

Republic of the Philippines

FY 2016 Ex-Post Evaluation of Japanese Grant Aid Project
“The Project for Evacuation Shelter Construction in Disaster Vulnerable
Areas in Province of Albay”

External Evaluator: Kenichi Inazawa, Octavia Japan Co., Ltd.

0. Summary

This project developed designated evacuation shelters in existing schools in the Province of Albay, aiming to strengthen the function of facilities for safe evacuation of residents during eruption of the Mayon Volcano, and during mudslides, debris flow, or flooding caused by typhoons, torrential rainfall, etc, as well as to ensure a learning environment at normal times. Regarding the relevance, the Philippine government has placed an emphasis on disaster preparedness through legislation such as the Disaster Risk Reduction and Management (Republic Act). In the Province of Albay too—the target area of this project—the provincial government is moving ahead with the development of evacuation centers, mainly targeting barangay¹ facilities. 26 facilities in total were developed in 2015, and there are plans to continue rolling these out in the future. Moreover, the project is also in line with the assistance policy of the Japanese government; thus, its relevance is high. Regarding the efficiency, although the costs of this project were almost as originally planned, the project period was partly delayed due to the necessity of site improvements at some schools, in addition to construction delays arising from disposal of excess soil during site preparation, and so the project period exceeded initial plans. Thus, project efficiency is fair. As for effectiveness and impact, as a result of development of schools designated as evacuation shelters by this project, target values for operation and effect indicators were largely achieved, including accommodation capacity of the evacuation shelters, number of classrooms which is usable as evacuation shelters, square meters of capacity at evacuation shelters per person, and congestion per room during evacuation. Also, as results of the beneficiary survey show, given the fact that resident satisfaction with the facilities developed through this project is high, and that impacts including improved awareness of disaster prevention and evacuation activities and contribution to disaster risk reduction were also confirmed, its effectiveness and impact are high. Regarding the sustainability, the roles and responsibilities of operations and maintenance at the time of the

¹ Indicates the minimum unit of a municipality representing a village or district. In Albay Province, there are 720 barangays, 15 municipalities (the level of organization above barangays), and 3 cities.

ex-post evaluation were not necessarily clear among stakeholder organizations such as the provincial government of Albay, Albay Public Safety and Emergency Management Office (hereinafter referred to as “APSEMO”), Albay Provincial Office of the Department of Education, local municipalities, etc. (for example, each school designated as an evacuation shelter has not been allocated budget for expenses capable of supporting large scale repairs, and it is unclear which organization takes the lead on this) Thus, sustainability of the project is fair.

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

1. Project Description



Project Location



Schools Designated as Evacuation Shelters
Developed under This Project
(Sto. Domingo Central Elementary School)

1.1 Background

The Province of Albay is one of the most disaster-prone areas in the Philippines. The province is faced with natural disasters such as lava flows, pyroclastic flow, volcanic bombs, and falling ash accompanying eruption of the Mayon Volcano, located in its center, as well as mudslides, debris flows, and flooding caused by typhoons. Additionally, because Albay is located near the subduction zone of the Philippine Sea Plate with the Eurasia Plate, the risk of earthquakes and coastal tsunami damage is high. The 1993 eruption of the Mayon Volcano left 77 dead and more than 12,000 household evacuees. The Mayon Volcano erupted again in 2000 and 2006, while in December 2009 the alert level was raised due to lava extrusion, with the surrounding residents obliged to evacuate.² In addition, major typhoons³ in 2006 damaged

² Evacuation period was about one month.

³ These major typhoons were Typhoon No. 15 (Philippine name: Milenyo) and No. 21 (Philippine name: Reming).

many public facilities and houses, recording many human casualties.⁴ Meanwhile, the Province of Albay was faced with a shortage of evacuation shelters capable of receiving evacuees in the event of a disaster. Its central elementary schools⁵, which are positioned for use as evacuation shelters, were built at least 30 to 50 years ago and many of their buildings have deteriorated, raising safety concerns. For this reason, many residents refused to use these as evacuation shelters. Therefore, the development of evacuation facilities in Albay was an urgent task.

