

Republic of Malawi

FY2020 Ex-post Evaluation Report of Japanese Grant Aid Project

“The Project for the Reconstruction and Expansion of Selected Community Day Secondary Schools (Phase 1), The Project for the Reconstruction and Expansion of Selected Community Day Secondary Schools (Phase 2), and The Project for the Reconstruction and Expansion of Selected Community Day Secondary Schools and Conventional Secondary Schools (Phase 3)”

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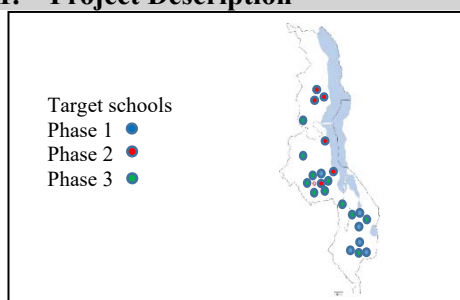
0. Summary

These projects (hereinafter referred to as “the Projects”) were implemented to solve the shortage of classrooms and improve the learning environment in the target schools by expanding and upgrading existing secondary educational facilities and providing education-related equipment, including science laboratory equipment, thereby, contributing to the improvement of the quality and accessibility of secondary education in the target areas.

On the one hand, the purpose of the Projects is well in line with the development policy and development needs of Malawi, as well as the aid policy of Japan; thus, the relevance of the Projects is high. On the other hand, although the cost was in line with the original plan, the project period exceeded the plan due to the rebidding, insufficient distribution of imported materials, natural disasters caused by heavy rains during the rainy season, and financial and administrative problems of some contractors, resulting in the efficiency of the Projects as “fair.” As for effectiveness, the quantitative and qualitative effectiveness indicators set at the planning stage were mostly achieved. In addition, as it has been confirmed that the Projects have had an impact on promoting girls’ school enrollment, preventing the spread of COVID-19 in schools, and improving student performance through the synergistic effect of technical cooperation for the capacity building of science and mathematics teachers, their effectiveness is evaluated to be high. In terms of sustainability, there are no major issues in the system of project operation and maintenance, but some financial issues, such as the inability to secure sufficient operation and maintenance costs for experimental equipment, were identified. Therefore, project sustainability is also fair.

Considering the above, the Projects are evaluated to be “satisfactory.”

1. Project Description



Project locations



Classrooms developed under the Projects

1.1 Background

The Projects included in “The Projects for the Reconstruction and Expansion of Selected Community Day Secondary Schools (hereinafter referred to as “Phase 1”),” “The Projects for the Reconstruction and Expansion of Selected Community Day Secondary Schools (Phase 2) (hereinafter referred to as “Phase 2”),” and “The Projects for the Reconstruction and Expansion of Selected Community Day Secondary Schools and Conventional Secondary Schools (Phase 3) (hereinafter referred to as “Phase 3”)” supported the expansion of facilities such as general classrooms, multipurpose halls, science laboratories, libraries, and hostels for girl students in 23 secondary schools throughout Malawi. As mentioned above, the Projects consist of separate projects in each phase; however, each phase was evaluated as a whole in this ex-post evaluation.

1.2 Project Outline

The Projects aim to solve the shortage of classrooms and improve the learning environment in the target schools by expanding and upgrading existing secondary education facilities and providing education-related equipment, including science laboratory equipment, thereby, contributing to the improvement of the quality and accessibility of secondary education in the target areas.

Grant Limit / Actual Grant Amount	1,198 million yen (Phase 1), 1,085 million yen (Phase 2), 1,756 million yen (Phase 3) / Actual amount is same as Grant Limit
Exchange of Notes Date /Grant Agreement Date	August 2010 (Phase 1), March 2012 (Phase 2), March 2014 (Phase 3)
Executing Agency	Ministry of Education, Science and Technology (MoEST) ¹
Project Completion	August 2013 (Phase 1), September 2014 (Phase 2), May 2017 (Phase 3)
Target Area	Phase 1: Southeast, Southwest, Midwest, and Shire Highlands (Total of 6 schools) Phase 2: Midwest and Middle East (Total of 6 schools) Phase 3: Midwest, North, Middle East, Southeast, and Shire Highlands (Total of 11 schools)
Main Consultant(s)	Mazda Consultants International Co., Led
Procurement Agency	Japan International Cooperation System
Outline Design	Phase 1: August 2009–September 2010 Phase 2: December 2010–February 2012 Phase 3: June 2013–June 2014
Related Projects	【Technical Cooperation】 “Strengthening Mathematics and Science at Secondary Education (SMASSE) INSET Malawi” (2004–2007) “Strengthening Mathematics and Science at Secondary Education (SMASSE) INSET Malawi Phase 2” (2008–2012) “Project for Strengthening of Mathematics and Science in Secondary Education in Malawi” (2013–2017)

¹ After the new government came to power in June 2020, MoEST was renamed as the Ministry of Education (MoE).

	<p>【Grant Aid】 “The Projects for Improvement of Domasi College of Education” (E/N: 2004) “The Projects for Construction of a Teacher Training College for Secondary School Teachers in Lilongwe” (G/A: 2013) “The Projects for Expanding and Upgrading the Domasi College of Education” (G/A: 2017)</p>
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2. Outline of the Evaluation Study

2.1 External Evaluator

Haruo Ito, ICONS Inc.

2.2 Duration of Evaluation Study

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

Duration of the Study: October 2020 – February 2022

Duration of the Field Study: April 30 – May 22, 2021 (Onsite)

August 25 – September 7, 2021 (Remote)

2.3 Constraints during the Evaluation Study

The Projects of Phase 1 and Phase 2 were completed in 2013 and 2014, respectively. Thus, by the time of the ex-post evaluation, periods of seven years and six years, respectively, have already passed since the Projects’ completion, and the target year data for the indicators to evaluate the effectiveness of the Projects have been lost from the target schools and were difficult to obtain. Therefore, the degree of achievement was identified and evaluated based on the available data, so there may be some bias in the degree of achievement due to variability over time.

Due to the impact of the COVID-19 pandemic, the second field study was conducted remotely by hiring a local assistant. Although this did not have a significant bias in the evaluation, the evaluator did not observe lessons at the target schools, which was initially planned for the second field study, and, therefore, made an evaluation based on the reports from the local assistant.

3. Results of the Evaluation (Overall Rating: B²)

3.1 Relevance (Rating: ③³)

3.1.1 Consistency with the Development Plan of Malawi

At the time of planning, the “National Development Strategy (Vision 2020)” issued in 1998, the “Malawi Growth and Development Strategy (2006–2010),” and the “Second Malawi Growth and Development Strategy (2011–2016) (MGDS II)” issued in 2006 positioned the education sector as a priority area, indicating the need to improve access, quality, and equity in secondary

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

³ ③: High, ②: Fair, ①: Low

education, which is consistent with the purpose of the Projects. The “National Education Sector Plan (2008–2017) (NESP)” was formulated as an education policy, and its goals for secondary education were to increase enrollment, ensure equity, and improve facilities as priorities. In addition, the “Education Sector Implementation Plan (2009–2013) (ESIP)” and the “Education Sector Implementation Plan (2013–2017) (ESIP II)” were developed in response to the NESP. These plans set targets for secondary education, including upgrading of facilities of Community Day Secondary School (CDSS) and construction of girls’ hostels. From the above, the Project Purpose was consistent with the development policy at the planning stage of the Projects.

At the time of the ex-post evaluation, the “Malawi Growth and Development Strategy III (MGDS III)” was developed as a successor to the “Malawi Growth and Development Strategy II” In MGDS III, “Strategy 1: Improve access and equity in secondary education for all children, with a particular focus on hard-to-reach girls, vulnerable groups, and others, including students who travel long distances in rural areas” and “Strategy 2: Improve the quality of secondary education and the relevance of teaching contents” are stated as concrete strategies for secondary education.

