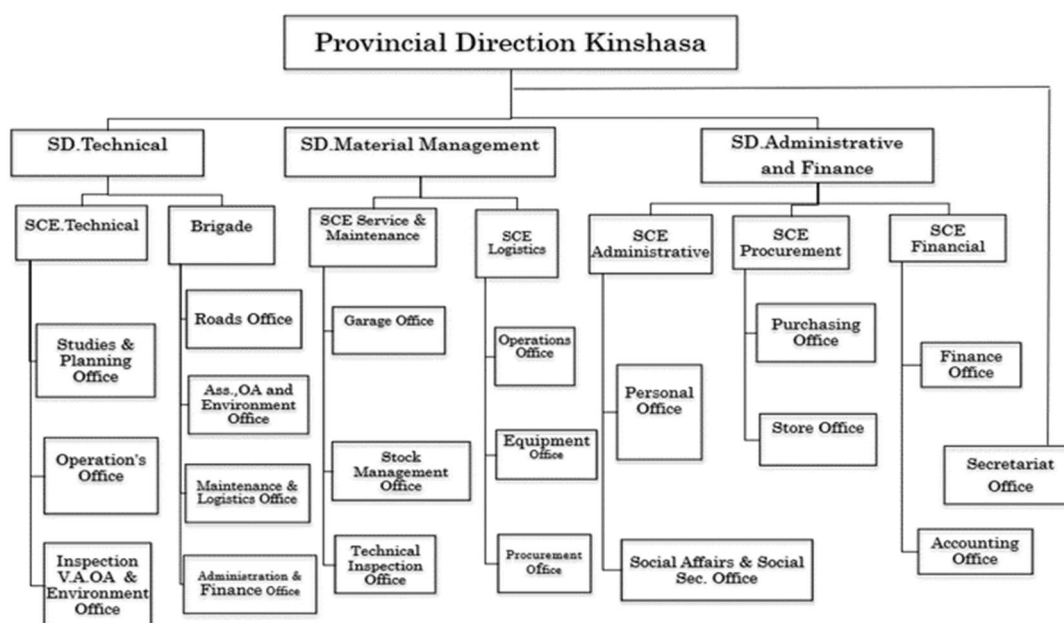
The operation and maintenance activities for the road are being carried out by the Kinshasa Provincial Office of the Office of Roads and Drainage (OVD¹¹), an organization under the Ministry of Infrastructure, Public Works and Reconstruction. From 2016 to 2018, the daily operation and maintenance activities for the road were outsourced to an NGO with experience in road maintenance. Since 2019, the operation and maintenance activities have been handled by the OVD Kinshasa office. While NGOs were entrusted with the operation and maintenance of the project, the Infrastructure Unit within the Ministry of Infrastructure, Public Works and Reconstruction was responsible for supervising the operation and maintenance (the Infrastructure Unit was the main body for the project within the Ministry at the time of project implementation). The OVD Kinshasa Provincial Office, the entity currently in charge of operation and maintenance, consists of a Technical Department, Material Management Department, Administrative and Finance Department, and Secretariat. The Office employs a total of 141 persons, including the Director (as of May 2021 survey). The Brigade Division (75 staff members) in the Technical Department is responsible for specific operation and maintenance works and various projects in each district, and maintenance work requiring equipment is carried out in cooperation with the Material Management Department. For the utilization of equipment, the Material Management Department is staffed with 26 engineers at the university graduate level. The Brigade Division is organizationally structured for operation and maintenance by task (city road network, drainage

¹¹ OVD is an acronym for the French name, "Office des Voiries et Drainages."

and ancillary facilities, environment, operation & maintenance and support, general affairs and finance). Most of the daily operation and maintenance work, however, is carried out by part-time employees. The main tasks in daily operation and maintenance are street sweeping, side ditch cleaning, trash removal, weed removal, and curb management.

