Ex-Post Project Evaluation 2017

Package Ⅲ-7 (Zambia, Mozambique, Lesotho)

November 2018

JAPAN INTERNATIONAL COOPERATION AGENCY

INTEM Consulting Inc.

EV
JR
18-40

Disclaimer

This report compiles the result of the ex-post evaluations. These are conducted by external evaluators to ensure objectivity, and the views and recommendations herein do not necessarily reflect the official views and opinions of JICA. JICA is not responsible for the accuracy of the English translation, and the Japanese version shall prevail in the event of any inconsistency with the English version.

Minor amendments may be made when the contents of this report is posted on JICA's website.

Comments by JICA and/or the Counterpart Agencies may be added at the end of the evaluation report when the views held by them differ from those of the external evaluator.

Republic of Zambia

FY2017 Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for the Improvement of the Living Environment in the Southern Area of Lusaka"

External Evaluator: Satoshi Nagashima, INTEM Consulting Inc.

0. Summary

This project was implemented with the target of improving the social infrastructures through improving access to the workplace and improving the situation of accumulation of water on the roads in the rainy season by constructing the inner ring road in the capital, Lusaka City, the access road to the multi facility economic zone, and the associated drainage facilities, thereby contributing to facilitate logistics in the capital and to improve the living environment.

This project is consistent with the development policy of Republic of Zambia (hereinafter referred to as "Zambia") at the time of planning and ex-post evaluation. In Lusaka City, problems caused by undevelopment of roads have not been solved, and development needs are high. In addition, this project was consistent with Japan's aid policy, and the relevance is high.

Project cost and project period of this project were within the plan. Therefore, the efficiency of this project is high.

Target indicators related to improvement of congestion to confirm the outcome of this project have not been achieved due to the problem of setting of indicators and subsequent deterioration of congestion in Lusaka City, but a certain level of effect of improving congestion was confirmed. On the other hand, since there were users' voices concerning improvement of convenience due to the construction of bus stops near residential area due to the road construction, improvement of water accumulation on the roads in the rainy season associated with reduction of diseases due to improvement of the hygiene situation, and improvement of access to basic social infrastructure etc., and the effectiveness/impact are high.

The operation and maintenance structures of this project are not well established. The executing agencies have sufficient technical level for the operation and maintenance. The budget for the operation and maintenance of Lusaka City Council (hereinafter referred to as "LCC") is decreasing, and the sustainability in terms of finance is low. In addition, there is no prospect of repairing road unevenness occurring at the time of ex-post evaluation, and the operation and maintenance situation also faces challenges. Therefore, the sustainability is low.

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

1. Project Description

Project Location

Part of constructed road

1.1 Background

Zambia had achieved an economic growth rate of more than 6% per year at the time of project implementation, on the other hand, it also had problems of high transportation costs compared to the other countries due to inefficient road network, structural weakness of land infrastructure and geographical conditions as an inland country. The pavement rate still remained at around 65% in Lusaka City due to lack of financial resources, it was muddy everywhere in the rainy season as drainage facilities were not in the vicinity of the unpaved road area and the hygiene situation was poor, and infectious diseases such as cholera, etc. occurred. In addition, due to poor drainage, traffic became difficult and there was a serious obstacle to access basic social infrastructures such as hospitals and schools. Further, the expansion of low-income residential areas promoted the friction between the rich and the poor and increased social unrest, and planned urban development including road improvement was considered an urgent task.

In response to these circumstances, “The Study on Comprehensive Urban Development Plan for the City of Lusaka” (hereinafter referred to as “Development Study”) was implemented from August 2007 to March 2009 by Japan for a comprehensive urban development of Lusaka City, the capital city of Zambia, including improvement of the current status of the road network. In the Development Study, the development plan of Lusaka City in the short, medium and long term was formulated. With regard to the road network of Lusaka City, traffic was concentrated in the city centre due to the radial structure, and it was suggested to eliminate traffic congestion by constructing an inner ring road in the short term. In addition, it was also expected that it a contribution to eliminating traffic congestion and improve access to the Lusaka South Multi Facility Economic Zone (herein after referred to as “LS-MFEZ”) would be made by constructing a road connecting to LS-MFEZ, which was under development in the southern part of Lusaka City. Under these circumstances, the Zambian government made a request to Japan for a grant aid project related to construct the inner ring road (southern and western areas) and the access road to LS-MFEZ. Subsequently, the project was further examined by the

"Preparatory study on Industrial Infrastructure Support Program[1]" conducted in January 2010, which was positioned as a preliminary survey for this project, and this project was implemented.

1.2 Project Outline

The objective of this project is to improve the social infrastructures for residents through improving access to the workplace etc. and improving the situation of accumulation of water on the road in the rainy season by constructing the inner ring road in the capital, Lusaka City, the access road to LS-MFEZ, and the associated drainage facilities, thereby contributing to facilitating logistics in the capital and to improve the living environment.

Grant Limit / Actual Grant Amount	2,776 million yen / 2,737 million yen
Exchange of Notes Date /Grant Agreement Date	June, 2011 / June, 2011
Executing Agency	Ministry of Local Government and Housing (Currently Ministry of Local Government), LCC
Project Completion	November 2014
Main Contractor	Shimizu Corporation
Main Consultant	Katahira & Engineers International
Preparatory Survey	July, 2010 – April, 2011
Related Projects	The Study on Comprehensive Urban Development Plan for the City of Lusaka (2009)

2. Outline of the Evaluation Study

2.1 External Evaluator

Satoshi Nagashima, INTEM Consulting Inc.

[1] This project was requested by the Zambian government based on the recommendations of the Development Study, but since the scale of the project was large, proposals were made to classify the survey scope in the first phase and the second phase. However, due to ambiguousness of validity of dividing phases of the survey scope and the implementation framework concerning the environmental and social consideration of the Zambian government, the survey was carried out. Please refer to "3.1.4 Appropriateness of the Project Plan and Approach" for further examinations of the targets to be implemented.

2.2 Duration of Evaluation Study

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

Duration of the Study: October, 2017 – December, 2018

Duration of the Field Study: January 7th, 2018 – February 8th, 2018

April 15th, 2018 – April 28th, 2018

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

3.1 Relevance (Rating: ③[3])

3.1.1 Consistency with the Development Plan of Zambia

In the road infrastructure development program of the *Fifth National Development Plan (2006-2010)* at the time of planning, the goals were to promote the construction of road infrastructure, to establish standards and to develop the nation, and the means were to formulate a road infrastructure development plan, to provide technical information and specifications to constructing companies and consultants, to enforce quality standards, to provide technical advice on public works to governmental organizations and construction industries, to strengthen registration systems for construction companies and consultants and to formulate training programmes for small scale contractors and engineers etc.

The *Seventh National Development Plan (2017-2021)* at the time of ex-post evaluation has listed improvements in transport systems and infrastructures as one of the development goals, and it mentions that improvement of transport systems including road and the infrastructures will expand economic interests such as supporting growth and creation of employment, enhancing economic production capacities, increasing efficiency and increasing international competitiveness.

As described above, in the national development plan at the time of planning and ex-post evaluation, there is no difference in the direction of promoting the construction of road infrastructures for economic development and it is consistent with this project, which aimed at making an impact on promoting economic activities through construction of a part of the inner ring road and improvement of access to economic zone.

3.1.2 Consistency with the Development Needs of Zambia

At the time of planning, the hygiene situation was poor due to muddy places in the rainy season because of undeveloped drainage facilities around the unpaved road areas, and there was a serious obstacle for access to the basic social infrastructures such as hospitals and schools in Lusaka City. Furthermore, the expansion of disorderly low-income residential areas

[2] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[3] ③: High, ②: Fair, ①: Low

around unpaved roads had promoted the friction between the rich and the poor and it increased social unrest, and a systematic urban development including road construction was regarded as an urgent task.

At the time of ex-post evaluation, according to a result of qualitative survey[4] for residents on target roads of this project, there were some positive opinions expressed such as perceptions of improvements in hygiene conditions and decrease of diseases such as cholera and malaria in areas where drainage facilities were constructed through implementation of the project. In addition, as the result of the implementation of this project, there were stated opinions that there was alleviation of congestion on roads parallel to the road constructed in this project and dramatic improvement of access to basic social infrastructures. Friction between the rich and the poor were not observed at the time of field survey in the ex-post evaluation.

On the other hand, according to the information from LCC, there are places that have been paved but do not have sufficient drainage facilities along other roads outside the scope of this project, and many water-borne diseases such as cholera[5] and mosquito-borne infections such as malaria are still occurring. In addition, according to the on-site survey, it was confirmed that chronic congestion still occurred in the centre of the city. Furthermore, disorderly habitations of low-income people are still expanding on roads that are not covered by this project, and an increasing number of illegal stores on the road side and illegal parking of minibuses create congestion and worsen the hygiene situation, leading to increased social unrest.

As described above, residents in the area around the road have recognized that the development needs such as poor hygiene conditions, occurrence of diseases, and difficulty concerning access to basic social infrastructures were largely solved due to implementation of this project in the area surrounding the target road of this project. On the other hand, those problems have not been resolved on roads adjacent to this project's target road. Therefore, development needs are still high.

3.1.3 Consistency with Japan's ODA Policy

There is no difference between this project and Japan's aid policy, including "Support for

[4] Interview survey was conducted targeting the residents living around the roads constructed by this project. A semi structured interview was conducted for 13 places selected along the road constructed by this project for residents living in the vicinity (about two to eight persons at each place). Major question items were access to the main social infrastructures before and after the project, effects of installation of bus stops, the traffic volume of the vehicles, effects of improvement of the drainage facilities, effects of the road pavement, and other positive and negative effects etc.

[5] A serious cholera infection occurred in Lusaka City in January 2018 when the primary survey of this ex-post evaluation was conducted. From October 6th, 2017 to January 11th, 2018, a total of 2,905 people were infected and 67 people died. In order to prevent infection, a curfew was announced at Kanyama where there was a high population density. In addition, the start of the school's new term was delayed (Express, January 11th, 2018). The infected areas were Chipta, Kanyama, Shawama, Matero, Chilenge and Chelston as of December 7th, 2017 (reliefweb, December 11th, 2017).

efforts to formulate balanced economic structures" in priority fields in the *Country Assistance Program* formulated in 2002, and it is highly consistent with this project.

3.1.4 Appropriateness of the Project Plan and Approach

Prior to implementing the above-mentioned "Preparatory study on Industrial Infrastructure Support Program", there was a request from the recipient government to divide the project activity into two phases and implement the project such as construction of the inner ring road (southern part) and an access road to Chilimbulu road as the first phase and construction of the inner ring road (western part)[6] and the access road to LS-MFEZ as the second phase. On the other hand, it was announced as a policy in the survey to prioritise and implement construction of the inner ring road (southern part) and the access road to LS-MFEZ but not to conduct construction in the inner ring road (western part) due to higher traffic volume at the inner ring road (southern part) and high possibility of large scale resettlement occurring in the inner ring road (western part) while the implementation structure on the Zambian side was insufficient. By making the plan to exclude the inner ring road (western part) from the scope of the project in this way, the risk factor that could lead to a large delay of the project was eliminated, and it contributed to the improvement of the efficiency of the project[7].

Meanwhile, since construction of the inner ring road (western part) has not been implemented as the Phase two, it cannot fully demonstrate the effect of the road to be fulfilled such as alleviating congestion and increasing traffic volume to LS-MFEZ, and some adverse effects were observed such as the project's originally intended effects were not fully demonstrated due to emphasis on the environmental monitoring implementation structure.

Although emphasis was placed on efficiency, problems were observed slightly on the generating effects concerning the effectiveness of the project, such as the limited effect of improving congestion, there was no influence sufficient to lower the evaluation result of relevance of the project.

From above, 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: ③)

3.2.1 Project Outputs

Difference between the Plan and the actual outputs of the project are shown in Table 1 below.

[6] Inner Ring Road (western part) was planned to start from Kafue road through Chibolya and Kanyama to Mumbwa road.

[7] In fact, even in the ex-post evaluation in this time, some problems were seen in the implementation structure of environmental and social considerations at the Zambian side, such as the fact that LCC did not periodically prepare monitoring reports on environmental impact assessment and resettlement.

Table 1 Difference between the Plan and the actual outputs of the project

Name of the road	Plan	Actual
Inner Ring Road	4.88km	4.88km
Extension of inner ring road	2.58km	2.58km
Access road to LS-MFEZ	4.95km	5.22km
Mini Bypass Link	1.22km	1.22km
Ben Bella Road	0.95km	0.95km
Total	14.58km	14.85km

Source: Material provided by JICA

As for the output of Japanese side, the end point was extended by about 0.27 km from the basic design period, and the access road to LS-MFEZ has been extended by 0.27 km. It is reasonable as it was a change before the detailed design, the reason for the change was appropriate, and it was determined through formal procedures. In addition, this change is reflected in the amount of the G/A.

Furthermore, according to an interview conducted in the executing agency, it was confirmed that the output by the Zambian side was as planned.

3.2.2 Project Inputs

3.2.2.1 Project Cost

Regarding the project cost, it was estimated at 2,776 million Japanese yen in the plan, but the actual result was 2,737 million Japanese yen (99% of plan), which was lower than planned. In addition, the obligation of the Zambian side was estimated at about 738 million Japanese yen[8] in the plan due to resident resettlement expenses, obstacle relocation expenses, banking arrangement fees, etc. and at about 528 million Japanese yen (72% of plan) was spent in the actual and it was lower than planned.

3.2.2.2 Project Period

Regarding the project period, the project was supposed to be completed in a total of 42 months in the plan and the project was actually completed in 41 months, which was shorter than planned (98% of the planned).

From above, both the project cost and project period were within the plan. Therefore, efficiency of the project is high.

[8] Converted at the average annual rate of 2011, US$1 = 79.807 Japanese yen (International Financial Statistics: Yearbook 2011)

3.3 Effectiveness and Impacts[9] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

The level of achievement of the indicators set for measuring the quantitative effect of this project (travel time, average speed per hour on Chilenge - city centre (8.2 km) and Kanyama - city centre (3.0 km)) are as shown in Table 2 below (For travel route on the survey of travel time and the average speed per hour, see Figure 1).

Table 2 Travel time and average speed per hour on Chilenge - city centre (8.2 km) and Kanyama - city centre (3.0 km) (peak hour)[10]

	Baseline	Target	Actual
	2010	2018	2018
		4 Years After Completion	4 Years After Completion
Travel time and average speed per hour on Chilenge - city centre (8.2 km)[11]	Travel time: 35 mins Average speed per hour: 14km/h	Travel time: 14 mins Average speed per hour: 35km/h	Travel time: 30 mins Average speed per hour: 16km/h
Travel time and average speed per hour on Kanyama - city centre (3.0 km)	Travel time: 12 mins Average speed per hour: 15km/h	Travel time: 5 mins Average speed per hour: 35 km/h	Travel time: 12 mins Average speed per hour: 15km/h[12]

Source: Actual measurement by the evaluator

[9] Sub-rating for Effectiveness is to be put with consideration of Impacts.

[10] A condition of the baseline value was confirmed with the designing consultant and the measurement timing was around 7:30 am on weekdays, and the survey was implemented according to the condition. It is the average value of eight times on Chilenge - city center and 10 times on Kanyama - city center.

[11] At the design stage of this project, there was no roads at all in some sections scheduled to develop roads in this project. Therefore, the baseline (travel time and average speed per hour) for confirming the outcome of this project is the data when passing through the Independence Avenue. The actual value is a route which passes Chilimbulu road, Yotam Muleya road and a part of the road developed by this project indicated by the dotted orange line since the starting point is not connected to the road constructed by the project.

[12] It took 40 minutes to reach the city centre from Kanyama on the first day of the survey (January 10th, 2018) when caught in a heavy traffic jam. However, since it was confirmed that such congestion is extremely rare in the subsequent eight surveys, the data on the first day is excluded when calculating the average value.

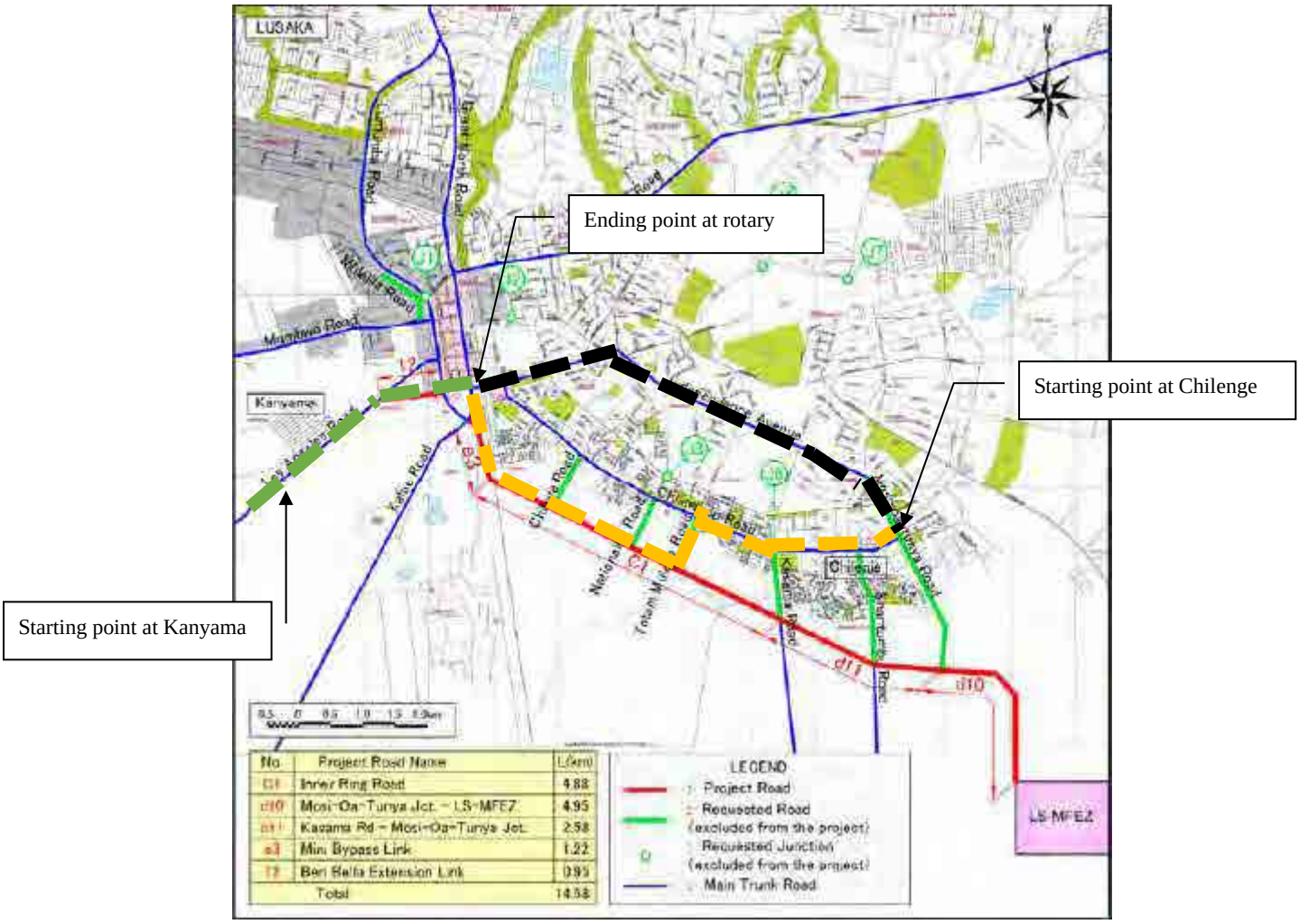


Figure 1 Road map constructed by this project and the running route for the survey of travel time and average speed per hour[13]

Source: Evaluator adds on the figure of the preparatory survey report

As mentioned above, indicators on the travel time and average speed per hour from Chilenge to city centre, from Kanyama to city centre have not been achieved. Regarding the one from Chilenge to city centre, though it was confirmed by interview survey that the project contributed to alleviate congestions in the Chilimbulu road etc. running in parallel by road constructed by this project, and congestion has rarely occurred at the inner ring road itself developed by this project, the travel time and average speed per hour from Chilenge to the city centre and from Kanyama to the city centre are the same as before implementation of the project. The following factors may be considered as reasons for not achieving the target value.

[13] Black dotted line: Assumed route of Chilenge - city centre before implementation of the project (baseline)
Orange dotted line: Assumed route of Chilenge - city centre after implementation of the project
Green dotted line: Assumed route of Kanyama- city centre after implementation of the project

(1) The target value of the indicator was set higher than the actual situation

The results of the survey on the travel time and average speed per hour of the same section at the time after the peak hour of the traffic congestion in the morning or day time are shown in Table 3 below.

Table 3: Travel time and average speed per hour (time other than peak of traffic congestion) of Chilenge - city centre (8.2 km) and Kanyama - city centre (3.0 km)[14]

	Target	Actual
	2018	2018
(For reference) Travel time and average speed per hour of Chilenge - city centre (8.2km) (Route passing through constructed section of the project (Orange dotted route))	Travel time: 14 mins Average speed per hour: 35km/h	Travel time: 21 mins Average speed per hour: 23km/h
(For reference) Travel time and average speed per hour on Kanyama - city centre (3.0 km)	Travel time: 5 mins Average speed per hour: 35 km/h	Travel time: 10 mins Average speed per hour: 18km/h
(For reference) Travel time and average speed per hour of Chilenge - city centre (7.7km) (Route passing through baseline route (Black dotted route))		Travel time: 14 mins Average speed per hour: 34km/h

As shown in Table 3, the travel time did not reach the target value when passing through the assumed route (via the Chilimbulu road and constructed section of this project) even if the measurement was carried out in the time zone without congestion. Many of the assumed courses are one lane, and there are many factors to prevent smooth running such as obstruction to passing intersections such as insufficient function of signals, sudden crossing of roads by pedestrians and sudden getting on and off of buses at locations other than bus stops etc., and it is difficult to run at a stable speed. Therefore, there is a possibility that the target value was set too high. On the other hand, as for the route of Chilenge - city centre which passed through the same running route of the baseline (via the Independence Avenue), it was close to the target value of the indicator. Since Independence Avenue has two lanes and there are few elements that impede traffic as described above, smooth passage is possible except at peak hours.

[14] It is the average value of measurement of nine times on Chilenge - city centre, six times on Kanyama - city centre and three times on Chilenge – city centre via baseline route.

(2) Base of baseline value has been changed

According to the interview survey at LCC, it is pointed out that traffic congestion has been getting worse since this project covers a part of the inner ring road and there are undeveloped sections of the inner ring road, and the situation in which traffic is concentrated in the centre of the radially spreading road network of Lusaka City has not been changed. In fact, the end point of the project's road is joined to the Kafue Road via the mini-bypass link and it leads to the rotary of the city centre, and the function of the rotary of the city centre malfunctions especially during the morning rush and it causes congestions of the road (traffic control by police officers is done in some cases, but it has not led to alleviation of congestion). Therefore, as shown in Table 4 below, it was confirmed that the travel time from Chilenge to city centre in case of passing through the baseline route also deteriorated from the target value of 35 minutes to 46 minutes.

Table 4 Travel time and average speed per hour of Chilenge - city centre (8.2 km) (in the case of passing through the same route as the baseline) [15]

	Target	Actual
	2010	2018
(For reference) Travel time and average speed per hour of Chilenge - city centre (7.7km) via the Independence Avenue	Travel time: 35 mins Average speed per hour: 14km/h	Travel time: 46 mins Average speed per hour: 10km/h

It is conceivable that the increase in the population of Lusaka City and the number of vehicles in Lusaka City have exerted influence as factors that have changed the base of the baseline as mentioned above. According to the statistics on the number of registered vehicles of whole of Zambia and Lusaka Province[16] from 2005 to 2017 (Figure 2) obtained from the Road Transport and Safety Agency, it is confirmed that the number of registered vehicles is increasing year by year, and the increase is more than around 2.2 times at 430,000 registered vehicles. Of course, such an increase in the number of vehicles is supposed to be assumed at the time of creation of indicators, but there is a possibility that the number of vehicles in Lusaka City has increased by more than the assumption.

[15] It is the average value of measurement of six times on Chilenge - city centre via the baseline route.

[16] Statistic of Lusaka Province was used as the statistic on the number of registered vehicles in Lusaka City could not be obtained. Since 76.2% of the urban population of Lusaka Province lives in Lusaka City, it is considered that many of the vehicles registered in Lusaka Province are used in Lusaka City.

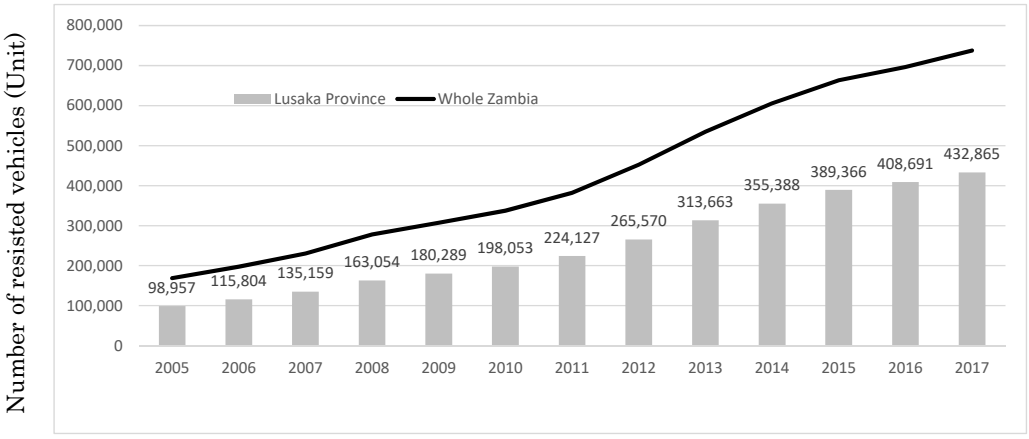


Figure 2 Trends in the number of registered vehicles from 2005 and 2017 in whole Zambia and Lusaka Province

Source: Road Transport and Safety Agency

In addition, according to the data prepared by the Central Statistical Office of Zambia, the population growth rate of Lusaka Province including Lusaka City is expected to be high during the period from 2011 to 2020 and it is the second highest after Muchinga Province in Zambia. The population growth rate of Lusaka City is predicted to be 4.2% per year, compared to a population growth rate of 3% per year in the whole of Zambia. In the Development Study, the population increase was assumed as shown in Table 6. However, according to the result of the population census of 2011 conducted by the Central Statistical Office of Zambia, it is almost the same as the population prediction in 2020 of the Development Study, and population growth is occurring at a faster pace than the assumption of the Development Study.

Table 5 Prediction of population growth for the whole of Zambia and Lusaka City, and the growth rate during the period

	2011	2020	Population growth rate
Whole of Zambia	13,718,722	17,885,422	3.0%/ year
Lusaka City (Trial calculation as 76.2% of population in Lusaka Province)	1,800,581	2,560,460	4.2%/year

Source: Central Statistical Office of Zambia

Table 6 Population forecast of Lusaka City in the Development Study

	2007	2015	2020	2030
Lusaka City	1,385,000	1,696,000	1,828,000	2,483,000

Source: Final report of the Study on Comprehensive Urban Development Plan for the City of Lusaka

According to the interview survey at the LCC, it was pointed out that due to the development

of this project, the southern part of Lusaka City, which had been unpaved and considered to have poor public safety before the project, became an attractive area, and there is a special trend of population increase.

Furthermore, regarding the route from Kanyama to the city centre, although only Ben Bella Road was developed by this project, information was obtained in the interview survey at LCC that the population is increasing year by year in Kanyama. On the Los Angeles Road which is passing Kanyama, traffic congestion is caused by hindrance of traffic due to sudden stops of buses other than bus stops and narrow road width due to illegal street vendors. Since the traffic congestion on the Los Angeles Road has not been improved, it is considered that just improving Ben Bella Road has not led to improvements of travel time and average speed per hour on Kanyama - city centre.

