Mongolia

FY2015 Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for Improvement of Primary Education Facilities (Phase IV) in Mongolia"

External Evaluator: Ai Ishitobi, Tekizaitekisho LLC

0. Summary

The project was implemented with the aims of increasing the seating capacity and mitigating the overcrowding in the schools by constructing twelve (12) primary and secondary education facilities in Ulaanbaatar covered by the project (hereafter referred to as "the project schools"), and thereby contributing to the improved access to primary and secondary education and to the provision of quality education in Ulaanbaatar.

The project has been in line with the development policy of Mongolia, aiming to improve access to education and provide quality education, as well as Mongolia's development needs for improving the educational environment urgently, and Japan's Country Assistance Policy for Mongolia established in November 2004, which designated the strengthening of basic education as a priority subject. Therefore, the relevance of the project is high.

While the project cost was within the plan, the project period exceeded it. Therefore, efficiency of the project is fair.

The project achieved outcomes such as an increase in the seating capacity and the number of students in the project schools, mitigation of the overcrowding in classrooms, a reduction in the percentage of triple-shift classes, and improved satisfaction among students and teachers with the educational environment. These effects resulted in various positive impacts such as the provision of effective class sessions and quality education and improvement of the motivation of students to study and of teachers to teach and work. Therefore, the effectiveness and impact of the project are high.

Since no major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system, the sustainability of the project effects is high.

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

1. Project Description

Project Location

A school constructed by the project (No.118 school)

1.1 Background

The Government of Mongolia (hereafter referred to as "GOM") designated education as one of the priority areas in its national development plan, the MDG-based Comprehensive National Development Strategy (2007-2021) (hereafter referred to as "NDS"). It stipulates the establishment of a general education system in line with international standards[1] and the achievement of universal primary education as the medium-term goals. In order to achieve these goals, the GOM developed the Education Sector Master Plan (2006-2015) (hereafter referred to as "ESMP") in 2006, a medium- to long-term plan for the education sector with the aims to improve access to education and provide quality education. The ESMP promoted programmes with a focus on strengthening general education, with a focus on the transition of the school system from 10 years to 12 years and on the expansion of educated opportunities.

In Mongolia, while the net enrolment rate[2] at the primary level reached 92.7% in 2007, there were delays in providing educational facilities for the higher number of students resulting from the rapid influx of people moving from rural to urban areas and the transition of the entry year to first grade. The shortage of educational facilities seriously deteriorated the education environment. Especially in Ulaanbaatar, where the project was implemented, the population increased by about 30% between 2000 and 2007, the urban area rapidly grew into the suburbs, and the number of general students increased by 22,000. Because of these changes, the number

[1] Mongolia adopted a twelve-year general education system in 2008. Compulsory education is nine years, which consists of five years of primary school and four years of lower secondary school. In Mongolia, general education schools are used by both primary and secondary students in general. The new school buildings constructed by the project are used mainly by primary students at the existing project schools and by primary and secondary students at the new project schools.

[2] The net enrolment rate is, at a certain level of education, the ratio of the number of people who actually receive the education (and who belong to the official school age group) to the total population of children of the official school age, expressed as a percentage. (Asia-Pacific Cultural Centre for UNESCO, "Glossary on literacy", http://www.accu.or.jp/shikiji/glossary/indexm2.htm ＊Accessed on August 2, 2016)

of districts where there were no schools within commuting distance increased, and hence children had to commute a long distance or go to a boarding school. Several schools had to deal with overcrowded classes with more than 50 students per class, or operate on triple shifts. Many schools also had to use a corridor and/or a hall as classrooms in order to address the lack of classrooms due to the increase in the number of students. In 2008, the entry age for primary school was changed from seven years old to six years old, which increased the number of students enrolled at a national level by 12% compared with 2007. Educational facilities had to be urgently provided. Under these circumstances, in the ESMP the GOM designated an increase in the number of educational facilities as one of the major priorities in order to respond to the increase in the number of students resulting from the reform of the education system and to reduce the gap between regions. Accordingly, the budget for the education sector was significantly increased from 2007 in order to construct classrooms to provide an additional 69,000 seats by 2015, and furthered the provision of educational facilities by establishing an annual action plan, including projects funded by foreign donors. However, since it was still difficult to provide a great enough quantity of educational facilities to respond to the increase in the number of students resulting from population growth and education system reforms relying only on their own financial resources, the GOM requested that the Government of Japan carry out a grant aid project to construct educational facilities and provide equipment in Ulaanbaatar, following the previous projects for improvement of primary education facilities (Phase I to III) in Mongolia[3].

1.2 Project Outline

The objective of this project is to increase the seating capacity and mitigate the overcrowding in the schools covered by the project by constructing twelve (12) primary and secondary education facilities in Ulaanbaatar, and thereby contributing to the improved access to primary and secondary education and to the provision of quality education in Ulaanbaatar.

The project provided expanded school facilities including classroom buildings at existing seven (7) schools (hereafter referred to as “existing project schools”) and newly constructed five (5) schools (hereafter referred to as “new project schools”).

<Grant Aid Project>

E/N Grant Limit/ Actual Grant Amount	3,341 million yen (Detail design: 79 million yen, Main works: 3,262 million yen) / 2,942 million yen (Detail design: 79 million yen, Main works: 2,863 million yen)

[3] The Basic Design report (2008)

Exchange of Notes Date /Grant Agreement Date	January, 2009 (Detailed Design), August 2009 (Main works) / January, 2009 (Detailed Design), August 2009 (Main works)
Implementing Agency	Education Department, Ulaanbaatar City Administration
Project Completion Date	March, 2013
Main Contractor(s)	DAI NIPPON-KONOIKE Joint Venture
Main Consultant(s)	Matsuda Consultants International Co., LTD
Basic Design	January 2009
Detailed Design	October 2009
Related Projects	【Grant Aid Project】 "The Project for Improvement of Primary Education Facilities in Mongolia"（1999-2001） "The Project for Improvement of Primary Education Facilities (Phase II) in Mongolia"(2002-2005) "The Project for Improvement of Primary Education Facilities (Phase III) in Mongolia: Phase III"(2004-2007) Renovation or extension of school buildings and dormitories by Japan's Grant Assistance for Grassroots Human Security Projects (Total: 132 projects)　(2004-2014) 【Technical Cooperation Project】 ・ Technical cooperation "Teaching Methods Improvement Project towards Children's Development Phase1&2"（2006-2009, 2010-2013） "Promoting a violence-free, fair environment in public education for the purpose of realizing the children's rights project" (2008-2011) "Project for Child-Centred Education Supports"(2016-2019) "The Project for Strengthening Teachers Ability and Reasonable Treatments for Children with Disability"（2015-2019） ・ Grassroots technical cooperation "Sustainable use of ICT for improving the quality of primary education in rural Mongolia"（2012-2017） ・ Japan Overseas Cooperation Volunteers (JOCV) The total number of volunteers dispatched: 17 (2001-2016) (Categories: Physical education, Primary school education, Science education, Japanese language education, PC instructor, Computer technology, Home economics, and Sewing) 【Projects by other donors】 ・ Asian Development Bank "Third Education Development Project" (2006-2012) "The Ulaanbaatar School Concession Programme) (2014-2016) ・ The World Bank "Rural Education and Development Project"（2006-2012） Financial Assistance-EFA-FTI（2007-2012） "Improving Primary Education Outcomes for the most vulnerable children in rural Mongolia" (2012-2016) "Transparency and Accountability in Mongolian Education"（2014-2018） "Education Quality Reform Project"（2014-2019）