In addition to the daily operation and maintenance activities, which include direct visual inspection every day and night, periodical operation and maintenance works are conducted every three months (e.g., repairing holes in the road surface) and every three years. If urgent action is required, temporary operation and maintenance works are carried out on a case-by-case basis. While no special operation and maintenance plan is set for the future, a budget request has been made to fund staff increases by about 5 to 10 persons in each department for an overall strengthening of the system.

An organizational chart of the Kinshasa Provincial Office of the OVD follows below.



Source: OVD Kinshasa Provincial Office / Preparatory Survey Report for Improvement of Road Maintenance Equipment in Kinshasa City (2018)

Although the COVID-19 brought about the following effects in 2020, subsequent improvements in the infection levels have helped OVD avoid any interruptions in its work activities in 2021.

- Operation and Maintenance activities for the road were suspended from March to April 2020.
- The F/S (feasibility study) finalization work for the Kinshasa Road Rehabilitation and

Modernization Project (OVD's own project) was delayed in October 2020 due to a lack of human resources.

- Field checks for sewage and sidewalk repair activities were delayed after heavy rains. (April to September 2020)
- The number of staff on hand to conduct OVD's work was reduced. (April to September 2020)

Based on the above, the sustainability of the system for operation and maintenance of the project is judged to be high.

3.4.2 Technical Aspect of Operation and Maintenance

No special technology is required for operation and maintenance in the scope of the project, and there are no technical difficulties. However, even in cases where materials and equipment are used for activities other than daily operation and maintenance, the system is designed to be handled by experienced engineers in the Material Management Department, and no major technical problems have been encountered in the use of existing equipment. The OVD reported that the necessary equipment and materials for operation and maintenance were sufficiently prepared.

The technical training provided by the OVD can be divided into two main categories: internal training and training by external aid agencies. The internal training is conducted on an irregular basis either by OVD's own instructors or at the national Center for the Training of Road Engineers (CFAV) or the National Institute for Professional Preparation (INPP), for the learning of new skills. The training by external aid agencies is conducted whenever new equipment is introduced. The EU provided training in 2013. JICA provided training in 2016, and is providing new training this year for the introduction of new machinery.

As mentioned above, the training provided by OVD is irregular and limited to that for the learning of new technologies and installation of new equipment. There is no systematic training plan for the efficient and effective use of existing technologies, or for basic matters related to operation and maintenance, planning and implementation, or the various related tasks.

From the above, there are judged to be some problems with the technical aspects of operation and maintenance.

3.4.3 Financial Aspect of Operation and Maintenance

The annual road cost for operation and maintenance for the project section was estimated to be about US\$115,000 (about 2.3% of the budgeted amount). This amount, however, is less than 1% of the annual budgeted amount compared to the amount budgeted by the OVD Kinshasa

Office since 2012. The total length of the roads under the control of the OVD Kinshasa Office is 678.8 km. Of that total, the 12 km of road targeted in the project makes up about 1.7%. Therefore, the operation and maintenance activities for the road are considered to be feasible under the budget. Even accounting for the expected increase in the actual annual cost of operation and maintenance due to the expansion of the road to four lanes instead from the originally planned two (even if a doubling of the cost is assumed), the cost still comes in at less than 2% of the budgeted amount. From this, the budget for operation and maintenance can be considered to have been secured. The table below shows the budget of the OVD Kinshasa Office.