Furthermore, the Projects, which include the construction of girls’ hostels and toilets, as well as the installation of toilets and slops for disabled students, are consistent with the “National Inclusive Education Strategy (2018–2021) (NIES),” which specifies the need to adopt school designs that are conducive to gender equality and people with disabilities. In addition, the “National Girls’ Education Strategy (NGES)” provides guidelines for promoting girls’ education, which is also consistent with improving the learning environment for girls in the Projects.

BOX 1: Contributions to the Sustainable Development Goals (SDGs)

The purpose of the Projects is to contribute to the achievement of Goal 4 “Quality Education” in SDGs. In particular, the Projects will support specific SDGs such as “Ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes,” “eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations,” and “Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.”

In addition, the Projects promote girls’ education, which will contribute to Goal 5 “Gender Equality,” and the improvement of water supply and toilets in schools will contribute to access to sanitation through Goal 6 “Clean Water and Sanitation.” Furthermore, the development of quality school infrastructure that is resistant to disasters will help to mitigate the impact of climate change; therefore, the Projects will also contribute to Goal 13 “Climate Action.”

3.1.2 Consistency with the Development Needs of Malawi

In the planning stage of the Projects, the total enrollment rate in secondary education stagnated from 20.3% in 2008 to 21.4% in 2011, with the lack of classrooms as one of the factors denying

students to advance from primary to secondary education. The ratio of qualified teachers by region in secondary education in 2010 was about 56% in urban areas and 37% in rural areas, with low teacher retention rates in rural areas, particularly due to long commuting time because of the lack of teacher housing and some amenities.⁴

Even at the time of the ex-post evaluation, the shortage of secondary schools and classrooms is becoming more pronounced due to the growing need for secondary education, with the total number of students in 2020 at 415,013, an increase of about 10%, from 377,731 in 2019. These factors have resulted in a net enrollment rate of 15.5% in 2020, virtually unchanged over the past 5 years, and schools remained overcrowded with an average of 63 students per classroom in the same year. Thus, the need to construct secondary schools is still high, especially in rural areas where the demand for secondary education has been increasing. Subsequently, the consistency of the Project Purpose, promoting the construction of secondary schools in rural areas (13 out of 23 target schools are located in rural areas), and the development needs of Malawi were confirmed. In addition, although indicators for quality education, such as gender equality,⁵ the pass rate of the Malawi School Certificate Examination (hereinafter referred to as “MSCE”),⁶ and the dropout rate,⁷ had been partially improved, they are deteriorating due to the impact of the COVID-19 pandemic from 2020. Consequently, the Projects, aiming to improve the quality of education through improving the educational environment in schools, are more aligned with the country’s development needs than ever before. The procurement of sanitary water, flush toilets, and social distancing by reducing the number of students per classroom through constructing additional classrooms are necessary learning environments in schools during the COVID-19 pandemic, and the need for the Projects has increased in the same context.

3.1.3 Consistency with Japan’s ODA Policy

The “Basic Education for Growth Initiative (BEGIN)” in 2002, in which the Japanese government announced its support for the spread of basic education. At the “Fourth Tokyo International Conference on African Development (TICAD IV),” the government announced the construction of 1,000 primary and secondary schools as a specific goal for African basic education cooperation. Furthermore, at the “5th Tokyo International Conference on African Development (TICAD V)” in 2013, it announced its support to “provide quality education to 20 million children.” Under the “Basic Education Expansion Program” specified in the “Country Assistance

⁴ From documents provided by JICA.

⁵ In 2020, the Gender Parity Index (GPI) for primary education has become 1.0 (half boys and half girls), while the GPI for secondary education is 0.94 (0.96 in urban areas and 0.92 in rural areas), leaving a gender gap.

⁶ The MSCE pass rate improved from 44% in 2006/2017 to 50% in 2018/2019, but declined to 41.4% (47.3% for boys and 34.6% for girls) in 2019/2020 as schools were closed for eight months due to COVID-19.

⁷ The dropout rate for 2019/2020 is 10% (8% for boys and 12% for girls), with girl students accounting for 60% of the total number of dropouts. For both boys and girls, the most common reason for dropping out is the inability to pay school fees, while for girls, the most common reasons are pregnancy and early marriage.

Policy for the Republic of Malawi (2012),” several grant aid and technical cooperation projects have been implemented in the field of education. Therefore, the objective of the Projects is consistent with Japan’s ODA policy.

3.1.4 Appropriateness of the Projects’ Plan and Approach

(1) Appropriateness of adapting the scheme, “Grant Aid for Community Empowerment”

One of the advantages of adopting the scheme, “Grant Aid for Community Empowerment,” is that it allows the flexible use of funds to realize the requests from the recipient country to the maximum extent possible. In fact, the Projects made it possible to reflect the needs of the basic education sector in Malawi, where quantitative expansion is a high priority, by significantly reducing costs with the use of local contractors. Japanese consultants, however, pointed out that one of the challenges of using “Grant Aid for Community Empowerment” is that the construction period is often delayed, which makes it difficult to deliver the Projects on time due to the insufficient capacity of local contractors and unfavorable procurement conditions.

(2) Selection and process of target schools and decision process of support contents

In planning the Projects, the selection of target schools was carried out in consideration of the location where effective construction supervision could be carried out. The selection of target schools was evaluated as appropriate because it was carried out according to the site selection criteria agreed upon by both parties in line with the request from the Ministry of Education (hereinafter referred to as “MoE”). The Education Infrastructure Management Unit (hereinafter referred to as “EIMU”) under the MOE was not sufficiently involved in the planning of specifications such as facility size and layout, and improvements are required in the future.

(3) Reflecting lessons learned from the prior phases.

As mentioned above, by reflecting the defects in the preceding phases, the Projects were smoothly implemented from Phase 1 to Phase 3 to maintain the quality of construction supervision. Specifically, the capacity of the Malawian side to fulfill their responsibilities (e.g., water and electricity supply, perimeter fence, etc.) was assessed, and the responsibilities that might cause hindering factors in the Projects were complemented by the Japanese side. To ensure the quality of the Projects, the appropriate size of the bidding lots was set in the bidding process to promote the participation of major companies with high technical skills, and the appropriate construction schedule and the firm procurement supervision mechanism were also set considering the unstable local procurement situation of construction materials and equipment.

Above all, the Projects have been highly relevant to the country’s development plan and needs, as well as Japan’s ODA policy. Therefore, their relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

The outputs of the Projects were not significantly different from the plan set in the Detailed Design (hereinafter referred to as “D/D”). The procurement of facilities, equipment, and furniture was carried through competitive bidding by local contractors, resulting in total cost reduction and generating residual funds in Phases 2 and 3. The Projects adapted the scheme “Grant Aid for Community Empowerment,” which can use resources in an effective manner; thus, the number of facilities and furniture for those additional facilities was increased in Phases 2 and 3 by using the remaining funds. The Japanese consultant selected the target schools and necessary components based on the priorities and the needs of the recipient country identified in the D/D and the modification of the Drafted Design was approved by JICA and the government of Malawi. As for the science laboratory equipment, although the specification of some items was changed in Phase 1 due to the availability of local procurement, it was confirmed that there was no difference in the quantity between the planned and actual items.