1.2 Project Outline

The objective of this project is to strengthen the function of facilities for safe evacuation of the surrounding inhabitants in times of eruption of the Mayon Volcano, lava flows and pyroclastic flows due to typhoon and heavy rain, and flooding, as well as to ensure the educational environment at ordinary times, by constructing evacuation shelters with special facilities at the existing schools of the province of Albay, thereby contributing to alleviate risks of disaster in the area.

G/A Grant Limit / Actual Grant Amount	739 million yen / 715 million yen
Exchange of Notes Date /Grant Agreement Date	August 2011 / August 2011
Executing Agency	Provincial Government of Albay
Project Completion	November 2013
Main Contractor	Iwata Chizaki Inc.
Main Consultant	Mohri. Architect & Associates, Inc.
Basic Design	July 2010 to March 2011 (Implementation Period of Preparatory Study)
Related Projects	[Technical Cooperation] · Improvement of Earthquake and Volcano Monitoring System (2004-2006) · Enhancement of Earthquake and Volcano Monitoring and Effective Utilization of Disaster

⁴ Typhoon No. 15 (Philippine name: Milenyo) left 14 dead and 176 injured in the Province of Albay, and an affected population of about 700,000. Typhoon No. 21 (Philippine name: Reming) left 10 injured (none dead), 1 missing person, and an affected population of about 1,060,000 people. No evacuee number data was obtained.

⁵ Although there is no rigid definition of the differences between central elementary schools and ordinary schools, "central elementary schools" have characteristics such as large number of children in a municipality under the provincial government, and are located near municipal buildings. Other "elementary schools" tend to be located outside of town centers and in barangays.

	<p>Mitigation Information Project in the Philippines (2010-2015)</p> <ul style="list-style-type: none"> · The Study on Comprehensive Disaster Prevention around Mayon Volcano (Development study) (1998-2000) · Disaster Risk Reduction and Management (DRRM) Capacity Enhancement Project (2012–2015) · Disaster Risk Reduction and Management Capacity Enhancement in the Philippines (Dispatch of experts) (2012) · Regional Revitalization in Disaster Prone Area (Training Program for Young Leaders) (2016) · Dispatch of Japan Overseas Cooperation Volunteer (Albay Provincial Disaster Risk Reduction Management Office) (2013–2015) <p>[Grant Aid]</p> <ul style="list-style-type: none"> · The Project for Improvement of Earthquake and Volcano Monitoring System (1998) · The Project for Improvement of Earthquake and Volcano Monitoring System (Phase 2) (2002) · The Project for Improvement of the Meteorological Radar System (2009) · The Programme for the Improvement of Capabilities to cope with Natural Disasters Caused by Climate Change (Non-project grant aid) Improvement of the Flood Forecasting and Warning System for Bicol River (2009) <p>[Other Programs]</p> <ul style="list-style-type: none"> · (Spanish Agency for International Development Cooperation : AECID) Project for Evacuation Shelter Reconstruction (2007–2011)
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2. Outline of the Evaluation Study

2.1 External Evaluator

Kenichi Inazawa, Octavia Japan Co., Ltd.

2.2 Duration of Evaluation Study

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

Duration of the Study: August 2016 - November 2017

Duration of the Field Study: November 8 - 25, 2016

March 15 – 22, 2017

2.3 Constraints during the Evaluation Study

At each school designated as an evacuation shelter developed under this project, it was confirmed that local residents living near the building stayed due to the typhoons and heavy rain, after the completion of project. However, there is no evacuation record related to eruption of the Mayon Volcano. The evacuation period for residents during occurrence of typhoons and heavy rain is 1 to 2 days in case of a lengthy typhoon (usually staying only in the night at around 6 to 12 hours on average). Meanwhile, if the volcano did erupt, a longer period of use (about 1 to 2 months) could be expected.. Therefore, this ex-post evaluation confirmed result during the occurrence of typhoons and heavy rains through the beneficiary survey, but it is necessary to note that the situation is different from the case of forced evacuation for a longer duration due to the volcano.