Table 3 Budget and Execution amount of OVD Kinshasa Office

(US\$1,000)

Year	Category	Central Government	Kinshasa Province		FONER	Total
2012	Budget	3,903	19,083		3,914	26,900
	Execution	3,058	7,147		3,889	14,094
2013	Budget	4,680	12,678		7,846	25,204
	Execution	4,126	8,672		6,756	19,554
2014	Budget	1,914	12,235		17,394	31,543
	Execution	1,096	5,704		10,854	17,654
2015	Budget	5,076	5,274		11,110	21,460
	Execution	861	1,910		7,227	9,998
2016	Budget	4,306	4,191		17,579	26,076
	Execution	405	1,488		13,883	15,776
2017	Budget	7,084	---		10,538	17,622
	Execution	8,421	---		10,538	18,959
2018	Budget	7,649	---		15,665	23,314
	Execution	5,850	---		15,665	21,515
2019	Budget	75,621	---		22,473	98,094
	Execution	53,087	---		22,473	75,560
2020	Budget	7,871	---		16,331	24,202
	Execution	3,522	---		13,756	17,278

Source: Preparatory Survey Report for Improvement of Road Maintenance Equipment in Kinshasa City (2018) and OVD

One of the sources of budget funding is FONER, the National Road Maintenance Fund, a fund established in 2009 under the guidance of the World Bank to secure budget for the operation and maintenance of roads. The funding sources include gasoline and diesel taxes, tolls, weight taxes, donor funds, and the national budget. In addition to the regular budget, a "100-day plan"¹² and

¹² The budget was designed to coincide with the inauguration of the new president in 2019 and covered a wide range of sectors, including infrastructures such as electricity and water, the social sector, and housing. OVD Kinshasa Office executed 43,342 thousand US dollars for construction of multi-level crossings and rehabilitation of roads from a budget of 61,944 thousand US dollars.

the "special budget"¹³ were prepared in 2019 (as reflected in the conspicuously high Central Government budget for that year in the table). There have been no allocations from the Kinshasa provincial government since 2017.

Based on the above, the financial sustainability is judged to be high.

3.4.4 Status of Operation and Maintenance

According to the OVD, the daily operation and maintenance activities for the road are based on direct visual inspection. The side (drainage) ditches on some parts of the road are filled with garbage and weeds, and collapsed streetlights and damaged concrete side ditch covers can be found left unattended. It will be necessary to involve other related ministries and agencies to enlighten the users, as the garbage buried in the side ditches is largely the result of their manners. In any case, daily and steady operation and maintenance activities are always important. With regard to the side ditches, interviews with companies along the road indicated that, "The side (drainage) ditches are sometimes buried or flooded due to inadequate operation and maintenance." One company says that its staff sometimes cleans the drainage facilities related to the side ditches in front of their premises by themselves. Information from the Executing Agency is that they are working on rehabilitation in 2021, and it is expected that the situation will be improved.



A collapsed streetlight left unattended



Damaged concrete side ditch covers



Garbage filling the side ditch

In light of the above, problems can be found with the operation and maintenance status.

In summary, some minor problems have been observed in terms of the technical aspect and current status of operation and maintenance. Therefore, sustainability of the project effects is fair.

¹³ A budget of US\$5,987,000 was allocated for emergency response to the erosion and collapse of several roads due to heavy rains, and US\$2,788,000 was executed.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The purpose of the Japanese grant aid, "The Project for Rehabilitation and Improvement of the Poids Lourds Avenue in Kinshasa (Phase 1 and Phase 2)," is to facilitate traffic on the targeted road section by rehabilitating the Poids Lourds Avenue in Kinshasa City, and to thereby contribute to the revitalization of economic activities and the restoration of the capital's functions by improving the city's road network. Road and transportation network improvement is one of the important policies of the country. This project is highly consistent with not only the development policies and needs of DRC, but also Japan's aid policy at the time of planning. Therefore, the relevance of this project is judged to be high. Initially, a two-lane road was planned for this project. After review and consultation, however, a four-lane road was constructed in response to a renewed request from the DRC. The project cost based on this change in plan was within the planned amount, but the project period exceeded the plan. The efficiency of the project is therefore judged to be fair. As a result of this project, the traffic capacity of the target road increased more than fivefold compared to the pre-project level, and the planned traffic capacity was generally reached. Though the average speed during peak hours increased 2.1 times compared to the pre-project level due to the increase in traffic volume, it fell short of the level targeted in the planning. Companies using the road have praised the improved traffic flow, shortened travel time, and better assurance of safe operation. In addition, increases have been reported in the numbers of gas stations, small businesses, and customers, as well as in the sales by the companies along the road, indicating that the project is contributing to economic and social activities. From the above, the effectiveness and impact of this project are judged to be high. The operation and maintenance activities for the project are organized, and the budget is well allocated. The operation and maintenance activities for the project, however, are not necessarily functioning efficiently and effectively. Effective implementation methods need to be established and human resources need to be developed. Therefore, sustainability of the project effects is fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Short-Term Recommendation