As described above, the target values of the travel time and the average speed per hour have not been achieved due to development of the road by this project. However, other than the problems of setting of indicators such as the target values were too high in the first place, several factors are considered to be responsible for the further deterioration of the traffic congestion in the road of Lusaka City such as the number of vehicles and population increase, in addition to the incomplete development of the inner ring road. Under such circumstances, it is considered that a certain level of effects are obtained even though it is not as same as expected, since it is possible to reach the city centre in the same or lower travel time than the baseline travel time at an average speed per hour via the road developed by this project.

3.3.1.2 Qualitative Effects (Other Effects)

(1) Improvement of convenience of public transportation etc.

According to the results of the qualitative survey targeting the residents along the target road of this project, the constructed section of this project was unpaved or the road was not completely constructed before implementation of this project, and there was no bus stop in the neighbourhood of residence. Therefore, residents had to walk to Chilimbulu Road running parallel to the road by foot and take the bus and head for the destination from there. However, due to the construction of the road by this project, new bus stops were set up along the road, and it was possible to go from the nearby bus stops to the city centre without making connections to other buses. In this way, the convenience of public transportation for the residents around the target road was greatly improved by implementation of this project.

(2) Increase in traffic volume

As a result of confirmation with LCC, there was only a forecast data of the traffic volume prepared by the Development Study, and there was no traffic volume data as baseline and

measured traffic volume data at the time of ex-post evaluation. However, according to the interview survey with LCC, there was an answer that though it is highly possible that the traffic volume on the inner ring road has not reached the traffic volume predicted in the Development Study that the traffic volume has been increased compared to before since the area used to be unpaved or have no road before. It was also mentioned that the reason why the traffic volume predicted in the Development Study has not been reached is that the roads covered by this project are developed as a part of the inner ring road plan and development of LS-MFEZ is yet to be conducted. In the results of the qualitative survey targeting the residents on the target road of this project, there were many areas where the roads were not paved or there were no roads before, and there was no traffic or very little. However, several responses were obtained that the traffic volume has steadily increased due to implementation of the project.

(3) Retention of water on the roads in the rainy seasons is improved through construction of drainage.

As a result of the qualitative survey targeting the residents along the roads covered by this project, in areas where drainage was improved through implementation of this project, several opinions were obtained that there was no retention of water on roads in the rainy season and also no floods in the surrounding residential areas[17].

3.3.2 Impacts

3.3.2.1 Intended Impacts

In this project, it was assumed to contribute to smoothing the logistics in Lusaka City, as a result of construction of the inner ring road, the access road to LS-MFEZ and the connecting road to existing roads in Lusaka City as the impacts. The impacts of this project and contribution of this project are described below.

(1) Improvement of resident's standard of living by improving access to hospitals, schools and work places

As a result of the qualitative survey on the neighbouring residents (27 men, 20 women, 47 persons in total) around the target roads of this project, interview survey results showed that access to hospitals, schools and work places has been improved due to setting up bus stops in the neighbourhood after construction of the project and it was possible to reach destinations in 50% of the time and 25 to 30% of the time in cases where there were no traffic jams compared with the previous situation. In addition, due to improvement of the access, the number of households which were attracted by the target area and moved in has increased, and the

[17] However, in January 2018, when the first survey was conducted, there was almost no rain in the capital, Lusaka City even during the rainy season. As a result, it was not possible to actually confirm whether floods were completely solved on the whole target road of the project when rainfall was continuous.

number of people who are targeting the increase of the population in the surrounding area and newly starting business along the road is also increasing. As a result of the effects, there were some opinions that the residents in the surrounding area do not need to go far away for shopping, and at the same time, those who do business do not need to go to the city centre and can do business near their residential area, and the sales have increased compared with the past, and a certain level of effects were observed.

(2) Traffic volume of heavy-duty vehicles going to LS-MFEZ increases.

As a result of confirmation with LCC, there was no data on the actual traffic volume of the access road to LS-MFEZ (An evaluator actually visited the gate of LS-MFEZ, but they did not keep a record of the vehicles). According to the interview with the environmental planning officer of the City Planning Division of LCC, there was an answer that though these places were previously vacant lots, a beer factory was constructed and transportation of products has been increased, and construction of other factories and employees' houses are also progressing and transportation of materials for housing construction has also been increased, and the amount of transport of goods to LS-MFEZ has been increased.

However, same as according to the environmental planning officer of the City Planning Division of LCC, there was a reply that the road constructed by this project had highly likely not reached the traffic volume assumed by Lusaka City. The reason for this is considered to be that the development of the inner ring road is underway and development of LS-MFEZ is also underway[18].

For this reason, a certain effect was seen in the increase of the traffic volume to LS-MFEZ.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

According to the interviews with LCC, an environmental impact statement was prepared by a local consultant company in December 2010 and approved by the Zambian Environmental Management Agency in December 2011. During construction and after service, environmental monitoring was conducted by LCC in accordance with the environmental impact statement, but no monitoring report was prepared[19]. Therefore, the level of achievement of the indicators in the environmental impact statement was confirmed by a questionnaire survey. According to the results of this survey, measures were taken during the construction period and it was confirmed that there was no particular impact on the natural environment, and it is concluded

[18] An evaluator visited LS-MFEZ but there were no conspicuous buildings except for the beer factory, and many plots of land have remained vacant lots. According to the interview survey at LCC, most of the land has already been sold and factories and residences for the workers are expected to be constructed in the same area in the future.

[19] An evaluator asked the reasons for LCC, and there was an answer that they did not know that there was an obligation to periodically prepare and submit the monitoring reports.

that the negative impact of the project did not occur.

(2) Resettlement and Land Acquisition

According to LCC, resettlement of residents was made in accordance with the law of Zambia, a resident resettlement plan was prepared by the local consultant company in December 2010 and it was implemented according to the plan. In the data obtained from LCC, compensation was made for 75 buildings (including shops), and it was noted that resettlement of residents was done without problems. However, no monitoring report on resettlement was prepared[20].

According to the interview with the environmental planning officer at LCC, sufficient amounts to buy land and house and compensation were paid to residents who moved according to the plan, and provision of alternative land was not conducted. Although there was a complaint regarding resettlement from the residents at the beginning of the plan, agreement was reached by seeing the reasonable amount of the compensation, and complaints did not occur after that. Regarding the situation of recovery of the livelihood of residents after the resettlement, since the survey was not conducted at LCC afterwards there was no information. According to the interview survey at LCC, the resettlement of residents was carried out according to the resident relocation plan and no major problem occurred. Therefore, it is highly likely that resettlement of residents was done properly, but it was difficult to confirm the fact sufficiently.

(3) Other Impacts

1) Reduction of disease through improvement of hygiene situation

Since it was difficult to obtain health statistics specialized for the target area, the qualitative survey for residents on the target road of this project was conducted. According to the results of the survey, there were opinions that retention of the water on the roads and surrounding areas due to construction of drainage has been decreased and cholera has been reduced in a part of the areas. However, the population density around the target area was originally low and most of the area was not even a cholera outbreak area. On the other hand, many opinions were heard that the number of mosquito has decreased in most of the areas and the malaria infection rate has been also decreased due to the disappearance of the water retention.

2) Reduction of dust associated with road pavement

According to the qualitative survey targeting the residents around the target road of this project, problems of dust during the dry seasons were particularly serious, since there was no road or even if there was, it was not paved road before the project. Many opinions were expressed that even if the laundry was dried, it got soiled, or even if cleaning inside of the

[20] Same as footnote 18

house was made, it was soiled with dust immediately, and it caused symptoms such as coughing. Many opinions were expressed that after implementation of this project, dust was reduced in areas around the road and symptoms such as coughing have decreased.

3) Improvement of security situation around the area along the roads

According to the qualitative survey targeting the residents around the target road of this project, the surrounding areas were covered with forests before the project, and it was the best place for criminals to hide. As a result, there was information that robbery and rape, etc. occurred frequently in the areas but as the forest was cut down due to the road construction, the places where the criminals hid disappeared and the security situation has been improved. In addition, there is also other information that robberies on the road at night have become less frequent through installation of street lights along the road.

4) Revitalization of economic activities accompanying construction of roads

According to the qualitative survey targeting the residents around the target road of this project, the construction of roads has resulted in the construction of new houses around the road and new residents have also increased. For this reason, there are opinions from many residents that economic activities in the surrounding areas are activated such as that the number of retail stores has increased and construction of a new shopping mall etc. are confirmed in the on-site survey.

Photo: Shopping mall under construction along the road

Photo: Newly launched yogurt sales business along the road

From above, this project has largely achieved its objectives. Therefore effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ①)

3.4.1 Institutional / Organizational Aspect of Operation and Maintenance

Daily inspection/cleaning and small-scale repair were supposed to be done at the Civil

Engineering Division, Operation Department, LCC in the ex-ante evaluation. Following the restructuring of the organization, it is conducted by Road and Drainage section, Road and Drainage Division, Operation Department, Engineering Services Bureau, LCC at the time of ex-post evaluation. The staff of Roads and Drainage section consists of 109 people. The organization chart of LCC is shown in Figure 3 below.

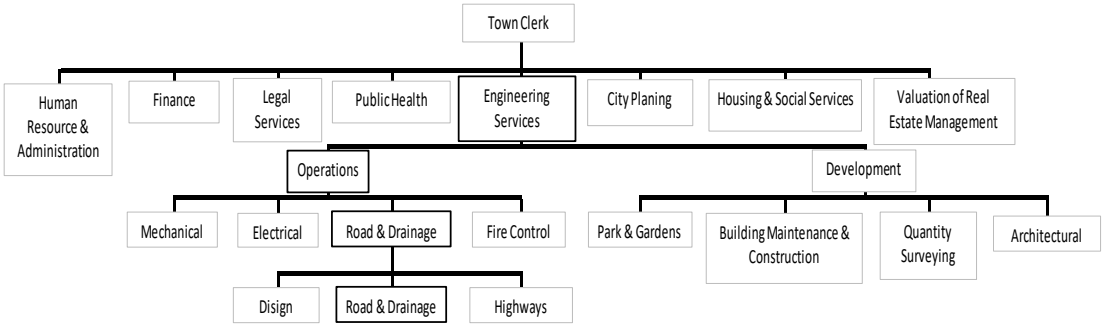


Figure 3 Organization chart of LCC

Source: LCC

In addition, if there is a large repair, it was supposed that support would be requested from LCC to Road Development Agency (hereinafter referred to as “RDA”) and it would be carried out by RDA in the plan. The Organization Chart of RDA is shown in Figure 4 below.

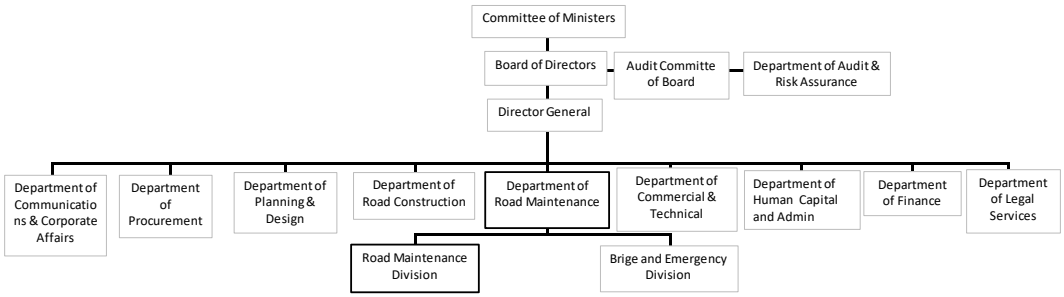


Figure 4 Organization chart of RDA

Source: RDA

According to the interview survey at LCC and the RDA at the time of the ex-post evaluation, there is no change in the structures which LCC become a central role to the daily operation and maintenance. On the other hand, according to the interview with the RDA, RDA was not involved in the design and implementation process during the project implementation stage. In addition, concerning the operation and maintenance structures when a large-scale repair is required on the road constructed in this project, they mentioned that they did not have any opportunity to discuss about the operation and maintenance structure concretely. For this reason, there is inconsistent response when large-scale repair is necessary, such as a road unevenness that occurred at the time of ex-post evaluation (see 3.4.4 Status of Operation and

Maintenance). As described above, since LCC has not discussed concrete collaboration structures with RDA at the project implementation stage, LCC does not have sufficient technologies and budget for large-scale repair, and meanwhile, RDA which has them does not know how it should be involved in this issue at the time of ex-post evaluation when the road unevenness occurs, and the current state is one where it is impossible for both sides to respond adequately.

The operation and maintenance structures of the road constructed by this project are under discussion for improvement between LCC and RDA but the system is not well established at the time of ex-post evaluation, and the evaluation on the operation and maintenance structures is low.

3.4.2 Technical Aspect of Operation and Maintenance

According to the interview survey conducted at LCC and RDA, operation and maintenance of existing roads have been carried out in each organization, and there are no technically difficult problems on the road maintenance and management works at the level required to be carried out by the implementation structures. However, neither organization has technical manuals. Regarding the trainings of engineers, there is no internal training system, and human resource development is carried out through OJT or trainings in overseas.

Although both LCC and RDA have no internal technical transferring mechanisms, they have sufficient technical skill at the level required by the implementation structures for the operation and maintenance of the road constructed in this project, and it is regarded that the sustainability in terms of technologies is high.

3.4.3 Financial Aspect of Operation and Maintenance

The trend of the budget between 2010 and 2017 of LCC which is in charge of operation and maintenance is shown as Table 7 below.

Regarding LCC, the overall budget tends to increase in recent years. However, the budget related to road operation and maintenance declined rapidly, peaking in 2013. It is impossible to procure US$ 422,800 (about 4.1million kwacha[21]) of annual expenses required for operation and maintenance which was estimated in the preparatory survey report, and it seems that it is a very difficult situation in terms of finance as LCC is responsible for managing all the roads in the city, and the sustainability in terms of finance is low. According to the interview survey at LCC, the reason for this is that the priority of the budget for road maintenance is low, as there are many issues to be addressed at LCC.

[21] US$=9.72 kwacha (February 2018, Oanda.com)

Table 7 Trend of the overall budget of LCC and the budget for the operation and maintenance of the road between 2010 and 2017 (Unit: million kwacha)

Year	Budget in total	Budget related to operation and maintenance of the road
2010	79,565	5,124
2011	100,969	1,345
2012	163,620	1,132
2013	184 (183,472)	3 (2,983)
2014	176 (176,012)	2 (2,140)
2015	186 (185,712)	0.5 (512)
2016	208 (207,510)	0.1 (89)
2017	376 (376,079)	0.1 (99)

Source: LCC

* Since the currency of Zambia has been devalued from January 1st, 2013 and 1,000 kwacha (ZMK) has become 1 kwacha (ZMW), it is shown by ZMK until 2012 and by ZMW after 2013. The figures in parentheses are converted into currency value (ZMK) before currency devaluation.

On the other hand, the transition of the budget between 2011 and 2017 of RDA, which was supposed to support LCC when large-scale repair is necessary is shown in Table 8 below.

Table 8 Trend of the overall budget of RDA and the budget for the operation and maintenance of the road between 2010 and 2017 (Unit: million kwacha)

Year	Budget in total	Budget related to operation and maintenance of the road
2011	3,043,988	559,853
2012	4,272,698	967,082
2013	3,289 (3,289,000)	250 (250,000)
2014	4,943 (4,943,000)	957 (957,000)
2015	5,462 (5,462,000)	893 (893,000)
2016	6,630 (6,630,000)	774 (774,000)
2017	8,624 (8,624,000)	714 (714,000)

Source: RDA

* Since the currency of Zambia has been devalued from January 1st, 2013 and 1,000 kwacha (ZMK) has become 1 kwacha (ZMW), it is shown by ZMK until 2012 and by ZMW after 2013. The figures in parentheses are converted into currency value (ZMK) before currency devaluation.

Regarding RDA, the overall budget has been increasing in recent years, but budget concerning operation and maintenance of the road tends to decrease year by year. In addition, regarding the problem of road unevenness as described later on the status of operation and of the road, there is no budget for hiring a private consultant company to confirm the situation, and the sustainability in term of finance is considered to be low.

3.4.4 Status of Operation and Maintenance

After the rainy season in 2016-2017, road unevenness occurred in a part of the road constructed in this project. Further, as of November 2017, a new surface layer gap etc. has been confirmed. As of January 2018, repair by the Zambian side has not been done.

According to a material provided by JICA, it is analysed that there is a high possibility that it is caused by gaps between existing roads or rocks in the road floor, water stagnant due to heavy rain, erosion of existing top soil due to groundwater flow, softening and vibration due to traffic, etc.

According to the interview survey at LCC, they have already dispatched engineers, conducted on-site surveys, and reported to Ministry of Local Government, but there is no prospect of securing budget for repair. In addition, it was observed during the on-site survey that there were several places where the guardrails along the road were also left damaged.

Photo: One of part of road unevenness
(The part surrounded by the red frame is sinking)

Photo: Damaged guardrails

Furthermore, according to the interview survey at RDA, though there is a plan to hire a private consultant company to conduct a technical audit to investigate the present condition of this road and grasp the problems, they have not secured the budget to hire the private consultant company and it is unknown when this technical audit will be implemented as of January 2018. Therefore, it is unknown when the repair of this road unevenness part will also be done and how it will be done.

In this way, road unevenness has occurred in the roads constructed in this project, but the future repair plans of LCC and RDA are unknown, and it is judged that the operation and

maintenance has not been done sufficiently at the time of ex-post evaluation.

From above, major problems have been observed in terms of the institutional aspect/ financial aspect/ current status. Therefore sustainability of the project effects is low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented with the target of improving the social infrastructures through improving access to the workplace and improving the situation of accumulation of water on the roads in the rainy season by constructing the inner ring road in the capital, Lusaka City, the access road to the multi facility economic zone, and the associated drainage facilities, thereby contributing to facilitate logistics in the capital and to improve the living environment.

This project is consistent with the development policy of Zambia at the time of planning and ex-post evaluation. In Lusaka City, problems caused by undeveloped roads have not been solved, and development needs are high. In addition, this project was consistent with Japan's aid policy, and the relevance is high.

Project cost and project period of this project were within the plan. Therefore, the efficiency of this project is high.

Target indicators related to improvement of congestion to confirm the outcome of this project have not been achieved due to the problem of setting of indicators and subsequent deterioration of congestion in Lusaka City, but a certain level of effect of improving congestion was confirmed. On the other hand, since there were users' voices concerning improvement of convenience due to the construction of bus stops near residential area due to the road construction, improvement of water accumulation on the roads in the rainy season associated with reduction of diseases due to improvement of the hygiene situation, and improvement of access to basic social infrastructure etc., and the effectiveness/impact are high.

The operation and maintenance structures of this project are not well established. The executing agencies have sufficient technical level for the operation and maintenance. The budget for the operation and maintenance of Lusaka City Council (hereinafter referred to as "LCC") is decreasing, and the sustainability in terms of finance is low. In addition, there is no prospect of repairing road unevenness occurring at the time of ex-post evaluation, and the operation and maintenance situation also faces challenges. Therefore, the sustainability is low.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Establishment of a collaborative structure for operation and maintenance of roads in Lusaka City

RDA is responsible for the operation and management of roads in Zambia, whereas LCC is responsible for the operation and maintenance of the road in Lusaka City, thus part of the duties are overlapping at the time of ex-post evaluation. In addition, although it was supposed to be supported by RDA at the time of large-scale repair, there was a possibility that a sufficient operation and maintenance structure was not considered during this project, and the coordination system is unclear. It is desirable for both organizations to continue discussions concerning demarcation and cooperation of operation and maintenance, and also to establish an effective and efficient operation and maintenance structure.

(2) Allocation of budget for operation and maintenance for roads by LCC

In LCC, the budget allocated for operation and maintenance for roads has been rapidly reduced in recent years. In the future, operation and maintenance of the roads becomes important due to deterioration of roads etc. Since the city's overall budget is increasing, it is recommended to consider increasing allocation of budgets for operation and maintenance of roads.

(3) Immediate repair of the part of road unevenness

Some of the road unevenness that occurred during the rainy season in 2016-2017 is extremely dangerous, especially it is hard to see it during night time driving. Although LCC and RDA are conducting surveys to investigate the cause, it is necessary to identify the cause as soon as possible. In addition, it is desirable to allocate the budget for repairing the road at the earliest possible stage after the survey and repair the road unevenness sections as soon as possible.

4.2.2 Recommendations to JICA

(1) Examination of follow-up cooperation on road unevenness sections

Although LCC and RDA are conducting surveys to investigate the cause of the road unevenness that occurred during the rainy season in 2016-2017, it is currently difficult to secure even the cost of the surveys due to the severe financial circumstances. In case it is judged that repairs by LCC and RDA are difficult, it is desirable to consider examining the follow-up cooperation for the repair of the road unevenness parts as one of the solutions.

(2) Continuing support for the inner ring road plan

The inner ring road constructed in this project is a part of the inner ring road plan of the total of four stages that LCC is examining. Moreover, as described in the section on the effectiveness, the effects of alleviating congestion and increase of traffic volume have not reached the level assumed by the Development Study. In order to maximize the effect of this project, it is desirable to continue to provide continuous support for the construction of the inner ring road.

4.3 Lessons Learned

Implementation of a capacity building programme (soft component) to LCC for implementation and monitoring of environmental impact assessment and resettlement

In this ex-post evaluation, some of implementation structures were inadequate such as the LCC did not regularly prepare monitoring reports on environmental impact assessment and resettlement. In the future, when the second phase, which is being requested by the government of Zambia, is adopted, it will include densely populated residential areas and it is predicted that there will be further difficulties on implementation and monitoring of environmental impact assessment and resettlement. When projects are implemented for executing agencies that are judged not to have adequate implementation structures for environmental impact assessment, it is necessary to conduct technical assistances such as implementing soft components related to implementation and monitoring of environmental impact assessment

Establish a structure when local governments conduct operation and maintenance of roads

During the planning stage of this project, LCC was supposed to operate and maintain the road, but it was planned that RDA would provide assistance when large-scale repair of the road is necessary. However, involvement of RDA during implementation stage of the project was insufficient, and there was no sufficient discussion for the establishment of a concrete collaborative structure of operation and maintenance between LCC and RDA. Therefore, in the situation where there was a necessity for large-scale repair such as road unevenness at the time of ex-post evaluation, LCC carried out its own investigation and reported it to the Ministry of Local Government and RDA is planning their own survey and the measures are unstructured. As described above, since there is no collaboration system between LCC and RDA at the stage of project implementation, LCC does not have sufficient technologies and budget for large-scale repair, and meanwhile, RDA which has them does not know how it should be involved in this issue at the time of ex-post evaluation when the road unevenness occurs, and the current state is one where it is impossible for both sides to respond adequately. When local governments are in charge of operation and maintenance of the roads as is the case in this project, local governments have limited capabilities such as technologies and budget for large-scale repair of

roads. For this reason, it is desirable to establish concrete collaboration and communication structures and define each role with ministries and agencies that have a jurisdiction over road construction and have considerable experience ranging from the process of designing to the implementation of projects.

Republic of Zambia

FY2017 Ex-Post Evaluation of Technical Cooperation Project

"Rural Extension Services Capacity Advancement Project

– Through PaViDIA Approach-"

External Evaluator: Satoshi Nagashima, INTEM Consulting Inc.

0. Summary

This project aims to improve the agricultural extension services provided by the Department of Agriculture through improving the extension implementation structures and improving the technologies and knowledge of the extension officers in the target areas, thereby improving the quality of farmers' lives in target areas.

This project was consistent with the development policy of the agricultural sector, the development needs of the agricultural sector before implementation and after completion of the project, and the development policy of Japan before implementation of the project. In addition, although the project purpose had been changed during the implementation period, there is no difference in the direction of aims, and the project plan and approach, etc. were appropriate. Therefore, the relevance is high.

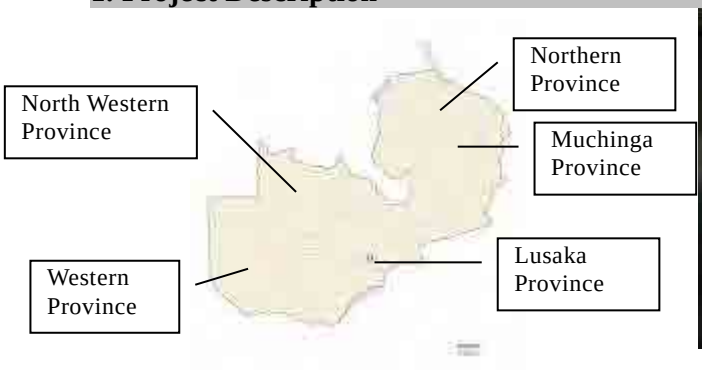
Through implementation of the project, the agricultural extension services have largely improved through improvements in the extension implementation structures and improvement of extension officers' technical abilities and knowledge in the target areas. In addition, the overall goal has been mostly achieved as improvement is observed in socioeconomic conditions of farmers due to the above effects, and the effectiveness and impact are high.

In this project, the project period was as planned but the project cost exceeded the plan, and the efficiency is fair.

Policy and institutional sustainability of this project is secured by National Development Plan and National Agricultural Extension and Advisory Services Strategy. The structures and technologies to maintain the effectiveness of this project in the medium term are largely secured. On the other hand, the sustainability of this project is fair, due to the factors such as the lack of financial resources to conduct trainings to maintain it in the future.

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

1. Project Description



Project Location(s)

Example of improvement of agricultural extension services (Checklist of reports submitted by extension officers)

1.1 Background

In Zambia, agricultural development was indispensable for poverty reduction as 60.5% of the population lived below the poverty line and 77.9% resided in rural areas. However, since the resultant weakening of the agricultural support structures of the government due to a sharp decline in the budget for extension services in the early 2000s caused by the structural adjustment, it became difficult to promote agriculture development targeting small-scale farmers in the remote areas.

In order to improve this situation, the Government of Zambia requested Japan to undertake a technical cooperation to mitigate poverty in the rural areas through implementation of a technical cooperation project, “Participatory Approach to Sustainable Village Development (hereinafter referred to as “PASViD”)”, which was mainly focused on conducting development projects investing small funds in farmers (hereinafter referred to as “micro project”), and the technical cooperation was implemented from 2000 to 2001. Based on the positive results of PASViD, a successor project was requested by the Ministry of Agriculture and Cooperative (hereinafter referred to as “MACO”) (at the time[1]) for the purpose of disseminating the approach nationwide, and a technical cooperation project “Participatory Village Development in Isolated Areas (hereinafter referred to as “PaViDIA”)” was implemented from 2002 to 2009. Through implementation of PaViDIA, even though a participatory practical model for isolated area’s communities was established, it was revealed that the institutional weakness of the

[1] The Ministry of Agriculture and Cooperatives, which was the implementing agency at the beginning of this project, was divided into the Ministry of Agriculture and Livestock and Ministry of Cooperatives in 2012, and the implementing agency of the project was the Ministry of Agriculture and Livestock. In 2016, the Ministry of Agriculture and Livestock was further divided into the Ministry of Agriculture and Ministry of Livestock and Fisheries, and the Ministry of Agriculture is the main body of substantive activities. Therefore, when the name of the Ministry before the Ministry of Agriculture appears in the main text, it is written with the words '(at the time)'.

agricultural extension structures that the communication and command system between each staff member in the framework among the Department of Agriculture, the provincial/district agricultural office and extension officers was not functioning at all was an obstacle to disseminating and expanding the PaViDIA approach nationwide. To solve this problem, a new technical cooperation for strengthening the agricultural extension structures was requested from the Ministry of Agriculture and Livestock (hereinafter referred to as "MAL") (at the time). Based on this, this project was implemented.