2. Outline of the Evaluation Study

2.1 External Evaluator

Ai Ishitobi, Tekizaitekisho LLC

2.2 Duration of Evaluation Study

Duration of the Study: August, 2015 -September, 2016

Duration of the Field Study: December 3-29, 2015 and April 19-28, 2016

3. Results of the Evaluation (Overall Rating: A[4])

3.1 Relevance (Rating: ③[5])

3.1.1 Relevance to the Development Plan of Mongolia

NDS (2007-2021), the national development plan, designates education as one of the priority areas in the field of human development, and the National Action Plan (2008-2012), which was enacted in order to achieve the objectives of NDS, identified the "transition to a 12-year school system" and "improvement of the quality of education" as priority policies for the primary and secondary education sector. Also, the ESMP (2006-2015)[6] aimed for "high-quality education which everyone can access," and in the sector of primary and secondary education, it prioritized improved access to education with the focus on reducing the gap between regions and providing quality education adapted to the renewed educational values. Therefore, the project has been highly consistent with the development and education policies and plans of Mongolia. In addition, the project directly contributed to the quantitative targets of the ESMP such as the number of students per class (36 at primary level and 32 at secondary level) and the provision of classrooms with a total of 69,600 seats.

The GOM's development and education policies in effect at the planning stage were still in force at the time of the ex-post evaluation (2015), and the following national action plan (2012-2016) also aims to "improve the educational environment by increasing and expanding schools" in the field of education. As a result, there were no major changes to the development plans of the GOM at the time of the ex-post evaluation. Therefore, the project has been highly consistent with the development plans of Mongolia from the time of the planning stage to the time of the ex-post evaluation.

3.1.2 Relevance to the Development Needs of Mongolia

As noted in "1.1 Background", the basic design study (2008-2009) pointed out that the

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

[5] ③: High, ② Fair, ① Low

[6] At the time of the 2nd field survey of the evaluation (April 2016), the amendment of the Education Law was under discussion and the subsequent national action plan had not yet been enacted.

increase in the number of educational facilities did not catch up with the increase in the number of students due to the population influx to the urban areas and the transition of the entry age. This resulted in the deterioration of the educational environment, such as overcrowded classrooms and the need to run schools with triple shifts. The report also pointed to the problem of areas with no school within commuting distance due to the expansion of urban areas. Especially in Ulaanbaatar, while the net enrolment rate for general education was lower than the national average, the percentage of triple-shift classes and the number of students per class were higher than the national average, as shown in Table 1. This indicated that the need to improve the educational environment was urgent. Besides, the same study also noted that most schools had to use non-classroom space such as corridors, halls and laboratories as classrooms because of the shortage of classrooms, and that a further shortage of classrooms was expected due to the rapid rural-to-urban migration. In this way, since Ulaanbaatar urgently needed to improve access to education and the educational environment compared with other regions at the planning stage, it was appropriate to choose Ulaanbaatar as the target site for the project. Even at the time of the ex-post evaluation, the population of Ulaanbaatar had increased by 31% compared with the planning stage (2007). As regards the educational environment, the percentage of triple-shift classes was 2.9%, and the number of students per class was 33.5[7]. Therefore, the development needs to improve the education environment in Ulaanbaatar remained high and the project has been highly consistent with these needs of Mongolia from the planning stage to the time of the ex-post evaluation.

Table 1 Educational indicators by region (2007)

	Net enrolment rate (%)		Percentage of triple-shift classes (%)	Number of students per class
	Primary	General		
Western	93.5	91.7	0.0	30.3
Mountainous	93.9	90.7	1.2	31.8
Central	93.9	91.5	0.3	29.3
Eastern	95.2	92.6	0.1	29.2
Ulaanbaatar	**90.4**	**87.2**	**0.6**	**31.7**
National	92.7	89.9	0.5	30.8

Source: The Basic Design Report

The selection of the project schools was relevant given the situation of the schools at the planning stage. Specifically, the seven existing schools out of the twelve project schools (1) were overcrowded and the number of students per class was higher than the national average[8], (2) four out of seven of the schools had to operate on triple shifts to accommodate a large

[7] Ulaanbaatar City Education Statistics (2016)

[8] As of the planning stage in 2007, the number of students per class in the project schools was 34.4 (School No. 19) at a minimum, and 51.3 (School No. 30) at the maximum, while the national average was 30.8 students per class.

number of students, (3) population growth was rapid in the areas where the schools were located[9], and/or (4) the shortage of classrooms calculated based on a demand analysis exceeded the scale suitable for efficient operation and construction. Areas in which population growth was particularly rapid and/or there was no school within commuting distance were chosen as the sites for the new five schools.

3.1.3 Relevance to Japan's ODA Policy

The Country Assistance Policy for Mongolia established by the Japanese Ministry of Foreign Affairs in 2004 defined system development and human resource development to support market-oriented economic reform as one of the four priority areas of aid for Mongolia. As the strengthening of basic education was designated as one of the priority issues, Japan actively provided assistance in this area. The project was therefore relevant to Japan's ODA policy as the project was the continuation of the past three phases of the projects to improve primary education facilities in Mongolia (Phase I to III) under the policy.

This project has been highly relevant to Mongolia'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

As shown in Tables 2 and 3, the following facilities, equipment and furniture were provided as planned. In terms of equipment, one boiler and two sewage tanks were additionally provided for the project schools. A boiler was added because when a technical examination was conducted based on the basic design of the project, it was found that central heating could not be provided at the site for School No. 27 since the supply capacity of the existing hot water pipes that had been planned to be connected to the school was lower than expected, and it was difficult to set up a branch from another main pipe to the school. Regarding sewage tanks, since it had not been determined whether two new project schools (Nos. 118 and 123) would be connected with the public sewage system before the schools opened, sewage tanks were additionally provided for the two schools. Based on these reasons, the changes to the plan were appropriate.

[9] As of the planning stage in 2007, the most rapid population growth rate in the existing project school zones was 10.2%/year (the school zone of No. 19) and then 8.5%/year (the school zone of No. 30).