Table 1 Outputs of the Projects (planned and actual)

		Phase 1	Phase 2	Phase 3
Classroom	Plan	26	28	78
	Actual	26	28	78
Laboratory	Plan	12	5	11
	Actual	12	5	11
Library and Administration building	Plan	6	6	11 (Library 9)
	Actual	6	6	11 (Library 9)
Student hostel (Girl’s hostel)	Plan	8	10	–
	Actual	8	10	–
Kitchen	Plan	4	5	4
	Actual	3	5	4
Multi-purpose hall	Plan	4	5	4
	Actual	4	6	6
Teachers’ house	Plan	32	18	36
	Actual	32	30	40
Toilet	Plan	33	26	30
	Actual	33	26	30
Guardroom	Plan	6	2	–
	Actual	6	4	–
Water supply	Plan	–	–	6
	Actual	–	–	6
Solar panel	Plan	–	–	1
	Actual	–	–	1
Furniture	Plan	3,893	6,114	12,993
	Actual	5,658 ⁸	6,594	13,893
Laboratory equipment	Plan	511	891	891
	Actual	511	891	891

Source: Documents provided by JICA

Note 1 : Increase : Decrease

⁸ Although the volume has increased, there is no difference between the plan and actual results because the calculation method is different; for example, the plan includes desks and chairs as a set.

3.2.1.1 Added Support Components

In the Projects, the components that have been added in the planning stage (D/D) due to the generation of residual funds were the multipurpose hall in the Mkwichi CDSS, which was the target school of Phase 2, the teachers' house (one building and two dwellings), and the furniture to be installed in these additional facilities for all target schools for Phase 2. In addition, the components of Phase 3 included multipurpose halls for Mzoma CDSS and Kabekele CDSS and teachers' housing (two buildings and four dwellings) for Zomba Urban CDSS with furniture for these additional facilities.

3.2.1.2 Deleted Support Components

One of the support components that was removed from the planning stage was the installation of a kitchen for Chikwaza CDSS in Phase 1, as the existing kitchen was usable. The installation of a new kitchen was canceled to avoid duplication.

3.2.1.3 Other Changes in the Design

Other changes in the original design were 1) the specifications of the science laboratory equipment, locations of the wall and the well, and concrete blocks in Phase 1, 2) location of the wall, flush toilets in the teachers' houses, the addition of drainage facilities in Phase 2, and 3) ground improvement and locations of toilets and drainage facilities in Phase 3.

3.2.1.4 Consulting Services

In the Projects, Japanese consultants contracted with a procurement agency (Japan International Cooperation System) to provide technical services for construction supervision according to the plan.

3.2.2 Project Inputs

3.2.2.1 Project Cost

There was no difference between the planned amount (Grant Agreement) and the actual amount for Phases 1, 2, and 3, and the project cost was within the plan. The actual cost was 100% of the planned amount, even though additional procurement was carried out using the remaining funds generated by competitive bidding to select the construction contractor. The project cost was as planned. However, the amount to be borne by the government of Malawi could not be confirmed.

Table 2 Project cost

(Unit: million yen)

	Phase 1	Phase 2	Phase 3
Plan	1,198	1,085	1,761
Actual	1,198	1,085	1,761
Actual/Plan	100%	100%	100%

Source: Documents provided by JICA

3.2.2.2 Project Period

As shown in the table below, the project period exceeded the plan in Phases 1 and 3. Phase 1 was delayed for about four months due to the rebidding caused by the withdrawal of a successful bidder, the disruption in the distribution of imported materials (especially, fuel and cement shortage) caused by foreign currency shortage, and the delay in material procurement and construction progress caused by heavy rainfall during the rainy season. In Phase 3, the construction period was delayed for about six months due to delays in procuring materials and labor shortages caused by financial problems and the contractor's lack of management capacity.

Table 3 Project period

(Unit: months)

	Phase 1	Phase 2	Phase 3
Plan	27	27	30
Actual ⁹	35	27	36
Actual/Plan	130%	100%	120%

Source: Documents provided by JICA

3.2.2.3 Obligation Items of Recipient Country

The obligation items that were reported to be completed during the Defect Inspection were confirmed to have almost been carried out in the ex-post evaluation. However, one of the Phase 1 target schools, Nankumba CDSS, has no electricity connection and city water supply (currently using well water). According to school officials, they have never used electricity or city water since the completion of the Projects. To use the science laboratory and equipment effectively, and to ensure the hygienic condition of the toilets, it is important to install city water. In particular, school officials pointed out that securing water in the school is an important factor for preventing COVID-19; therefore, immediate measures are required. In addition, on the one hand, the installation of school walls, which was an item borne by the Malawian side, has not been made compulsory, as it should be implemented as needed. On the other hand, the installation of school walls plays an important role not only in ensuring the safety of the school premises but also in maintaining the facility against theft of equipment, misuse of the facility, and graffiti. Some of

⁹ The actual results for the project period were calculated by excluding the period of additional procurement by using residual funds (Phase 1: three months, Phase 2: one month) as unavoidable.

the target schools without walls face challenges in the operation and maintenance of the facilities.

Consequently, although the project cost was within the plan, the project period exceeded the plan, and some incomplete items were borne by the Malawian side. Therefore, the efficiency of the Projects is fair.

3.3 Effectiveness and Impacts¹⁰ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

The number of enrolled students at the target school, which is an indicator of quantitative effectiveness, was 14,291, far exceeding the target of 9,793. Moreover, the capacity of first-year students reached 3,865 compared to the target of 2,570 students. The average number of students per class, an indicator set only for Phase 3, was 56 students per class, slightly higher than the ideal target of 50 students set by the MoE due to the increase in the students' number. Although some of the target schools were overcrowded with a maximum of 70 students per class, almost all the target schools were below the national average of 63 students per class, which was also a significant improvement from the baseline of 85 students per class.

From the above, it is evaluated that the quantitative effects of the Projects have been “almost achieved.”

Table 4 Baseline, target and actual for quantitative effects of the Projects

(Unit: person)

	Baseline	Target	Actual
	Phase 1: 2009 Phase 2: 2011 Phase 3: 2013	Phase 1: 2017 Phase 2: 2017 Phase 3: 2019	2021 Ex-post evaluation
Number of students enrolled	6,548	9,793	14,291
Capacity of new students	1,511	2,570	3,865
Average number of students per class	85	50	56

Source: Documents provided by JICA, and ex-post evaluation questionnaire

Note 1: The target year for achieving the indicators is 2017 for Phase 1 (5 years after the completion), 2017 for Phase 2 (3 years after the completion), and 2019 for Phase 3 (3 years after the completion), but since past data was not available on the site, the data at the time of ex-post evaluation (2021) was used as the actual figure.

Note 2: “Number of enrolled students” and “Capacity of new students” in the target schools means the total of 23 target schools of Phase 1, Phase 2 and Phase 3.

Note 3: “Average Number of Students per Class” was not set as an indicator in the Phase 1 and Phase 2 because most of the target schools were located in rural areas, where the number of students was limited, and the problem of overcrowded classrooms did not arise.

3.3.1.2 Qualitative Effects (Other Effects)

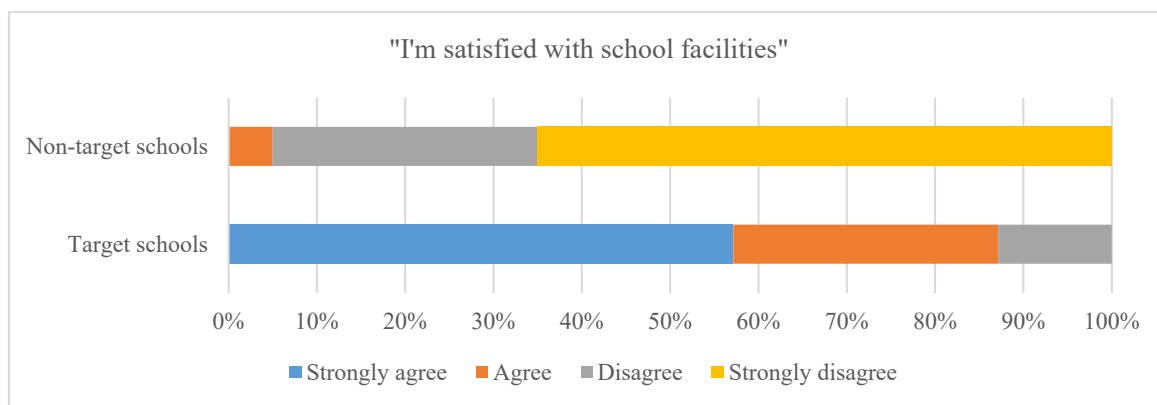
In order to measure the qualitative effect, “improvement of the learning environment,” resulting

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

from new classrooms, student hostels, restrooms, science laboratories, and laboratory equipment, and to evaluate effectiveness, the opinions regarding students' satisfaction with the learning environment and teachers' satisfaction with the school management and classroom operating environment are summarized as follows.