1.2 Project Outline

Overall Goal		Farmers' quality of life is improved in the target areas.
Project Purpose[2]		Rural extension services provided by MAL (at the time) are improved with the improved service delivery system, and skills and knowledge of extension officers including use of PEA-PaViDIA Approach (as an entry point) in the target areas.
Output(s)	Output 1	Appropriate technologies for farmers are identified in the target Districts of Northern/Muchinga Provinces.
	Output 2	In-Service Training System for Extension Officers is institutionalized within MAL (at the time).
	Output 3	Practical abilities of Extension officers are improved in the target Provinces/Districts.
	Output 4	Monitoring and backstopping capacity of Camp/Block[3], District and provincial level is strengthened.
	Output 5	Management capacity of MAL's extension service is improved.
Total cost (Japanese Side)		708 million yen
Period of Cooperation		December 2009 – December 2014
Implementing Agency		Department of Agriculture, Ministry of Agriculture and Cooperatives (Ministry of Agriculture at the time of ex-post evaluation)
Related Projects		【Technical Cooperation】 - Participatory Village Development in Isolated Areas Phase I (2002-2007) and Phase II (2007-2009)

[2] These contents are the one in the PDM at the time of ex-ante evaluation. Since the PDM was prepared up to version seven, this ex-post evaluation was evaluated according to the final version (revised in January 2013). For the comparison between the PDM at the ex-ante evaluation and the final one, see the section on effectiveness and impact.

[3] Camp is the smallest administrative unit consisting of several villages in Zambia. Blocks are the administrative unit in which three to four camps are gathered.

	- Rice Dissemination Project (2015-2018 (Plan)) 【Grant Aid】 Contribution of funds through counterpart funds from support for poor farmers (2KR) 【Other international organization, aid organization】 Contribution of funds through World Food Programme (WFP)[4]

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

In this project, in addition to the fact that the indicators of the project purpose had been virtually achieved, efforts had been made to deepen the contents of the activities. As a result, activities related to the training and monitoring system were conducted while being expanded to whole provinces of Zambia and other departments in the Ministry of Agriculture and Livestock (at the time).

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation (including other impacts.)

At the time of the terminal evaluation, there was no information that could confirm the improvement of the socioeconomic situation of farmers in the target areas and improvement of the quality of life. However, as improvement of extension services had been confirmed, and the structure of the Department of Agriculture had been strengthened by this project and the necessary improvement of awareness of stakeholders had been observed, it was evaluated that it was possible to achieve the overall goal.

1.3.3 Recommendations from the Terminal Evaluation

- Drafted National Agricultural Extension and Advisory Services Strategy should be finalized as soon as possible and obtain approval from related organizations.
- At the central level, at least the Department of Agriculture should respond independently and not rely on Japanese experts to mobilize people and goods to secure funds as before.
- It should work closely with relevant departments at the Ministry, provincial and district level, aiming to establish an implementation structures for comprehensive extension structures.

[4] It was expected to be used for this project mainly by acquiring the counterpart fund of 2KR and part of WFP special funds funded by the Japanese government as a source of funds for implementing micro projects.

- Since the Agricultural Diary for Extension Officers (hereinafter referred to as "ADEOs"[5]) was an important tool for extension officers, it should be surely printed and distributed even after the 2015 version.

2. Outline of the Evaluation Study

2.1 External Evaluator

Satoshi Nagashima, INTEM Consulting Inc.

2.2 Duration of Evaluation Study

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

Duration of the Study: October, 2017 –December, 2018

Duration of the Field Study: January 7th, 2018 – February 8th, 2018,
April 15th, 2018 – April 28th, 2018

3. Results of the Evaluation (Overall Rating: B[6])

3.1 Relevance (Rating: ③[7])

3.1.1 Consistency with the Development Plan of Zambia

Agriculture is regarded as one of the priority areas in the *Fifth National Development Plan* (2006-2010) which was the policy at the time of the ex-ante evaluation, and improvement of extension services was positioned as one of the important programs of agriculture sector.

In the *Revised Sixth National Development Plan* (2013-2016) which was a policy at the time of project completion, "sustainable and effective production of diversified crops, improvement of productivity and value addition" was mentioned as one of the targets of agriculture, livestock and fisheries sector, and as a strategy for achieving it, employment of extension officers, promotion of participation of the private sector in the extension services and introduction of IT into extension services were mentioned.

As mentioned above, this project has been consistent in that the extension service is important for development of the agricultural sector in the policies at the planning stage and at the completion stage of the project, and the relevance on the consistency between this project and the development policy was high.

[5] It is a diary distributed to camp/block extension officers, consisting of calendar, format of report, agricultural technology information and so on. Though it is currently renamed as Agriculture Planning and Resource Guide for Extension Officers (ARGEOs), this report uses ADEOs.

[6] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[7] ③: High, ②: Fair, ①: Low

3.1.2 Consistency with the Development Needs of Zambia

3.1.2.1 Development Needs regarding Improvement of Agricultural Extension Services

Agriculture in Zambia consisted of dual structures such as large and medium scale farmers who were capital intensive agricultural management and produced for export, and small-scale farmers who run self-sufficient agriculture (Occupying 90% of the number of farmers). In order to reduce poverty, which was a priority policy of the government, rural development targeting the small-scale farmers was regarded as an important issue.

According to an interview survey at the Department of Agriculture, the GDP of the agriculture and livestock sector growth was observed to have become an average of 13% from 2010 to 2012 at the period of completion of this project, but small-scale farmers had low productivity and they could not gain adequate and sustainable income from crop income, and the poverty rate in rural areas remained high at 78%. Therefore, the development needs to support small-scale farmers were high even at the time of completion of the project.

Under the circumstances where the rural development for small-scale farmers was regarded as an important mean for poverty reduction, the Japan International Cooperation Agency (JICA) had implemented PaViDIA for seven years from 2002 and established an approach. However, prior to implementation of the project, information sharing at each level such as the Department of Agriculture, provincial/district agricultural offices and camp/block was not sufficient. Since the Department of Agriculture could not sufficiently grasp problems which farmers had faced, and they could not provide sufficient support to farmers, the structure for conducting a rural development in accordance with a flow of essential extension structures was very weak.

According to an interview survey conducted concerning district senior agricultural officers and camp/block extension officers at the time of the ex-post evaluation, information sharing at each level among the Department of Agriculture, provinces/districts, the camp/block extension officers was improved due to implementation of this project in the pilot areas of the project at the time of completion of the project. In addition, since some activities were conducted across the country, improvements in planning and monitoring were observed all over the country. However, there were large differences between the project target areas and areas outside the target areas in the frequency of trainings and participation opportunities, and much room for improvement of extension structures remained outside the target provinces even at the time of completion of the project.

As mentioned above, the agricultural sector was growing both before and after the

implementation of the project, but it did not contribute enough to reduce the poverty of small-scale farmers. Regarding extension services, although major improvements were observed in the target areas, the situation remained vulnerable outside the target areas of the project. Therefore, development needs remained high even at the time of completion of the project, and the relevance of development needs was high.

3.1.2.2 Development Needs in the Target Areas

Regarding the selection of the target areas, according to the detailed plan formulation survey report of this project, the target areas in this project were Northern and Western Provinces and it was agreed to position Northern Province as the most important area for the reasons that terminal evaluation reports for both a technical cooperation project "Project for Development through Empowerment of Rural Communities in Zambia Initiative Areas" implemented in Western Region by JICA, and PaViDIA implemented in Northern Province and Lusaka Province recommended the necessity of the follow-up. According to statistics on the percentage of urban population prepared by the Central Statistical Office of Zambia[8], the descending order of the urban population was Eastern Province (12.2%), Western Province (12.5%) and Northern Province (19.0%) in 2015, and it was reasonable that these provinces were selected as target areas. On the other hand, Lusaka Province, selected as another target area, was an overwhelmingly urban population as 85.7%, and according to statistics, about 76% of the population of Lusaka Province was concentrated in Lusaka City. Therefore, a question remains why Lusaka Province was selected as a target area.

According to interviews with experts who carried out this project, there were explanations that (1) PaViDIA as the former project and PASViD as the previous former project selected Lusaka as one of the target areas, and (2) when assigning a monitoring expert at the Ministry level to disseminate the activities of the project nationwide was examined, there was a request from the director of the Department of Agriculture at the time that the expert continue activities in Lusaka Province near the headquarter while monitoring the activities nationwide. Therefore, Lusaka Province was continuously selected.

Since there was the fact that the target area was selected for other reasons than development demand, there were some problems in the selection of the target area as the situation of improvement in the socio-economic aspects due to the results of this project in Lusaka Province was not as good as other provinces in Lusaka Province according to the result of the qualitative and quantitative survey conducted in this ex-post evaluation. However, there was no severe negative effect to lower the evaluation of the relevance.

[8] Zambia Population and Demographic Projections, 2011-2035

3.1.3 Consistency with Japan's ODA Policy

One of the priority areas is "support for poverty reduction centered on rural development" in *Country Assistance Program for Zambia* (2002), which was a policy of Japan at the time of ex-ante evaluation. It was consistent with this project and its relevance was high.

3.1.4 Appropriateness of the Project Plan and Approach

In this project, the project purpose was changed from "Rural extension services provided by MACO (at the time) are improved by using the PaViDIA Approach (as an entry point) in target areas" to "Rural extension services provided by MAL (at the time) are improved with the improved service delivery system and knowledge of extension officers including use of the Participatory Extension Approach (hereinafter referred to as "PEA")-PaViDIA Approach (as an entry point) in the target areas".

According to interviews with the Department of Agriculture and with experts who implemented this project, PEA in agricultural extension services was adopted by the Government of Zambia in 2000, but it was not fully recognized by extension officers. Meanwhile, on the Zambian side, the PaViDIA approach, which was targeted to be disseminated by this project, was not recognized as a part of PEA, and it was positioned as a participatory development in a village unit. However, since it was undesirable that similar approaches proceeded in parallel and it was judged that the ownership of the Department of Agriculture to PaViDIA would increase, PaViDIA was positioned as PEA's affiliate and became the PEA-PaViDIA approach which included the framework/approach of the participatory extension method called PEA in more detail and more concretely and also included the implementation and monitoring of PaViDIA's micro projects, and a part of the project purpose was modified. As a result of this modification, ownership for this project increased at the Department of Agriculture. In addition, according to an interview survey of camp/block extension officers in the target areas, it was possible to strengthen extension service capabilities such as participatory development led by farmers that can be practiced in the process of micro projects better than before implementation of the project, and the situation has been continued even now.

Furthermore, although the name PEA-PaViDIA approach is not used, PEA revised by incorporating the results of this project has been continuously used by other donors (for the details, see 3.2.2.2 Other impacts).

Importance of frequent information sharing with an implementing agency

According to the experts who implemented this project, the Director of the Department of Agriculture at the time (retired in November 2013) regarded that this project was just a continuation of the previous project, and it was interested in only expanding and extending the PaViDIA approach as "a donor project" and did not support overall important tasks of the Department of Agriculture, and he deeply criticized the project and passively responded from the beginning of this project. Under these circumstances, experts in this project tried to communicate and share information with the Director as frequently as possible, and made efforts to have discussions including irregular informal discussions with the director and provide information on project activities and receive comments and feedbacks through a Deputy Director. In particular, the experts tried to grasp and understand important issues and major activities within the Department of Agriculture. Among them, it was revealed that there was a similar approach called PEA in the Department of Agriculture in parallel with the PaViDIA approach, and the Department of Agriculture aimed to disseminate it to all extension officers as a formal participatory extension approach of the Department of Agriculture.

For this reason, experts in this project regarded that PaViDIA refined the framework/approach of the participatory extension method (PEA) further and also included concrete implementation and monitoring methods of micro projects, and it was decided to define clearly it in the MAL (at the time) again as PEA-PaViDIA under the umbrella of PEA. In addition, the PEA-PaViDIA approach adopted by this project was recognized as one of popularization methods that can be utilized as a concrete tool in extension activities by extension officers to deal with issues of various extension services, and it was widely used even in activities not related to PEA-PaViDIA activities. As a result, this project gained understanding and support from the Director of the Department of Agriculture (at the time) as the project to strengthen the structure of the Department of Agriculture's extension service as a whole.

In this way, though the project purpose was changed during the project implementation from the direction of improving extension services through PaViDIA to the direction of improving extension services through promotion of the PEA-PaViDIA approach which was positioned as PaViDIA under the umbrella of PEA, and there was no significant difference in the aims of the direction. Due to changes in the project purpose, positive effects were observed such as raising the implementing agency's ownership and contributing to strengthening the extension capacities of extension officers, and impacts were observed such as other donors continuing the same approach, and it was reasonable to change the project purpose.

From the above, this project was highly relevant to the country's development plan and development needs, as well as Japan's ODA policy, and the project plan and approach were appropriate. Therefore, its relevance is high.

3.2 Effectiveness and Impact[9] (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Achievement of Project Purpose

At the time of planning, this project was aimed at strengthening the capacities of agricultural extension services as extension officers frequently visited their camps through implementation of PaViDIA. However, the operations of camp/block extension officers were diverse, and it was obvious that implementation of PaViDIA alone could not adequately improve essential agricultural extension services such as guidance on appropriate agricultural techniques and proper reporting to the prefectures and districts on the real situation in rural areas. For this reason, this project was transformed into a project which aimed at improving general agricultural extension services such as the planning capacities of camp/block extension officers and provincial and district agricultural officers in the Department of Agriculture, practical implementation of extension services through demonstration in the farms, monitoring capacities through establishment of reporting format in an appropriate form and so on, while making PEA-PaVIDIA an opportunity to improve agricultural extension services.

With the revision of the contents of this project, the PDM was created up to version seven, and the project purpose and outputs were revised. Table 1 below shows a comparison between the PDM at the time of ex-ante evaluation and the PDM of the final version. Output 2 was divided into Output 2 and Output 3 in the middle of the project. These changes are justified as they are accompanied by the change of the contents of the project.

[9] Sub-rating for Effectiveness is to be put with consideration of Impact.

Table 1 Comparison between PDM at ex-ante evaluation and PDM at final version

	PDM at ex-ante evaluation	PDM at final version (Version 7)
Project Purpose	Rural extension services provided by MACO (Those days) are improved by using PaViDIA Approach (as an entry point) in the target areas.	Rural extension services provided by MAL (Those days) are improved with the improved service delivery system, and skills and knowledge of extension officers including use of PEA-PaViDIA Approach (as an entry point) in the target area.
Output 1	Appropriate techniques for farmers are identified.	Appropriate technologies for farmer are identified in the target Districts of Northern/Muchinga Provinces[10].
Output 2	Practical abilities for agricultural extension of Extension officers are improved.	In-Service Training System for Extension Officers is institutionalized within MAL.
Output 3	Monitoring and backstopping capacity of Camp/Block, District and Provincial level is strengthened.	Practical abilities of Extension officers are improved in the target Provinces/Districts
Output 4	Management capacity of MACO's extension service is improved.	Monitoring and backstopping capacity of Camp/Block District and Provincial level is strengthened.
Output 5		Management capacity of MAL's extension service is improved.

From the time of completion of this project to the time of the ex-post evaluation, a part of the appropriate technologies identified in Output 1 has been used by farmers in the targeted provinces. In addition, according to interviews with the Department of Agriculture, regarding identification of new technologies to be disseminated, this is done by utilizing the Linkage Model[11] for agricultural extension among agricultural research institutes, provincial/district agricultural offices and camp/block extension officers established during the project.

With regard to extension officer's trainings for Output 2, master trainers trained during the project implementation period whose tasks were training of trainers to conduct trainings in each province/district have remained in each Province, and there is a structure to conduct trainings. However, due to the severe financial situation, extension officer's trainings by the funds of the Department of Agriculture have not been implemented after completion of the project.

Extension services utilizing demonstration farms by extension officers in the target

[10] Activities concerning this output were originally planned to be carried out only in the Northern Province and were not noted in the output. However, due to the division of the Northern Province and the Muchinga Province in 2012, Chinsali District in the Northern Province would be included in Muchinga Province. As these activities continued in a part of Muchinga Province and it was included in the content of this output, the names of the provinces were also added on the PDM.

[11] It is a model in which new technologies developed at the Agricultural Research Institute are tested at the provincial/district level, and extension officers conduct dissemination activities through demonstration farms.

areas promoted in Output 3 have been maintained thereafter.

Efforts have been continued to maintain technical ability on the monitoring capabilities and supporting capacities on Output 4 at the camps/block extension officer's level, provincial/district level in the target provinces where these officers were trained during the project implementation period and Department of Agriculture level. However, as agricultural extension related budget is not allocated sufficiently, a decrease in the submission rate of reports is observed concerning camp extension officers who are located at a distance and cannot bear the transportation fee or concerning camp extension officers who cannot purchase stationery. On the other hand, due to the facts that extension officer's trainings and district senior agricultural officer's[12] trainings were targeted and conducted for the all provinces, and ADEOs were distributed to camp/block extension officers nationwide, it was confirmed that a part of the outputs were disseminated to all provinces. For this reason, although the submission rate of reports has decreased somewhat in target provinces (according to interviews conducted in several provinces and districts, those locations that had reached 90% during the project are down to approximately 60% to 70%), and this project also contributes to improving the quality of reports other than the target provinces.

In order to strengthen the dissemination service management ability of the Department of Agriculture on Output 5, the National Extension and Advisory Services Strategy aiming for approval during the implementation period of this project was approved in 2017 and is the basic policy of the extension services of the Department of Agriculture in Zambia at the time of the ex-post evaluation.

As the continuation results of the above Output 1 to 5 show, there are problems such as: 1) new trainings for extension officers and district senior agricultural officers have not been carried out, 2) the report submission rate of camp/block extension officers has been declining, and 3) new micro projects have not been implemented by the budget of the Department of Agriculture, as the budget situation of the Department of Agriculture is tight. On the other hand, even at the time of the ex-post evaluation, dissemination of new technologies through the demonstration farm and guidance of agricultural technology making use of ADEOs, monitoring of activities in rural areas etc. have been continued, and this project greatly contributed to improving the essential extension services that conduct rural development according to the flow of the essential extension structure such as the Department of Agriculture, provinces/ districts and camp/block.

[12] A chief executive of the Department of Agriculture's operations at the district agricultural coordination office, and his/her main task is to supervise the camp/block extension officers.

The level of achievement of the set indicators of the project purpose is as shown in Table 2 below.

Table 2 Achievement of Project Purpose

Project Purpose	Indicator	Actual
Rural extension services provided by MAL are improved with the improved service delivery system, and skills and knowledge of extension officers including use of PEA-PaViDIA Approach (as an entry point) in the target area.	1) Over 350 villages are implementing micro projects with PEA-PaViDIA Approach. (Achieved)[13]	Through confirmation of actual results by related materials and interviews by the evaluator to the Department of Agriculture, regarding the target of 350 villages, it was confirmed that micro projects using the PEA-PaViDIA approach were implemented at 354 villages in 14 districts of five provinces including four target provinces.
	2) More than 80% of Farmers in the target areas acknowledge the improvement of extension service. (Almost achieved)	Through confirmation of actual results by related materials and interview by the evaluator with the Department of Agriculture, 79.5% of the targeted 1,000 farmers in four provinces recognized that extension services were improved according to the results of the impact survey conducted during the project period (version 3.1).
	3) (Additional indicator) Staff members of the target areas (provinces/districts) and the Ministry of Agriculture's Headquarters (Department of Agriculture) recognize the improvement of the agricultural extension services at the time of completion of the project. (Achieved)	Since confirmation was not made as to whether the staff of the target areas (provinces/districts) and the Department of Agriculture recognized improvement of agricultural extension services at the time of project completion, it was confirmed by questionnaire survey at the time of this ex-post evaluation. Through the questionnaire survey of the Department of Agriculture and the provinces, it was confirmed that 100% of the respondents felt that the agricultural extension services had been dramatically or somewhat improved. Many of the provinces which answered that it was dramatically improved are the target provinces of this project, and Northwestern Province where micro projects were implemented. On the other hand, although Western Province was a target province, the improvement in the agricultural extension services had only been to some extent. According to the interview survey in the Western province, it was pointed out that a report submission rate had not been improved as there was no transportation method in the remote areas and the road construction was delayed.

[13] Concerning the indicator, with PDM revision, there were changes in the indicator value such as the target number going up to 500 and then decreasing to 350. According to the interview survey results from the experts who implemented this project, it was confirmed that the target of 500 villages included the 171 villages adopted during the implementation period of the previous project, PaViDIA. Therefore, the project decided to change the target value to the number of villages which was adopted to implement micro projects during the project implementation period.

Photo: Micro project on pig rearing

Photo: One of the appropriate technologies Dissemination of NERICA rice

Through confirmation of existing materials and interview by the evaluator with the Department of Agriculture, the set indicators 1), 2) and 3) were largely achieved. From above, the project largely achieved its purpose.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

The achievement of the project purpose has been maintained and improvement of the agricultural extension services has been sustained, and improvement of socioeconomic conditions in a certain number of farmers in the target provinces which was the overall goal was confirmed by qualitative and quantitative survey results especially through implementation of micro projects and dissemination of appropriate technologies, and dissemination of new technologies through demonstration farms etc.

Regarding the “application of PEA of which the PaViDIA method is a part as a trigger for promotion” in the project purpose, as described later in “3.2.2.2 Other Impacts”, although it is not an original form such as PEA-PaViDIA, it has been applied even at the ex-post evaluation period. In the first place, the objective of this project was to strengthen the capacities to provide extension services by extension officers triggered by PEA-PaViDIA, and PEA-PaViDIA was only a way to improve extension services and its expansion was not the objective. Therefore, the fact that activities are not continued in an original form does not exert a major negative impact on the continuation of the effects of this project.

Table 3 below shows the level of achievement of the indicators of the overall goal.

Table 3 Achievement of Overall Goal

Overall Goal	Indicator	Actual
Farmers' quality of life is improved in the target areas.	At least 70% of 1,000 farmers interviewed through Household Characteristics and Agricultural Practice Survey in the target areas/provinces improve their social and economic condition. (Achieved)	(1) Implementation status of micro projects According to the results of the qualitative survey[14] with farmers in the villages surveyed in Northern Province, Muchinga Province, Northwestern Province and Western Province, as shown in Table 1 of appendix 1, 62% of micro projects out of 53 micro projects in 23 villages visited are continued by a group or individual (including those transformed into other activities), and it has led to socio-economic improvements. Specifically, the following points were cited as positive socio-economic impacts by implementation of this micro projects. 1) It became possible to bear the cost of children's school fee and educational materials. 2) Quality of life was improved, by means such as purchase of electrical appliances and purchase of roofing materials. 3) It led to improvement of nutrition through consuming cultivated crops or breeding livestock or purchasing other foods by money from selling them. 4) Reduction of work load of farmers and their families was realized, since it became possible to cultivate wider cultivated land through hiring laborers by agricultural products and livestock products instead of wages, or they did not have to do charcoaling which was done to obtain cash income. 5) It became possible to pay the contribution for applying for the subsidy system of fertilizer which the country had offered. In addition, fertilizer has made it possible to increase the yield of crops. 6) Beneficiaries expanded by distributing the increased livestock to the villagers who were not initially included in the group and other villagers. 7) It has become possible to conduct activities by groups that could not be done by individuals such as construction of livestock pens. 8) Elderly persons, handicapped persons etc., which experienced difficulty in conducting cultivation by themselves became able to conduct cultivation by the micro-project of plow cultivation through the utilization of cattle, and their income increased. In addition, as a result of the quantitative survey[15] (Table 2 in Appendix 1), the percentage of households who answered that households had at least one positive socioeconomic impact as described above by implementing the micro project was 88.7%. (2) Dissemination of 14 appropriate technologies in Northern Province and Muchinga Province In the target counties of Northern Province, Muchinga Province, and Lusaka Province, a part of 14 appropriate technologies of Output 1 have

[14] Among the rural areas that carried out micro projects in this project, the evaluator visited randomly selected 23 villages at in Northern Province (Kasama District, Luwingu District and Mporokoso District), in Muchinga Province (Chinsali District), in North Western Province (Solwezi District), in Western Province (Senanga District, Kaoma District) and in Lusaka Province (Kafue District), and conducted semi-structured interviews with the resident group (three to 15 people).

[15] Of the target districts (one district of Lusaka Province, three districts of Western Province and five districts of Northern Province) in which the micro projects were implemented within the target provinces of this project, 10 camps in each province (10 camps/district in Lusaka province, five camps/district in Western and Northern Province) were randomly selected among the selected districts. Moreover, one village was also selected from selected 10 camps and a questionnaire survey was conducted to see whether improvement of the socio-economic situation was observed by implementing this project. The survey was conducted from February to April 2018. In this project, all the households were originally beneficiaries in each village. However, there were also some households that have left the group of micro projects due to the success or failure of subsequent activities. Therefore, 10 households in each village were selected according to the ratio of group members and non-group members of micro projects at the time the ex-post evaluation and the survey was conducted. The ratio of sex of selected target respondents are 163 males and 137 females. Distribution of age was 1 person in 10's, 18 persons in 20's, 72 persons in 30's, 72 persons in 40's, 70 persons in 50's and 67 persons in 60's or more. Survey results were compiled with spreadsheet software and statistical analysis was carried out if necessary.

		been established and contributed for improvement of livelihoods. According to the results of the qualitative survey in the 11 villages of Northern Province and Muchinga Province (Appendix 1 Table 3), among the 14 of appropriate technologies trialed for dissemination, it was confirmed that 27 % of them were established in the whole village or a part of the village at the time of ex-post evaluation. As an example, in a part of farmers in Northern Province, introduction of upland rice (NERICA rice) contributed to improve income 1.5 times than before. In addition, according to the quantitative survey (Table 2 in Appendix 1), The percentage of households who answered that the households had at least one positive socioeconomic impact as described above by practicing the appropriate technologies was 89.3% in the total of the three provinces. (3) Improvement of farmers' income As a result of the quantitative survey, a distribution of the income for 2010 and 2017 is as shown in Figure 1 of Appendix 1. In addition, the percentage of respondents who answered that the income in 2017 improved as compared to the income in 2010 was 53% as in Figure 2 of Appendix 1. For the income from 2010 and 2017, when comparing by the t-test, there was a significant difference[16] in the result shown in Table 4. Further, according to Table 5 of Appendix 1, the reasons that 53% of respondents answered that income has been increased included implementation of micro projects, dissemination of appropriate technologies, improvement of activities of extension officers etc., the percentage of the respondents that view the above as the effect of this project such was 154 persons (96.9%), out of 159 persons who answered that income has been increased. However, since there are 63 persons (41.0%) out of 154 persons who responded that they were also supported by other donors, it can be said that this improvement in income was the combined effects of support by this project and support by other donors.

From above, the project has been achieved the overall goal.

3.2.2.2 Other Positive and Negative Impacts

(1) Impact on natural environment and resettlement of residents/land acquisition

According to an interview with the Department of Agriculture, this project has not adversely affected the natural environment, and resettlement of residents and land acquisition have not been conducted.

(2) Support for similar projects by other donors

After implementation of this project, projects supported by other donors have been implemented with reference to this project. In the "Smallholder Productivity Promotion Programme[17]" under the support of the International Fund for Agricultural Development (IFAD), it has been implemented as a participatory rural development

[16] The results of this survey do not consider the inflation rate of Zambia. However, since the information to be the baseline of income for 2010 was not taken during the project implementation period, and farmers did not accurately record their income. They were asked to infer their income in 2010 based on the income at the time of the ex-post evaluation survey. Therefore, it is considered that it was answered in terms of current value.