Table 2 The planned and actual provision of facilities, equipment and furniture

School Number	Planned								Actual							
	Classroom	facility		equipment			set of furniture	set of equipment	Classroom	facility		equipment			set of furniture	set of equipment
		Classroom building	Gymnasium	Water tank	Sewage tank	Boiler				Classroom building	Gymnasium	Water tank	Sewage tank	Boiler		
The existing project schools																
12	8	○					○	○	8	○					○	○
19	8	○					○	○	8	○					○	○
27	12	○			○		○	○	12	○			○	○	○	○
30	19	○					○	○	19	○					○	○
35	8	○			○		○	○	8	○			○		○	○
52	8	○					○	○	8	○					○	○
79	12	○			○	○	○	○	12	○			○	○	○	○
The new project schools																
118	16	○	○			○	○	○	16	○	○		○	○	○	○
120	16	○	○	○	○	○	○	○	16	○	○	○	○	○	○	○
121	16	○	○	○	○	○	○	○	16	○	○	○	○	○	○	○
122	16	○	○	○	○	○	○	○	16	○	○	○	○	○	○	○
123	16	○	○			○	○	○	16	○	○		○	○	○	○
Total	155	12	5	3	6	6	12	12	155	12	5	3	8	7	12	12

Source: Information provided by JICA

As shown in Table 3, the following furniture and equipment were provided as planned.

Table 3 List of furniture and equipment provided

	Existing /New	Furniture and equipment provided	
Furniture	Both	Classroom	Desks and chairs for students and teachers, blackboard, bulletin board
		Teachers' room	Tables and chairs for meetings, desks and chairs for the headmaster and other management staff, cabinets
	Only new project schools	Computer room	PC desks and stools for students, desk and chair for teachers, bulletin board
		Special room	Desks and chairs for students, laboratory table and chair for teachers, blackboard, bulletin boards, cabinets
		Kitchen	Open shelves
Equipment	Both	A geographic map, an administrative map, a mineral resource map, a botanical map, a zoological map of Mongolia, a world geographic map, a world political map, charts of chemical elements, physical measuring units, human body dissection, and Mongolian Cyrillic alphabet, a multiplication table, geometric block models, an abacus, a wall thermometer, an azimuth compass, a measuring tape, a T-square, ruler set, a projector set	

Source：Information provided by JICA

3.2.2 Project Inputs

3.2.2.1 Project Cost

The total project cost amounted to 2,942 million Japanese yen, which was 88% of the planned cost (3,341 million yen), as shown in Table 4. The gap resulted from the lower contract amount with the consultant than planned as the result of the bidding. Although the Mongolian side was supposed to provide about 361 million Mongolian Tughrik (hereafter referred to as "Tg", 33 million yen when calculated at the exchange rate during the planning stage[10]) for provision of external facilities (e.g., gates, fences, and pavement), clearance and levelling of the sites and so on, the information on the actual amount spent was not available.

Table 4 Project costs provided by the Japanese side

（unit：million yen）

	Planned	Actual	%
Detailed design	79	79	100
Main Works	3,262	2,863	88
Total	3,341	2,942	88

Source: Information provided by JICA

3.2.2.2 Project Period

Compared with the planned project period (46.5 months), the actual project period was 49.4 months, which was 6% longer than planned. The main reason for the extension was that the examination of the detailed project plan by the GOM took longer than expected and the planned period for detailed designing was 5.5 months, but it took 8.5 months. Although the duration available for construction outside is limited during the year in Mongolia since the average temperature goes down below the freezing point in the winter, the extension of the project period had no effect on the planned start date of the construction.

Although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness[11] (Rating: ③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

<Operation Indicators>

Number of classrooms at the project schools

With 155 classrooms newly constructed by the project, the total number of classrooms at the

[10] 1 yen =11.00 Tg (Mongolian Tughrik : local currency)（as of July 2008, the Basic Design report）

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

12 project schools amounted to 311 classrooms as planned (Table 5), and this resulted in an increase in the seating capacity of the project schools. At some of the project schools that were comparatively less crowded with students, there were cases in which these schools used classrooms for other purposes (e.g., rooms for staff or for activities at a district level) and therefore, 295 out of 311 classrooms were used as general classrooms at the time of the ex-post evaluation (Table 5). These schools confirmed that such classrooms would be used as general classrooms when the number of students increased further, and the education department of Ulaanbaatar city (hereafter referred to as "UBC") also confirmed that they have instructed these schools to use classrooms in that way.

The basic design report of the project (2007) pointed out that some rooms inappropriate as classrooms[12] were used as general classrooms at all the existing project schools. According to the result of a questionnaire conducted for this evaluation, such rooms were no longer used as general classrooms, which indicated the improvement in the physical education environment of the existing project schools.

Table 5 Number of classrooms at the 12 project schools (unit: classroom)

	Baseline (2007)	Target (2013)	Actual (2013)	Actual (2015)
	Planning	Completion	Completion	2 years after completion
Number of classrooms	156	311	311	311
Rooms used as general classrooms	156	311	(unknown)	295

Source: Summarized by the evaluator based on the results of the survey and the Basic Design Report

<Effect Indicators>

The total number of students at the project schools

The project was expected to increase in the number of students at the project schools at the planning stage due to the increase in the seating capacity of the schools by the project, as shown in Table 6. The total number of students at the 12 schools was 13,206 at the planning stage in 2007, which was increased to 15,577 (72% of the target value) when the project was implemented in 2013, and to 19,672 (90% of the target value) at the time of the ex-post evaluation, quite close to the target value (21,770 students). The target value was calculated as twice of the seating capacity (35 students per class) on the assumption that the project schools

[12] The basic design report defines "inappropriate classrooms" as classrooms which are smaller or narrower than a standard classroom, classrooms far from standards such as ones students unable to enter from a corridor, and classrooms of which the UBC prohibits the use due to the reasons including deterioration, and pointed out that there were 21 inappropriate classrooms in total at the seven existing project schools.

operate on double shifts[13].

Table 6 Number of students and classrooms at the project schools[14] (unit: person)

		The number of students			
		Baseline (2007)	Target (2013)	Actual (2013)	Actual (2015)
		Planning	Completion	Completion	2 years after completion
The existing project schools	12	1,802	2,240	1,939	2,377
	19	1,135	1,680	936	1,080
	27	2,301	2,660	2,314	2,641
	30	2,052	2,660	1,801	2,392
	35	1,797	1,890	1,453	1,558
	52	1,608	2,030	2,194	3,157
	79	2,511	3,010	2,252	2,270
The new project schools	118	0	1,120	804	941
	120	0	1,120	543	826
	121	0	1,120	192	355
	122	0	1,120	588	1,274
	123	0	1,120	561	801
Total		13,206	21,770	15,577	19,672

Source: Summarized by the evaluator based on the results of the questionnaire survey, the Basic Design Report and the UBC Education Statistics.