3. Results of the Evaluation (Overall Rating: B⁶)

3.1 Relevance (Rating: ③⁷)

3.1.1 Consistency with the Development Plan of the Philippines

Prior to the start of this project, the Philippine government formulated the *Philippine Development Plan 2011-2016*, in which disaster risk mitigation and management were a main priority for action. In 2009, the government also formulated the *Strategic National Action Plan 2009-2019* to minimize the damage caused by disasters. In addition, the government enacted the *Philippine National Disaster Reduction and Management Act* in 2010 with the aim of passing disaster reduction and management-related legislation. Meanwhile, the provincial government of Albay formulated the *Integrated Disaster Preparedness Program in Albay Province/Bicol Region, Philippines 2009-2013* (also referred to as “the Master Plan”). In this Master Plan, the establishment of a risk map and emergency measures, development of emergency shelters, early warning system and assistance for communication for evacuation procedures were listed.

At the time of ex-post evaluation, the aforementioned *Philippine Development Plan 2011-2016* continues to be effective. In connection with this Plan, in 2010 the Philippine government passed the *Disaster Risk Reduction and Management Act (Republic Act No. 10121)*; thus, the Philippine Government has made it a legal requirement to formulate a national disaster risk reduction framework adopting an integrated method of managing various disasters such as natural disasters and human disasters. Meanwhile, in the current international community,

⁶ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory and D: Unsatisfactory.

⁷ ③: High, ②: Fair, ①: Low.

Sustainable Development Goals (SDGs) with the target year of 2030 were announced in 2014. As one of the targets, “significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses caused by disasters with a focus on protecting the poor and people in vulnerable situations⁸.” Furthermore, through the 3rd UN World Conference on Disaster Risk Reduction held in 2015, Sendai Framework for Disaster Risk Reduction 2015-2030 (hereinafter referred to as “SFDRR”) was adopted. SFDRR has specified four priority actions, such as 1) Understanding disaster risk, 2) Strengthening disaster risk governance to manage disaster risk, 3) Investing in disaster risk reduction for resilience, and 4) Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction. The Philippine government has been participating in these international frameworks. In addition, the provincial government of Albay has taken on a substantial role in administrating this project and through its subsidiary organization the APSEMO, it has enacted the *Disaster Risk Reduction and Management Plan* (created in 2008, revised in 2014). This Plan places an emphasis on developing an organizational structure related to disaster risk management.

Based on the above, at the time of the ex-post evaluation, the Philippine central government and the provincial government of Albay have each developed disaster reduction and management policies. Therefore, both at the time of planning and ex-post evaluation, the project is in line with policies and measures in the national plans and the sector plans.

3.1.2 Consistency with the Development Needs of the Philippines

Prior to the start of this project, the Province of Albay was proceeding with disaster risk reduction measures through the construction of evacuation shelters to take in evacuees in the event of a disaster, as well as planning evacuation routes and constructing an early warning system. However, there was a shortage of evacuation shelters, and the central elementary schools, which were positioned for use as evacuation shelters, were built at least 30 to 50 years ago and many of their buildings have deteriorated, raising safety concerns. Moreover, such schools designated as evacuation shelters were overcrowded at times of evacuation, and many lacked equipment necessary for evacuation accommodation, such as toilets, kitchens, and water supply facilities. Many residents thus refused to use these as evacuation shelters. Therefore, the development of appropriate facilities in the province was an urgent task.

At the time of the ex-post evaluation, the provincial government of Albay was moving ahead

⁸ It corresponds to Target 11.5 of SDG's Goal 11.

with improvement of evacuation centers for the purpose of coping with natural disasters, mainly targeting barangay facilities. In 2015, a total of 26 sites were developed. According to APSEMO, although the provincial government's budget is limited, in order to respond to expansion of natural disasters and climate change, they suggested that the need to develop evacuation facilities is still high.⁹ Municipal Disaster Risk Reduction Management Offices (hereinafter referred to as “MDRRMO”)—local municipalities¹⁰ under the jurisdiction of the Province of Albay—play a central role for the schools designated as evacuation shelters developed by this project, conducting on-site training on natural disaster-related themes for local residents and children. Specifically, the MDRRMOs conduct quarterly training on themes such as evacuation drills in case of earthquake/tsunami/landslide/flooding/volcanic eruption/typhoon, as well as first aid training for injuries and disaster readiness during the rainy season.