[17] S3P: It is a project undertaken by the Department of Agriculture, Ministry of Agriculture, funded by IFAD, which started in 2015 and is scheduled to be completed in 2018, but is expected to be extended. The target areas are Northern Province, Muchinga Province and Luapula Province.

through farmer's field schools that is a method of PEA and extension officers have practiced in this project, and trainings for camp/bock extension officers. In addition, in the "Agricultural Productivity and Market Enhancement Project[18]" under the support of African Development Bank (AfDB), it has aimed to reduce poverty through implementation of sub-projects through funding to farmers' groups as a part of their activities.

These activities are not called PEA-PaViDIA and are recognized as PEA in the provincial and district agricultural offices. However, it was confirmed in the interview with the Department of Agriculture that through implementation of the project, PEA: which had been known in name only, was revitalized and had been revised by adopting the results of this project during this project in the flow of harmonization of extension services which was promoted in Output 5 of this project and it led to the formation and implementation of these projects and the adoption of PEA in the Department of Agriculture. Therefore, this can be regarded as the result of this project.

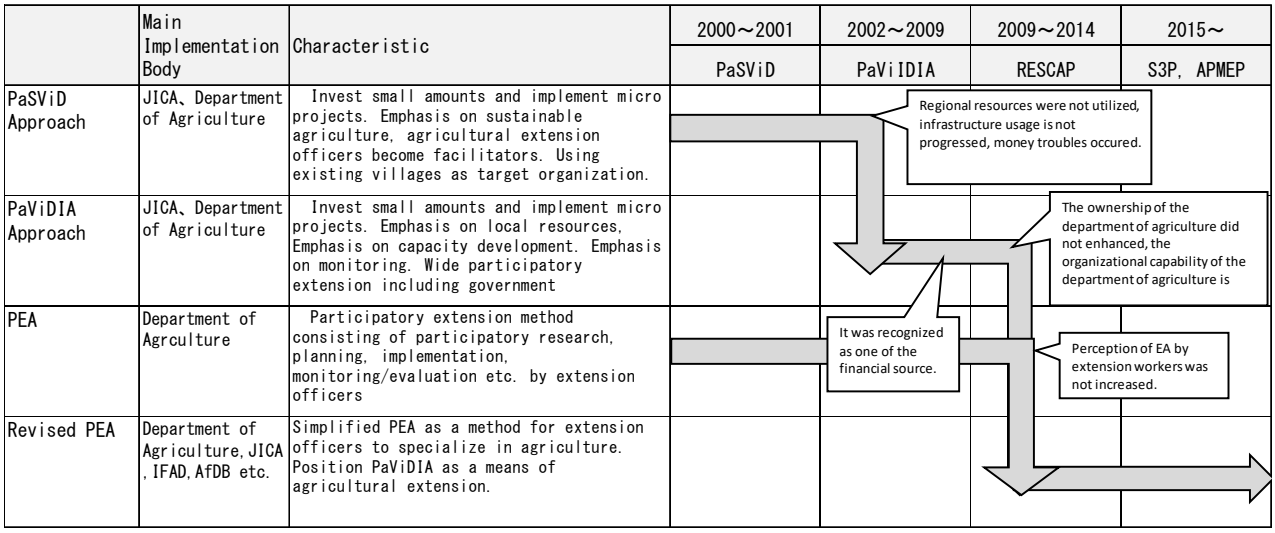


Figure 1 History of PEA revision

As described above, this project has largely achieved the project purpose concerning improvement of extension services provided by the Ministry of Agriculture and Livestock (at the time) through improvement of extension implementation structures in the target

[18] APMEP: It is a project for which the Department of Policy and Planning, Ministry of Agriculture has received funds from AfDB from 2015 to 2019 aiming at reducing poverty through agriculture. The budget for the project is US $ 31.1 million and is implemented in two districts each in Lusaka Province, Central Province and Southern Province. The main components are (1) improvement of agricultural production and productivity, (2) linkage between the value chain and the market, and (3) strengthening of the organization, and there are irrigation, provision of equipment for aquaculture, supply of livestock, provision of milling machine for added value, etc. to the farmer organization (mainly cooperative group) in a part of the activities of (1) and (2), and it is similar to the activities of micro projects of this project. According to an interview with the Director of the Department of Agriculture, information was gained that the activities of this project were partially referenced when APMEP was formulated.

areas and improvement of extension officers' technical abilities and knowledge and the overall goal in terms of confirmation of improvement of the socioeconomic condition of the farmers and planned effects. Therefore, effectiveness and impact of the project are high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

The input of the project is as shown in Table 4 below.

Table 4 Inputs of the project

Inputs	Plan	Actual
(1) Experts	Long-Term: six persons Short-Term: two persons	Long-Term: six persons Short-Term: three persons
(2) Trainees received	two persons/year	29 persons in total
(3) Equipment	Vehicles, motorbikes	Vehicles, photocopy machines, scanners, PC
(4) Overseas project enhancing expense	Expense for implementation of trainings/seminars/workshops, employment of local consultants, developing manuals/guidelines	Approximately 160 million yen
Japanese Side Total Project Cost	701 million yen in total	708 million yen in total
Zambian Side Total Project Cost	Allocation of counterparts Providing land and facilities and project offices, electricity and water fee, wage of counterparts	Allocation of 73 counterparts in total, four experts' office spaces, wage of counterparts

* MM stands for man month.

3.3.1.1 Elements of Inputs

At the time of ex-ante evaluation, dispatch of six long-term experts and two short-term experts were planned, but six long-term experts and three short-term experts were actually dispatched. Prior to the project, it was difficult to judge the necessity of short-term experts specializing in technical fields and agricultural extension training, so one person was increased. For the acceptance of trainees, it was

supposed to be two people per year (about 10 people in five years), but it was actually 29 persons. In order to improve the extension services aiming for this project, not only extension officers but also senior agricultural officers who were their superiors, etc., were subject to training. The provision of equipment, overseas activities cost, and the project cost of implementing country were almost as planned. The project cost on the Japanese side will be analyzed in the next section.

3.3.1.2 Project Cost

Regarding the project cost, it was estimated as 701 million yen in the plan, but the actual result was 708 million yen (101% of the plan), and it was higher than planned. As mentioned above, the reason why the project cost increased by seven million yen was due to dispatching three short-term experts who were originally supposed to be about two persons.

3.3.1.3 Project Period

Regarding the project period, it was expected to be five years in the plan, while it was actually completed in five years (100% of the plan), and it was as planned.

From above, although the project period was within the plan, the project cost exceeded the plan. Therefore, efficiency of the project is fair.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and Political Commitment for the Sustainability of Project Effects

In order to sustain improved agricultural extension services provided by the Department of Agriculture through improvement of extension implementation structures and improvement of technical abilities; and knowledge of extension officers supported by this project, it is important that agricultural extension services become important for agricultural development in the future and the improved agricultural extension services approach becomes the basic policy of the Department of Agriculture.

Even in the *Seventh National Development Plan* (2017-2021) which is the successor policy of the *Revised Sixth National Development Plan* (2013-2016), it is pointed out that 1) increase in farmers' incomes will directly meet rural demand such as development of new activities, diversification of local economy and change of rural structure, 2) output by agriculture is an important source of employment and it leads development of upstream and downstream industries of agriculture which creates opportunities for economic diversification, integration of the value chain, and expansion of the agricultural industry, and that agriculture has been recognized as an important

industry. As one of its development strategies, promotion of small scale agriculture is mentioned, and it is regarded as a mean of increasing employment opportunities and improving livelihoods in rural areas.

The *National Extension and Advisory Services Strategy* having been targeted for approval during the implementation period of this project was approved in 2017 and became the basic policy of the Department of Agriculture's extension services even at the time of ex-post evaluation[19].

Furthermore, according to interviews with the Department of Agriculture, even at the time of ex-post evaluation, PEA is the basis for participatory approach in extension services in Zambia.

From the above, on the policy and institutional aspect, the policy sustainability for sustaining the effect of this project as confirmed in the effectiveness/impact part is high.

3.4.2 Institutional / Organizational Aspect for the Sustainability of Project Effects

In order to sustain improved agricultural extension services provided by the Department of Agriculture through improvement of extension implementation structure and improvement of extension officer's technical ability and knowledge supported by this project, it is important to maintain the structure of the agricultural extension services in the future.

The implementation structure for providing the agricultural extension services of the Department of Agriculture is shown in Figure 2 below.

[19] Among the 16 objectives, strengthening capacities in understanding of PEA, robust extension planning, monitoring, reporting and feedback, implementation of refresher trainings for extension officers, focus on farmer group activities, coordination and harmonization of extension, strengthening farmers-research and extension linkages etc. are listed as related items of this project.

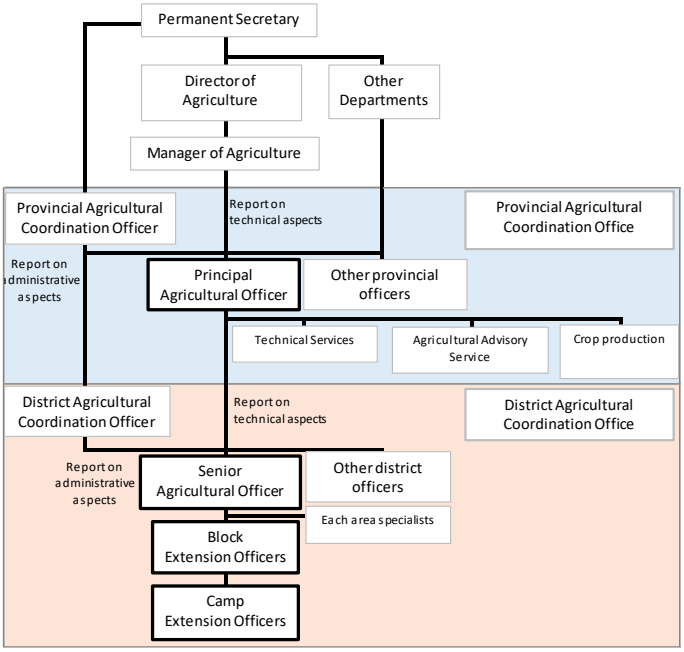


Figure 2 Implementation structure of agricultural extension services in the Ministry of Agriculture in Zambia

Source: Prepared by the evaluator based on the interview survey

Table 5 below shows the role of the implementing agency related to agricultural extension services and the main tasks.

Table 5 Role and main tasks on implementation of agricultural extension services by implementing agencies

Implementation body	Main tasks
Ministry (Department of Agriculture)	Development of strategy, raising strategy-based funding and promotion of the activities, follow-up on problems which are unable to be handled by provinces and districts
Province (Principal agricultural officer)	Coordination of advisory and technical services at the provincial level, planning and implementation of training on extension, coordination on human resources, finance and administration in the province, supervision of technical services and extension activities in districts, compilation of report submitted by senior agricultural officers and providing the feedback
District (Senior agricultural officer)	Coordination of advisory and technical services and extension at the district level, implementation of training, coordination on human resources, finance and administration in the district, supervision of technical services and extension activities by camp/block extension officers, compilation of report submitted by block extension officers and providing the feedback
Block extension officers	Supervision of extension activities by camp extension officers, compilation and providing the feedback of activity reports submitted by camp extension officers
Camp extension officers	Offering extension services in rural areas, submission of activity report

Regarding the number of staff at the Ministry, province and district level, the number

of persons who conduct a certain level of work is allocated. In addition, camp/block extension officers who are responsible for implementing extension services are mostly located in all camps/blocks. However, many block extension officers are not dedicated to the block extension officers' work, and one of the camp extension officers in a block serves as a block extension officer concurrently.

As mentioned above, although the implementation structures for provision of the extension services in Zambia have already been established, if the number of staff who attended the trainings would decrease by future personnel change or retirement, there is a possibility that the structure cannot be maintained, and there are some difficulties in maintaining the future structure. Therefore, sustainability of the structure aspect is relatively high.

3.4.3 Technical Aspect for the Sustainability of Project Effects

In order to maintain the improved agricultural extension services provided by the Department of Agriculture through improvement of extension implementation structures supported by this project and improvement of extension officers' technical abilities and knowledge, it is important that techniques for improving agricultural extension implementation structures of the Department of Agriculture, provincial and district agricultural office and camp/block extension officers have been maintained.

(1) Level of the Department of Agriculture

Among the staff who had worked for the Department of Agriculture, staff who have rich experience on the PEA-PaViDIA related activities such as trainees who took training in Japan, staff who were trained as trainers in this project and staff who was strengthened in capacity as a master trainer during the subsequent project period etc., have been assigned. In addition, the linkage model for extension among agricultural research institutes, provincial/district agricultural offices and camp/block extension officers established during the project is still one of the extension strategies of the Department of Agriculture in Zambia. Some manuals etc. created in this project are shared. Technical transfer from experienced staff to new staff is done individually and there is no opportunity for systematic technical transfer.

(2) Provincial/District Level

According to an interview survey at the provincial/district agricultural offices and others, there are still one to three persons working continuously in each province as master trainers trained during the project implementation, and even after completion of

the project, they have played an important role in the implementation of the trainings in other areas and other projects. In addition, in the technical cooperation project “Rice Dissemination Project” (2015-2018 (planned)) implemented by JICA from 2015, master trainers have been newly trained in Northern Province, Luapula Province and Muchinga Province etc., and training system established in this project (such as training of master trainers at the provincial level, master trainers train trainers in the districts and the trainers transfer technical skills through trainings to camp/block extension officers, etc., the so-called cascade type training system) is still being utilized.

Many provincial principal agricultural officers and district senior agricultural officers who received management trainings during the project period were assigned at the time of ex-post evaluation, and many of them have continued promoted activities by the project such as checklists for submission of reports and filing of documents by camps. In addition, when new camp extension officers have been assigned, the orientation for works is done using the teaching materials etc. developed in this project even at the time of ex-post evaluation when the budget of the Department of Agriculture is limited and trainings for new recruited staff cannot be conducted. This greatly improved the situation before the project, which new recruited staff was assigned without knowing what camp extension officers should do in rural areas and what to write in the report. However, as manuals etc. distributed at the time of trainings have not been handed over since then, there is no opportunity to receive such an opportunity for newly appointed provincial agricultural officers and district agricultural officers.

(3) Camp/block extension officer level

According to an interview survey of camp/block extension officers, in the project target areas where many extension officers who had taken the training of extension officers in the past and had experienced micro projects, the capacities of works which camp extension officers essentially should do was improved in areas such as plannability to disseminate new extension technologies through time management by ADEOs and demonstration farm, technical capacities on participatory extension approach obtained through implementation of micro projects and monitoring capacities to conduct regular reports with high quality using format, and these activities have been continued even at the time of the ex-post evaluation. However, the submission rate of the report tends to decline somewhat except for Northern Province. According to the results of the qualitative survey, there were reasons such as 1) due to lack of budget, transport means are limited as many extension officers are not given motorcycles and fuel costs are not paid, 2) due to the lack of stationery, it is not possible to submit the report on a regular basis, 3) occupied by other works such as Farmers Input Support

Program (FISP)[20] and there is no time for preparation of the report.

In addition, among the eleven camp extension officers[21] who were interviewed in the provinces on operation of the demonstration farm by extension officers in the target provinces, all are conducting extension activities through demonstration farms, and a total of 112 demonstration farms in total (average 10 demonstration farms per person) are managed. Therefore, it was confirmed that the dissemination of technologies through demonstration farms by camp extension officers was established in the target provinces. For some demonstration farms, the seed company has been asked to examine the growth situation of different species of maize, and it is managed with the support of private funds.

There are extension officers outside the target area of this project who had not implemented micro projects and who were unable to receive training opportunities, extension officers who were unable to receive the benefit of this project due to being newly employed after the project completion. However, though not to the same degree as the project target areas, improvement is observed in the works on management on demonstration farm and monitoring capacity to conduct periodical reporting due to 1) orientation given by district senior agricultural officers who received management trainings by the project, and 2) publishing of the submission date and the report form on ADEOs which has been continuously issued even at the time of the ex-post evaluation. Furthermore, the basic technical capabilities related to the participatory extension approach can be practiced in case the farmer's field school is conducted in other donor's projects (S3P) etc. Since issue of ADEOs are by sponsored funds such as agricultural machinery and seed companies, there is a high possibility that it can be continued in the future, and monitoring techniques for extension officers outside the target provinces will also be maintained to some extent in the future.

As mentioned above, the technical level of the Department of Agriculture level, province/district level and many of camp/block extension officer level in the target provinces are maintained at the time of ex-post evaluation. However, if trainings are not continued in the future, there is a possibility that it will be impossible to maintain the techniques in the future due to promotion, change, and retirement etc. of officers. Therefore, considered comprehensively, the technical sustainability has some difficulties.

[20] FISP is one of the subsidy schemes introduced since 2002 and will provide agricultural materials (seeds and fertilizer). (Source: Ex-post Evaluation Report on Participatory Village Development in Isolated Areas)

[21] It targeted camp extension officers selected in randomly selected target districts in consultation with district senior agricultural officers.

3.4.4 Financial Aspect for the Sustainability of Project Effects

In order to maintain improved agricultural extension services provided by the Department of Agriculture through improvement of extension implementation structures supported by this project and improvement of extension officers' technical abilities and knowledge, it is important whether the training system constructed through the implementation of this project is continued and whether it is possible to allocate the activity expense for camp/block extension officers to conduct activities. However, the result was that the financial sustainability on extension services at the Ministry level and province/district level was low.

(1) Financial situation of Ministry Level

Looking at the budget situation of the Ministry of Agriculture (it was the Ministry of Agriculture and Livestock until 2015) from 2011 to 2017, the total budget decreased to 0.2% of the previous year in 2014, but this was due to the devaluation of the currency by the Government of Zambia (Although there are differences by years due to the influence of copper's international price etc, more budget has been allocated to the whole Ministry of Agriculture than the year when this project was implemented.)

Approximately 60% to 90% of the budget distributed to the Ministry of Agriculture have been allocated to the Department of Policy and Planning and the Department of the Agribusiness and Marketing and has been used for implementation of the government's two major policy programmes (FISP and grain purchase by the Food Reserve Agency[22]). In the budget of the Department of Agriculture, which is the implementing agency of this project, the project budget is only 0.6%-2.1% of the budget of the Ministry of Agriculture, and the amount which it is allocated for training, monitoring and evaluation, purchase of motorcycles, etc. for improving extension service is small (about 8% in 2017). In addition, according to an interview with the Department of Agriculture, most of the budget is not executed by the Ministry of Finance, and the actual amount of execution is extremely limited about 3% to 30%.

(2) Financial situation of Provinces and Districts

According to information on the budget and execution amount in the past six years (2012 to 2017) at seven provincial agricultural offices in seven provinces surveyed, the actual amount of execution in the provinces tends to decrease in recent years, and there are also years in which the actual execution amount was around 1% against the budget, and there is no room to spend budget to continue the extension services, and it is a

[22] Food Reserve Agency (FRA) founded in 1996 has been purchasing maize as a leading player in the maize market since 2005 on the basis of the government's request. (Source: Ex-post Evaluation Report on Participatory Village Development in Isolated Areas)

situation in which it is difficult to conduct the activities of the entire Ministry of Agriculture in the provinces/districts.

In order to carry out activities of camp/block extension officers, it is necessary to visit the village in the camp, but there is little payment for motorcycles, fuel costs, motorcycle spare parts etc. from the district agricultural offices. When they do not have their own motorcycles, transportation expenses etc. related to visiting villages are also covered by their own expenses.

However, as stated in the structure and technical part, even though the budget situation is severe, the implementation structure of the agricultural extension services and the transferred technologies are still largely maintained and all extension officers do not stop their works. Though almost no extension expenses are paid to the extension officers for the work, it is continued by extension officers' self-help efforts due to high sense of responsibility. Therefore, financial problems are severe but it is not in a critical situation such as agricultural extension services stop completely.

From above, some minor problems have been observed in terms of the technical/financial aspects. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aims to improve the agricultural extension services provided by the Department of Agriculture through improving the extension implementation structures and improving the technologies and knowledge of the extension officers in the target areas, thereby improving the quality of farmers' lives in target areas.

This project was consistent with the development policy of the agricultural sector, the development needs of the agricultural sector before implementation and after completion of the project, and the development policy of Japan before implementation of the project. In addition, although the project purpose had been changed during the implementation period, there is no difference in the direction of aims, and the project plan and approach, etc. were appropriate. Therefore, the relevance is high.

Through implementation of the project, the agricultural extension services have largely improved through improvements in the extension implementation structures and improvement of extension officers' technical abilities and knowledge in the target areas. In addition, the overall goal has been mostly achieved as improvement is observed in socioeconomic conditions of farmers due to the above effects, and the effectiveness and impact are high.

In this project, the project period was as planned but the project cost exceeded the plan, and the efficiency is fair.

Policy and institutional sustainability of this project is secured by National Development Plan and National Agricultural Extension and Advisory Services Strategy. The structures and technologies to maintain the effectiveness of this project in the medium term are largely secured. On the other hand, the sustainability of this project is fair, due to the factors such as the lack of financial resources to conduct trainings to maintain it in the future.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

Continuation of management trainings to maintain the quality of extension officers

The district senior agricultural officers who attended the management trainings of the extension services in this project have been still assigned often at the time of ex-post evaluation. Since they have been conducting orientation for new camp extension officers and supervising existing camp extension officers, the quality of extension services has been maintained to some extent even without trainings for extension officers. However, if the number of staff who attended the trainings decreases due to personnel change or retirement, there is a possibility that these technologies will not be maintainable in the future. Therefore, it is desirable that the Department of Agriculture at least regularly organizes management trainings for district senior agricultural officers.

Bearing expenses for implementing the operations of camp/block extension officers

According to interviews with camp/block extension officers, most of camp/block extension officers have not been lent motorcycles, and even if they are lent, fuel and spare parts fees are not paid. However, since there are works to do, they are forced to walk to their own camps or hire vehicles by their own expense and visit camps in charge, and the motivation for improving extension services is decreasing. In order to improve the services of extension officers, the Department of Agriculture should allocate as much budget as possible to the camp/block extension officers for implementation of their works in each year.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Distribution of ADEOs

A noteworthy achievement of this project is the development and distribution of ADEOs. This project aimed to improve the capacity of camp/block extension officers in the target provinces through trainings, but as another activity, the development and distribution of ADEOs for nationwide extension officers were supported. This ADEOs consists of a calendar that can write monthly plans/achievements, a report form, technical information on agriculture and livestock, etc. Since this diary was distributed to camp/block extension officers nationwide, it contributed to improving the planning, implementation and monitoring capacities of camp/block extension officers outside the target provinces who did not attend extension worker trainings to some extent.

In addition, as a factor that ADEOs has been issued even though the issue is delayed every year, it can be pointed out that it is issued without using the agricultural budget but rather by placing advertisements of agricultural machinery and seed manufacturers.

In projects aiming to establish and diffuse rural development models, when spreading the effects of projects outside the target area during or after project completion, it is a good example of an extension method to make the activities sustainable without using large inputs but by instead utilizing private funds effectively by means such as placing advertisement, even in countries like Zambia where government budgets are limited.

Appendix 1: Result of qualitative and quantitative survey

Table 1 Implementing situation of micro projects in the target provinces based on the qualitative survey.

Provinces/Districts	Activities which are continued by groups even now and improvement of socio-economic condition is observed	Activities which are continued by some individuals and improvement of socio-economic condition is observed	Activities which was converted to other activities and improvement of socio-economic condition is observed[23]	Activities which were suspended and no improvement of socio-economic condition is observed
Kasama District, Northern Province	1	1		5
Luwingu District, Northern Province		4		1
Mporokoso District, Northern Province	5	2		
Chinsali District, Muchinga Province	3			4
Solwezi District, North Western Province			4	
Senanga District, Western Province	2	3		
Kaoma District, Western Province	2	1		3
Kafue District, Lusaka Province	1	4		7
Total	14	15	4	20
Activities which have contributed to improve livelihood	33			-
Percentage of activities which have contributed to improve socio-economic condition within the micro projects implemented.	62%			

[23] Although these activities are not activities carried out in this project, it was counted as the result of this project in the sense that it reused the funds invested in this project and got results.

Table 2 Positive impacts to the households which were gained through implementation of micro projects or learning of appropriate technologies based on the results of quantitative survey[24]

	Lusaka Province	Western Province	Northern Province	Whole	Lusaka Province	Western Province	Northern Province	Whole
	Implementation of micro projects				Learning of appropriate technologies			
Fertilizer was purchased, and yield was increased.	66	70	78	214	57	64	88	209
It was possible to purchase agricultural materials other that fertilizer	45	67	32	144	37	65	38	140
It was possible to pay school fees for children	74	70	66	210	64	72	80	216
It was possible to reduce workload of women and children	48	64	12	124	41	65	18	124
It was possible to start new business such as commerce	54	49	30	133	49	48	34	131
It was possible to invest in a new micro project	44	51	24	119	39	51	18	108
Group was able to have more budget/income for new investment	39	47	8	94	36	53	10	99
Employment opportunities for women and youth were increases	41	52	32	125	36	54	42	132
Common cultivated land was increased.	48	63	64	175	41	59	64	164
It was possible to purchase electric appliance, galvanized iron sheet etc.	60	48	30	138	51	44	42	137
Nutrition level of family was improved.	59	76	66	201	47	79	80	206
It was possible to pay medical expense.	61	61	24	146	54	58	22	134
It was possible to connect electricity.	34	30	12	76	32	29	8	69

[24] The error of the quantitative survey is ± 10% in each province and ± 5% in total, and the statistical reliability is 80% in each province and 90% in total.

No answer (No impact)	16/100	8/100	10/100	34/300	22/100	10/100	0/100	32/300
At least more than one positive impact was gained through micro projects or introduction of appropriate technologies.	84/100	92/100	90/100	266/300	78/100	90/100	100/100	268/300
	84%	92%	90%	**88.7%**	78%	90%	100%	**89.3%**

Table 3 14 appropriate technologies which have been continued at the time of ex-post evaluation in Northern Province and Muchinga Province based on the result of qualitative survey

		Utilized by many farmers even now	Utilized by a part of farmers
1	NERICA 4 under drilling method using line marker in dambo	5	-
2	Lowland rice using improved implements (weeder)	1	-
3	Sesame production and processing	1	-
4	New beans varieties	4	-
5	Use of sun-hemp green manure for Maize and NERICA	2	3
6	Improved finger millet under drilling method	5	1
7	Rainfed protected Tomato	1	1
8	Mushroom culture	1	1
9	Bee keeping using low cost implements	2	1
10	Hydro power mill gattari	1	-
11	Pest control using botanical pesticide and acaricide	2	3
12	Irrigated Irish potato	2	1
13	Improved Leaf Mustard variety		1
14	Tithonia as green manure for vegetable production	2	-
Number of technologies which are utilized by most or a part of farmers		41 technologies	
Dissemination rate		**27%** (41 technologies ÷ (11 villages×14 technologies) ×100)	

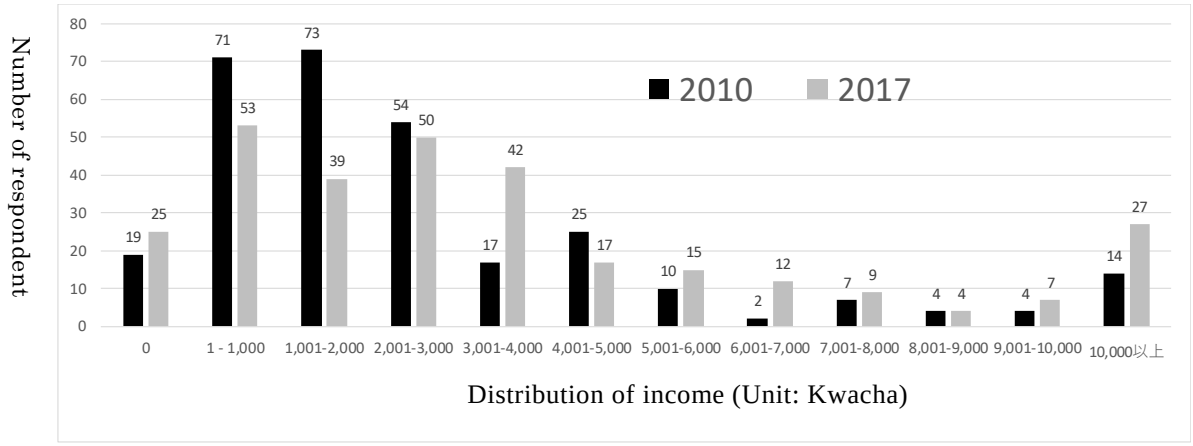


Figure 1 Distribution of income from agriculture, livestock and aquaculture in 2010 and 2017 based on the surveyed household of quantitative survey[25]

Table 4 Result of t-test on the difference of income from agriculture, livestock and aquaculture in 2010 and in 2017 based on the quantitative survey conducted in Lusaka Province, Western Province and Northern Province

	Number of respondent	Average income in 2010 (Kwacha)	Average income in 2017 (Kwacha)	Result of t-test	Result
Lusaka Province	100	3,590	3,080	P value 0.18>0.05	No significant difference
Western Province	100	2,670	5,090	P value 0.00<0.05	Significant difference
Northern Province	100	3,520	4,520	P value 0.00<0.05	Significant difference
Whole	300	3,260	4,230	P value 0.00<0.05	Significant difference

[25] 1 Kwacha = about 10.3 yen. Since January 1, 2013, currency has been devalued and 1,000 kwacha (ZMK) is 1 kwacha (ZMW). However, the income in 2010 before currency devaluation is also indicated by the currency value (ZMW) after currency devaluation.