One of the main reasons of not achieving the target value is that new schools were constructed in the vicinity of three existing project schools (No. 19, 35 and 79) and the number of students at the schools dropped. Another reason is that one new project school (No. 121) located in the suburb did not reach the target value at the time of the ex-post evaluation due to the delayed development of the planned area, although the number of students of the school has increased year by year since the school opened. At the same time, the number of students is expected to further increase because the number of residents in the vicinity of the school (*Horoo*[15]) had steadily increased for the past three years (2013-2015). Besides, the UBC and the school think that the potential needs of the school are huge because not a few people move

[13] The number of students at all the project schools has increased year by year. According to the district education offices and headmasters, it is highly likely that two more project schools need to newly operate on triple shifts and one project school already with triple-shift classes has to operate on quadruple-shift from 2016. Given this situation, it was realistic to assume that schools would be used on double shifts, not a single shift. In 2015, five project schools (No. 12, 27, 30, 52 and 122) have 27 triple-shift classes. The UBC aims to make all general schools operate on a single shift in the future.

[14] At the time of the ex-post evaluation, the actual number of students of School No. 30 was 2,932. The above number excludes 540 students of School No. 14, which will be destroyed and rebuilt due to the deterioration. The construction of a new school building of No. 14 will be completed in 2018 or 2019.

[15] There are nine districts in Ulaanbaatar and under each district, there are sub-districts called "*Horoo*."

to the areas avoiding the serious air pollution in the city centre[16], and there are children in the vicinity of the school who commute to schools in the city centre and those who lead a nomadic life. Hence the UBC was constructing a dormitory[17] at the school as of April 2016. The UBC expects that the school will reach the full seating capacity with this dormitory within a couple of years.

Number of students per classroom and the number of triple-shift classes

The project was expected to mitigate the overcrowding in classrooms and cancel triple-shift classes by increasing the seating capacity of the project schools. With regard to the change in the number of students per classroom before and after the project (Table 7), the target for this indicator (i.e., less than 85 students per classroom) was achieved as the number was 56 when the project was completed in 2013, and increased to 67 at the time of the ex-post evaluation in 2015 at the existing project schools. The indicator was also achieved at the new project schools. While the target value was 70 students per classroom, the number was 34 when the project was implemented in 2013 and 52 at the time of the ex-post evaluation in 2015.

Although the number of triple-shift classes at the project schools could not be reduced to zero (i.e., complete cancellation of triple-shift classes) as targeted, it was reduced from 21 at the planning stage in 2007 to five as of the project's completion in 2013 (Table 7). After 2013, however, due to the increase in the number of students at the project schools, the number of triple-shift classes was increased to 27 in 2015. On the other hand, since the total number of classes at the project schools had been increased due to the implementation of the project and the increase in the number of students[18], the percentage of triple-shift classes at all of the project schools was reduced from 6% in 2007 to 1% in 2013, and while the percentage was increased to 4% as of the ex-post evaluation in 2015, the value was still lower than the baseline.

[16] In fact, during a focus group discussion, some parents at the school mentioned that they had moved to the school's vicinity in search of an environment with fresher air.
[17] The construction of the dormitory is due to be completed in October 2016. If the school has a dormitory, children of nomads can live in the dormitory and attend school.
[18] The total number of classes at the 12 project schools was 349 as of the planning stage in 2007, increased to 506 at the time of the project completion in 2013, and to 624 at the time of the ex-post evaluation in 2015.

Table 7　Number of students per classroom and operation of triple-shift classes

	Baseline (2007)	Target (2013)	Actual (2013)	Actual (2015)
	Planning	Completion	Completion	Two years after completion
Number of students per classroom (The existing project schools)	85 students	Reduced	56 students	67 students
Number of students per classroom (The new project schools)	—	70 students	34 students	52 students
Number of triple-shift classes	21 classes	0 class	5 classes	27 classes
Ratio of triple-shift classes in the total number of classes	6%	0%	1%	4%

Source: Summarized by the evaluator based on the results of the questionnaire survey, the Basic Design Report and the UBC Education Statistics.

In this way, the results of the evaluation showed that the project helped to mitigate crowding in classrooms and reducing the ratio of triple-shift classes by increasing the seating capacity of the project schools.

3.3.2 Qualitative Effects

In order to assess the qualitative impacts of the project, this evaluation conducted a questionnaire and semi-structured interviews with school officials (i.e., a headmaster, a curriculum coordinator, a maintenance staff, and a medical staff in each school). A questionnaire was also given to and a focus group discussion was held with about six teachers who had been teaching in a new school facility, about six students who had been studying at a new facility, and about six parents/grandparents of students who had studied at a new facility. Responses were collected from 12 headmasters, 12 curriculum coordinators (or his/her proxy), 76 teachers (19 male teachers and 57 female teachers), 12 maintenance staff, 11 medical staff, 79 students (33 male students and 46 female students) and 58 parents/grandparents (16 fathers/grandfathers and 42 mothers/grandmothers)[19].

Improvement of satisfaction with physical education environment

A questionnaire survey was conducted with teachers and students to assess the satisfaction level with newly constructed facilities such as classrooms, toilets, a gymnasium and a

[19] The response rate was 100%. Students and parents were selected mainly from the student council and a parents' association when possible.

computer room. The result shows that their satisfaction level was very high, and most of teachers (96%) and students (98%) responded that they were "very much satisfied" or "satisfied" with newly constructed classrooms (Table 8). In addition, the same survey was conducted at schools not covered by the project (hereafter referred to as "non-project schools")[20] and the result of the survey shows that teachers and students of the non-project schools were much less satisfied with the classrooms at their schools, in contrast to the result of the project schools (Table 8).

Table 8 Level of satisfaction with classrooms

	Project school		(Non-project school)	
	Teacher	Student	(Teacher)	(Student)
Very satisfied	**62%**	**84%**	**(0%)**	**(0%)**
Satisfied	**34%**	**14%**	**(6%)**	**(36%)**
Neither	4%	3%	(28%)	(36%)
Unsatisfied	0%	0%	(39%)	(27%)
Very unsatisfied	0%	0%	(28%)	(0%)

Source: Summarized by the evaluator based on the results of the questionnaire survey

Note: Numbers of respondents: 76 teachers and 79 students at the project schools, and 24 teachers and 27 students at the non-project schools. As the numbers were rounded up, the total sum of % is not necessarily equal to 100.

The questionnaire was given to teachers and students in order to compare new classrooms with older classrooms at the existing project schools and with classrooms of schools where teachers and students at the new project schools used to go or work before the project. The result shows that over 90% of teachers and students responded that the spaciousness, brightness, and warmness of the new classrooms were "improved" or "very much improved" by the project (Tables 9 and 10), and it supports the contention that the project has contributed greatly to improvements in the physical education environment. On the other hand, in terms of "crowdedness", 50% of teachers and 60% of students responded that the crowdedness of new classrooms was "improved" or "very improved". This can be considered due to the rapid increase in the number of students at several project schools (i.e., Nos. 12 and 52) from 2013 to 2015 as Table 6 shows.