Based on the above, the need for disaster reduction and management measures (including development of evacuation shelters and on-site training, for instance) continues to be emphasized in the Province of Albay even at the time of ex-post evaluation; therefore, it can be judged that the project is consistent with development needs both at the time of planning and at the time of ex-post evaluation.

3.1.3 Consistency with Japan’s ODA Policy

The Country Assistance Plan for the Republic of the Philippines prepared by Japan’s Ministry of Foreign Affairs in June 2008 listed support for the independence of the poor and improvement of their living environments as priority development challenges. It clearly indicated that, "As a support measure for the protection of life from natural disaster, we will provide prompt emergency support and assistance with reconstruction and rebuilding to areas affected by catastrophic damage due to sudden natural disasters."

Based on this assistance plan, the Japan International Cooperation Agency (JICA) prepared the Country Assistance Implementation Policy for the Republic of the Philippines in July 2009. Among its provisions, JICA has indicated its policy to promptly offer emergency physical, humanitarian, and financial support in the event of a disaster, based on the scale of the disaster.

This project provides assistance to reduce disaster risk in the Philippines, and it can be confirmed as consistent with the emergency and reconstruction assistance indicated in the

⁹ Furthermore, at the time of ex-post evaluation, there were more than 350 evacuation facilities in the Province of Albay. According to APSEMO, the number of evacuation centers still to be developed is significant, but no response was received on specific numbers.

¹⁰ The Libon, Oas, Polangui, Santo Domingo, and Manito municipal buildings, and the Legazpi town hall.

aforementioned country-specific assistance plan and country-specific assistance implementation policy. It can thus be judged as consistent with Japan's ODA policy.

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



Photo 1: Polangui North Central Elementary School



Photo 2: Gogon Central Elementary School

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

This project carried out the development of classroom buildings and auxiliary facilities for the schools designated as evacuation shelters (Oas South Central Elementary School, Sto. Domingo Central Elementary School, Polangui North Central Elementary School, Manito Central Elementary School, Gogon Central Elementary School, and Libon Community College). Table 1 shows the planned and actual output of this project.

Table 1: Outputs of the Project (Plan/Actual)

Plan		Actual
【Outputs to be borne by Japanese side】		
Development regarding the following classroom facilities at schools designated as evacuation shelters (a total of 79 classrooms)		Implemented as planned.
1	Oas South Central Elementary School (Oas Town): 11 classrooms	
2	Sto. Domingo Central Elementary School (Sto. Doming Town): 9 classrooms	
3	Polangui North Central Elementary School (Polangui Town): 11 classrooms	
4	Manito Central Elementary School (Manito Town): 19 classrooms	
5	Gogon Central Elementary School (Legazpi City): 9 classrooms	
6	Libon Community College (Libon Town): 20 classrooms	
Development of auxiliary facilities such as machinery rooms including generators, shower rooms, kitchens, laundry rooms, toilets, management offices at the schools designated as evacuation shelter		Implemented as planned.

【Outputs to be borne by Philippine side】	
Demolition of existing facilities, cutting and filling, concrete paving, electricity connection, telephone connection, water connection, fire extinguisher, VAT, bank commission	Almost implemented as planned.

Source: Answers to the questionnaires

As shown in Table 1, outputs to be borne by the Japanese side were implemented as planned. Outputs to be borne by the Philippine side were also almost implemented as planned. However, as explained in the column below, the ongoing situation is such that four facilities developed in this project have limited electrical power supply, while one facility has limited water supply.

Column: Basic infrastructure challenges in facility operations

Before commencing this project, in order to make use of the lessons learned from similar projects in the past, the need for “securing a stable supply of electricity and water” was cited as one of the lessons from the Grant Aid to Bangladesh “Project for Construction of Multipurpose Cyclone Shelters”,¹¹ in the ex-ante evaluation. However, the following challenges were also confirmed in this project.