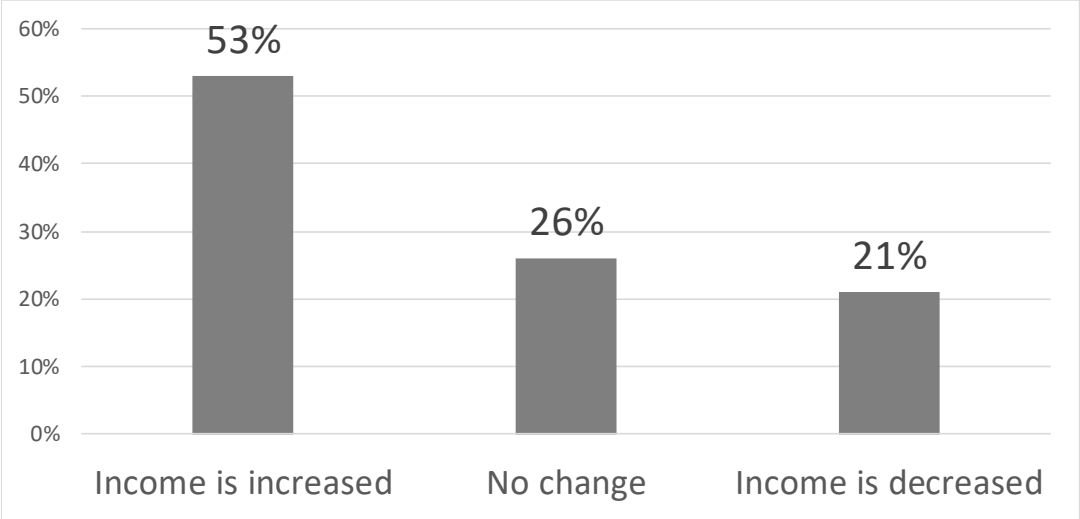


Figure 2 Percentage of increasing income from agriculture, livestock and aquaculture in 2017 compared with 2010 based on quantitative survey

Table 5 In the case the income from agriculture, livestock and aquaculture is increased, whether the support from this project is the cause of the effect. (Multiple answer)

	Lusaka Province	Western Province	Northern Province	Total
It is because of implementation of micro projects.	23	50	65	138
It is because of learning of appropriate technologies through extension officers.	24	51	61	136
Since extension officers regularly visit.	24	41	56	121
Since extension officers provide good advice	23	43	54	120
Number of respondents who answer one or more of the above options (the number of people who can be presumed to have benefited from this project)	33/33 (100%)	55/60 (91.7)	66/66 (100%)	154/159 (96.9%)
No answer to this question	0	5	0	5
Through implementation of other donor projects	12	15	36	63
Self-help effort	0	13	12	25
Others	0	8	1	9

Republic of Mozambique

FY2017 Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for the Construction of Secondary Schools in Nampula Province in the Republic of Mozambique"

External Evaluator：Yudai NISHIYAMA, INTEM Consulting Inc

0. Summary

This project was implemented with the aim of improving the access to and learning environment of secondary education by constructing new secondary schools in three districts and one city in Nampula province where is the lowest Net Enrollment Rate (hereafter referred to as "NER") in lower secondary education (Grade 8th-10th) in Mozambique, thereby contributing to the improvement of education quality.

At the time of planning and ex-post evaluation stage, as the construction of education facilities was prioritized according to the policies of Mozambique, the project for constructing new secondary schools is consistent with policy. In the target province of the project, where the current situation that the number of secondary schools is insufficient and NER is low, there is a high need to support new secondary school construction. Since this project is consistent with Japan's ODA policy with an emphasis on enhancing basic education, the relevance of this project is high.

Although the project cost was within the plan, the project period exceeded the plan as the procedure of executing agency delayed, etc. So, the efficiency is considered fair.

Effectiveness indicators such as "the number of enrolled students", "commuting time" and impact indicators such as "students' awareness of sanitation" and "students' motivation to study" are generally achieved. Therefore, the project's effectiveness and impact are considered high.

The executing agencies and school committees of communities for this project have the necessary institutional structure and technique of operation and maintenance to maintain the effectiveness of this project. On the other hand, some problems have been found in the finance of executing agencies. Thus, sustainability is fair.

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

1. Project Description

Project Locations

Namapa school in Nampula Province, the target school for this project

1.1 Background

In Mozambique, human social development including education was positioned as one of the main issues for comprehensive economic growth and poverty reduction in the five-year plan and the *Poverty Reduction Action Plan*. *National Education Strategic Plan* was also formulated as basic plan of the education sector and it aimed at completion of high-quality primary education for seven years and the expansion of educational opportunities after primary education including secondary education. In 2008, *Secondary Education Strategic Plan* (2009-2015) was formulated and classrooms had been constructed with the aim of achieving 70% of NER in lower secondary education (Ensino Secundario Geral do Primeiro Ciclo, hereinafter referred to as "ESG 1") by 2015. With the rapid popularization of primary education, the demand for enrollment to the secondary education had risen rapidly and the number of students in ESG1 had increased by 2.6 times from 2004 to 2010. During the same period, the number of public schools at ESG1 level increased by 1.43 times and the number of classrooms increased by 1.56 times. However, as the supply of facilities could not keep up with the rapidly increasing demand for schooling, the average number of students per classroom at ESG1 level was 127.9 students (2010, public schools) and the overcrowding situation had become serious. In addition, many of the newly constructed secondary schools were operating at a minimum capacity, forced to compensate by diverting the primary school facilities to the secondary schools as well as by borrowing some classrooms. These schools did not have facilities such as library rooms and laboratories necessary for proper secondary education.

Given this background, this project was implemented with the objective of increasing the access to and improving the school environment in secondary education by constructing new

secondary schools in three districts and in one city in Nampula province where is the lowest NER at ESG1 level in Mozambique.

1.2 Project Outline

The objective of this project is to improve the access to and learning environment of secondary education by constructing new secondary schools in three districts and in one city in Nampula province, thereby contributing to improvements in the quality of education.

G/A Grant Limit / Actual Grant Amount	1,063 million yen / 1,063 million yen
Exchange of Notes Date	August 2012/ August 2012
Executing Agency	Ministry of Education and Human Development (MINEDH) [1]
Project Completion	May 2015
Main Contractors	Construction company：CETA ENGENHARIA E CONSTRUÇÃO, S.A Procurement of Equipment：L. Duarte Dos Santos Lda
Main Consultant	Matsuda Consultants International Co., Ltd.
Procurement Agency	Japan International Cooperation System (JICS)
Outline Design	March 2011- March 2012
Related Projects	【Technical Cooperation】 - Strengthening of primary education in Gaza province in Mozambique (2006 - 2009) - Teacher training advisor (2010-2012) - Strengthening In-service teacher training system for Secondary Education in Mozambique (2014- 2015) 【Grant Aid】 - Project for the construction of primary and secondary schools in Maputo city (2001-2003) - The project for construction of secondary schools (2009-2012) 【Other international organizations, donor agencies, etc.】

[1] In 2015, it was changed to its current name from the Ministry of Education.

	- Education Sector Support Fund(FASE)(World Bank・EU, other 9 countries, Phase I 2003-2008, Phase II 2008-2012, Phase III 2012-2016) - Education Project IV(AfDB, 2008-2010)

2. Outline of the Evaluation Study

2.1 External Evaluator

Yudai NISHIYAMA, INTEM Consulting Inc.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.
Duration of the Study: October 2017 - October 2018
Duration of the Field Study: January 14 - February 19, 2018, April 22 - May 14, 2018

2.3 Constraints during the evaluation study

Although attempts were made to collect NER of target districts to evaluate the impact, no reliable data could be obtained from MINEDH and Nampula Provincial Director of Education and Culture (hereinafter referred to as "DPEC").

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

3.1 Relevance（Rating：③[3]）

3.1.1 Consistency with the Development Plan of Mozambique

In Mozambique's national development plan at the time of planning stage of this project, *Poverty Reduction Action Plan* (2011-2014) (*Plano de Accao para a Reducao da Pobreza*, hereinafter referred to as "PARP"), ensuring primary education as well as expansion of education opportunities for post primary education including secondary education were part of prioritized strategies. In addition, in *Education Culture Strategic Plan* (2006-2010/2011) (*Plano Estrategic Da Educacão Cultura*, hereinafter referred to as "PEEC"), 100% of NER of lower primary education in 2008 by implementing a strategic plan focusing on expansion of primary education was targeted. Further, in order to implement the realization of PEEC, *Secondary Education Strategy* (2009-2015) (*Estrategic da Ensino Secundario* (hereinafter referred to as "EESG") was formulated and Mozambique government has been working on expanding access to secondary education, improving the quality of education, and strengthening the organization. As the expansion of access to the education and improvement of education quality continuously

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

mentioned in PARP (2015-2018), which is the latest plan of PARP (2011-2014), and *Education Sector Strategic Plan* (2015-2019) (*Plano Estrategic do sector da Educacão*, hereinafter referred to as "PEE")[4], which is PEEC's subsequent plan, it is consistent with development policy.

As mentioned above, at the time of planning and ex-post evaluation stage, development policy of Mozambique did not change and this project is consistent with Mozambique's development policy.

3.1.2 Consistency with the Development Needs of Mozambique

At the time of planning stage, the number of students in secondary education had increased rapidly due to the spread of the primary education and the increase of graduates. It became 2.2 times in ESG 1 and 3.5 times in upper secondary education (Ensino Secundário Geral do Segundo Ciclo, hereinafter referred to as "ESG 2")[5] for the six years from 2005 to 2011[6]. NER in 2011 was 46% at ESG 1 and 19% at ESG 2 and the number of students in secondary education was expected to increase more. On the other hand, in 2010, the number of classrooms in secondary education was overwhelmingly scarce, and the number of students per classroom at ESG 1 level was 127.9 students / classroom (three-part system) nationwide and increasing the number of classrooms in secondary education was an urgent issue. Nampula province, which is the target area for the project, had the largest population among the 10 provinces and one city in Mozambique. It located in the northern area where infrastructure development had been delayed and development of secondary education also had been remarkably delayed. In 2011, NER of Nampula province was 32% at ESG 1 and 16% at ESG 2, both of which were the lowest in the nation. Also, the number of students per classroom at ESG 1 level was 155 students / classroom (three-part system) which was more crowded than the national average and urgent improvement was required.

At the time of ex-post evaluation stage, NER in nation in 2017 is 33.1% at ESG 1 and 15%[7] at ESG 2, which are still low. The number of students per classroom at ESG 1 is 99 students / classroom (three-part system) in nation and increasing the number of classrooms in secondary education is an urgent issue. In Nampula province, the NER in 2017 is 23% at ESG 1 and 12%[8] at ESG 2, which are still low as well. And the number of students per classroom at ESG 1 is 101 students / classroom (three-part system) and it is still high. Thus, there is still a need for facility development in Mozambique.

[4] Regarding the *Secondary Education Strategy Plan*, it is mentioned in PEE (2015 - 2019) at this moment because there is a possibility that a new administration may be established in the 2019 election.
[5] Upper secondary education (Grade11th-12th)
[6] Source: *Preliminary Survey Report* (2012), P. ii
[7] Hearing from MINEDH
[8] Hearing from MINEDH

From the above, there is no difference in the consistency with the development needs from planning stage through to ex-post evaluation stage, and the development needs continue to be high.

3.1.3 Consistency with Japan's ODA Policy

Based on PARP adopted by Mozambique in 2011, Japan focused on developing its assistance for improving access to basic education in order for Mozambique to achieve poverty reduction with sustainable economic growth by exerting its high potential[9]. "Improvement of access to basic education" was stated in the priority area of Japan's aid policy at the time of ex-ante evaluation in 2012, and this project was consistent with the policy at the time.

From the above, this project has been highly relevant to the Mozambique'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 Outputs

The outputs from the Japanese side of this project was the development of educational facilities, such as classroom, administration block, multi-purpose block, toilet block, guard hut block and simple gymnasium / dressing room block as well as the procurement of educational equipment. The outputs from Mozambique's side was maintenance and connection of water supply, power lead-in and connection, outer construction, maintenance of scientific experiment equipment and procurement of PC equipment, etc. The output of this project is outlined in Table 1.

Table 1 Planned / Actual number of educational facilities

Site	Classrooms	Administ-Ration blocks	Multi-Purpose block	Toilet block	Guard hut block	Simple gymnasium/ Dressing room block
Natikire	19/19	1/1	1/1	1/1	1/1	1/1
Memba	10/10	1/1	1/1	1/1	1/1	1/1
Namapa	10/10	1/1	1/1	1/1	1/1	1/1
Nacala-a-velha	10/10	1/1	1/1	1/1	1/1	1/0
Total	49/49	4/4	4/4	4/4	4/4	4/3

Source: Created from the result of hearing with target schools

Note: Shaded part is numbers where changes (increases) were made in planned and actual results

[9] Source: Official Development Assistance (2012) "Data by country" P.669

As for the outputs from the Japanese side, according to the hearing with MINEDH, the priorities were changed due to the cost adjustment of fluctuations in the exchange rate, and the construction of the simple gymnasium / dressing room block was canceled at Nacala-a-velha. This is a priority change as a countermeasure of grant aid for community empowerment. Thus, relevance of its change is high.

As for the outputs from the Mozambique side, according to the result of hearing survey with target schools and the visual check by the evaluator, it was confirmed that procurement of the items to be borne by the Mozambique side, such as “PC equipment” and “Scientific experiment equipment “was not implemented as planned. Procurement of PC equipment and scientific experiment equipment was not carried out at all target schools as planned due to the lack of budget[10] of MINEDH[11].

From the above, the equipment outputs from the Japanese side were provided as planned. But the part of outputs from the Mozambique side was not imputed as planned. Thus, differences in the outputs of the equipment are seen.

Proposal to localize standard design utilizing community empowerment

This project is grant aid for community empowerment and the procurement agency (JICS) contracted with the local contractor as an agent on behalf of the client, and the Japanese consultant carried out the construction supervision. In the grant aid for community empowerment, the project can propose necessary improvement ideas to the local standard design. The improvement plan required not to deviate from the technical expertise and experience of the local engineer and priority was given not to raise costs significantly compared with the standard design. All improvement ideas proposed were agreed upon, and construction was carried out. Furthermore, these ideas gained high recognition by the executing agency. For example, a water receiving tank was installed at each site in order to improve water supply in advance of outages and to ensure consistent supply. The receiving tank has a mechanism for an elevated tank according to the local standard design, pumping water from the receiving tank automatically to supply water to each water supply point via gravity. At the time of ex-post evaluation, the evaluation of each school visited seemed to be high owing to water supply stability being achieved at a low cost compared with before the construction. By utilizing grant aid for community empowerment and proposing the improvement ideas based on the local standard of design, it not only improved the effectiveness and sustainability of this project but it also resulted in the project effect being evaluated from the target schools.

[10] As a result of hearing with MINEDH, there was an answer that the originally planned budget for PC and laboratory equipment had been used for school reconstruction support as a flood occurred in 2014.

[11] Please refer to “Sustainability” for evaluation judgment about PC and laboratory equipment. In addition, a well was planned as an initial water supply source though, as a result of comparing the cost of drilling the well and using the city water, water supply source was changed to be city water.

3.2.2 Project Inputs

3.2.2. 1 Project Cost

The project cost was planned to be 1,063 million yen at the time of planning stage, and the actual result was 1,060 million yen (100% compared to the plan), and it was as planned[12]. The project cost from Mozambique side could not be confirmed.

3.2.2.2 Project Period

The project period was expected to be 24 months[13] in the plan, but according to a hearing with the procurement agency, the actual result was 34 months and it exceeded the plan (142% compared to the plan). The reasons for the difference in the project period are 1) About one month delay[14] in the Agent Agreement and contract with the consultant due to the delay of the executing agency procedures[15], banking arrangements, and fund transfers, 2) About 2.5 months delay in the contract on construction works and the contract on furniture procurement due to the delay in securing water supply sources to be borne[16] by the executing agency, 3) About 2.5 months delay in the construction starting and furniture procurement starting due to the delay of above 1) and 2), 4) As a result of 3), construction work rushed into the rainy season and about 4.5 months delay occurred at the time of completion of the construction and furniture installation, 5) In addition, traffic was interrupted due to more rainfall than usual and the construction period (completion time) and the furniture procurement period were delayed about 2.5 months, etc.

From the above, although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness and Impacts[17] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In order to confirm the improvement situation of access to secondary education and learning

[12] It was 1,060 million yen due to detailed design 1 (change of water supply source) and detailed design 2 (component decreased due to foreign exchange difference), and it was 3,007 thousand yen lower than planned. This change is valid.

[13] This project period at the time of ex-ante evaluation was not defined as the signing date of Agent Agreement (A/A) but was set as from the establishment of the agency's office to the closure.

[14] The A/A and the contract with consultant are not included in the implementation period of 24 months.

[15] Two months was planned as an average period from the Cabinet to A/A in the initial plan. In addition to the fact that the signing of the exchange of note (E/N) was delayed by 1 week due to the absence of counterpart' signatories, the period concerning the procurement agency contract took the last two months of regulation. This is due to the delay in fund transfer of bank procedures. It is not the responsibility of the executing agency.

[16] This is because the budget for well excavation work could not be secured. Finally, it was contributed from Construction Education Equipment Department's budget in MINEDH. Due to the delay of the Cabinet meeting, the whole construction period shifted backward, so it was a budget contribution at the end of the fiscal year.

[17] Sub-rating for Effectiveness is to be put with consideration of impact.

environment, 1) the number of enrolled students at the target schools, was confirmed and evaluation was made as an indicator of the quantitative effect. In addition, 2) the number of classrooms and students in overcrowded classes, 3) the number of classrooms, administration blocks, multi-purpose block, toilet block, and simple gymnasium block that are actually being used, were set as additional indicators and evaluation was made. Table 2 shows the number of enrolled students at the target schools.

Table2 Number of enrolled students at the target schools

Name of site	Target	Actual			
	2018	2015	2016	2017	Achievement level (2017)
	3 years After completion	Completion Year	1 year After completion	2 years After completion	Actual / Target
Natikire	2.090	3,380	3,069	2,815	135%
Memba	1,100	2,235	1,936	1,936	176%
Namapa	1,100	1,189	1,156	1,141	104%
Nacala-a-velha	1,100	1,201	1,151	1,055	96%
Total number of students	5,390	8,005	7,312	6,947	129%

Source: Created from the result of hearing with target schools

The actual number of students in 2017 was 6,947 (achievement level is 129%) for a target number of 5,390 in 2018[18](three years after completion) and the initial target was achieved. As of 2017, the number of classrooms and students in overcrowded classes[19] is shown in table 3 below.

Table3 Number of classrooms and students in overcrowded classes

Item	2015	2016	2017
Number of overcrowded classrooms (Classrooms)	45/146	33/145	35/140
Number of students in overcrowded classroom (persons)	2,967/8,005	2,013/7,312	2,340/6,947

Source: Created from the result of hearing with target schools

Note: The denominator in the upper row is the total number of classrooms, the denominator in lower row is the total number of students

[18] Because the project period was extended, it is 2018 after three years of project completion. In February 2018 in which this ex-post evaluation was conducted, it was the first semester. Usually the number of enrolled students increases or decreases in the first semester. So, the latest data of the number of enrolled students was FY 2017.

[19] The definition of overcrowded classroom is more than 55 students per classroom, which is the medium-term target of the “Secondary Education Strategic Plan”.

In 2017 there are 35 classrooms in overcrowded classes, it is 25% for 140 classrooms actually used. The number of students studying in the classroom in overcrowded classes is 2,340 which is 34% of the total number of 6,947 students. The average number of students per a classroom in overcrowded classrooms is 67 students / classroom[20] and it is 50 students[21]/ classroom in all classrooms.

Figure 1 shows the frequency distribution of the number of students per classroom at the target schools.

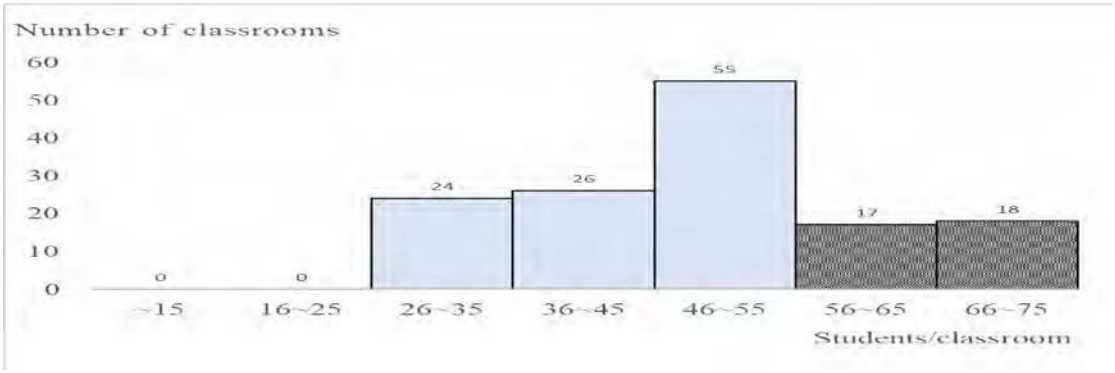


Figure 1 Frequency distribution of the number of students per classroom

Source: Created from the result of hearing with target schools

Table 4 shows the number of classrooms and students in overcrowded classes by the target schools in 2017. It can be said that there are many overcrowded classes at Natikire and Namapa. From the frequency distribution, the degree to which it exceeds the standard of overcrowded classes is low. So, it can be judged that the degree of overcrowding is not serious.

Table 4 Number of classrooms and students in overcrowded classes by the target schools

	2017	
	Number of overcrowded classrooms	Number of students in overcrowded
Natikire	23	1,490
Memba seda	0	0
Namapa seda	12	850
Nacala-a-velha	0	0
Total	35	2,340

Source: Created from the result of hearing with target schools

[20] Total number of students in overcrowded classes are 2,340 students and number of classrooms is 35 classrooms. Therefore, the average number of students per classroom in overcrowded classes is 67 students.

[21] The total number of students in the target schools is 6,947 students, the total number of classrooms is 140, and the average number of students is 50 students per classroom.

Table 5 compares the targets and actual number for the operational indicators of the classrooms, administration block, multi-purpose block, toilet block, and simple gymnasium block.

Table 5 Comparison of target and actual number of operational indicators

	Target	Actual			
	2018	2015	2016	2017	Achievement Level (2017)
	3 Years After Completion	Completion Year	1 Year After Completion	2 Years After Completion	Actual /Target
Number of classrooms(classrooms)	49	49	49	49	100%
Number of administration blocks(blocks)	4	4	4	4	100%
Number of multi-purpose blocks (blocks)	4	4	2	2	50%
Number of toilet blocks (blocks)	4	4	4	3	75%
Number of simple gymnasiums blocks (blocks)	3	3	3	3	100%

Source: Confirmed with provided documents by JICA (Target), by school visit (Actual)

One toilet block is not used because the water in the toilet cannot be used due to a breakdown of the water supply facility. In the science laboratory included in the multi-purpose block at four schools, necessary equipment has not been procured for conducting experiments. Likewise, regarding the computer rooms, PCs are arranged but servers and wiring are not in place and cannot be used at Natikire and Namapa. Only a few PCs and equipment are in place at Memba and Nacala-a-velha[22]. A part of problems can be seen in the multi-purpose blocks and the toilet blocks. But the classrooms, the administrative blocks, and simple gymnasium block were built as planned and are used properly. Therefore, in general, the indicators have been achieved.

3.3.1.2 Qualitative Effects (Other effects)

As for the indicators for the qualitative effects, 1) Implementation of the official curriculum of secondary education through construction of necessary facilities (laboratory, computer room, library, simple gymnasium) for implementing secondary education curriculum, 2) the students'

[22] One PC is shared with 3 students, and it is used during the lessons.

awareness of sanitation has been promoted through construction of toilets, were set at the planning stage. 2) is not a direct result of this project, so it was analyzed and evaluated in the impact. As for the additional indicators, 3) Student's commuting time and distances, 4) Satisfaction level of school facilities for students and teachers, were set as indicators and the evaluation was made. The indicators of 1) and 4) were to evaluate the improvement of learning environment and 3) was to evaluate the improvement of access to education.

(1) Implementation of classes in accordance with the curriculum become possible through construction of necessary facilities for the secondary education curriculum.

Although some equipment are not in place, it is possible to provide the regular curriculum of secondary education by using the classrooms developed by this project. As for ICT subject, PCs are arranged but servers and wiring are not in place and cannot be used in schools at Natikire and Namapa. Only a few PCs and equipment are in place in schools at Memba and Nacala-a-velha. Due to the budget shortage of MINEDH, the equipment necessary for science experiment are not provided in all four schools[23]. Classes in lecture style are being held at schools without equipment. The number of class hours for science (biology, chemistry, physics), ICT and physical education is carried out as the hours recommended in the official curriculum[24]. As for the utilization of the library, the library has the function as lending and storage of textbooks as well as is used as a self-study room. Each library has a librarian who manages the lending and storage of textbooks[25].

In addition, in order to utilize these facilities developed by this project, the allocation of appropriate number of teachers and staff was requested to the executing agency at the planning stage. Table 6 shows the allocated number of teachers responsible for science (physics, biology, chemistry), ICT, physical education and librarian in 2018. Every teacher has a teaching license and teacher allocation is done appropriately.

[23] Evaluation judgment about maintenance situation of PC equipment and laboratory equipment is mentioned in sustainability section.
[24] Concerning the number of lesson hours in the official curriculum, science (physics, biology, chemistry) and physical education are two hours each per week in 8th grade to 10th grade, and ICT is two hours per week in 10th grade. As for ICT subject, one PC is shared with two students as the standard curriculum.
[25] Textbooks are charged in secondary schools. Students who have difficulties to purchase textbooks use textbooks in the library.

Table 6 Number of teachers assigned by subjects (2018)

	Science	ICT	Physical education	Library
Natikire (persons)	42	2	6	3
Memba (persons)	19	0	2	1
Namapa (persons)	17	1	2	1
Nacala-a-velha (persons)	0[26]	1	3	1

Source: Created from the result of hearing with target schools

Based on the above, the improved educational environment has led to the qualitative effects.