[20] During the first field survey in the evaluation, with the cooperation of the JICA office in Mongolia and the UBC, the survey on the physical education environment at five non-project schools was conducted in order to use the information as a reference when examining the impact of the project. The number of respondents was 51 persons (24 teachers and 27 students) in total at the five non-project schools. Since the data is collected only from the five non-project schools that the UBC chose (not at random), it is not statistically meaningful to compare the data of the project schools and those of non-project schools. Therefore the results should be used only for reference.

Table 9 New classrooms in comparison with old ones (respondents: teachers)

	Warmness	Brightness	Spaciousness	Crowdedness
Very improved	61%	58%	41%	16%
Improved	33%	41%	50%	34%
Neither	5%	1%	8%	39%
Worse	1%	0%	1%	11%
Much worse	0%	0%	0%	0%

Source: Summarized by the evaluator based on the results of the questionnaire

Note: Number of respondents: 76 teachers.

Table 10 New classrooms in comparison with old ones (respondents: students)

	Warmness	Brightness	Spaciousness	Crowdedness
Very improved	94%	97%	68%	54%
Improved	0%	3%	26%	5%
Neither	6%	0%	3%	39%
Worse	0%	0%	3%	1%
Much worse	0%	0%	0%	0%

Source: Summarized by the evaluator based on the results of the questionnaire

Note: Number of respondents: 79 students. As the numbers were rounded up, the total sum of % is not necessarily equal to 100.

Regarding toilets, 85% of teachers and students responded that they were "very satisfied" or "satisfied" with toilets. Female teachers and students in particular were more satisfied than male teachers and students, listing "more single toilet rooms than before", "neat" and "cleaner" as the reasons for their positive responses. On the other hand, respondents noted that a few toilets in some schools had a very bad smell[21]. The project equipped a handrail with some toilets and a slope outside a new school building for people who use wheelchairs. While some schools show some consideration, such as always putting classes with such students on the first floor, since there are no toilets on the first floor of new school buildings[22], teachers, parents[23] and/or students have to carry these students to toilets on the second floor during break time, which is a burden for them, as they pointed out.

[21] Regarding the smell in toilets, refer to "3.5.4 Current status of operation and maintenance" and "4.2.1 Recommendations".

[22] According to the consultant in charge of the project, on the first floor space for the entrance and access to the basement floor were prioritized and the necessary number of toilets was provided on the second floor or higher floors instead.

[23] Some parents of physically disabled children not only accompany the child to and from school, but also come back to the school during the break between classes in order to carry the children to toilets.

Table 11 Satisfaction level with toilets (respondents: teachers)

	All	Male	Female	(Non-project)
Very satisfied	42%	26%	47%	(0%)
Satisfied	43%	37%	46%	(21%)
Neither	8%	21%	4%	(13%)
Unsatisfied	0%	0%	0%	(4%)
Very unsatisfied	7%	16%	4%	(63%)

Source: Summarized by the evaluator based on the results of the questionnaire

Note: Number of respondents: 76 teachers at the project schools and 23 teachers at the non-project schools. As the numbers were rounded up, the total sum of % is not necessarily equal to 100.

Table 12 Satisfaction level with toilets (respondents: students)

	All	Male	Female	(Non-project)
Very satisfied	65%	61%	67%	(0%)
Satisfied	20%	12%	26%	(14%)
Neither	15%	27%	7%	(27%)
Unsatisfied	0%	0%	0%	(36%)
Very unsatisfied	0%	0%	0%	(23%)

Source: Summarized by the evaluator based on the results of the questionnaire

Note: Number of respondents: 79 students at the project schools and 27 students at the non-project schools.

The satisfaction level of students was so high with the new facilities and rooms constructed only at the new project schools such as a gymnasium and a computer room that 100% of students responded that they were "very satisfied" or "satisfied" with the gymnasium and 91% of students were also "very satisfied" or "satisfied" with the computer room. On the other hand, at the existing project schools, students were not able to fully use the existing facilities (especially the gymnasiums) due to the increase in the number of students caused by the construction of new school facilities; many of them requested that the same facilities as the new project schools be additionally provided.

Clean toilets

A new gymnasium

3.4 Impacts

3.4.1 Intended Impacts

(1) Provision of effective class sessions and quality education

The project aimed to help provide effective and quality education by equipping the project schools with basic educational equipment and appropriate educational environment. During the focus group discussion with teachers, many of them commented that the educational equipment provided by the project such as geometric block models, an abacus and a projector set which enables teachers to use visuals aids made it easier to get students interested in class sessions by using visible and tangible equipment for explanation rather than relying solely on general explanations using a black board, and that the equipment was used daily and contributed to effective class sessions. Also, a number of teachers pointed out that the educational equipment was useful in promoting a new child-centred teaching method[24] that JICA supported in Mongolia, by enhancing interactive communication between teachers and students. In addition, some teachers and students commented that the reduced number of students per classroom enabled teachers to provide students with more detailed instruction, and it was easier for students to ask questions and concentrate in the class sessions due to the quieter environment.

At the project schools, where all beneficiaries have more time because triple-shift classes were reduced or cancelled, teachers commented that they were able to take more time for students who need more assistance than other students, and also had more time for class preparation. Students also commented that now they had the time to ask questions after class, and to continue to study after going home. Students' parents now take more time to communicate with teachers, and as a result, parents became more interested in their children's education, which led to the improvement of students' academic performance and parents' cooperation with the schools. For the reasons above, the project contributed to the provision of effective class sessions and quality education.

(2) Impact on the motivation to study and teach

As noted in "3.3 Effectiveness," at the planning stage, the existing project schools had to face with overcrowded classrooms and operation on triple shifts, and hence the improvement of the educational environment needed to be urgently tackled. When teachers and students were asked what impeded their motivation to study or teach before the project (multiple responses were allowed), most students listed the "smallness" (69%) and "darkness" (67%) of

[24] This is a teaching method supported by the JICA technical cooperation project "Teaching Methods Improvement Project towards Children's Development Phase 1 (2006-2009) and Phase 2 (2010-2013)", which aimed to help students to think and learn by themselves, rather than the conventional teaching method in Mongolia, which focuses on memorization.

classrooms, while teachers chose “double/triple shifts” (59%) and “classroom temperature” (39%) as the major causes.

“3.3.2 Qualitative effect” shows that the teachers and students of the project schools were highly satisfied with their new educational environment, and felt that their new classrooms were much warmer, bigger and brighter compared with the previous classrooms they had used. In addition, when asked about the changes to their motivation to study after the project implementation, all students at the existing project schools who participated in the questionnaire responded that the motivation to study had improved in the new classrooms compared with the old classrooms, and many of them stated, “Now that I can study in a comfortable environment, I like to study and my academic performance was improved.” Many teachers and parents also responded that after the project implementation, the motivation of students to study was improved, and several teachers mentioned that when students had to take classes in the third shift, they were already tired when the class session started, and found it difficult to concentrate during the session. Some teachers and parents also commented that since the school was now warm and comfortable, students were happy to come to school.