(1) Students' satisfaction with the learning environment

From the results of the questionnaire for the students¹¹ (70 students in the target schools and 20 students in the non-target schools), 86% of the students (37% in the non-target school) answered "Strongly agree" or "Agree" in response to "I am satisfied with the school facilities (classrooms, library, toilets, laboratories, etc.)." Consequently, the students showed a high level of satisfaction with the facilities of the target schools.



Source: Ex-post evaluation questionnaire

Figure 1 Students' satisfaction with facilities

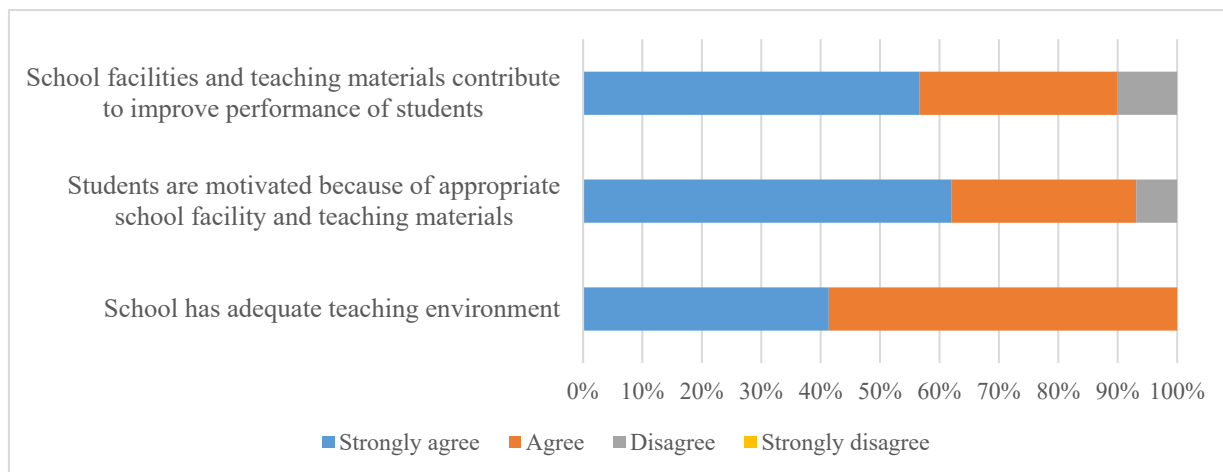
From the results of the student interviews at the target schools, the following comments were made about the learning environment at the schools.

- *There were science labs and experimental equipment, and through experiments, I was able to better understand the content. (Boy student)*
- *The school had electricity so I could study at night [in the school], which helped me improve my grades. (Boy student)*
- *I am glad that there are clean and flushable women's toilets. (Girl student)*
- *The distance between the hostel and the restrooms is a challenge. (Girl student)*
- *The parents are happy to be able to attend a well-maintained school and are actively involved in PTA activities. (Girl student)*

¹¹ Of the 10 schools that were visited by the Japanese evaluator, questionnaires were distributed to 10 students (5 boys and 5 girls each) in each of the 7 target schools (Phase 1: 1 school, Phase 2: 2 schools, Phase 3: 4 schools) and 2 non-target schools (CDSS). The students from final year (4th grade) were selected on sites during the evaluator's visit to the school, because this cohort of students has benefited the most from the upgraded facilities.

(2) Teachers’ satisfaction with school management and the classroom operating environment

As shown in the figure below, the results of the questionnaire for teachers¹² (30 teachers) in target schools show that all the teachers answered that the “School has adequate teaching environment,” and more than 90% of teachers felt that “Students are motivated because school facilities and teaching materials are well maintained” and “school facilities and teaching materials contribute to improving students’ performance.”



Source: Ex-post evaluation questionnaire

Figure 2 Teachers’ satisfaction with the facility, students’ motivation, and impact on academic performance

The results of the interviews with the school heads and teachers in the target schools indicated that the learning environment was improved by the Projects, and the teachers' motivation was increased, as shown below.

- *In the past, there were only a few teachers and many of them left the school, but the improvement in the facilities has improved the community’s interest in education for their children, which in turn has affected the motivation of the teachers. (School head)*
- *The head of the school conducts contests for teachers and awards outstanding teachers to improve their performance. (Female teacher)*
- *The school facilities are of high quality and are well designed. It has now become a symbol of the community. Residents also use facilities for weddings and events. (Male teacher)*
- *There is no electricity in the village, and only classrooms with lights are open at night to ensure that students have time to learn. (School head)*

¹² Questionnaires were distributed to 30 teachers (21 boys and 9 girls), 5 teachers from each of the 6 schools (Phase 1: 1 school, Phase 2: 2 schools, and Phase 3: 3 schools), who were present at the time of the visit.

- *In science labs, students can learn through experiments. In addition, there is sufficient space for group work and individual instruction. (Male teacher)*
- *Now that the teachers' hostel is in place, they no longer have to commute as long as they did before and can use more time to prepare classes and tuitions for students. (Female teacher)*

Other requests from the school heads and teachers included expansion of the library and development of additional hostels and the perimeter walls.

- *The library is small and not large enough for learners to read inside. (School head)*
- *There are no hostels, and many students are forced to commute long distances to school, averaging 14 km. This affects the safety of students and their academic performance. (Male teacher)*
- *Due to the lack of school walls, outsiders broke in and stole. The community has installed barred doors in the facility, but it is important to install walls to secure the safety of students and maintain the facility. (School head)*

3.3.2 Impacts

3.3.2.1 Intended Impacts

The indicators for measuring the impact of the Projects were mostly achieved. In particular, on the one hand, the implementation of the Projects contributed significantly to improving the dropout and retention rates, the pass rate of MSCS, girls' enrollment rate, and the rate of qualified teachers in the target schools. On the other hand, in 2020/2021, when the ex-post evaluation was conducted, all national secondary schools, including the target schools, were closed for eight months due to the COVID-19 pandemic. This closure had a significantly negative impact on these indicators, but it was assessed that the target schools were impacted less when compared to nationwide deterioration. The achievements of each set indicator for measuring the impacts are shown as follows.

(1) Dropout rate

The dropout rate in the target schools was 4%¹³ in 2019/2020, which is lower than the national average of 10% in the same year (8% for boys and 12% for girls). Major reasons for dropping out are early marriages and pregnancies of girl students, while some cases are due to migrating to neighboring countries (Mozambique and South Africa) for boys. The reasons for the lower dropout rate in the target schools compared to the national average are the construction of girls' hostels and flush toilets by the Projects, as well as the high percentage of female teachers (51% compared to the national average of 24%) who are role models for girl students. They provide support to girl students, and their parents as members of the

¹³ Although the dropout rate segregated by gender was not available in the target schools, it was confirmed from the interviews that girl students account for about 60-80% of the dropouts.

Mother Groups, and impact the female teacher retention rate.