(2) Students' commuting time and distances have shortened through construction of new schools.

Effectiveness was evaluated from the viewpoint of access to education through the group interviews[27] with students. Table 7 shows the method of school transportation and commuting time.

Table 7 Students' transportation method and commuting time at target schools

Method of transportation	number of students	Commuting time			
		Less than 30 mins	Less than 1hr.	1hr. or more	2hr. or more
Walk (persons)	14	5	9	0	0
Bus (persons)	5	5	0	0	0
Motorbike (persons)	1	0	1	0	0
Total (persons)	20	10	10	0	0
Percentage	100%	50%	50%	0%	0%
Percentage of walk in total	70%	25%	45%	0%	0%

Source: Created from the result of hearing with target schools

The secondary schools constructed by this project were in the distance within maximum of 6.2 km from the site to the existing secondary school and it was expected that students' commuting time and distances would have shortened. Before the construction, it took more than 2.5 hours for one way. With the construction of new schools, 100%[28] of students are able to commute to schools within one hour. Furthermore, students who commute to the schools by

[26] In Nacala-a-velha, teachers who hold teaching license of mathematics teach sciences as well. According to a hearing with the principal it is usual that one teacher teaches several subjects, in Mozambique.
[27] For group interviews with students, five students were selected by random sampling for each school at four target schools and it was carried out at the site visited by the evaluator. Sample size is 20 people (10 boys and 10 girls).
[28] 100%=50% (Less than 30 mins) +50% (Less than 1hr)

walk not by bus or motorbike in an hour or less is 70%[29] of the total. Following opinions came from parents; “my child comes back home before sunset. We can have dinner together.” (Parents, Natikire), and “my child becomes to attend school in the rainy season.” (Parents, Namapa).

(3) Satisfaction level of school facilities has been improved.

Table 8 shows the group interview results on the students’ satisfaction level on classrooms, multi-purpose blocks, toilet block, and gymnasium block.

Table 8 Students’ satisfaction level with classrooms, multi-purpose blocks, toilet block, and gymnasium block

	Classrooms	Multi-purpose blocks	Toilet block	Gymnasium block
Satisfaction level	3.5 /4.0	2.8 /4.0	2.5 /4.0	3.9 /4.0
Very satisfied · satisfied	95%	75%	50%	100%
Very dissatisfied · dissatisfied	5%	25%	50%	0%

Source: Result of group interview with students

Students’ satisfaction with the multi-purpose blocks was 2.8 out of four scales. There were answers for “very dissatisfied”, or “dissatisfied” that “because there is no laboratory equipment, and the class is conducted in a lecture style.”, and “because there are not enough PCs, we must share them with some students.” as the reasons. Students’ satisfaction with the toilet block was 2.5 out of four scales. There were answers for “very dissatisfied”, or “dissatisfied” that “because there is only a little water running.” and “there are times when the hand washing water does not come out.” as the reasons.

Table 9 shows the results of group interviews[30] on the teachers’ satisfaction levels with classrooms, multi-purpose blocks, toilet block, and administration blocks.

[29] 70%=25% (Less than 30 mins) +45% (Less than 1hr)

[30] For group interviews with teachers, three teachers were selected for each school at four target schools and it was carried out at the site visited by the evaluator. The sample size was 12 people (six male and six female).

Table 9 Teachers' satisfaction levels with classrooms, multi-purpose blocks, toilet blocks, and administration blocks

	Classrooms	Multi-purpose blocks	Toilet blocks	Administration blocks
Satisfaction level	3.6 /4.0	3.1 /4.0	3.3 /4.0	3.4 /4.0
Very satisfied · satisfied	100%	83%	100%	100%
Very dissatisfied · dissatisfied	0%	17%	0%	0%

Source: Group interview with teachers

The teachers' satisfaction level with classrooms, multi-purpose blocks, toilet blocks, and administration blocks was generally high. At the time of ex-ante evaluation, it was expected that more effective school management and administration would be possible by improving the administration blocks[31]. Since this project is not a project that directly aims with effective school management and administration by improving the administration blocks, "the teachers' satisfaction level with administration blocks" was measured and the evaluation was made.

Following answers came from the principals and teachers; "interaction among teachers, information exchange, and/or meetings with teachers on areas of learning have been carries out on a more routine basis than before.", "office procedures for parents and students are dealt with more effectively and quickly now.".

From the above, the quantitative and qualitative indicators of effectiveness have largely been achieved. It can be said that the implementation of this project has been effective in access to the secondary education and improving the learning environment in the target area.

3.3.2 Impacts

3.3.2.1 Intended Impact

(1) Quantitative effect

In order to evaluate the quantitative impact[32] of the project, factors measured were 1) the number of enrolled students in secondary schools in the target four districts, and 2) NER[33] in Nampula province. Table 10 shows the results.

[31] It was confirmed from the consultant who supervised construction that the originally assumed effects were as follows; 1) Measures for theft 2) Preparing for teacher's lessons, conducting conferences and taking breaks 3) School administration 4) Administrative accounting 5) Document storage

[32] There was no setting of the indicator of quantitative effect at the time of ex-ante evaluation stage.

[33] Although attempts were made to collect NER of target districts, no data could be obtained from MINEDH and Nampula DPEC.

Table 10 Change of number of enrolled students in target four districts

	Actual		
	2015	2016	2017
	Completion Year	1 Year After Completion	2 Years After Completion
Nampula city (persons)	46,187	44,859	50,835
Namapa district (persons)	1,986	3,398	3,498
Memba district (persons)	3,755	1,958	1,770
Nacala-a-velha district (persons)	1,201	1,151	1,055
Total of target four districts	53,129	51,366	57,158
Total of Nampula province	118,483	116,290	126,058

Source: Created from the result of hearing with Nampula DPEC

The number of enrolled students at secondary education in Nampula province increased by 7,575 students[34] from 2015 to 2017. The total number of enrolled students in the target four districts increased by 4,029 students[35]. In Nampula city and Namapa district located in the center of Nampula province, the number of enrolled students has increased. On the other hand, in Memba district and Nacala-a-velha district located in the North, it has been decreasing.

Table 11 shows NER of Nampula province. There has been no major change in NER of Nampula province for the last three years[36].

Table 11 NER of Nampula province (2015 - 2017)

Target province	Actual					
	2015		2016		2017	
	Completion Year		1 Year After Completion		2 Years After Completion	
Nampula province	ESG1	ESG2	ESG1	ESG2	ESG1	ESG2
	23.0%	10.6%	21.2%	11.4%	22.6%	12.3%

Source: Created from the result of hearing with MINEDH

(2) Qualitative effect

As the indicators, 1) Students' motivation to study due to the provision of classrooms,

[34] The number of secondary schools in Nampula province has increased by 11 schools from 78 schools (2015) to 89 (2017).

[35] As schools were newly built other than by this project, it shoud be noted that the increase in the number of enrolled students due to the improved access is not necessarily impacted only by this project.

[36] The number of schools in Nampula is 88 (2018), and the four schools for this project are 4.5% of the total. So, the weight of the evaluation judgment is low.

2) Teachers' motivation to teach due to the provision of teacher's room, 3) Students' awareness of sanitation due to the provision of toilet, 4) Female students' motivation to attend school due to the provision of toilet, were set for the ex-post evaluation and the evaluation was made.

1) Students have increased motivation to study due to the provision of classrooms

As a result of group interviews with students, the improvement in students' motivation to study by improving the classrooms was 3.9 out of four scales. There were answers such as "the classroom is large and has enough size.", "I can study in a comfortable environment". Also, as a result of group interviews with teachers and principals, there were answers such as "as the furniture (blackboards, desks, chairs) are well prepared, students can concentrate on their study.", "the rain and wind can be prevented, the students can concentrate on their study in a comfortable environment ".

2) Teachers have increased motivation to teach due to the provision of teachers' room

As a result of group interviews with teachers, the improvement in teachers' motivation to teach by improving the teachers' rooms was 3.7 out of four scales. There were answers from teachers such as "teachers can exchange the information in the teacher's room.", "because there is a shelf for myself and desk for each subject, it is easy to organize documents". Following answers came from principals in group interviews; "opportunities for teachers to talk about lessons have increased. ", "teachers came to prepare the lessons at the teacher's' room".

3) Students' awareness of sanitation has improved due to the provision of toilets,

As a result of the group interviews with teachers, the improvement of awareness of students' sanitation was 3.9 out of four scales. There were answers from teachers such as "the number of students who urinate in the schoolyards or surrounding grasses has decreased, there is no bad smell now.", "the number of students who have diarrhea has decreased".

4) Female students' motivation to attend school has improved due to the provision of toilet

As a result of the group interviews with teachers, the improvement of female students' motivation to attend school was 3.7 out of four scales. There were answers such as "from the viewpoint of privacy, the improvement of the toilet is important for female students.", "there are female students who come to school with their parents and check the presence and cleanliness of toilets before entering the school. Provision of toilets is related to female's motivation to attend school".

From the above, although there have been no major changes in "the number of enrolled students" and "NER" related to the access to secondary education in Nampula province, some

improvements in “the students’ awareness of sanitation” and “students’ motivation to study” related to the quality of education could be seen.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment, Resettlement and Land Acquisition

In this project, as a result of the hearing survey with the executing agency, it was confirmed that no particular impact was observed on the natural environment and the resettlement of residents and upon land acquisition.

From the above, the implementation of this project generally showed the effect as planned. Therefore effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional / Organizational Aspect of Operation and Maintenance

(1) Institutional / Organizational Aspect of Operation and Maintenance at MINEDH

In Mozambique, as a result of decentralization has been promoted since 2006, the promotion of school management and school construction as well as budget formulation have been delegated to the district level. DPEC and District Education, Youth and Technology Services (hereinafter referred to as “SDEJT”) are located under the MINEDH. MINEDH is responsible for the planning, operation and monitoring of the national education system. Educational administration at the provincial level is carried out by DPEC and at a district level it is carried out by SDEJT. Under the SDEJT, there are school clusters which conduct educational planning and management at the local level, such as opening schools, assigning teachers, etc. based on the policies of MINEDH.

The organization chart of MINEDH is as shown in Figure 2.

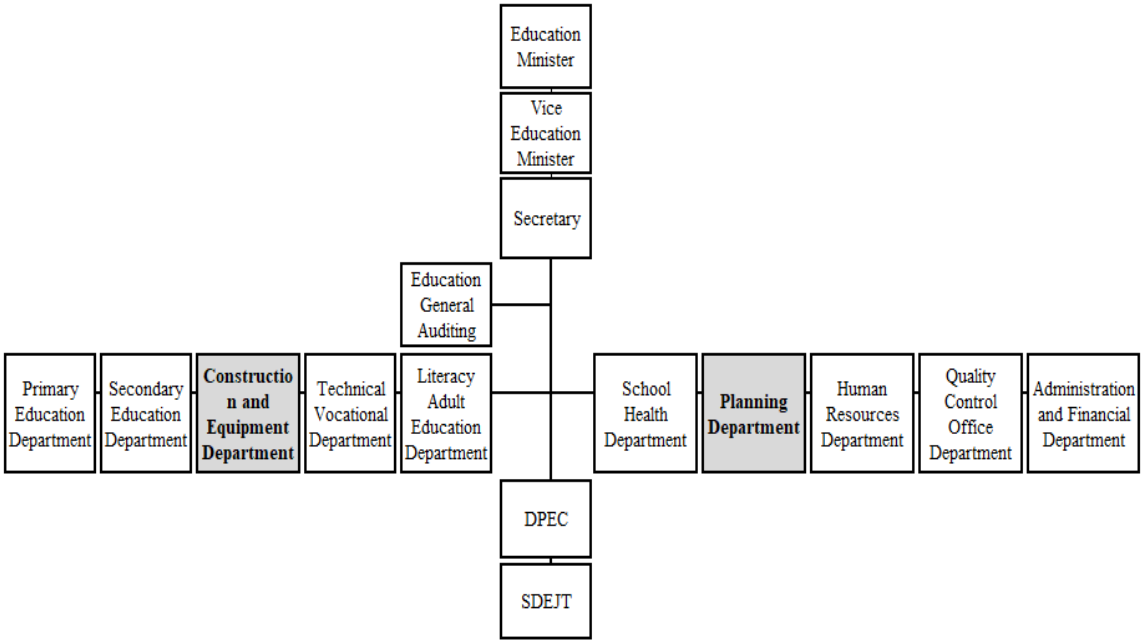


Figure 2 Organization chart of MINEDH

Source: MINEDH

The role of MINEDH is to formulate the educational policies and planning, conduct monitoring and evaluation and donor coordination centering on common basket funds. In addition, its role is to develop and revise the curriculum, formulate the personnel plans centering on teachers, secure the quality of education, planning and coordination. With the revision from Ministry of Education to MINEDH in 2015, four positions in Vice Education Minister until then became to be one position. And school health department, construction and equipment department, etc. were taken into the Ministry. As a result, comprehensive education support became possible more quickly.

The role of DPEC is to formulate the annual plan of province and district, coordinate the budget and conduct monitoring. It also coordinates and monitors teacher trainings and formulate teacher recruitment plans. It also plans, implements and monitors cultural activities. DPEC is responsible for coordination and communication between MINEDH and SDEJT in the school construction and maintenance and management, which have been implemented without any problem.

The role of SDEJT is to ensure the access to education for all school-aged children, to build schools, to promote adult literacy education and other vocational education, and to manage schools and teacher training schools. In addition, planning education activities, formulating budget and managing personnel of schools at district are the roles of district government, and are carried out by SDEJT.

(2) Institutional / Organizational Aspect of Operation and Maintenance at school and community level

There are school clusters under SDEJT. The school cluster is composed of teachers, principal, school counselors, which improves teaching methods, strengthens the capacity of teachers, promotes education, sports and culture activities among schools. The school committee including the principal, teachers, guardians and community representatives on school management exists at all schools and gathers when necessary. The school committee plays a role of connecting the community and the school through participation in decision-making concerning the school administration (selecting school uniforms, supporting poor families), providing guidance to problem students and school cleaning activities.

From the above, there has not been any change in the functions of the operation and maintenance system of MINEDH, school and community level from the time of planning stage to ex-post evaluation stage, and it is functioning.

3.4.2 Technical Aspect of Operation and Maintenance

(1) Technical Aspect of Operation and Maintenance at MINEDH

MINEDH's construction and equipment department has 30 staff members as of 2018, with construction and civil engineers, facility engineers, quantity surveyor, surveying technicians, and construction supervision staff working under the director. The construction and equipment department is engaged with all school constructions led by MINEDH including donor support projects and it carries out a series of tasks from planning and design to the selecting the contractors and supervising the construction. The construction and equipment department has accumulated sufficient experience and know-how in each process of school construction. Under the financial and technical support of the *Education Sector Support Fund* (*Fund de Apoio ao Sector da Educacao* (hereinafter referred to as "FASE")), the construction and equipment department develops manuals which include the procedures and key points of school maintenance and organizes seminars regularly for school personnel at each school.

Three to five staff members who received technical supports from FASE are assigned at school construction unit in each DPEC as of 2018. They have accumulated sufficient experience and know-how in the technical aspects. In addition, SDEJT is a liaison office that connects schools and provincial governments located in each district, and one to two engineers are assigned as of 2018[37].

Based on the above, MINEDH, DPEC and SDEJT in Nampula province have accumulated certain experiences and know-how and have sufficient technical capabilities to operate and

[37] All the technical information of MINEDH, DPEC and SDEJT are based on the hearing with MINEDH.

maintain the facilities developed in this project.

(2) Technical Aspect of Operation and Maintenance at community level

At the field survey of ex-post evaluation stage, it was confirmed that the community had sufficient technical capabilities on the maintenance and management of facilities. Table 12 shows the items to be confirmed in the field survey.

Table 12 Operation and maintenance status at community level

Number of schools which understand the procedure when repair occurs	4/4	100.0%
Number of schools which have a meeting between school and school committee more than once a month	4/4	100.0%
Number of schools which maintain the school facilities between school and school committee more than once a month	4/4	100.0%

Source: Created from the result of hearing with schools

If small repairs occur to school facilities, the school committee holds a meeting and discusses on the plan of repair policies, whether they can be repaired within the budget or whether supplies from the community or additional funding are necessary, etc. In case that serious repairs occur, the school committee reports it to SDEJT and submits a document stating the improvement plan. Maintenance of checking the doorknobs, and opening and closing of the windows in the classroom, and the condition of toilets are carried out at each school. After this project, there were two schools out of four schools that built toilets, classrooms, and water supply facilities, and so on.

3.4.3 Financial Aspect of Operation and Maintenance

(1) Financial Aspect of Operation and Maintenance at MINEDH

Some problems have been observed in terms of the financial aspect of operation and maintenance at MINEDH. As described in 3.2 Efficiency, science laboratory and ICT equipment to be borne by Mozambique side have not been equipped yet due to the lack of budget at MINEDH[38]. Table 13 shows the annual budget of MINEDH.

[38] Regarding the procurement of equipment, decisions are made at the Construction and Equipment Department based on the annual activity plan after approval of the national budget. Although attempts were made to collect the data of initial planned number of PC's and science laboratory equipment and the reason why this equipment had not been equipped, no reliable data could be obtained.

Table13　MINEDH annual budget

(Unit: Million MZN[39])

	2014	2015	2016	2017	2018
National budget	249,094	226,425	243,358	272,288	302,928
Education budget	40,127	45,768	49,327	57,719	52,630
MINEDH	34,037	36,884	41,813	49,415	42,356
Ordinary budget	27,828	34,236	39,876	44,614	40,578
Capital budget*[1]	6,209	2,648	1,937	4,801	1,777

Source: MINEDH

*1: Capital budget includes the investment in projects, the budget used for classroom construction, etc. UNICEF had been conducting a school construction and environmental improvement project until 2014. Due to its completion the capital budget has decreased since 2015.

The government budget for the last five years has expanded steadily every year. Along with that, MINEDH continues to increase its ordinary budget every year. Currently, 14 to 18% of the government's current budget is allocated to the ordinary budget of MINED every year. The school direct support money (Apoio Directo as Escolas, hereinafter referred to as "ADE") is contributed from FASE and transferred directly to the bank account of SDEJT, and SDEJT distributes the fund to each school cluster. The main purpose of ADE is to improve the quality of education and school administration by directly allocating fund necessary for school teaching materials[40] and services (such as small repairs of toilets) to each school. ADE is being offered at all four target schools[41]. The amount of subsidies from ADE depends on the number of students at each school.

(2) Financial Aspect of Operation and Maintenance at community level

The sustainability of the financial aspect of the operation and maintenance at the community level is high. There are three types of budget that the school receives; the ADE budget, the general budget from the Ministry of Finance through the provincial government, and the tuition fee[42]. Schools receive ADE as financial support for operation and maintenance. But 4 out of 4 schools answered that the amount was not enough. Most of the administrative budget is used for operating expenses for labor and utilities, and the budget that can be used for maintenance and

[39] 1MZN=¥ 1.84(May of 2018 present)

[40] This teaching materials do not include the experimental instruments but include guidelines for teachers and students' textbooks.

[41] According to the hearing with Namapa, they receive 20,000 MZN per month as ADE, but it was not enough according to their answer.

[42] The annual tuition per student at the target schools is 150-160 MZN for daytime shift at ESG 1, 200- 260 MZN for daytime shift at ESG 2. It is 250- 265 MZN for night time shift at ESG 1 and 250-285 MZN for night time shift at ESG 2. At Namapa, tuition for girls entering 8th grade and 11th grade is free. Although there is no accurate data on the collection rate of tuition fees at each school, it was confirmed by an answer from the principals that it is roughly 70-90%.

management is insufficient.

As an example of the financial situation of the operation and maintenance at the community level, Table 14 shows the annual operating budget and expenditure of Memba in the target schools. The general budget and tuition revenue from the Ministry of Finance has been secured to a certain extent for the last 3-4 years and compensates for the shortage of ADE.

Table 14 Annual operating budget and expenditure of Memba

(Unit: Million MZN[43])

		2015	2016	2017
Income	ADE	87	84	107
	General budget	240	209	338
	Tuition fee income	192	207	218
Total revenue		519	500	663
Total expenditure		489	475	662
Carryforward amount		30	25	1

Source: Created from the data provided by Memba

3.4.4 Status of Operation and Maintenance

The classrooms, administration blocks, multi-purpose blocks, toilet blocks, and simple gymnasium constructed by this project are properly operated and maintained. The aging situation of the facility is shown in Table 15 below.

Table 15 Aging situation of the classrooms, administration blocks, multi-purpose blocks, toilet blocks, and simple gymnasium

	Classrooms		Administra-tion bocks		Multi-purpose blocks		Toilet blocks		Simple gymnasiums	
	Construction	Good condition	Construction	Good condition	Construction	Good condition	Construction	Good condition	Construction	Good condition
Natikire	19	19	1	1	1	1	1	1	1	1
Memba	10	10	1	1	1	1	1	0	1	1
Namapa	10	10	1	1	1	1	1	1	1	1
Nacala-a-velha	10	10	1	1	1	1	1	1	0	0
Total	49	49	4	4	4	4	4	3	3	3

Source: Created from the result of hearing with target schools

[43] 1MZN=¥ 1.84(May of 2018 present)

The maintenance and management situation are generally good. Regular cleaning is conducted every day at each school. The toilet block at Memba is not used due to the damage of water supply facility. Since the technical staff employed by the school cannot repair it, the school is currently requesting DPEC in Nampula province to repair it. It will be repaired within the provincial budget during this year as soon as the procedure is over.

The target number of teachers to be hired at the target schools are shown opposite the actual numbers as below.

Table 16 Target and actual number of teachers and staff

	Target	Actual	
	2018	2017	
	3 Years After Completion	2 Years After Completion	
	Teacher / Staff	Teacher / Staff	Student/1Teacher
Natikire	49 / 14	62 / 14	23
Memba	33 / 12	31 / 7	31
Namapa	33 / 12	22 / 10	27
Nacala-a-velha	33 / 12	27 / 5	20
Total	148 / 50	142 / 51	25

Source: Confirmed with provided documents by JICA(Target), by school visit (Actual)

The number of teachers and staff which is necessary to increase for this project was planned to be 148 and 50 respectively. The actual number of assigned teachers and staff was 142 and 51 respectively as of 2017. The staff salary of only 10 of them is covered by the schools. For the salary of these 10 staff members paid by the school, as its 5.2% for the total of 193 teachers and staff, the financial burden to the school is small[44]. The average number of students per teacher is 25 at all the target schools. From the interview survey with four target schools, the actual class hours for one teacher at ESG 1 is 24 hours a week and 20 hours a week at ESG 2. Most teachers are in charge of two shifts, and basically there is no overtime.

From the above, there are some financial problems in the operation and maintenance of this project. Therefore sustainability of the project effects is fair.

[44] According to the hearing with the target schools, many teachers are newly applying for new schools and supply more than demand of teachers continues. From the viewpoint of the supply and demand of teachers, it can be said that this cannot be a risk factor of schools.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented with the aim of improving the access to and learning environment of secondary education by constructing new secondary schools in three districts and one city in Nampula province where is the lowest Net Enrollment Rate (hereafter referred to as "NER") in lower secondary education (Grade 8th-10th) in Mozambique, thereby contributing to the improvement of education quality.

At the time of planning and ex-post evaluation stage, as the construction of education facilities was prioritized according to the policies of Mazambique, the project for constructing new secondary schools is consistent with policy. In the target province of the project, where the current situation that the number of secondary schools is insufficient and NER is low, there is a high need to support new secondary school construction. Since this project is consistent with Japan's ODA policy with an emphasis on enhancing basic education, the relevance of this project is high.

Although the project cost was within the plan, the project period exceeded the plan as the procedure of executing agency was delaye, etc. So, the efficiency is considered fair.

Effectiveness indicators such as "the number of enrolled students", "commuting time" and impact indicators such as "students' awareness of sanitation" and "students' motivation to study" are generally achieved. Therefore, the project's effectiveness and impact are considered high.

The executing agencies and school committees of communities for this project have the necessary institutional structure and technique of operation and maintenance to maintain the effectiveness of this project. On the other hand, some problems have been found in the finance of executing agencies. Thus, sustainability 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

(1) Procurement of urgent IT and laboratory equipment

At the present three years after school opening, science experimental equipment and ICT equipment to be borne by Mozambique side are not equipped in all four schools. From the viewpoint of ensuring and improving the quality of education, MINEDH should prepare the budget for the equipment and immediately deliver them to the target schools. While the budget is limited, it is advisable that for example the executing agency should discuss again on priority of the teacher assignment and equipment placement by collaborating with relevant departments in MINEDH.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Considering the feasibility of the obligation by the executing agency and the incorporation of the project scope at the project planning stage

Science laboratory equipment and ICT equipment are part of Mozambique's obligation. But due to the financial constraints, the budget priority has been lowered and these equipment cannot be installed. Since only the lecture style classes are conducted and the practical classes are not provided, it is a big problem from the viewpoint of ensuring and improving the quality of education. The fact that the priorities of purchasing and providing educational equipment are low and postponed is one of the reasons for this. Even though it is the obligation of the executing agency, as for the components that are highly likely not to be secured by the executing agency and that are indispensable for effective utilization of facilities, the components should be considered incorporating them into the support package.

Establishment of construction period considering the fiscal year plan of the executing agency and transaction experience of financial institutions

As for the project, the delays in securing water supply source and contracting with the executing agency led to the delays of construction start. As a result, construction work rushed into the rainy season and the project period was extended to 142% compared to the plan. The reason why securing the water supply was delayed is that due to the delay of the Cabinet meeting, the whole construction period shifted backward and the budget at the end of the fiscal year was contributed and then the budget for well excavation work was not secured. Regarding the delay in the A/A, E/N was delayed by one week due to the executing agency signee's situation. In addition, it took two months to regulation for the A/A period to be close. This is because the transfer of funds was delayed due to bank procedures. It is necessary to establish the construction period with a margin, considering the fiscal year plan of the executing agency and the transaction experience of financial institutions.

Kingdom of Lesotho

FY2017 Ex-Post Evaluation of Japanese Grant Aid Project
The Project for the Construction of New Secondary Schools and Upgrading of Facilities in Existing Secondary Schools

External Evaluator：Yudai NISHIYAMA, INTEM Consulting Inc.

0. Summary

The objective of this project was to expand the enrollment opportunities to the secondary education and improve the learning environment by constructing new secondary schools and upgrading facilities at existing secondary schools at total 12 sites in seven districts, thereby contributing to the improvement of access to and quality of education.

At the time of planning and ex-post evaluation stage, as the construction and upgrade of educational facilities to improve access to high-quality education was prioritized by policy in Lesotho, the project for constructing new secondary schools and upgrading facilities at existing schools is consistent with policy. From the current situation that the number of secondary schools is insufficient, there is a high need to support the upgrade of the facilities. Since this project is consistent with Japan's ODA policy with an emphasis on enhancing basic education, the relevance of this project is high.

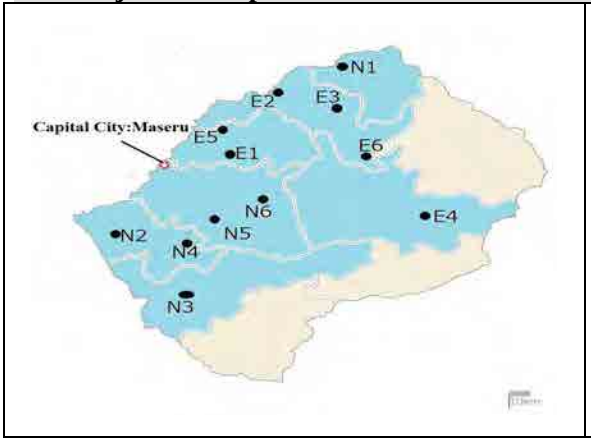
Although the project cost was within the plan, the project period exceeded the plan as construction by local contractors was delayed. So, the efficiency is considered fair.