Similarly, because of the reduction in multiple shifts and the improvement in classroom temperature by the project, 98% of teachers who participated in the questionnaire responded that their motivation to teach and work was improved due to the new school building. Some headmasters and parents also commented that after the project, “the attitude of teachers was improved” (headmaster) and “Teachers do not want to be transferred to another school” (parents).

In sum, the results show that the improvement in the educational environment contributed to the positive impact of improved motivation for students to study and for teachers to teach and work.

(3) Reduction of economic burden due to less commuting costs and time

At the planning stage of the project, it was expected that in the areas where new schools were constructed, it would become possible for students to go to school on foot, thus reduce financial costs for commuting or boarding.

The results of the focus group discussion with students and parents showed that due to the construction of the new project schools in the areas where there were no schools before the project, students who live close to the schools were able to greatly reduce commuting time and hence financial costs, as expected. Before the project, many students of these new schools had to take several buses to go to school in the city centre of Ulaanbaatar and it took one to two hours. However, now they come to the project schools on foot due to the construction of the new schools. Parents pointed out that they no longer had to cover commuting costs such as bus

fees or fuel costs[25] and boarding costs (about 320,000Tg/year) with this change. As an unintended positive impact, some parents mentioned that as they no longer needed to accompany children to and from school, now more parents can have a job or work longer. Besides, due to the large reduction in commuting time, students commented that now they have the time to read, study or participate in a club activity.

（4）Improvement in students' hygienic and health conditions

Since the project was expected to contribute to improvements in the hygiene and health conditions of students by equipping the project schools with hygienic toilets and heating and ventilation systems appropriate for the severe winter, the evaluation assessed the change on the hygienic and health conditions of students after the project based on the statistics of medical offices and interviews with medical staff.

According to the statistics of the medical offices at seven out of nine project schools with data on medical offices for more than two years, the number of students who left school during the day after being diagnosed with illnesses such as colds steadily decreased year by year, as shown in Table 13.

Table 13 Number of students who left school after the diagnosis of illnesses such as colds by medical office (unit: %)

	2012	2013	2014	2015
	1 year before completion	Project completion	1 year after completion	2 years after completion
No. 12	114	97	64	49
No. 19	78	74	60	39
No. 27	859	654	637	300
No. 35	55	38	22	16
No. 79	-	-	21*	48
No. 118	-	-	917	321
No. 121	-	-	28	25

Source: Summarized by the evaluator based on the results of the questionnaire

Note: * This figure consists of the data for the three months from October to December 2014.

Besides, during the interviews with medical staff and parents, they commented that "the number of students who contracted influenza has fallen to zero for the past three years," and "at the new school facility, I have not heard of any students who contracted infectious diseases

[25] Commuting costs before the new project schools were constructed vary by household and school. The maximum amount reported was 10,000 Tg (about 588 yen) per day. 1 yen = 17 Tg as of December 2015. The table for a settlement rate for FY2015. (JICA, 2015)
（http://www.jica.go.jp/announce/manual/form/consul_g/ku57pq00000kzv7m-att/rate_2015.pdf） *Accesed on June 14, 2016.

in the past three years." Medical staff at the project schools thought that the improvement in the health conditions of students resulted from maintaining an appropriate temperature by improving the heating system, reducing airborne infection of viruses due to less crowded classrooms and improving the hygienic environment of classrooms compared to previous conditions with the provision of a cloakroom (i.e., no need to keep dusty jackets inside a classroom)[26].

Based on these findings, it is reasonable to think that the improvements made to the educational and hygienic environment by the project helped to improve the hygienic and health conditions of students.

A new classroom

A cloakroom

(5) Mitigating the overcrowding at schools near the project schools

At the planning stage of the project, the project was expected to mitigate crowding at schools near the new project schools by transferring some students at those schools to the new project schools. When assessing changes to the crowding of classrooms at schools near the new project schools before and after the project implementation in 2013, it was found that the number of students per class at the schools near three out of five new project schools (Nos. 118, 120 and 123) was reduced, and the number of triple shift classes at the schools near the two project schools (27 triple-shift classes in total) was also reduced after the project implementation in 2013 (Table 14). The remaining two new project schools (Nos. 121 and 122) did not have any impact on existing schools in the vicinity since the two new schools were constructed precisely because of the lack of schools in the surrounding areas (before the project, students at the two schools went to schools in the city centre)[27].

[26] Some medical staff responded that the expansion of the space for hand washing made hand washing a habit, which also contributed to improving health conditions of students.

[27] Schools No. 121 and 122 are located 20-40 kilometers away from the city center.

Table 14 Changes in the number of students and of triple-shift classes at schools near the project schools due to construction of new project schools (before and after project implementation)

	Number of students per class			Number of triple-shift class		
	2012	2013	2014	2012	2013	2014
	1 year before completion	Project completion	1 year after completion	1 yr before completion	Project completion	1 year after completion
No. 60 (near No. 118)	29 students	28 students	28 students	2 classes	0 class	0 class
No. 87 (near No. 120)	31 students	30 students	29 students	0 class	0 class	0 class
No. 106 (near No. 123)	37 students	32 students	33 students	8 classes	0 class	0 class

Source: UBC Education Statistics

3.4.2 Other Impacts

The project did not require the resettlement of residents and land was not acquired for the project since public land was utilized. There was no impact observed on the natural environment by the project.

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

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

The Ministry of Education, Culture and Science (hereafter referred to as "MoES") directs the operation and maintenance of the project schools and the UBC and district education offices supervises them. Each school appropriates staff, develops and submits the budget and develops an educational programme according to the standards set by the MoES. In addition to teachers, each school hires specialized staff (technical staff) to take charge of school operations and maintenance of school facilities. At all the project schools, including the new project schools, a school management committee[28] (or a similar committee) was established and has been convened twice a year to discuss school-related issues.

In terms of maintenance of the project schools, the UBC inspects all the general schools twice a year to identify the facilities and equipment that need to be fixed, and repairs them. In

[28] A school management committee consists of Deputy Chief of the UBC, district education offices, representatives of each school (a curriculum coordinator, a social worker), representatives of parents and representatives of students.

addition, the officer in charge of the project in the UBC also took charge of the previous projects (Phase I to III) and demonstrates a high sense of ownership over the project. He grasps the detailed conditions of all the project schools and supervises and directs the schools in effective maintenance and management of the facilities, making use of lessons in past JICA projects[29].

On the other hand, in terms of school operations, securing an appropriate number and quality of staff and teachers is a challenge. At 10 out of 12 project schools, the number of students per teacher is beyond the MoES goal (27.4 students per teacher for primary education level, and 16.9 students per teacher for secondary education level), as shown in Table 15[30]. While the UBC is aware of the situation, it is not possible to easily increase the number of classes due to lack of classrooms, and the UBC responds to this issue mainly by increasing the number of students per class and hence cannot increase the number of teachers. One new project school (No. 121) is less attractive as a workplace since the school is located far away from the city centre and has no dormitory, and therefore it is difficult to hire experienced teachers and staff[31]. No one commented on the deterioration of the quality of education due to the lack of sufficient teachers, however.