Immediate action should be taken to remove and, if necessary, reinstall, the streetlights that are currently collapsed and left unattended (traffic regulations related to dealing with damage to streetlights will be reiterated in the long-term recommendations), remove garbage and weeds from the side ditches (drainage), and repair the damaged side ditch (drainage) covers. And, we have

been informed by the Executing Agency that the inspection survey is being conducted, and we expect that necessary repairs and other measures will be taken based on the results of the survey. In addition, to cope with the collapsed, abandoned streetlights and garbage clogging the side ditches, a system should be set up whereby part-time workers at road-cleaning sites can immediately contact the OVD Kinshasa office so that OVD can immediately take action, and the communication system with part-time workers should be strengthened. Taking the opportunity of this ex-post evaluation survey, OVD has decided to formulate a special road maintenance plan for the roads in Kinshasa, including the Poids Lourds Avenue, as soon as possible, with the aim of cleaning up the garbage in the side ditches and road cave-ins. It is therefore recommended that the plan be formulated and implemented at the earliest opportunity.

Medium-Term Recommendation

To develop internal human resources who can properly supervise part-time workers in the field and take appropriate actions in a flexible manner in order to better ensure that the daily operation and maintenance work can lead to actual improvements in the condition of the road and road ancillary facilities. In addition, as an organization in charge of the operation and maintenance of the road, training on efficient and effective use of existing technology, or training on basic matters related to operation and maintenance, planning and implementation, and various tasks should be conducted on a regular basis to maintain the technical level.

Long-Term Recommendation

As some of the side ditches have been filled with garbage and have lost their functionality as drains, it is recommended that OVD conduct enlightenment activities by cooperating with other related ministries and agencies, in order to improve the manners of nearby residents, kiosks, business corporations, and other road users along the road. Cooperation for the studies and promotion of traffic policy to improve traffic conditions, such as studies on measures to deal with congestion caused by increased traffic, is also recommended.

And, considering the traffic congestion that has been occurring, it is also recommended that OVD cooperate with relevant ministries and agencies to further examine ways to cope with the situation. Such examinations could focus on the installation of additional traffic signals, traffic policies that cover the conditions of intersections with other roads, and the introduction of traffic regulations, such as the installation of speed limit signs to protect the streetlights since there have been a growing number of cases of vehicles colliding with streetlights at excessive speeds on sunny days.

4.2.2 Recommendations to JICA

Considerations on the provision of training and expert guidance

It is recommended that JICA consider feasible support, such as training and expert guidance on operation and maintenance, as necessary, by monitoring the implementation of the above short- and medium-term recommendations.

4.3 Lessons Learned

Support for / Cooperation with the recipient country

Although it was agreed, at the time of planning, that the road to be rehabilitated in the project would be two lanes, the President requested that the road be four lanes after the start of the project, due to insufficient consensus-building between the relevant ministries and the President in the DRC. As a result, the DRC and the Japanese side had to re-coordinate, and construction was suspended, which extended the project period far longer than planned. In light of this, JICA needs to carefully check the status of consensus-building and information-sharing on the subject project within the government of the recipient country and the progress of the procedures before the project is commenced. It is also necessary to consider providing side support and cooperation in establishing consensus, promoting information-sharing, and facilitating related procedures in the recipient country by holding project briefing sessions and meetings to confirm procedures with relevant parties in the government, if needed.