Achievement level of effectiveness indicators such as "number of enrolled students", "commuting time" and impact indicators such as "students' motivation to learn", "teachers' motivation to teach" are generally high. As other impact, some degree of improvement of the learning environment for disabled students could be seen. Therefore, the project's effectiveness and impact are considered high.

The executing agencies and school management committees of communities operate under a good enough institutional structure with techniques that are necessary for operation and maintenance to ensure the effectiveness of this project. On the other hand, some problems have been found in the finance of operation and maintenance. Thus, sustainability is fair.

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

1. Project Description



Project Locations

Fusi in Berea District, built under this project

1.1 Background

The literacy rate in Lesotho was 82.2% (2002) which was slightly higher than the average of 80% in the countries where human development were proceeded to moderate. In the top-level national plan of *Poverty Reduction Strategy Plan* (PRSP), "access to and completion of high quality primary and secondary education" was the objective and it aimed to achieve the complete enrollment in primary education which is one of the Millennium Development Goals. As one of the strategies to achieve that, Lesotho started Free Primary Education (herein after referred to as "FPE") from 2000. Based on this strategy, the Ministry of Education and Training (hereinafter referred to as "MoET") formulated the *Education Sector Development Plan* (2005-2015) and the *Medium-Term Education Sector Plan* (2009-2012, MTESP) and constructed secondary schools in the mountainous area and highly populated area. As a result, the number of secondary school enrollments in Lesotho had increased since around 2007 when FPE first-year graduates entered secondary schools. However number of "combined schools (primary school attached with secondary school)" increased rapidly as development of the facilities did not catch up. A combined school is a facility that uses primary school facilities as secondary education facilities as emergency. For this reason, secondary school students took classes in primary school buildings, churches, mobile classrooms and other substitutes and the shortage of facilities was a serious issue. In addition, the number of enrolled students in secondary education in 2009 was 113,500 students which was 14,000 more students than the predicted number, and the classroom shortage was even more remarkable. The specific goal by 2015 was the achievement of 85% of the gross enrollment rate in secondary education (47.7% as of 2009).

Given this background, this project was implemented with the objective of expanding the enrollment opportunities of secondary education and improvement of the learning environment

by expanding total 12 schools in seven districts (six new secondary schools and six existing schools).

1.2 Project Outline

The objective of this project is to expand the enrollment opportunities to the secondary education and improve the learning environment by constructing new secondary schools and upgrading facilities at existing schools at total 12 schools in seven districts, thereby contributing to the improvement of access to and quality of education.

G/A Grant Limit / Actual Grant Amount	1,069 million yen / 1,069 million yen
Exchange of Notes Date	March 2011/ April 2011
Executing Agency	MoET
Project Completion	April 2014
Main Contractors	Construction companies：Melupe Construction, These Construction Services (Pty) Ltd, Kaybon (Pty) Ltd, Sigma Construction (Pty) Ltd, Morning Star Construction (Pty) Ltd , Twentieth Construction (Pty) Ltd, Monahali Construction (Pty) Ltd, Shelile Construction (Pty) Ltd Procurement of Equipment：Sebabatso Suppliers (Pty) Ltd
Main Consultant	Fukunaga Architects-Engineers
Procurement Agency	Japan International Cooperation System (JICS)
Outline Design	March 2010 - March 2011
Related Projects	【Technical Cooperation】：Preparatory survey on education project for Kingdom of Lesotho and Swaziland (2008) 【Grant Aid】：The project for the construction of secondary schools (2008)

2. Outline of the Evaluation Study

2.1 External Evaluater

Yudai NISHIYAMA, INTEM Consulting Inc.

2.2 Duration of Evaluation Study

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

Duration of the Study: October 2017 - October 2018

Duration of the Field Study: January 14 - February 19, April 22 - May 14, 2018

2.3 Constraints during the Evaluation Study

Although attempts were made to collect Net Enrollment Ratio of target districts from MoET, which is necessary to analyze the impact , no reliable data could be obtained as the census of Lesotho is conducted only once in 10 years.

3. Results of the Evaluation (Overall Rating: B[1])

3.1 Relevance (Rating：③[2])

3.1.1 Consistency with the Development Plan of Lesotho

In Lesotho's development policy of *Vision 2020* at the time of planning period of this project, it aimed at achieving the 90% completion rate for basic education by 2015. In addition to this, in *Education Sector Strategic Plan* (hereinafter referred tp as "ESSP") (2005-2015) which is Lesotho's national development plan, it aimed at strengthening primary and secondary education and it was necessary to improve quality aspects such as improvement of curriculum and teacher training as well as developing the infrastructure for equal access to education. As for secondary education, in order to expand the opportunity for schooling, it aimed at constructing additional 570 classrooms between 2008 and 2012[3]. In addition to this, the ESSP aimed at developing a comprehensive education sector, specifically aiming at securing access to free and high quality primary and secondary education for all children by 2015.

At the time of the ex-post evaluation, *Vision 2020* continues to be the development policy of Lesotho and still aims to achieve 90% completion rate for primary and secondary (basic) education. In the ESSP (2016 - 2026) and *Education Sector Plan* (hereinafter referred to as the "ESP" (2016 - 2026)), it aims at strengthening primary and secondary education, improving quality aspects such as improvement of curriculum and teacher training as well as developing the infrastructure for equal access to education. Furthermore, in the ESP, it aims to secure

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

[2] ③: High, ②: Fair, ①: Low

[3] 141 classrooms per year from 2008 to 2009, and 96 classrooms per year from 2010 to 2012 were targeted. (Project preliminary evaluation table)

access to free and high-quality primary education for all children by 2026 and to achieve a secondary education enrollment rate of 80%. As the education sector continues to be a priority sector, the construction and upgrading of educational facilities are part of the top priority for improving access to high-quality education.

As mentioned above, Lesotho's development policy has not changed at the planning and the ex-post evaluation stage, and the development policy of Lesotho is consistent with this project.

3.1.2 Consistency with the Development Needs of Lesotho

At the time of planning stage for this project, after FPE which began in 2000, the number of primary school students had increased sharply. In 2007 when FPE first-year graduates started to enroll into the secodary education, the number of secondary school students increased year by year. The number of students who enrolled into the secondary school in 2009 was 113,562, and it was 14,000 more students than predicted as of 2007. The shortage of classroom facilities became more serious. In addition, there were some schools which were just diverted from primary school classrooms and churches into secondary schools. However, as these schools did not have the necessary facilities for secondary education, it was difficult to receive appropriate education. As the school administration budget and the government budget were limited, it was not easy to carry out the facility development.

At the time of ex-post evaluation, there are only 341 secondary schools for 1,478 primary schools[4] in 2017 and its absolute number is short. Furthermore, the number of secondary schools in the target seven districts is still insufficient compared with the number of primary schools[5]. The number of students enrolled in the secondary schools at the time of the ex-post evaluation is 128,780 students (2016), and it is increasing. However, the transition rate from primary school to secondary school at the time of ex-post evaluation is 73% (2016), and it has not reached 100% as the target of the ESSP (2016 - 2026). The actual number of enrolled students in 2017 is 32,609 (86.5%), while the number of students who are eligible to go to secondary school is 37,695 (2017) and there are some students who are qualified to attend secondary schools but are not able to attend schools. For that reason, measures to improve the access to secondary education by improving the education infrastructure in remote areas and highly populated areas is listed in the *National Strategic Development Plan* (2013-2017) and there are needs for facility development.

From the above, the project is consistent with the development needs from planning stage to ex-post evaluation stage, and development needs continue to be high.

[4] Hearing at MoET

[5] Number of secondary schools in the target districts in 2016 is 23 (Butha-Buthe), 40 (Mafeteng), 25 (Mohale's Hoek), 72 (Maseru), 43 (Berea), 69 (Leribe), 19 schools (ThabaTseka). Number of primary schools is 83 schools (Butha-Buthe), 158 (Mafeteng), 171 (Mohale's Hoek), 254 (Maseru), 139 (Berea), 199 (Leribe), 142 schools (ThabaTseka).

3.1.3 Consistency with Japan's ODA Policy

As stated in the *Basic Education for Growth Initiative* (BEGIN[6]) at the G8 Kananaskis Summit in 2002, the Japanese government emphasized the strengthening of basic education support. In addition, in economic cooperative policy talks with Lesotho conducted in June 2010, the Japanese government shared that Japan's priority areas would be human resources development related to common issues within the Southern Africa region, including education[7]. Therefore, this project was consistent with the aid policy at the time.

From the above, this project has been highly relevant to the Lesotho'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 Outputs

The outputs from the Japanese side for this project were the development of educational facilities and the procurement of educational equipment. The outputs from Lesotho's side were to secure the water supply works, the electricity supply works, the landscaping works, procurement of the laboratory equipment and the supply of teacher's room equipment, etc. Outline of the outputs of this project is shown in Table 1.

Table 1 Planned / Actual number of educational facilities

	Number of schools	Number of classrooms	Number of science rooms	Number of teacher's rooms	Number of toilets	Number of Teachers' houses
New Schools	6/6	60/60	6/6	6/6	12/12	12/12
Existing Schools	6/6	45/45	6/6	3/3	10/12	12/12
Total	12/12	105/105	12/12	9/9	22/24	24/24

Source: Created from the result of hearing with the target schools

Note: Shaded areas are numbers where changes (increases) were made in planned and actual results

As part of the Japanese side's output, boy's and girls' toilets were newly constructed at Fusi school and the number of toilets was increased by two blocks. This is because the number of

[6] BEGIN: Basic Education for Growth Initiative

[7] Source: *Japan's ODA Data by Country*、Official Development Assistance、2010、P.685

students increased 1.8 times in two years from 2011 to 2012 and it increased faster than the initial expectation. The other changes made after the detailed design were actually newly constructed and are now used without any problem. As for the boy's and girl's toilets, one booth of each toilet building was secured for people with disabilities. This change was due to a request from MoET before the bid announcement and it is consistent with MoET's *inclusive education policies*. In addition, it was confirmed from the hearing with MoET that the initially planned quantity of educational equipment such as desks and chairs was delivered.

As for the output from Lesotho side, as a result of hearing with MoET, there was a response that the outputs were implemented as planned. By the visual confirmation at sites by evaluator, it was confirmed that the items and inputs to be borne by the Lesotho side, such as the dismantling and removal of existing facilities and obstacles, external construction work, the connection of electricity and securing a water supply and so on were implemented.

Establishment of efficient collaboration between consultants and the procurement agency

As this project was grant aid for community empowerment, the procurement agency (JICS) contracted a local contractor as the agent on behalf of the client, and the Japanese consultants carried out the construction supervision. This project was a decentralized project where there were some mountainous sites which took 5-6 hours to reach from the resident area in capital city. In the field, monthly meetings with MoET, the procurement agency, the supervisor (Japanese consultant) and the local contractor, and weekly meetings at the sites were carried out. While communication was sometimes stagnant, the project tried to share and update information among the stakeholders. Resident supervisors reported on project progress, shared problems and provided technical advice. Through maintaining close contact with stakeholders to grasp the situation and establishing a system to cope with problems, it led to generate high project's effects even in the decentralization type project in mountainous areas.

3.2.2 Project Inputs

3.2.2. 1 Project Cost

The project cost was estimated as 1,070 million yen at the time of planning stage, but the actual project costs was 1,069 million yen and it was as within the plan[8]. Although it was confirmed that all the matters to be borne by Lesotho were done as planned, the actual cost for these works was not able to be confirmed.

[8] It was confirmed from consultants in charge of design that there were design change, contract cancellation of local contractors and the collection of delay penalty fee and the calculation of remaining budget was reported to JICA and accepted at each time. As a result, there were changes of amount of budget, such as extension of two toilets and corridors, but the project cost was 100% as the planned amount.

3.2.2.2 Project Period

The project period was estimated 24 months in the plan, whereas the actual result was 33 months, and it exceeded the plan (138% compared to the plan). The reasons for the difference on the project period were as follows; releasing contract due to construction delay, bidding for the remaining work and the implementing remaining works. In the construction supervision for the first batch, as the local construction contractor delayed work and it was difficult to prospect the completion, the contract was terminated and a new contract was made again with the subcontractor of the construction company on the remaining works. In the second batch, for three lots whose construction were delayed by less than eight months, the contract was canceled because of low prospects of completion and the nominated competitive bid related to the remaining works was carried out. Therefore, the project period was extended by nine months and the plan was exceeded by 138%[9].

From the above, although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness and Impacts[10] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In order to confirm the improvement of the learning environment at the target schools and the expansion of the opportunities to attend secondary education in the target area, 1) The number of enrolled students at the six new schools (60 classrooms), 2) The number of enrolled students at the six existing schools (45 classrooms) were confirmed as the indicators of the quantitative effect and the evaluation was made. In addition to that, 3) The number of classrooms, toilets, teacher's rooms, science rooms, and the teachers' houses that are actually being used and 4) The number of overcrowded classrooms and the number of students in overcrowded classrooms at the target 12 schools, were set as additional indicators and the evaluation was made.

Table 2 shows the number of enrolled students at the target new schools and the existing schools.

[9] 138% = 33 months / 24 months (including EN)

[10] Sub-rating for Effectiveness is to be put with consideration of Impacts.

Table2 Number of enrolled students at the new schools and existing schools.

	Target	Actual					
	2019	2014	2015	2016	2017	2018	Achievement Level (2018)
	5 years After completion	Completion Year	1 year After completion	2 years After completion	3 years After completion	4 years After completion	Actual / Target
Number of students at new schools	2,400	911	1,143	1,298	1,471	1,613	67.2 %
Number of students at existing schools	2,560	2,094	2,429	2,345	2,404	2,369	92.5 %
Total number of students	4,960	3,005	3,572	3,643	3,875	3,982	80.3 %

Source: Created from the result of hearing with the target schools

For a target of 2,400 students at new schools in 2019[11] (five years after the project completion), the actual number of students in 2018 was 1,613. For a target of 2,560 students at existing schools, the actual number of students was 2,369, the total actual number of students was 3,982. The achievement level of the indicator at new schools was 67.2% (1,613 out of 2,400 students) and 92.5% (2,369 out of 2,560 students) at existing schools and 80.3% at total. The probability of reaching the target value by 2019 at the new school is low, but for existing schools, it has been achieved generally. On the actual values (2017) against target value at the time of ex-post evaluation (three years after the project completion) which was set at the time of planning stage, number in 2017 was 1,471 at new schools and 2,404 at existing schools[12]. The actual values in 2017 have achieved their respective targets.

It was confirmed from the hearing with MoET and target schools that the reason why the achievement level at the new schools is lower than that of the existing schools are as follows; 1) The number of enrolled students in secondary education has remained flat in the past three years[13] and the increase rate of enrollment is slowing compared to the original plan. 2) There is a possibility that parents choose the existing schools with good teaching records and good reputation instead of the new schools. 3) Population movement from the region where new

[11] Because the project period was extended, it is 2019 after five years of project completion.

[12] Not only the target number of five years after the completion of the project, but also intermediate target number was set at the timing of ex-post evaluation. The target numbers for 2017 were 1,440 for new schools and 2,363 for existing schools.

[13] It was confirmed from hearing with MoET that the number of enrolled students in secondary education from 2014 to 2016 is 112,418 (2014), 112,256 (2015) and 112,323 students (2016).

schools are located to urban areas as well as from Lesotho to South Africa may have occurred[14].

Also, in order to investigate factors that are unlikely to reach the initially planned target numbers (at five years after the project completion), the following data were acquired by the evaluator and compared; 1) The number of graduated students in primary education and the number of enrolled students in secondary education in each district, 2) The number of applicants to the 12 target schools and actual number of enrolled students. As for 1), according to the hearing with MoET, the number of primary education graduates in 10 districts including the target districts in 2017 was 41,097 and the number of enrolled students in secondary education was 34,146 so that 83.1% of graduated students continued to secondary education. As for 2), nine of 12 target schools accepted all the applicants who wished to enter the schools in 2018. For the remaining three schools[15], 89-97%[16] of the applicants actually enrolled[17]. Based on the above, it was found out that the school side accepts most applicants who want to enroll and the reasons for the students for whom admission is declined are factors from the family side. Thus, the reason why the number of secondary education enrollment is flat is not a factor from school side.

Table 3 Comparison of target and actual number of operational indicators

	Target	Actual					
	2018	2014	2015	2016	2017	2018	Achievement Level (2018)
	4 Years After Completion	Completion Year	1 Year After Completion	2 Years After Completion	3 Years After Completion	4Years After Completion	Actual /Target
Number of classrooms	105	69	79	85	92	91	86.7 %
Number of science rooms	12	12	12	12	12	12	100.0 %
Number of toilets blocks	24	24	24	24	24	24	100.0 %
Number of teacher's rooms	9	9	9	9	9	9	100.0 %
Number of teachers' house blocks	24	24	24	24	24	24	100.0 %

Source: Provided by JICA(Target), confirmed by school visit (Actual)

[14] It is pointed out by CEO of Secondary at MoET. However, the exact factor is unknown in the current statistic data.
[15] Those three schools are Linareng, St. Theresa and Fusi.
[16] Number of applicants and enrolled students to Linareng, St. Theresa and Fusi were 119/113, 236/228 and 112/100 respectively.
[17] It was confirmed from the hearing with the principals and the families who abandoned enrollment that the reasons why students did not enroll although they wished to enroll is that "Tuition fee cannot be paid", "There is no transportation means." etc.

For the number of classrooms, the actual number is 91[18] and the target in 2018 (four years after completion) is 105, so that the achievement level is 86.7%. For the others, such as science rooms, toilets, teacher's rooms, and teachers' houses, the target numbers are achieved so that the indicators have achieved. For classrooms which are not in use, those are being used as warehouses or dining halls. Due to the fact that the actual number of students are less than expected and the lack of teachers, there are some empty classrooms.

At the time of ex-post evaluation, the number of classrooms and students in overcrowded classes[19] was as follows.

Table 4: Number of classrooms and students in which overcrowded classes were held

Item	2013	2014	2015	2016	2017	2018
Number of overcrowded classrooms (classrooms)	24 /49	40 /69	51 /79	43 /85	56 /92	48 /91
Number of students in overcrowded classrooms (persons)	1,444 /2,273	2,128 /3,005	2,696 /3,572	2,294 /3,643	2,882 /3,875	2,583 /3,982

Source: Created from the result of hearing with the target schools

Note: The denominator in the top row is the total number of classrooms, the denominator in bottom row is the total number of students

At the time of the ex-post evaluation, there were 48 overcrowded classes, and it was 52.7% to 91 classrooms which were actually used. The number of students in overcrowded classrooms was 2,583 students, and it was 64.9% to the total number of students of 3,982 students. The average number per class in overcrowded classrooms was 54 students/classroom[20] and average numner per class in all classrooms was 44 students/classroom[21]. Figure 1 shows the frequency distribution of the number of students per classroom at the target schools.

[18] At the time of the ex-post evaluation, the schools where there are unused classrooms are Nlthakeng (N4) as five classrooms, Sehlabeng, (N5) as four classrooms, Ha Belo (N1) as three classrooms, St. Margaret (E3) and Fusi (E5) as one classroom each. Total 14 classrooms are unused.

[19] The definition of overcrowded classroom is 40 students or more per classroom, which is a medium-term target of ESP.

[20] The total number of students and total classrooms in overcrowded classes are 2,583 students and 48 classrooms respectively. Therefore, the average number of students per overcrowded classroom is 54 students.

[21] The total number of students and classrooms in the target schools are 3,982 students and 91 classrooms respectively. The average number of students per a classroom is 44.

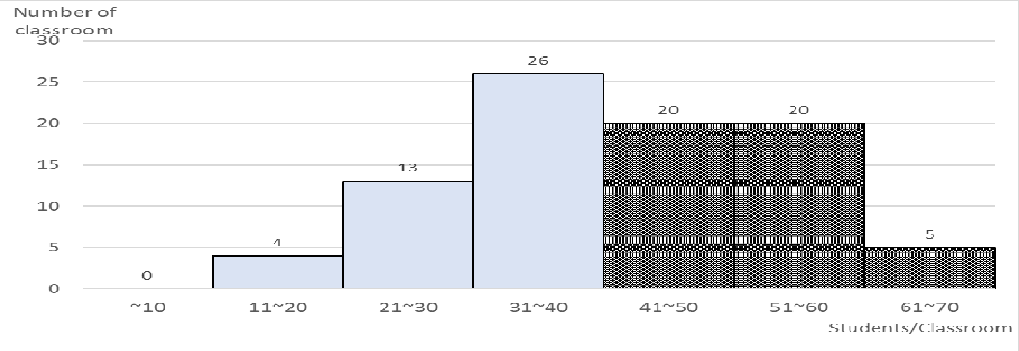


Figure 1 Frequency distribution of the number of students per classroom

Source: Created from the result of hearing with the target schools

There are some overcrowded classrooms where one teacher teaches more than 40 students (the recommended class size is 40 students/class) due to a lack of teachers and classrooms. The number of unused classrooms and the number of overcrowded classrooms at each school are shown in Figure 2

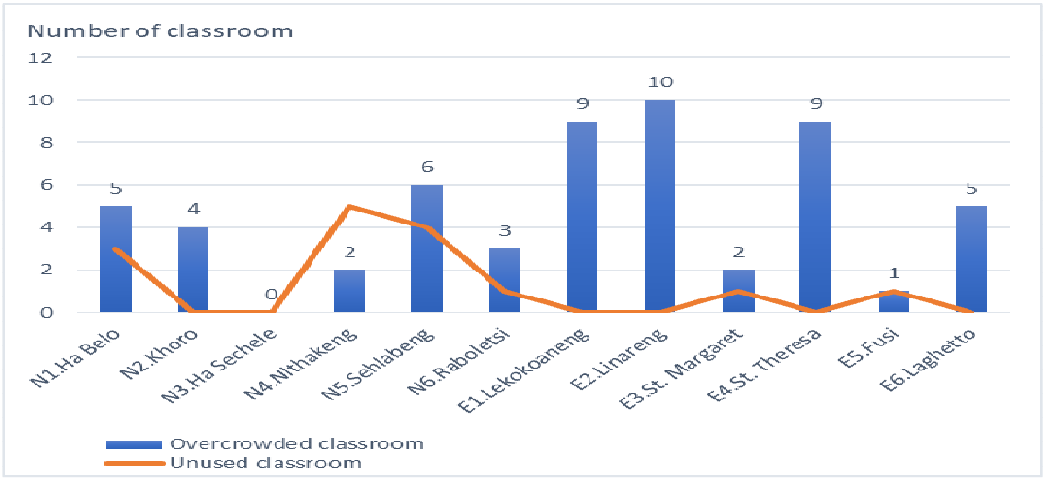


Figure 2 Number of unused classrooms and the overcrowded classrooms at each school[22]

Source: Created from the result of hearing with the target schools

For the schools with many overcrowded classrooms and few unused classrooms (E1. Lekokoaneng, E2. Linareng etc.), the reason for the overcrowded classrooms is due to many students and few classrooms. On the other hand, for schools with many overcrowded classrooms but also many unused classrooms (N1. Ha Belo, N5. Sehlabeng etc.), the reason for the overcrowded classrooms is due to the shortage of teachers and thus there are some unused classrooms. It can be said that this trend in new schools has stronger than in existing schools.

[22] E and N put before the school name in the figure indicate the “Existing school” and “New school” respectively

From the above, while the effect of increasing the number of enrolled students by this project can been seen, the degree of overcrowding in classrooms remains high at some schools due to the lack of classrooms and teachers.

3.3.1.2 Qualitative Effects (Other Effects)

For the qualitative effects, the indicator was set from the two points which are the expansion of enrollment opportunities and the improvement of learning environment and the evaluation was made. Regarding the expansion of enrollment opportunities, 1) Student's commuting time and distance to school was set as a new indicator. Regarding the improvement of the learning environment, in addition to the original indicator of 2) The classes in accordance with the official curriculum of secondary education has been provided with the provision of science rooms, 3) Satisfaction level of school facilities for students and teachers and 4) Appropriate assignments of teachers and staffs were set as indicators and the evaluation was made.

(1) Students' commuting time and distance to school have been shortened due to construction of new schools

Effectiveness was evaluated through the group interviews[23] with students. Table 5 shows the students' transportation means and commuting time to target schools.

Table 5 Students' means of transportation and commuting times to target schools

Method of transportation	Students	Commuting time			
		Less than 30mins	Less than 1hr.	1hr. or more	2hrs. or more
Walk (persons)	54	34	8	10	2
Taxi (persons)	4	2	0	0	2
Total (persons)	58	36	8	10	4
Percentage	100%	62%	14%	17%	7%
Percentage of walk against total	93%	59%	14%	17%	3%

Source: Result of group interview with students

The data shows that 76%[24] of the total students commute to schools in less than an hour. In addition, the number of students who commute to schools not using the bus nor taxi but less than an hour walk was 73%[25] of total numbers. As additional information, following opinions were heard from students' parents; "Children who have been at home or in the village at

[23] For group interviews with students, five students were selected by random sampling at each school in 12 target schools and it was carried out at the site visited by the evaluator. Sample size was 56 students (28 boys and 28 girls), and students who wish to go to a new school from a distance were excluded from the evaluation.
[24] 76%=62% (Less than 30mins) +14% (Less than 1hr.)
[25] 73%=59% (Less than 30mins) +14% (Less than 1hr.)

daytime have come to school." (Parents, Lekokoaneng), "It took 45 minutes by taxi before, but now it is only 10 minutes walk to school. The cost of going to school has been reduced." (Parents, Nlthakeng,).

(2) It is possible to carry out the classes in accordance with the official curriculum of secondary education due to the provision of science rooms

In all target schools, the class hours for science are being carried out in according with the official curriculum[26]. Additionally, as upper secondary education was to start at the six existing schools, one science specialist teacher per school was planned to assign. The actual number was six people. Due to the provision of science rooms, the following statement were heard from the teachers; "The students are looking forward to the experiment, but on the other hand, expectations from students for experimental instruments are also high. The science experiment became a motivation for students toward science." (Teacher, Ha Sechele)

(3) Satisfaction level of school facilities is improved

Table 6 shows the group interview[27] results on the satisfaction level with classrooms, toilets and science rooms for students.

Table 6 Satisfaction levels with classrooms, toilets and science rooms for students.

	Classroom	Toilet	Science room
Satisfaction level	3.3 /4.0	2.9 /4.0	2.6 /4.0
Very satisfied · satisfied	88.3%	58.3%	50.0%
Very dissatisfied · dissatisfied	11.7%	41.7%	50.0%

Source: Group interview with students

Students' satisfaction level on the toilets was 2.9 out of four sclaes. As the reasons of answer for "very dissatisfied", "dissatisfied", there were comments that "Many students go to toilet during a break time at the same time, and I have to wait for the toilet for a long time.", "Because the keys are still broken, I feel restless." Students' satisfaction level on the science rooms was 2.6 out of four sclase. As the reasons of answer for "very dissatisfied", "dissatisfied", there were comments students of most schools that "There are few experimental equipment and reagents at the minimum." As a result of being able to conduct minimum experiments, it seems that students increase their interest toward more advanced experiments so that the level of

[26] Official lesson hours for science is 40 minutes per lesson, six lessons per week from eighth to 12th grade.
[27] For group interviews with students, 5 students were selected by random sampling for each school of 12 target schools and it was carried out at the site by the evaluator. Sample size was 60 students (30 boys and 30 girls).

satisfaction was not necessarily a negative evaluation.

Table 7 shows the results of group interviews[28] in terms of the teachers' satisfaction levels with classrooms, toilets, teachers' rooms and teachers' houses.