In 2020/2021, schools were closed for eight months due to COVID-19, and the increase in poverty was reported to have resulted in early marriage and increased pregnancies among girl students, and the national average dropout rate increased to 15.7%.¹⁴

(2) Retention rate

The retention rate for 2019/2020 at the target school was 0.59%, which is much lower than the national average of 2.5% for the same year (2.4% for boys and 2.6% for girls). The retention rate tends to be higher in the final year of the school, especially for students who cannot pass the MSCE in the final year and prepare to retake the exam in the following year. However, in the target school, the MSCE pass rate is higher than that of other schools, as described below, which contributes to the lower retention rate.

(3) Girls' enrollment rate

In 2020/2021, the percentage of girl students in the target schools is 50%, with a Gender Parity Index (GPI) of 1.0, higher than the national average of 0.94 (0.96 in urban areas and 0.92 in rural areas). In particular, it was observed that girls' enrollment in rural areas increased as a result of establishing girls' hostels and hygienic toilets and an increase in the number of female teachers. The percentage of girl students in the target schools with girls' hostels was 55%, much higher than the 47% in the target schools without girls' hostels. It was pointed out that there is a high demand from parents for girls' hostels to ensure the safety of students commuting from far away, and this is an important factor in promoting girls' enrollment. In some target schools, toilets for boys and girls are located too close to each other, and the incinerator for sanitary products is located near the toilet for boys, which does not ensure privacy and is difficult for girl students to use.

(4) Pass rate of the Malawi School Certificate Examination (MSCE)

The MSCE pass rate for 2019/2020 at the target school was 47.2% (57.7% for boys and 36.7% for girls), and girl students, who are forced to spend a lot of time on household chores, tend to have a lower success rate¹⁵. Although it was affected by the COVID-19 pandemic in that school year, it is higher than the national average of 41.4% (47.3% for boys and 34.6% for girls). As shown in the table below, the pass rate of the target schools has been higher than the national average for the past three years. Given that the national average includes private schools and Day Secondary Schools (DSS), the pass rate of target schools is at the top among the CDSS. The reasons for the higher MSCE pass rate compared to the national average are the retention of qualified teachers¹⁶ by improving the school environment, the provision of

¹⁴ MoE "Education Sector Performance Report (2019/2020)."

¹⁵ THE TIMES <https://times.mw/msce-pass-rate-reflects-poor-government-policies/>

¹⁶ At the time of the ex-post evaluation, the rate of qualified teachers in the target schools was 89%, which is a significant improvement from that of 49% before the implementation of the Projects. The rate in the target schools was also very high compared to the national average of 43% (2019/2020).

opportunities for night study with lighted classrooms, the improvement of student performance owing to the procurement of science laboratories (used for a wide range of subjects such as physics, chemistry, biology, and agriculture), the availability of teaching materials, the availability of textbooks to each student as a result of upgrading the library, and securing learning opportunity by procurement of girls' hostels.

Table 5 Comparison of MSCE pass rates

(Unit: %)

	National Average	Average of Target Schools
2017/2018	63.2	66.6
2018/2019	50.3	67.2
2019/2020	41.4	47.2

Source: MoE and ex-post evaluation questionnaire

In addition, it was pointed out that almost all target schools had no students going on to university before the implementation of the Projects¹⁷; however, since the implementation of the Projects, students have been proceeding to national universities such as the University of Malawi and Malawi University of Science and Technology.

BOX 2: Synergies with technical cooperation and other Grant Aid projects

The technical cooperation project that supported science and mathematics teachers, “Strengthening of Mathematics and Science in Secondary Education, (hereafter referred to as “SMASSE”),” was ended in 2017. However, since then, the annual (one-week) in-service training (called SMASSE training named after the project) has continued using the budget allocated by the MoE. In addition, SMASSE central training for regional trainers has been conducted at the two teacher training schools developed under the following Grant Aid projects, “The Projects for Improvement of Domasi College of Education” and “The Projects for Construction of a Teacher Training College for Secondary school Teachers in Lilongwe.”

In the target schools of the Projects, 4 to 10 science and mathematics teachers attend SMASSE training every year,¹⁸ and SMASSE training is also provided to school heads, so they understand the importance of teachers’ participation in the training. The teachers who participated in the training were able to practice the SMASSE concepts of activity-based, student-centered, and experiment-based teaching because the science laboratory was equipped through the Projects.¹⁹ In addition, there are several target schools where master trainers of SMASSE training are assigned, the science laboratories are used for cluster training with neighboring schools, and other schools are benefiting from the science laboratories of the target schools through SMASSE training. From the results of the questionnaire survey of teachers,²⁰ all science teachers

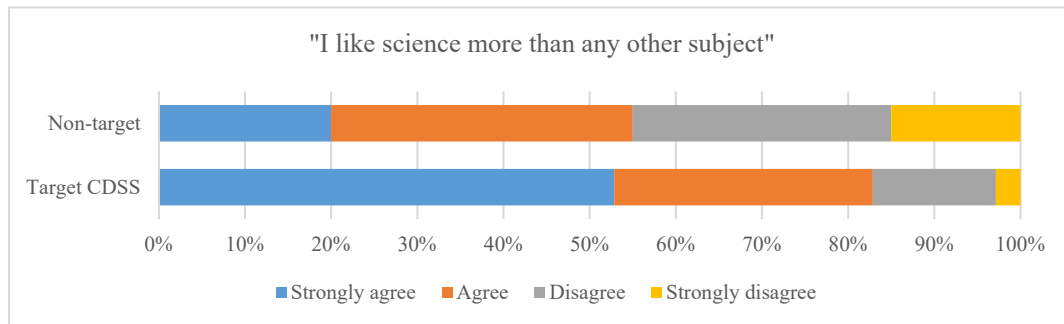
¹⁷ Despite the fact that CDSS are more numerous than the DSS and other schools, only about 18% (2019) of the CDSS graduates attend public universities.

¹⁸ It was reported that 3,436 science and mathematics teachers (biology, chemistry, physics, ecology/home economics, and mathematics teachers) from almost all over the country attended the training in FY2021, despite the COVID-19 pandemic.

¹⁹ As of 2020, only 45% of national secondary schools are equipped with laboratories. Most of them are DSS, and many CDSS do not have laboratories, which makes it difficult to conduct experiments in science class.

²⁰ Questionnaire were distributed to 30 teachers (21 boys and 9 girls), 5 from each of the 6 schools (Phase 1: 1 school, Phase 2: 2 schools, and Phase 3: 3 schools) whose teachers were present at the time of the visit.

answered “Strongly agree” or “Agree” to “I am able to use the laboratory and laboratory equipment effectively,” which suggests that the SMASSE in-service training at the target school has been generating a synergistic effect. The results of the student questionnaire survey²¹ also showed that 84% of the students in the target schools answered “Strongly agree” or “Agree” to “I like science more than other subjects,” while only 38% of the students in the non–target schools answered “Strongly agree” or “Agree.” This shows that the maintenance of science laboratory and equipment and the continuation of SMASSE training in the target schools have contributed to the improvement of students’ interest in science.



Source: Ex-post evaluation questionnaire

Figure 3 Results of questions to students regarding science subject

3.3.2.2 Other Positive and Negative Impacts

(1) Impact on the natural environment

The Projects are an expansion of an existing educational facility, and the site area does not exceed 30 hectares; thus, it was confirmed that the Projects are not subject to the procedures for the Environmental Impact Assessment (EIA) under the Environmental Management Act 1996. No other negative impacts on the natural environment were identified.

(2) Resettlement and land acquisition

As all the target schools have existing school sites, their land-use rights are already known, and no issue has arisen. During the Preparatory Study, some sites were found to be illegally inhabited, but these sites were not a hindrance to the Projects due to their large sizes.

(3) Unintended positive/negative impacts.

Contributing to Gender Equality

It was confirmed that the high ratio of female teachers and their retention as a result of constructing girls’ hostels, hygienic toilets, and teachers’ hostels through the Projects contributed to the reduction of girl students’ dropout rate, mainly due to early marriage and pregnancy.