Limited power supply (4 facilities)

As shown in Table 1, although the service wiring work (which was the responsibility of the Philippines side) was completed at the schools designated as evacuation shelters, power transformers essential for stable electrical supply had not been procured or installed at some schools, at the time of ex-post evaluation. Specifically, the supply of electricity is limited at four facilities: Oas South Central Elementary School, Sto. Domingo Central Elementary School, Polangui North Central Elementary School, and Manito Central Elementary School. For example, at Manito Central Elementary School, almost no power is supplied to the facilities other than the principal's office. Although it is possible to supply power to facilities using a diesel generator in case of emergency, these generators consume a large amount of fuel and are not always in use. (Thus, a power transformer is required to connect to the grid for stable power supply.) The background to this problem involves unpaid charges for electricity use by contractors during the project implementation. As a result of

¹¹ Source: joint evaluation with UNICEF (1997)
<http://www.mofa.go.jp/mofaj/gaiko/oda/shiryo/hyouka/kunibetu/gai/h10gai/h10gai04.html>

interviews at various schools designated as evacuation shelters, it became evident that the arrangements for payment (who was required to pay, as well as when and how) were unclear from the very start of this project. The provincial government of Albay has already issued to Albay Power and Energy Corporation (APEC) the requisite funds¹² for procurement and installation of transformers at these schools designated as evacuation shelters; however, by the time of the ex-post evaluation, APEC has not procured or installed these transformers. APEC's policy is not to procure or install transformers until the unpaid amount for electricity charges is paid.

Limited water supply (1 facility)

At Manito Central Elementary School, there is no water supply service throughout the town; instead, the water supply pipe is used to convey water from a spring. However, there is only one water supply pipe, which is impossible to supply large amounts of water. For this reason, it is considered necessary to work to improve the water supply situation inside the school, such as by increasing the amount of water supplied by increasing the number of water supply pipe.

Some factors indicate a failure to make full use of the lessons learned from previous projects at the beginning of the project—for example, the need to carefully consider issues such as the fact that although design and installation largely proceeded smoothly with regard to facility construction, there was inadequate discussion and confirmation about the burden of maintenance costs (such as electricity costs) after the project completion, and the water supply in the school buildings was not to be judged sufficient for the expanded facilities (schools) despite having only a single water supply pipe.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The initially planned project cost was approximately 809 million yen (project cost from the Japanese side was 739 million yen, while project cost from the Philippine side was approximately 70 million yen). In reality, the project cost was approximately 784 million yen

¹² According to APSEMO, a total of 700,000 PHP (about 1.55 million yen, applying the exchange rate for mid-November 2016).

(project cost from the Japanese side was approximately 715 million yen, while project cost from the Philippine side was approximately 69 million yen); thus, the project cost was almost as planned (approximately 97% of the plan).

3.2.2.2 Project Period

Completion of this project was scheduled within 22 months from August 2011 to April 2013. The actual period (28 months from August 2011 to November 2013) exceeded the planned period (127% compared to the plan). Major factors contributing to this delay include: 1) Design changes related to site improvement occurred at Oas South Central Elementary School after the project started, requiring unexpected time; 2) The issue of excess soil disposal by ground preparation at Manito Central Elementary School (which was the responsibility of the Philippine side), which had not started at the commencement of the main construction work. Despite the supervising construction consultant and the contractor making further requests for disposal of the soil to the provincial government of Albay, the provincial government took some time for processing and internal approval, delaying the progress of the entire construction.

Although the project cost was almost as planned, the project period exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness¹³ (Rating: ③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

At the time of planning of this project, baseline and target design values for the following were set as operation indicators of quantitative effect: 1) Accommodation capacity of the evacuation shelters meeting the standard size; 2) Number of classrooms which meets the standard size and is usable as evacuation shelters; and 3) Accommodation area per user as an evacuation shelter. However, since the grounds for setting the target design values for 3) were discovered to be unclear through this evaluation study, as there was a problem with confirming and analyzing the actual design value, confirmation and analysis relating only to target design values and the actual design value for 1) and 2) were carried out. These are listed in Table 2, with the results of their analysis also explained.

¹³ The sub-rating for Effectiveness is to be considered together with Impact.