Table 7 Teachers' satisfaction levels with classrooms, toilets, teachers' rooms and teachers' houses

	Classrooms	Toilets	Teachers' rooms	Teachers' house
Satisfaction level	2.9 /4.0	2.5 /4.0	3.2 /4.0	3.5 /4.0
Very satisfied · satisfied	62.9%	17.1%	68.6%	94.3%
Very dissatisfied · dissatisfied	37.1%	82.9%	31.4%	5.7%

Source: Group interview with teachers

The teachers' satisfaction level of classroom, teachers' room and teachers' house is generally high. The teachers' satisfaction level on toilets was 2.5 out of four scales. The reasons of answers for "very dissatisfied", "dissatisfied" were that "It is dirty because we are using the toilet same as the students.", "Each toilet is not completely private room and is connected with other toilets at the top. I am dissatisfied on the aspect of privacy."

(4) Number of teachers and staff at the target schools are appropriately assigned

The necessary number of teachers and staff to be newly hired and actual number of employed teachers and staff at the target schools were as follows.

Table 8 Number of necessary teachers and staff at planning and actually employed

	Necessary numbers at planning (persons)	Actual numbers (persons)	Satisfaction rate
Principal (New school)	6	6	100 %
Vice Principal	9	0	0 %
Teacher	65	54 (4)	83 %
Science specialist teacher	6	6	100 %
Staff	18	17	94 %
Total	104	83 (4)	80 %

Source: Created from the result of hearing with the target schools

Note: () is the number of people whose salary are born by school.

The number of additional necessary teachers and staff for the project was planned to be 104

[28] For group interviews with teachers, 3 teachers were selected at each school in 12 target schools and it was carried out at the site visited by the evaluator. Sample size was 35 teachers (18 male and 17 female).

persons. The actual number of assigned teachers and staffs is 83 persons. Among them the salary of four teachers is covered by the schools and the salary of others is covered by the government. The reason why the actual number of assigned vice principals is smaller than the planned is that in case the number of students is less than 450 students, the vice principal is not assigned[29]. Although the assigned staffs were fewer than the others, there was no complaint that the burden on the current staffs was increasing because of that.

Based on the above, as for the improvement of the learning environment, the indicators such as 1) Usage situation of constructed facilities, 2) Level of overcrowded classrooms, 3) Provisioning situation of official curriculum, 4) Students and teachers' satisfaction level of constructed facilities, and 5) Assignment of teachers have been generally achieved. Regarding the expansion of school enrollment opportunities, the indicator has already been achieved from the point of, 1) Number of enrolled students, and 2) Commuting time. Therefore, its effectiveness is high.

3.3.2 Impacts

3.3.2.1 Intended Impacts

This project was expected to contribute the improvement of the access to and quality of secondary education by improving the environment of learning facilities. As for the access to education, 1) Number of enrolled students in the target districts, and as for the quality of education, 2) Pass rate of the lower secondary education examination at the target schools (hereinafter referred to as "JC examination"), 3) Students' motivation to study due to the provision of new classrooms ,4) Teacher's motivation to teach due to the provision of new teacher's rooms, and 5) Promotion of teacher's assignment in rural areas with the construction of new teachers' houses, were set as the indicators for the qualitative effect of impact and evaluation was made. For the originally set indicator of "Mitigation of the education gap between urban and rural areas", it could not be confirmed as reliable data from MoET and District Education Office (hereinafter referred to as "DEO") was not obtained.

(1) Number of enrolled students in the target districts

Changes in the number of enrolled students are as shown in Figure 3 below. There were no significant changes in each district. The reason why significant changes cannot be seen is written in the factor analysis of the number of enrolled students as the quantitative effect of "3.3.1 Effectiveness" (p.9-10).

[29] The main task of the principal (Vice principal) is to manage the school and some principals (Vice principals) are in charge of lessons as teachers. Lesotho government has frozen the expansion of new posts due to the soaring salaries of government officials in recent years, carefully selecting the new teachers. Therefore, initially planned number of teachers and staff are not secured.

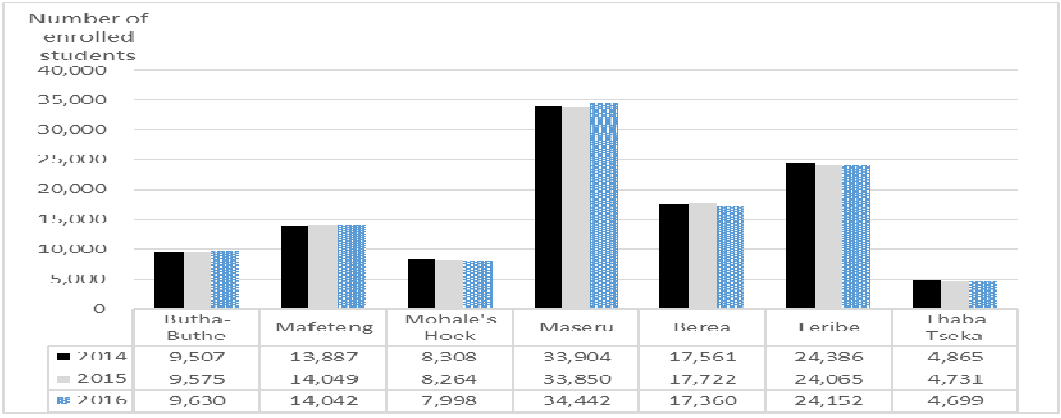


Figure3 Number of enrolled students in the target districts (2014-2016)

Source: Created from documents provided by MoET

(2) Pass rate of JC examination (examination of lower secondary education) at the target schools

Changes in the JC examination pass rate at target schools are as shown in Figure 4 and Figure 5 below. Although there are variations in the results depending on each school, no significant changes have been seen in the JC examination pass rate[30].

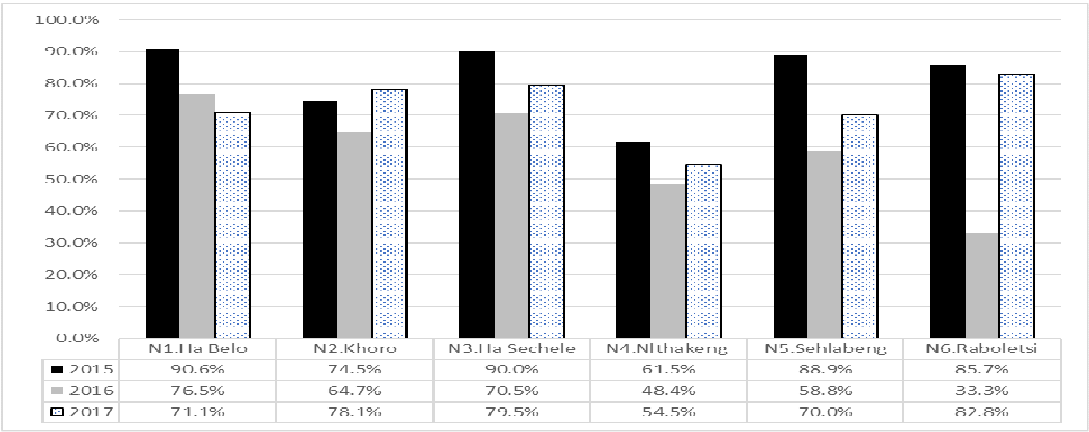
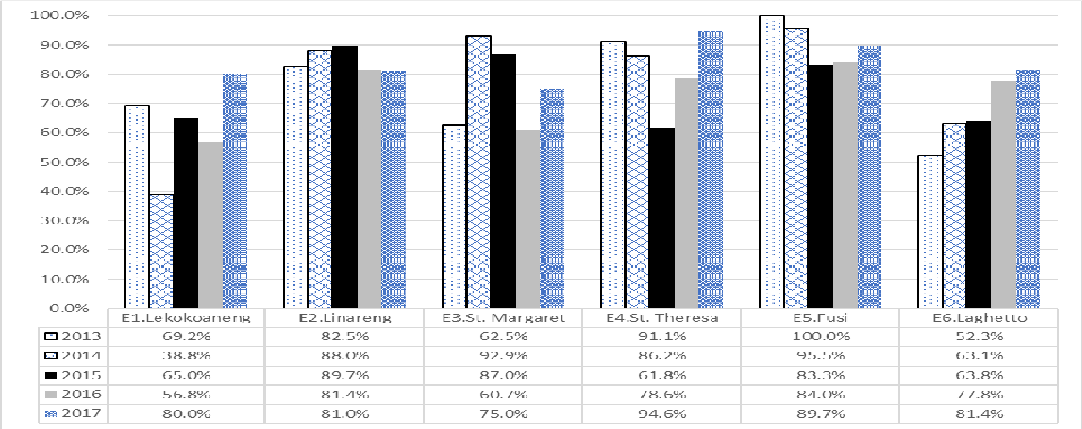


Figure 4 JC examination pass rate at new schools (2015 - 2017[31])

Source: Created from documents provided by target schools

[30] JC examination pass rate at new schools were compared with the national average and judged. JC examination pass rate in nation is 67.2% in 2015, and 66.8% in 2016. National average in 2017 had not been submitted yet at the time of ex-post evaluation.

[31] As for the new schools, since the 10th grade students who take the JC examination did not exist until 2014, it is the JC examination pass rate from 2015 to 2017.



	E1.Lekokoaneng	E2.Linareng	E3.St. Margaret	E4.St. Theresa	E5.Tusi	E6.Lapheto
2013	69.2%	82.5%	62.5%	91.1%	100.0%	52.3%
2014	38.8%	88.0%	92.9%	86.2%	95.5%	63.1%
2015	65.0%	89.7%	87.0%	61.8%	83.3%	63.8%
2016	56.8%	81.4%	60.7%	78.6%	84.0%	77.8%
2017	80.0%	81.0%	75.0%	94.6%	89.7%	81.4%

Figure5　JC examination pass rate at existing schools (2013 - 2017)

Source: Created from documents provided by target schools

(3) Student's Motivation　to study has increased due to the provision of new classrooms

As a result of the group interviews with students, the increase in student's motivation to study due to classroom improvement was 3.5 out of four scales. There are comments made by students such as "I can concentrate on my study even if it rains and it does not matter about the sound.", "I can enjoy studying as the walls are beautiful color". In addition, as a result of the group interviews with teachers and principals[32], the result was 3.9 out of four sclaes. There were commentssuch as "The congestion in the classroom was solved, and the students started to study more intensively than before.", "Students are less tired and more be able to focus on study as school location from their home is closer than before."

(4) Teacher's Motivation　to teach has increased due to the provision of new teachers' room

As a result of the group interviews with teachers, the increase in teachers' motivation to teach due to the improvement in the teachers' rooms was 3.7 out of four scales. There were comments made by teachers such as "The temperature of the room is stable, and I can concentrate to prepare lessons." "It's easy to store materials because there is a desk for my own use." In addition, the result of the question about whether the improvements in other teachers' motivation to teach can be seen is 3.8 out of four scales, which was a high result. The commets made by teachers obtained such as "Since the number of students has more increased than before, the teachers have become more motivated to teach.", "Teachers' absence has decreased".

[32] Five teachers and one principal, who know the situation before the classrooms are developed, were selected at each school in the six existing schools and it was conducted for the site visited by the evaluator. Sample size is 36 persons (20 male, 16 female).

(5) Teacher's assignments to rural areas have been promoted with the construction of teachers' houses

At the time of the ex-ante evaluation, the number of teachers using the teachers' houses was planned to be 48 persons. But the actual number was 34 persons (14 male, 20 female) and the satisfaction rate was 70.8%. In case, the principal uses teacher's house, he/she use 1 teachers' house while there are many cases that two teachers use 1 house together. All 24 teachers' houses out of 24 constructed by this project are being used now[33].

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment, Resettlement and Land Acquisition

In this project, as a result of hearing with the executing agency, it was confirmed that no particular impact on the natural environment and resettlement of residents and land acquisition were occurred.

(2) Other Impacts

As a result of that the design of the toilets and the corridors was partially changed so as to be designed considering students with disabilities, it was confirmed with hearing from MoET that the schooling opportunities for students with disabilities had been promoted at some target schools.

Based on the above, for the access to education, there were no significant changes in the number of enrolled students in the target districts, though improvement of the access to education for the students with disabilities could be seen. Regarding the quality of education, no significant changes were seen in, 1) Pass rate of JC examination at the target schools. However, the indicator of impact has been generally achieved due to 2) Improvement of students' motivation to study with the provision of new classrooms, and 3) Improvement of teachers' motivation to teach with the provision of new teachers' room.

From the above, this project has largely 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

(1) Institutional / Organizational Aspect of Operation and Maintenance at MoET

MoET manages the entire education sector from pre-primary education to higher education, vocational training and technical education. The responsible department for this project is

[33] Teachers who live farthest from the school preferentially use teachers' house.

Secondary Education Department. The executing agency for the construction of secondary education facilities is the Procurement Unit and Education Facilities Unit (hereinafter referred to as “EFU”) under the Deputy Principal Secretary, which bids, supervises and hands over the educational facilities. To ensure that the target schools are properly maintained and managed, EFU also conducts an annual monitoring, provides advice to DEO, establishes the human- and budgetary measures for maintenance and management of the facilities, etc. There are only seven staff members and visiting to all schools is only once a year. Teaching Service Department is in charge of teacher assignments and its training.

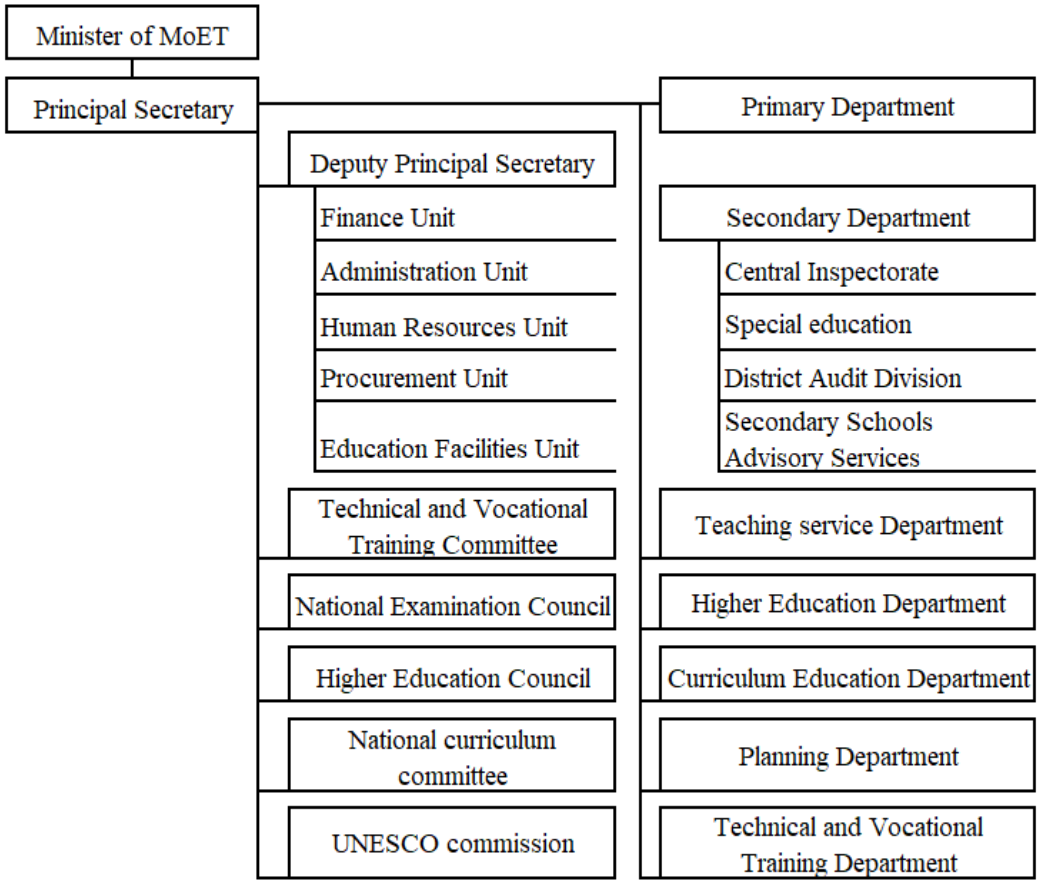


Figure 6 Organization chart of MoET

Source: MoET

(2) Institutional / Organizational Aspect of Operation and Maintenance at DEO

The role of DEO is to implement policies of MoET at the district level. The budgeting right at the district level and authority over personnel issues related to teacher assignment and so on are not delegated to DEO. DEO is led by the head of DEO and sections such as school inspection, distance education, pre-primary education and scholarships, etc are placed. In case that a major

damage in the school facilities and the equipment were seen, the school would report to DEO. DEO has to report to EFU. As for monitoring, instruction of general knowledge on operation and maintenance to each school is provided by EFU.

(3) Institutional / Organizational Aspect of Operation and Maintenance at school and community level

The school and the school management committee periodically conduct meetings on school management and inspections of the school facilities and report to DEO in case that a major damage in school facilities and equipment is seen, and DEO reports it to EFU. The operational system such as its role and number of staffs is also clear. The school management committee is established by educational law and consists of nine members including parents, representative of teachers, principal, district administrators and traditional chiefs and so on. They are responsible for the application and securing of the budget related to the maintenance and management of school facilities, as well as the contract and supervision of repairing companies and so on. Operation and management system at school and community level is functioning. Table 9 shows the result of the confirmation of school management committee's awareness of participation in school education.

Table 9 School committee's awareness of participation in school education

Number of schools which have a regular meeting[34] between school and school management committee once a semester or more	10/12 schools	83.3%
Number of schools which maintain the school facilities[35] between school and school management committee once a week or more	12/12 schools	100.0%
Number of schools in which voluntary labor support[36] was provided by the school management committee after the project	8/12 schools	66.7%
Number of schools which understand the procedure when repairs occur	12/12 schools	100.0%

Source: Created from the result of hearing with the schools

[34] Operation and maintenance related matters are included in the contents of the regular meeting, and they confirm the current situation and discuss future plan on school management, student guidance and community activities, and so on.

[35] According to the hearing from the principals, the maintenance conducted at the school includes the inspection of the doorknob and confirmation of window closing in the classroom and washing condition of the toilet etc.

[36] After implementation of the project, there were eight schools where voluntary labor supports were provided, including construction of cafeterias, test result cabinet, toilet for exclusive use of techers, pig huts for agricultural education, etc. and food preparation and distribution.

Out of the 12 schools visited at the ex-post evaluation survey, 10 schools hold the regular meetings four times a year (once in each semester). The remaining two schools hold meetings three times in a year.

From the above, there is no change of function of the operational and maintenance strucrures of MoET, schools and the community level from the time of ex-ante evaluation to the ex-post evaluation, and it is functioning.

3.4.2 Technical Aspect of Operation and Maintenance

(1) Technical Aspect of Operation and Maintenance at MoET

MoET has adequate technical capability related to operation and maintenance. Since DEO does not provide direct technical provision to schools, the necessary techniques for operation and maintenance is limited to communication between the school and MoET, but no particular problem has arisen. At EFU, there are seven staff as of 2018, with construction engineers, civil engineers, managers, surveying technicians, qualified accounting personnel, and engineers. They are responsible for designing school construction, creating bidding documents, supervising construction and the practical works related to school repairs. At the target schools, no serious damages which require large-scale repair have occurred so far. Since MoET has experience of school repair other than the target schools, there is no problem with technical aspect of operation and maintenance.

(2) Technical Aspect of Operation and Maintenance at community level

Through a field survey at the time of ex-post evaluation, it was confirmed that the community had sufficient technical capabilities in maintenance and the management of facilities. In case small repairs occur to school facilities, a meeting is held by the school management committee and discusses on repair policy, whether it can be repaired within the budget and whether supply of goods from the community and additional funding are necessary or not. In the case that serious repairs occur, the comittee reports to DEO and submits a document stating the improvement plan. Maintenance such as checking the doorknobs in the classrooms, confirming the opening and closing the window and the condition of toilet, etc. are carried out at each school. After implementation of this project, there were eight schools out of 12 schools which constructed cafeterias, test results cabinets, teacher exclusive toilets, pig huts for agricultural education, and so on.

3.4.3 Financial Aspect of Operation and Maintenance

(1) Financial Aspect of Operation and Maintenance at MoET

In terms of the financial aspect of operations and maintenance at MoET, some minor

problems have been observed. Table 10 shows the annual budget of MoET.

Table10　Aannual budget of MoET

(Unit: Millions of Maloti[37])

		2014	2015	2016	2017
National Budget	Ordinary budget	10,821.1	11,993.0	12,396.4	13,503.2
	Capital budget	5,001.5	4,686.6	4,798.2	5,342.6
MoET	Ordinary budget	2,034.6	2,249.8	2,306.2	2,320.1
	Capital budget	229.5	86.0	127.2	102.6
	Ordinary budget rate（%）	18%	19%	19%	17%
	Capital budget rate（%）	5%	2%	3%	2%
Secondary Department	Ordinary budget	22.7	17.3	13.6	11.6
	Capital budget	6.0	12.0	21.0	8.2
	Total of Secondary Department	28.7	29.3	34.6	19.8

Source: MoET Finance department

The government budget and MoET's ordinary budget continue to increase every year. 17-19% of the government's ordinary budget is allocated to MoET's ordinary budget every year[38]. The budget to be spent at DEO is allocated quarterly by MoET. But the large-scale budget such as the budget required for free primary education (school grants), the school lunch budget and so on, are not delegated to the district but managed directly by MoET. MoET also manages the budget on secondary education.

As described in the qualitative effect in 3.3.1.2, the actual number of assignments was 83 for additionally needed 104 teachers. The salaries of 4 teachers[39] out of them are covered by the schools. This is because the school asked DEO to recruit the teachers, but MoET didn't give them permission. The schools recruited the teachers by themselves and pay their salaries by themselves. According to the documents provided by JICA, the government provided maintenance and management expenses of 10,000 Maloti to government school each year before. However, at the time of ex-post evaluation, due to the budget constraint of the Secondary Education Department since 2017, the government has not been able to provide subsidies necessary for maintenance and management expenses at each school.

(2) Financial Aspect of Operation and Maintenance at community level

Some problems are seen in the sustainability of finance. There are 0 schools out of 12 schools

[37] 1Maloti=¥ 8.79(As of May 2018)

[38] The reason why the allocation of the project budget and budget to the secondary education department drastically decreased in 2017 is due to the completion of the construction of secondary schools by the African Development Bank and the Chinese government.

[39] It was confirmed with hearing from the principals that these four teachers were assiged to differnt schools. They also mentioned that if the burden of labor cost is only one person at each school, it is within the allowable range.

receiving funding for operation and maintenance from MoET and DEO and income source depends on the tuition fees collected from each household. The annual tuition fee per student is 800-1,700 Maloti, which is different at each school and is collected from each house according to the government's regulation. School management expenses[40] other than teacher salaries and textbooks provided by government are covered by tuition fee. Four out of 12 schools secured other income by placing a kiosk in the school or by cultivating fields. Because the budget is limited, seven out of nine schools with minor damages in the facility have not been repaired and are in a damaged condition.

3.4.4 Status of Operation and Maintenance

Although the status of maintenance is in a good condition, some minor problems have been observed in the status of operation. Table 11 below shows the current status of the classrooms, science rooms, teachers' rooms, toilets and teachers' houses constructed by this project.

Table 11 Aging situation of the classrooms, science rooms, teachers' rooms, toilets and teachers' houses

	Classroom		Science room		Teachers' room		Toilet		Teachers' house	
	Construction	Good condition	Construction	Good condition	Construction	Good condition	Construction	Good condition	Construction	Good condition
New Schools	60	59	6	6	6	6	12	11	12	12
Existing Schools	45	44	6	6	3	3	12	11	12	12
Sub total	105	103	12	12	9	9	24	22	24	24

Source: Created from the result of hearing with the target schools

A small proportion, which are two out of 24 toilets and two out of 105 classrooms, is in damaged. However, the status of maintenance of the facilities constructed by this project is generally good. As for the school operation, some problems arise from the fact of overcrowded classrooms due to the lack of teachers. On the other hand, there are empty classrooms at some schools due to the lack of enrolled students.

From the above, some minor problems have been observed in terms of the financial aspect/

[40] These are school building repair, supplementary educational materials, teaching materials used for technical subjects, utility costs and so on.

current status. Therefore sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of this project was to expand the enrollment opportunities to the secondary education and improve the learning environment by constructing new secondary schools and upgrading facilities at existing secondary schools at total 12 sites in seven districts, thereby contributing to the improvement of access to and quality of education.

At the time of planning and ex-post evaluation stage, as the construction and upgrade of educational facilities to improve access to high-quality education was prioritized by policy in Lesotho, the project for constructing new secondary schools and upgrading facilities at existing schools is consistent with policy. From the current situation that the number of secondary schools is insufficient, there is a high need to support the upgrade of the facilities. Since this project is consistent with Japan's ODA policy with an emphasis on enhancing basic education, the relevance of this project is high.

Although the project cost was within the plan, the project period exceeded the plan as construction by local contractors was delayed. So, the efficiency is considered fair.

Achievement level of effectiveness indicators such as "number of enrolled students", "commuting time" and impact indicators such as "students' motivation to learn", "teachers' motivation to teach" are generally high. As other impact, some degree of improvement of the learning environment for disabled students could be seen. Therefore, the project's effectiveness and impact are considered high.

The executing agencies and school management committees of communities operate under a good enough institutional structure with techniques that are necessary for operation and maintenance to ensure the effectiveness of this project. On the other hand, some problems have been found in the finance of operation and maintenance. Thus, sustainability 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

(1) Securing the educational budget to expand teacher's new employment

There are some schools where the classrooms constructed in this project are not used due to the lack of teachers and where as one teacher teaches a large number of students the classrooms have become overcrowded. It is desirable that MoET should secure the education budget for expanding the new employment of teachers as soon as possible such as by establishing a continuous cooperation system with other donors.

(2) Consideration of free lower secondary education

School administration funds are not provided by the government to schools and income from students' tuition is the main source at each school. Challenges in the financial aspect of the operation and maintenance of schools are that it is impossible to repair educational facilities in a timely manner, and new teachers cannot be hired. MoET is currently considering free secondary education with cooperation of World Bank while financial problems are seen in the current statue of operation and maintenance. It's necessary to consider discussing with other donors whether it is possible to provide high quality education without putting a burden on schools and communities by promoting free education.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Establishment of the construction period considering the special characteristics of community empowerment

Using the scheme of grant aid for community empowerment in the project (current procurement proxy method)[41], this project was able to economically construct schools at a lower cost by utilizing local contractors. Meanwhile, as a result of using small local contractors in construction and procurement work, this led to the delays in the construction by local contractors, cancellation of contracts due to the delays in the construction and delay in the construction period due to the bid and implementation of the remaining construction works so that overall construction period became 138% of the planned. It is necessary to establish the construction period with margin considering the special characteristics of the grant aid for community empowerment

Necessity of setting target value in line with reality as an outcome indicator of a project

The probability of reaching the target value[42] of enrolled students at the target new schools is low. At the time of planning stage, the forecasted number of students was calculated based on the number of students in the 5th to 7th grade of primary education and the forecasted transition rate. In calculation of the expected number of students to proceed, it is necessary to consider again the authenticity of necessary data and calculation method. Specifically, it is necessary to consider that the maximum forecasted number and the minimum forecasted number should be

[41] At present, the sub-scheme of grant aid is abolished, and it is organized as "procurement method of facilities / equipment" and "procurement proxy method". The former grant aid for community empowerment is classified as the latter.

[42] The target value is in 2019 which is five years after completion.

clalified, that whether all students who are out of schools in districts should be included in the calculation or that the data from national census should be used and so on.