²¹ Of the 10 schools that were visited by the Japanese evaluator, 10 students (5 boys and 5 girls each) in the final year (4th grade) who benefited the most from the facilities from 7 target schools (Phase 1: 1 school, Phase 2: 2 schools, Phase 3: 4 schools) and 2 non-target schools where the students were located at the time of the visit were given anonymous questionnaires.

Role as a Cluster Center

Of the 23 target schools, 10 (43%) are Cluster Centers,²² which consist of an average of six schools, and are used as venues for teacher training 3 to 4 times per semester. In addition, as students from other schools in the cluster schools conducted experiments in the science laboratory of the target school, the ripple effect of the Projects was also confirmed through the sharing facilities.

Use of barrier-free facilities

In the Projects, in accordance with the “Town and Country Planning Standards and Guidelines for Developments,” which must be followed in order to obtain building permits, all the target schools are trying to make their facilities barrier-free by installing toilets and slops for the disabled. However, the number of disabled students enrolled in the ten schools visited was limited to only one and four (three schools), including those enrolled in the past. This is because most of the secondary schools are farther away from home compared with primary schools, making it difficult for the disabled to commute to school, and they tend to be enrolled in schools with hostels. However, it was also pointed out that parents of disabled students cannot easily send their children to schools with hostels due to the high cost of hostel fees. In addition, it was pointed out that many teachers do not have basic knowledge on how to deal with disabled students and that additional teacher training is required to deal with students who need support in order to expand the acceptance of disabled students in the future.

Promote local employment

In the target school, the importance of the facility to the community was recognized. As a policy of the school and PTA members, five to ten school staff such as security guards, cleaners, and cooks are hired using the PTA budget and are paid according to the minimum wage regulations set by the government, thus, creating jobs in the community. The positive impacts of the Projects were confirmed.

From the above, the Projects have achieved their objectives as a plan. Therefore, the effectiveness and impact of the Projects are high.

²² In Malawi, a cluster system is in operation to improve the capacity of in-service teachers and to share facilities (such as science laboratories) and teaching materials that are in short supply. Six to fifteen secondary schools in close to each other form a cluster, and a leader school (Cluster Center) is assigned within the cluster to jointly conduct teacher training sessions, lend equipment and teaching materials, exchange opinions on common issues, and disseminate information from the DEO. The Cluster Centers are selected based on the availability of necessary facilities and accessibility from other schools.

BOX 3: Contribution of the Projects in the prevention measures of COVID-19

Considering social distancing as a response to preventing the outbreak of COVID-19, the MoE currently recommends that the number of students per class should be no more than 40. In response to this, the target schools of the Projects have been separating classes by utilizing other spaces such as laboratories and multipurpose halls. In addition, it was pointed out that the improvement of the sanitary environment in the schools through providing water supply facilities and flush toilets has contributed to the prevention measures of COVID-19. Furthermore, educational activities to prevent COVID-19 are being conducted for residents using facilities such as the multipurpose hall and the administration building, and it was confirmed that these activities contribute to the prevention measures of infection among residents.



Non-target school
(Classrooms are overcrowded)



Target school
(40 students/class recommended under COVID-19
has been realized)

3.4 Sustainability (Rating: ②)

3.4.1 Institutional/Organizational Aspect of Operation and Maintenance

(1) Central level

The unit in charge of maintaining and managing the Projects at the central level is the EIMU under the Department of Education and Planning of the MoE. The unit has one architect, one structural engineer, one quality control officer, and six other technicians under the administrative head (Deputy Director of the Planning Department). They are involved in the planning of school construction, including support from donors, but their responsibility for facility maintenance is to respond to major repairs of school facilities caused by disasters or other emergencies.

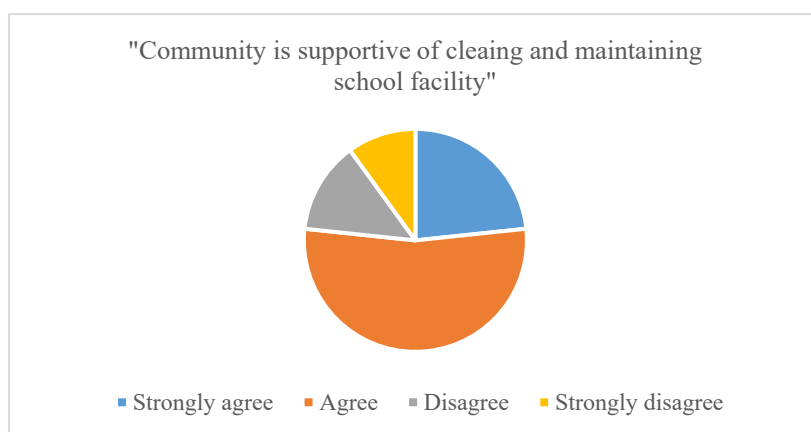
(2) Local level

The central government has six Education Division Offices (hereinafter referred to as “EDOs”) in the North, Central West, Central East, South West, South East, and Shire Highland, and under the EDOs, 34 District Education Offices (hereinafter referred to as “DEOs”) are located. In the EDOs, the district superintendent of education is in charge of the planning division, human resources division, finance division, auditing division, and school inspection division, and the staff of the planning division is in charge of the operation and maintenance of secondary schools. On the one hand, it is practically impossible for the 6 EDOs to manage the 1,400 secondary schools nationwide; consequently, they have almost no involvement

in the operation and maintenance of secondary schools. On the other hand, the DEO is located in each district (34 offices in total) to monitor the primary schools under its jurisdiction. For secondary schools, however, their functions are limited to the administration of final exams, human resource management for primary school teachers transferring to secondary school, and the revitalization of PTA and School Management Committee (hereinafter referred to as “SMC”).²³

(3) School level

In all target schools, students take daily turns cleaning classrooms, toilets, and so on. In some schools, residents are hired as cleaners to clean the facilities and schoolyards. In some of the target schools, the community conducts monthly cleaning activities around the school as part of the community cleaning program. The results of the questionnaire to the teachers²⁴ (30 teachers) of the target schools in the figure below also show that 76% of them answered “Strongly Agree” or “Agree” to “Community members are cooperative in school maintenance and cleaning.” PTA members in rural areas pointed out that the target school is the only facility in the village with electricity and water supply, and it is the symbol of the community; therefore, the target school can easily get support from the community, which has a supportive attitude toward school maintenance.



Source: Ex-post evaluation questionnaire

Figure 4 Results of questions to teachers regarding school operation and maintenance

²³ In some areas, the EU-supported Improving Secondary Education in Malawi (ISEM) project has started to establish Boards of Governance in 270 pilot schools, replacing the SMC, and the DEOs are responsible for strengthening its functions. However, the actual activities have not yet been implemented.

²⁴ Anonymous questionnaires were distributed to 30 teachers (21 boys and 9 girls), 5 from each of the 6 schools (Phase 1: 1 school, Phase 2: 2 schools, and Phase 3: 3 schools) whose teachers were present at the time of the visit.



Cleanup by students at the target school

Daily operation and maintenance in the target school are carried out at each school level. Regular cleaning by students and repairs using the PTA budget are conducted in the target schools, and there are no problems in terms of institutional and organizational aspects.

3.4.2 Technical Aspect of Operation and Maintenance

As for the operation and maintenance at the central level, EIMU is not substantially involved in the operation and maintenance of the target schools as shown in “3.4.1 Institutional/Organizational Aspect of Operation and Maintenance.” However, with regard to the technical level of operation and maintenance, the project team has sufficient capacity for monitoring, construction, and repair management of the facilities, based on its experience as the Project Implementation Unit for the projects of not only JICA but also the Bank of Africa and the World Bank.