Table 15 Number of students per teacher（2015） (unit: person)

School	12	19	27	30	35	52	79
Primary	**43.5**	**32.2**	**33.2**	**39.9**	**33.2**	26.8	**29.8**
Secondary	**35.4**	**29.7**	**31.1**	**58.2**	15.8	**70.4**	**38.1**
School	118	120	121	122	123		
Primary	**29.6**	**31.7**	22.6	**34.3**	**27.8**		
Secondary	**31.2**	**63.5**	16.9	**32.3**	**36.4**		

Source: Summarized by the evaluator based on the results of the questionnaire

Note: Boldface type figures denote that the figure exceeds the MoES target (27.4 students for primary education and 16.9 students for secondary education level)[32]

Therefore, while full deployment of teachers and staff is still an issue, the institutional system needed to sustain the development effects of the project was established.

[29] For example, according to the results of the interview with him, there were cases in the previous projects (before Phase IV) in which a headmaster hired an acquaintance with no knowledge and skills as maintenance staff through personal connections, which caused technical challenges in terms of the operation and maintenance of schools facilities. Therefore at this project, the UBC instructed headmasters to hire experienced technicians as maintenance staff, and if they hired inexperienced persons who could not properly conduct their duties, headmasters are supposed to take responsibility.

[30] While Schools No. 30, 52 and 120 have a higher number of secondary students per teacher than other project schools, these schools have less than 40 students per class [33.9 students (No. 30), 39.9 students (No. 52) and 31.9 students (No. 120)], according to the results of the questionnaire. Therefore, the reason why these schools have a higher number of secondary students per teacher is possibly because of teachers who have multiple classes due to multiple shifts.

[31] The dormitory was under construction as of April 2016, and supposed to be completed in October 2016. As of the ex-post evaluation, many teachers were young and had limited teaching experience. No medical staff worked for the school.

[32] The average number of students per teacher in Ulaanbaatar in 2015 is 34.4 at the primary education level and 16.2 at the secondary education level.

3.5.2 Technical Aspects of Operation and Maintenance

According to the results of the interviews with maintenance staff and a site survey, although the frequency of inspections and repairs differs by school and facility, all the project schools regularly inspect and carry out repairs of facilities, equipment and furniture. There were cases in the previous projects (before Phase IV) in which, even though headmasters and maintenance staff received instruction on the maintenance of facilities, this knowledge was not passed on when headmasters and maintenance staff were changed. Accordingly, in this Phase IV, the UBC developed an operation and maintenance manual for facilities and distributed it to each school along with the training on operation and maintenance when the facilities were handed over to the schools. The project schools implement inspections and minor maintenance based on what they learned at the training and from the manual. Since the UBC is supposed to bear the cost when major maintenance of facilities is required, the UBC conducts such maintenance based on the results of the inspection twice a year.

Therefore, no major problems with the technical aspects of the operation and maintenance system were identified.

3.5.3 Financial Aspects of Operation and Maintenance

(1) Budget for operation and maintenance at the ministry and city level

About 10% of the budget of the MoES for 2012-2014 was allocated for the maintenance of educational facilities (Table 16). In addition, the UBC independently allocated about 8 million Tg for 2014 and about 3 million Tg for 2015 for the maintenance of educational facilities[33].

Table 16 Percentage of operation and maintenance cost of education facilities in the MoES budget

(unit：1,000Tg)

	MOES budget	Operation and maintenance costs	% of operation and maintenance costs in the budget	Operation and maintenance costs per school
2012	133,908,700	12,453,947	9%	112,198
2013	116,520,700	12,691,937	11%	111,333
2014	269,144,800	18,342,900	7%	154,142

Source: Information provided by the MoES

(2) Financial support for operations and maintenance at a district level

While the budget of the district education offices is allocated only for human resources, the offices can request the necessary funding from the head of the district or the district assembly, as needed. The contents of the financial support on operation and maintenance differ by district, as below (Table 17).

[33] Financial data provided by the UBC.

Table 17 Financial support for operation and maintenance of general education facilities by the District Education Offices

District	School	Supports
Bayanzurkh	No. 27 No. 30 No. 79 No. 120	In case of emergency[34], up to 10 million Tg can be provided.
Songinokhairkhan	No. 12 No. 121 No. 122 No. 123	No financial support is provided.
Bayangol	No. 19	In case of emergency, up to 10 million Tg can be provided as required. When more than 10 million Tg is required, the request must be made to the district's national Diet member.
Sukhbaatar	No. 35	Lobbies to the district assembly as required, irrespective of the amount.
Khan-Uul	No. 52 No. 118	Disbursed from the budget of the district chief as required. 500 million Tg is budgeted for education and protection of children for 2016.

Source: Summarized by the evaluator based on the results of the interviews with the district education offices

(3) Budget for operation and maintenance at the school level

According to the result of the questionnaire, the annual budget of the project schools for 2012-2016 was or is from 531 million Tg to 2,071 million Tg (1,189 million Tg per school on average)[35], greatly increased from the planning stage (about 388 million Tg per school on average). 1-2 % of the schools' budgets were allocated for operation and maintenance.

Maintenance staff of the 11 project schools responded that although the maintenance costs were not sufficient (for major maintenance), the schools provided costs for minor maintenance. When the major repair of facilities and equipment[36] is required, the MoES or the UBC provides the costs, or schools partially repair them every year. Therefore, no major problem was observed.

According to the results of the focus group discussion with parents, most parents were satisfied with the maintenance of their schools, and appreciated that their children were able to study in a comfortable environment. For the maintenance of the schools, since parents had provided various supports including provision of necessary maintenance costs, painting of walls, varnish coating and repair of furniture so far, their support can be expected in the future as well. Parents also provided a wide range of support for the schools such as planting, and

[34] For example, in case of failures of electrical wiring and heating pipes in the winter.
[35] The figure for 2016 is an estimate.
[36] In order to reduce the gap between existing school facilities and new school facilities constructed by the project, three out of the seven existing project schools already underwent extensive repairs, including to heating systems, by end 2015 and one more school is scheduled for extensive repairs in 2016.

donation of soaps and toilet paper[37].

Therefore, no major problems were observed in the financial aspects of the operation and maintenance system.

3.5.4 Current Status of Operation and Maintenance

The current status of operation and maintenance of facilities and equipment in the project schools is shown in Table 18 below. There are no major problems observed in the current status of operation and maintenance of the project schools. Although ventilation and drainage systems at some schools need to be repaired soon, the rest needs only minor maintenance.

Table 18 Maintenance status of facilities and equipment（as of December 2015) (unit: school)

	Already repaired	Need to be repaired	No need to be repaired	Total Number of schools with the facility
Classroom	2	1	9	12
Gymnasium	1	1	3	5
Water tank	0	1	2	3
Sewage tank	0	2	6	8
Boiler	0	2	5	7
Heating system	1	1	10	12
Ventilation	0	6	6	12

Source: Summarized by the evaluator based on the results of the questionnaire given to maintenance staff.