Table 2: Operation Indicators of this Project (baseline, target, and actual)

Indicator	Baseline	Target design	Design value after project completion		
	2010	2016	2014	2015	2016 (as of November)
	Planned year	Three years after project completion	One year after project completion	Two years after project completion	Three years after project completion
1) Accommodation capacity of the evacuation shelters meeting the standard size (Unit: person)	4,040	7,200	6,960	6,960	7,200*
2) Number of classrooms which meet the standard size and is usable as evacuation shelters (Unit: number)	101	180	174	174	180**

Source: Document provided by JICA, answers and interview results with each school designated as evacuation shelter, local municipalities, and provincial engineering office of Albay

Note*: 7,200 people since November 2016 (due to the impact of Typhoon Glenda in July 2014, the roof and windows of the Polangui municipal office were damaged and became unusable. For this reason, from among the classrooms of Polangui North Central Elementary School (which was developed as part of this project) 6 classrooms were temporarily used as municipal facilities, although this use was halted in November 2016. After that, it was used as a school and evacuation shelter, and user capacity was increased.)

Note**: 180 classrooms after November 2016 (As mentioned above, 6 classrooms became available in November 2016.)

The operation indicators in Table 2 can be explained as follows:

In this project, as target values after the project completion, the number of users accommodated per classroom was designed to be 40 people, with some extra margin allowed. The number of classrooms meeting the standard size¹⁴ and capable of use as evacuation shelters was planned to be 180 classrooms, including 101 existing classrooms. This project planned to increase the user capacity to accommodate 7,200 people. Regarding design values after the project completion, it was confirmed that the number of such classrooms was 180 classrooms and that user capacity per classroom was 40—which means that the actual user capacity was $180 \times 40 = 7,200$. Therefore, it can be judged that the target design values were satisfied at the

¹⁴ The Department of Education's standard size for classrooms is 63 m^2 ($=7 \times 9 \text{ m}^2$), but before this project started, many classrooms in the target schools were smaller in area at about 48 m^2 ($=6 \times 8 \text{ m}^2$). These values are excluded from Table 2.

time of ex-post evaluation.

In addition, this project used the following three categories as effect indicators of quantitative effect: 1) Congestion per room during evacuation (average); 2) Number of evacuees per toilet (average); and 3) Mitigation of overcrowded condition at school room, with baseline values and target values being set at time of planning. Through this evaluation study, actual values for each category after project completion were obtained. These are listed in Table 3, with the outcomes of their analysis also explained.

Table 3: Effect Indicators of this Project (baseline, target, and actual)

Indicator	Baseline	Target design	Actual		
	2010	2016	2014	2015	2016 (as of November)
	Planned year	Three years after project completion	One year after project completion	Two years after project completion	Three years after project completion
1) Congestion per room during evacuation (average) (Unit: average no. of person)	94	53	35 to 50*	35 to 50*	No record of evacuation
2) Number of evacuees per toilet (average) (Unit: average number of person)	55	26	Unable to calculate (Congestion was alleviated.) **37.4	Unable to calculate (Congestion was alleviated.)	No record of evacuation
3) Mitigation of overcrowded condition at school room (Unit: average no. of schoolchildren per classroom at all target school)	No baseline and target were set.		Approx.30 to 40	Approx.30 to 40	Approx.30 to 40

Source: Document provided by JICA, answers and interview results with each school designated as evacuation shelter, local municipalities, and provincial engineering office of Albay

Note*: Room overcrowding was based on interviews with school staff in the 6 facilities visited as part of this study. Almost all staff gave a response of 35 to 50 people.

Note**: Based on the actual example of Typhoon Glenda in July 2014, a value of 37.4 people was obtained, estimated from Manito Central Elementary School only.

The effect indicators in Table 3 can be explained as follows:

1) There was no data measured or recorded regarding actual values for “Congestion per room