Regarding the repair of facilities at the school level, on the one hand, the repair of pumps, cracks in facilities, replacement of drainage pipes, and welding of furniture have been outsourced to specialized companies and have not caused any technical problems. On the other hand, some items, such as fluorescent lamps and some water pipes, were not available in the local market, and substitutes were used or repairs were neglected in some cases. In many of the target schools, laboratory equipment was damaged or broken, but the science teachers managed the equipment themselves without using inventory for management. In only one of the schools, the PTA employs its own lab technicians to support science experiments; consequently, the school can operate and properly manage the science laboratory and laboratory equipment. In addition, in schools where the Japan Overseas Cooperation Volunteers (hereinafter referred to as “JOCV”) (science and mathematics teachers) have been assigned, the 5Ss in the science laboratory are properly practiced regardless of the target schools. Therefore, technical support is required, especially for handling and maintenance of laboratory equipment.

Regarding the operation and maintenance manual, some target schools are using it for facility repairs and handling of science equipment; however, only a few schools are using it, and many of them do not know where it is. The Projects did not include any technical support components for operation and maintenance, and only guidance was provided by the contractors at the time of handover, so the operation and maintenance skills of school staff, PTA, and SMC members varied from school to school.

From the above, it can be concluded that there are some issues regarding the technical aspect of sustainability.

3.4.3 Financial Aspect of Operation and Maintenance

The national budget for the MoE for 2019/20 is 292 billion MK,²⁵ which represents an average increase of 116% over 5 years (2015/16–2019/20). The education budget as a percentage of GDP has averaged about 4.5% over the past 5 years, with an overall upward trend. However, 66% of the budget is spent on the salaries of primary and secondary school teachers, and the remainder on the purchase of teaching materials and operating expenses for primary and secondary schools. In addition, 63% of the budget goes to preschool and primary education, 12% to secondary education, and 22% to higher education; the ratio of secondary education is low. Therefore, the costs of maintaining school facilities depend mainly on the school budget. In addition, there are concerns about the impact of the COVID-19 pandemic on tax revenues and reduced support²⁶ from development partners.

Table 6 Budget of the MoE

(Unit: billions of MK)

	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020
MoE Budget	163	179	228	254	292
(Year-on-year change)		(110%)	(127%)	(111%)	(115%)
As a % of GDP	4.6%	4.2%	4.3%	4.5%	4.7%

Source: MoE

As a condition of being targeted by the Projects, all target schools are now approved as the Cost Center that can be applied for the Other Recurrent Transactions (hereinafter referred to as “ORT”) to the Ministry of Finance and receive a direct allocation of the recurrent budget, except for teachers’ salaries. However, it was pointed out that although ORT is used for school materials, training, supplies such as chalk, and photocopying, the allocated budget is not sufficient to maintain the facilities and purchase old equipment and chemicals for science experiments in many of the target schools. Therefore, the PTA fund,²⁷ collected mainly from the students’ families, and a part of the hostel fees collected from the students in the target schools with hostels are also used to maintain the facilities. However, PTA membership and hostel fees are mainly used for repairing and expanding old facilities on the same site, and there is not enough budget for maintaining the facilities upgraded by the Projects. Furthermore, the budget available for these operations and maintenance has been increasing with the increase in the number of students, but in 2020/2021, PTA membership and hostel fees have decreased due to the impact of the COVID-19 pandemic.

²⁵ Marawi Kwacha (hereinafter referred to as “MK”) 1MK = 0.14 yen (as of June 2021)

²⁶ Support from development partners in the education sector accounts for 23% of the total budget, but the impact of the COVID-19 pandemic is expected to reduce support from development partners by about 30%.

²⁷ The annual fee per student at the target schools varies from about 6,000 to 15,000 MK (about 800 to 2,000 yen) depending on the school.

The table below shows the average ORT, PTA membership fees, and hostel fees in the target schools for 2018/19–2020/21.

Table 7 Budget trends in target schools

(Unit: thousand MK)

	2018/2019	2019/2020	2020/2021
ORT	9,933	10,479	12,900
PTA fund	9,132	11,225	9,630
Hostel fee ²⁸	20,880	25,215	16,840

Source: Ex-post evaluation questionnaire

In the Projects, multipurpose halls were installed in target schools in urban areas. Such halls are not only used for school meetings and events but are also rented out for community activities (awareness-raising activities, weddings, church activities, etc.) for a fee, for example, MK 80,000 (Approximately JPY 11,000) per day for weddings, and the proceeds are used to maintain the facilities. Simultaneously, PTA members grow vegetables in the schoolyard and use part of the income to maintain the facility.

Although there have been some efforts to secure maintenance costs at the target school as described above, the overall lack of budget for the renewal of laboratory equipment, purchasing of reagents, and maintenance is identified, which indicates that there are some issues in the financial aspect of sustainability.

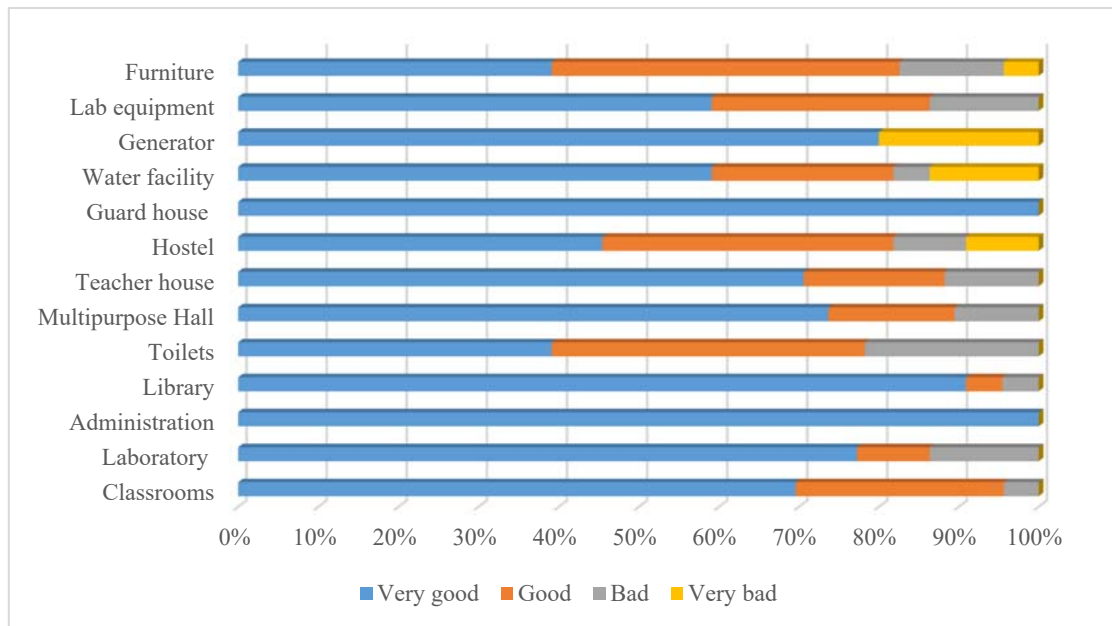
3.4.4 Status of Operation and Maintenance

Facilities such as classrooms, science laboratories, administration, and libraries are being used without problems owing to their robust design and routine maintenance. However, some of these facilities were found to be damaged by bat droppings, spider webs, termite damage, and cracks in the walls. In particular, many of the target schools needed to repair facilities mainly related to water, such as toilets (flush components), water facilities, and damaged showers in student hostels. In addition, many of the target schools from Phases 1 to 3 had to repair or procure nondurable properties such as laboratory equipment and furniture (desks and chairs). In some target schools, cooking kilns in the kitchen attached to the multipurpose hall were not in use because of the lack of electricity. In addition, school staff reported that they were unable to renew reagents and damaged equipment for experiments due to budget shortages and, thus, could not conduct the planned experiments. In addition, the gas valves in the science laboratories procured in accordance with the national “Standard Guidelines for School Facilities” is unused in all the visited schools because of the difficulty in obtaining gas cylinders in local markets, and an alcohol lamp procured by the Projects was used instead; thus, the rationale for procuring such equipment is questioned.