Urban road improvement plan with consideration of the network

The main purpose of this project was to facilitate smooth traffic on the road. One indicator of the traffic flow was the increase in the average speed of vehicle travel during peak hours. While the average speed during the peak hours was more than doubled after the project was implemented, it fell short the target figure as a result of the traffic congestion caused by the concentration of heavy traffic. More traffic than had been anticipated in the planning appeared to concentrate along the road. This reflects the importance of the Poids Lords Avenue in Kinshasa's road network, and may have helped alleviate congestion on other roads. As a system of urban arterial roads forms a network, a heavy concentration of traffic on one road section can reduce the burden on other road sections, thereby facilitating the traffic throughout the entire network.

Therefore, when considering the improvement of some sections of the urban arterial road network (including the improvement of intersections), it is necessary to plan after appropriately forecasting the future traffic volume, including the volume of traffic diverted from other roads, by considering the entire road network. Traffic volume forecasting from a network perspective is usually carried out in the process of formulating an urban transport master plan. Based on this, it is considered possible to accurately plan the appropriate number of road lanes, road specifications, and ancillary facilities according to the detailed traffic volume of the road section. As such, projects to improve circumscribed sections of urban arterial roads (including intersections with other roads) should appropriately be planned on the premise of an urban transportation master

plan and with full respect for its contents. In the absence of such a master plan, the volume of traffic diverted from other roads should be forecasted over the broadest possible area. In addition, in order to properly measure the effect of the project, it is also necessary to adopt traffic volume as an indicator, along with the traffic speed so that the role of a certain road playing in the entire network can be evaluated.

Comparison of major items- Plan/actual

Item	Plan	Actual
① Outputs	<p>[Japan side]</p> <ul style="list-style-type: none"> ▪ Length of road: 11.92 km ▪ Ancillary facilities: New installation of U-shaped side ditches covering to the whole section, Road-crossing box culverts (19 places), Water-gathering basins (71 places), Box culvert outlet (1 place), and other ancillary facilities ▪ Consulting services: Detailed design, Supervision of construction work <p>[DRC side]</p> <ul style="list-style-type: none"> ▪ Traffic lane widening: No plan ▪ Relocation of kiosks*: 35 kiosks * (A kiosk is a simple store that can be moved.) ▪ Buried power lines and telephone lines: relocation ▪ Relocation of railroad signals and circuit breakers: 16 locations ▪ Street trees: removal 	<p>[Japan side]</p> <ul style="list-style-type: none"> ▪ Length of road: As planned (The lane width was changed from two lanes to four lanes in the second phase. The DRC bore the cost for the widening to four lanes.) ▪ Ancillary facilities: In addition to the planned items, streetlights were installed in the four-lane section and two-lane ramp section in the second phase. ▪ Consulting services: In addition to the planned items, the work to cope with the expansion of road lanes from two to four, and the installation of streetlights. <p>[DRC side]</p> <ul style="list-style-type: none"> ▪ Traffic lane widening: Improvement of the roadway, shoulders, sidewalks, and side ditches in the widened area ▪ Relocation of kiosks: As planned ▪ Buried power lines and telephone lines: As planned ▪ Relocation of railroad signals and circuit breakers: As planned ▪ Street trees: As planned
②Period	November 2009 to August 2012 (34 months)	November 2009 to June 2014 (56 months) (Additional streetlight installation: March 2016 to May 2017 (15 months).)
③Project cost	<p>[Total cost] 5,160 million yen</p> <ul style="list-style-type: none"> ▪ Japan side: 5,103 million yen ▪ DRC side: 57 million yen 	<p>[Total cost] 6,994 million yen</p> <ul style="list-style-type: none"> ▪ Japan side: 4,849 million yen ▪ DRC side: 1,209 million yen