Note: The maintenance status of drainage system is not covered by the questionnaire.

There are no major problems with the maintenance of furniture and equipment, which were well taken care of. In order to keep new facilities clean, students change their shoes to slippers or sandals inside the new facilities, which are cleaned by students or cleaners once to three times a day at all the project schools. Some schools made more efforts to keep the facilities clean for longer. For example, even teachers change their shoes to room shoes, and visitors need to wear vinyl covers on their shoes. Other schools cover desks and chairs with a thick vinyl sheet to protect them from damage. On the other hand, the results of the interviews with headmasters and teachers indicated that the misunderstanding that project schools were not allowed to make any changes to facilities, equipment and furniture for the three years after the

[37] Support by parents differs by the area in which the project schools are located, however. For example, in the schools in the areas with high-rise apartment buildings and industrial parks in the city center or in the newly developed areas in the suburbs, about 1,000 to 2,000 Tg per month/student or 20,000 Tg per time when required are collected, but in the schools in the areas with many *ger*s (portable round tents) 3,500 Tg per student are collected once in two years, or only the donation of toilet paper and soap at the beginning of a school year is requested.

handover of the facilities prevailed among the schools[38], and due to the misunderstanding, there were cases in which furniture and facilities were not repaired.

While there were no major problems identified in the ventilation and drainage systems when the UBC and the consultant in charge of the project examined the defects of the facilities, equipment and furniture of all the project schools in July 2014, some schools pointed out a bad smell from toilets or sewage systems, which were identified after the examination. According to the result of the interview with the consultant for the evaluation, the cause of the smell is likely to result from the sewage system[39] and can be resolved with repairs[40]. There were some ventilation systems with weak suction power, and the UBC recognized the need for maintenance in this case. While it was reported that some facilities (such as the storage space in the gymnasium) at the three new schools experience inundation above ground level (about 10 cm) once a year or so during the heavy rains in the summer[41], this happens only about one day a year and does not have major adverse impacts on the development effects of the project. The UBC plans to inspect these issues (repair of ventilation systems, smell at toilets and floor inundation) during the summer school holidays (end May to August) in 2016 and take necessary actions. In addition, "the report on the result of the examination of defects in facilities provided and the solutions (translated into Mongolian)" prepared by the consultant had already been handed over to the UBC by the JICA Mongolia Office. The schools are planning to carry out minor maintenance by themselves with this report.

In sum, there were no serious problems observed in the current status of operation and maintenance and the facilities and equipment were appropriately operated and maintained in general.

No major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system. Therefore, the sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project was implemented with the aims of increasing the seating capacity and mitigating

[38] The UBC, informed by the evaluator, immediately contacted all the project schools and has already dispelled the misunderstanding.

[39] The result of an additional survey at the school with the bad smell indicates that the cause of the smell is likely because, while water kept in drainage pipes usually prevents such smells, water did not stay in the pipes at the school since it is always dry in Mongolia and the ventilation of air did not prevent the smell.

[40] Additional parts are flexible pipes or PVC pipes and a PVC cap. Odor leakage can be prevented by sealing the slit between buried pipes rising from the floor and flexible pipes with a sealant.

[41] According to the consultant, the issue with the floor inundation can be solved by installing a mobile drainage pump and hose at the schools.

the overcrowding in the schools by constructing twelve (12) primary and secondary education facilities in Ulaanbaatar covered by the project, and thereby contributing to the improved access to primary and secondary education and to the provision of quality education in Ulaanbaatar.

The project has been in line with the development policy of Mongolia, aiming to improve access to education and provide quality education, as well as Mongolia's development needs for improving the educational environment urgently, and Japan's Country Assistance Policy for Mongolia established in November 2004, which designated the strengthening of basic education as a priority subject. Therefore, the relevance of the project is high.

While the project cost was within the plan, the project period exceeded it. Therefore, efficiency of the project is fair.

The project achieved outcomes such as an increase in the seating capacity and the number of students in the project schools, mitigation of the crowding in classrooms, a reduction in the percentage of triple-shift classes, and improved satisfaction among students and teachers with the educational environment. These effects resulted in various positive impacts such as the provision of effective class sessions and quality education and improvement of the motivation of students to study and of teachers to teach and work. Therefore, the effectiveness and impact of the project are high.

Since no major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system, the sustainability of the project effects is high.

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

4.2 Recommendations

4.2.1 Recommendation to the Implementing Agency

The bad smell in the toilets (i.e., repair of drainage system) and floor inundation which were pointed out at several project schools are planned to be inspected and repaired by the UBC during the summer school holidays (from end May to August) in 2016 and to be addressed by each school as needed. Given the possible adverse impacts of these issues on the educational environment, it is recommended that the UBC urgently fix them.

4.2.2 Recommendation to JICA

During the field survey for the evaluation, the project schools often expressed a desire to strengthen ties with JICA, to take the advantage of their participation in the project through, for example, participating in JICA's technical cooperation programs in the field of education as a model school or receiving JOCVs (e.g., Japanese language instructor). In addition, the ex-post evaluation report of the *Project for Improvement of Primary Education Facilities*

(Phase II) in Mongolia introduced a case in which the effective deployment of a JOCV in charge of youth activities at a project school enhanced education at the school. Therefore, in this project as well, it is recommended that JICA maintain ties with the project schools through cooperation such as the deployment of JOCVs and promote the cooperation with synergistic effects in order to improve sustainability of the Project and maximize the project impact.

4.3 Lessons Learned

-Consideration for the place to install toilets for physically disabled children when planning a facility

At the new school buildings, toilets are located on the second and third floors, and it is inconvenient for children with physical disabilities who use classrooms on the first floor. Similar projects in the future should consider the place to install toilets when planning a facility, such as installation of toilets for students with physical disabilities on the first floor, for the convenience of such students. By doing so, projects can contribute to the improved access of students with physical disabilities to education, and to reducing the burdens of carers.

-Ensuring equity among beneficiaries

As already stated, since students at the expanded schools with facilities including classroom buildings under the project cannot fully utilize the existing facilities due to the increase in the number of students resulting from the project, many of them requested that their schools be provided with additional facilities and equipment (e.g., a gymnasium and a computer room) equivalent to those at the newly constructed schools under the project. In particular, gymnasiums are very crowded and do not have enough room for exercises since multiple classes use them at the same time, both at the expanded and newly constructed schools. Therefore, at many of the project schools, primary students do only gymnastics in front of a cloakroom in the basement of the new school building and some pointed out that they cannot get enough exercise. In order to ensure equity among beneficiaries and to maximize the development effect of a project, it is recommended that similar projects in the future take into account the rate of operation at existing facilities and the expected increase in the number of students at existing schools, and reflect the results into a facility plan to ensure the provision of an appropriate educational environment.