The table below shows the results of the survey on the operation and maintenance status of facilities and

²⁸ The average amount is shown only for the target schools that have hostels (8 schools).

equipment for all target schools.²⁹



Source: Ex-post evaluation questionnaire

Figure 5 Maintenance of facilities at target schools



Damaged chairs



Messy science equipment



Damaged toilet sinks

From the above, some issues can be seen in the status of operation and maintenance.

As for the sustainability of the Projects, although problems have not been observed in terms of the institutional/organizational aspect, there are minor technical problems, such as the unavailability of some consumables in the local market, the operation and maintenance skills for science equipment, and the lack of equipment inventory, as well as problems in the financial aspect, such as the lack of maintenance budget. Therefore, the sustainability of the Projects' effects is fair.

²⁹ The Japanese evaluators and research assistants visited all 23 target schools and evaluated the condition of the facilities and equipment on a four-point scale using the following criteria "Very good: No malfunctions or failures," "Good: Some signs of malfunctions or failures, but they have been repaired and are in use," "Poor: in use, but needs some repair," and "Very poor: not in use due to malfunctions or failures."

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Projects were implemented to solve the shortage of classrooms and improve the learning environment in the target schools by expanding and upgrading existing secondary educational facilities and providing education-related equipment, including science laboratory equipment, thereby, contributing to the improvement of the quality and accessibility of secondary education in the target areas.

On the one hand, the purpose of the Projects is well in line with the development policy and development needs of Malawi, as well as the aid policy of Japan; thus, the relevance of the Projects is high. On the other hand, although the cost was in line with the original plan, the project period exceeded the plan due to the rebidding, insufficient distribution of imported materials, natural disasters caused by heavy rains during the rainy season, and financial and administrative problems of some contractors, resulting in the efficiency of the Projects as “fair.” As for effectiveness, the quantitative and qualitative effectiveness indicators set at the planning stage were mostly achieved. Moreover, as it has been confirmed that the Projects have had an impact on promoting girls’ school enrollment, preventing the spread of COVID-19 in schools, and improving student performance through the synergistic effect of technical cooperation for the capacity building of science and mathematics teachers, their effectiveness is evaluated to be high. In terms of sustainability, there are no major issues in the system of project operation and maintenance, but some financial issues, such as the inability to secure sufficient operation and maintenance costs for experimental equipment, were identified. Therefore, project sustainability is also fair.

Considering the above, the Projects are evaluated to be “satisfactory.”

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Measures for target schools without water and electricity supply and walls

On the one hand, the construction of water supply facilities in schools through the Projects has greatly contributed to countermeasures against COVID-19. On the other hand, the MoE is required to provide support to restore schools that are not connected to the water supply system or that have difficulty in using sanitary water due to theft of pumps or damage to pipes. In addition, some of the target schools have no electricity connection, which hinders self-study at night and teachers’ preparation for classes. It was also confirmed that the installation of walls has a significant impact on the operation and maintenance of school facilities. Therefore, the Education Planning Department and EIMU in the MoE are required to instruct the EDO to identify schools without electricity and water connection and walls and to order the relevant work.

Effective use of barrier-free facilities

The target schools are equipped with barrier-free facilities such as toilets and slops for the disabled in accordance with the “Urban Planning and Development Guidelines,” which must be complied with in order to obtain building permits. However, unlike primary schools adjacent to the community, a limited number of secondary schools and large school catchment areas impose difficulties in providing access to students with disabilities. On the other hand, the target schools with hostels that do not require commuting to school have a good track record in accepting students with disabilities. Therefore, the promotion of inclusive education by effectively utilizing these facilities, mainly in target schools with hostels, is required by giving priority admission to students with disabilities and developing a support system for hostel fees.

4.2.2 Recommendations to JICA

Technical support for target schools

A more effective operation and maintenance of science laboratories and laboratory equipment in the target schools is expected by assigning JOCVs (science and mathematics teachers) preferentially to the target schools to provide technical support such as experimental guidance, preparation of science teaching materials, 5S, and preparation of inventory for laboratory equipment.

4.3 Lessons Learned

Achieving impact through the development of complex facilities

The Projects were not limited to the construction of classrooms, but also included the development of complex facilities, such as teachers’ houses, student hostels, science laboratories, libraries, and flush toilets, in accordance with the “Standard Guidelines for School Facilities” established by the MoE to contribute to the quality of education and the improvement of girls’ enrollment. The science laboratory promotes the study of science-related subjects, the library provides sufficient teaching materials, and the teachers’ houses and student hostels reduce the commuting time for teachers and students, which contributes to ensuring class preparation and learning. In addition, the establishment of teachers’ houses enables the retention of female teachers who can provide generous support for girl students. Furthermore, the girls’ hostel will reduce the safety risk for girl students when commuting to school, contribute to securing learning opportunities by reducing chores in their households, and the installation of clean toilets will improve the learning environment for girls, those therefore promote girls’ enrollment. To stimulate the quality of education and girls’ enrollment, it is advisable to plan for providing comprehensive facilities.

Importance of school wall construction

The construction of walls in schools greatly affects the current status of school facilities. In the Projects, since the construction of walls in target schools was requested as necessary at the expense of the Malawian government but it was not a prerequisite (obligation), some target schools do not have walls or have walls that are still under construction. Those schools are facing problems in operation and maintenance, such as damage caused by unauthorized use of the facilities, graffiti, and theft by outsiders. The installation of school walls in the target schools is highly effective in terms of school operation and maintenance, and it is desirable to include them as a component of school construction projects or to make it a prerequisite for the recipient government to provide support.

Necessity of Follow-up on Government's Responsibility

In the Projects, the cases where the Malawian government have not completed their burdens of the connection of electricity and running water to the target schools were identified. The completion of those burdens is supposed to be confirmed at the defect inspection a year after project completion, but the lack of a follow up mechanism, even if identified not to be completed, caused to generate this kind of uncompleted burdens of recipient country. Therefore, it is necessary to confirm the completion of the unimplemented items confirmed by defect inspection by the follow-up of the JICA local office.

Utilization of lessons learned from other similar projects by prior phases and donors

Some issues were found in the layout and specifications of the facilities; for example, the toilets for boys and girls are located next to each other and away from the girls' hostel, which poses a safety issue, and the lack of privacy for using the sanitary napkin incinerator also makes it difficult to use. These improvements are expected to contribute to the further promotion of girls' enrollment. In addition, it was difficult to obtain consumables (fluorescent lights and gas cylinders for experiments) in the local market. Although the specification of facilities and equipment are determined by the local standard It is necessary to closely examine the operation and maintenance of secondary school facilities in schools from previous phases and schools supported by other donors, and reflect the lessons learned from the identified advantages and challenges in the facility design and equipment specifications by referring the local standard. This will make it possible to increase the use of facilities and provide support with a higher return on investment.

Collaboration with technical cooperation and JOCV

The in-service training for science and mathematics teachers introduced through the technical cooperation project has been incorporated into the government's program and is being implemented continuously. In the target schools of the Projects, on the one hand, it was confirmed

that the science teachers who participated in the training were able to make effective use of the well-equipped laboratories and equipment, and the students' interest in science and their performance have also been improved. In addition, synergistic effects, such as proper management of laboratory equipment, were observed in schools where JOCV science and mathematics teachers were assigned. On the other hand, it is assumed that the use of schools developed through Grant Aid projects as a basis for technical cooperation and JOCV activities will facilitate the activities and easily obtain support from school staff. Therefore, the effects of both infrastructure and technical cooperation will be improved by selecting target schools and planning the specifications of facilities and equipment, considering the synergistic effect with technical support at the planning stage of Grant Aid projects.