during evacuation", but from interviews with staff at each school designated as an evacuation shelter, almost all gave a response of 35 to 50 people per classroom. Based on these answers, it can be observed that target values have largely been achieved. In 2016, there was no record of evacuation during occurrence of a natural disaster at any of the target schools, so the outcome was "No record of evacuation." 2) "Number of evacuees per toilet" was unable to be calculated because adequate numerical values and information as evidence for number of evacuees were not available¹⁵. As reference, from the results available, citing the example of 2,616 people evacuated to Manito Central Elementary School as a result of Typhoon Glenda in July 2014, this was estimated to be 37.4 people.¹⁶ Although this number did not achieve the target value (26 people), it was confirmed to be less than the baseline value (55 people). For all categories, when the staff of local municipalities and schools designated as evacuation shelters were interviewed, many respondents mentioned that the circumstances of use and degree of congestion of toilets at time of evacuation in 2013 and 2014 was better than before project completion. For this reason, it is judged that this project contributed to easing congestion of toilet use. In 2016, there was no record of evacuation during occurrence of a natural disaster at any of the target schools, so the outcome was "No record of evacuation." 3) " Mitigation of overcrowded condition at school room" is an indicator measuring the usage situation during normal times (when used as a school), and through interviews and on-site inspections at each facility, it was confirmed that roughly 30 to 40 students were taking classes. As mentioned above, in addition to larger classroom sizes than previously, since the number of classrooms has increased by this project, it is judged that classroom overcrowding had been eased compared to before the start of this project. (Photograph 3 below shows a classroom developed by this project, while photograph 4 shows the state of existing classrooms. Note that Photograph 3 shows the room seems less tight and more spacious.)

¹⁵ Although only fragmentary numbers of evacuees accommodated were available, this evaluation study was able to ascertain numbers for the facilities described below:

(1) During Typhoon Glenda (July 2014): 2,616 people at Manito Central Elementary School, 87 households at Libon Community College; (2) During Typhoon Ruby (December 2014): 684 people at Manito Central Elementary School, 248 households at Libon Community College; (3) During Tropical Storm Amang (January 2015): 165 people at Manito Central Elementary School; (4) During Typhoon Nona (December 2015): 105 households (437 people) at Gogon Central Elementary School, 835 people at Manito Central Elementary School, 295 households at Libon Community College. This evaluation study was only able to ascertain numbers for Manito Central Elementary School, Gogon Central Elementary School, and Libon Community College. No data from other facilities were available. Although the Mayon Volcano erupted in September 2014, no accommodation of evacuees occurred in any facility of this project.

¹⁶ The calculation formula was: 2,616 people divided by (number of existing toilets [24] + new toilets [46] installed by this project) = 37.4 people.



Photo 3: Oas South Central Elementary School
(Classroom size developed under this project:
 $7 \times 9=63 \text{ m}^2$)



Photo 4: Sto. Domingo Central Elementary School
(Existing classroom size: $6 \times 8=48 \text{ m}^2$)

3.3.2 Qualitative Effects (Other Effects)

(Raising disaster reduction awareness among residents in target evacuation areas)

It was expected that the disaster reduction awareness of residents in areas to be evacuated would be raised, and residents would proactively use these evacuation shelters, by constructing schools designated as shelters through this project. At the time of ex-post evaluation, the MDRRMO of each municipality in which the project's facilities are located plays a central role in regularly carrying out on-site training for local residents and children, presuming hypothetical evacuation situations at the time of natural disaster. Specifically, MDRRMOs conduct quarterly workshops on content including evacuation drills in case of earthquake / tsunami / landslide / flooding / volcanic eruption / typhoon, as well as first aid training for injuries and disaster readiness during the rainy season.¹⁷ Since this project facilities were designed with enough capacity for courtyard space, corridors, classrooms, etc., they are able to handle large-scale training and workshops. Through interviews with residents and the MDRRMO, this evaluation study has confirmed that residents are familiar with these facilities and that disaster reduction awareness has been sufficiently ensured by active participation in on-site training and workshops. From the above, it is observed that this project has also contributed to improving disaster reduction awareness among the surrounding residents.

¹⁷ The number of participants in each workshop is difficult to state precisely, although it ranges broadly from 100 to 1,000, depending on scale of implementation.



Photo 5: Disaster Countermeasures and Evacuation Drills by Local Municipality (Source: Polangui North Central Elementary School)



Photo 6: Life-saving Kit Deployed at Schools Designated as Shelters

3.4 Impacts

3.4.1 Intended Impact

3.4.1.1 Contribution to Mitigation of Disaster Risk

In this evaluation study, a beneficiary survey was conducted, by a face-to-face interview using a questionnaire format for residents living near schools designated as an evacuation shelter developed by this project. Libon Community College and Sto. Domingo Central Elementary School were selected as the two target sites¹⁸ and a total of 101 samples from residents with experience of evacuation were obtained.¹⁹ From the responses to the various questions, a generally high degree of satisfaction was confirmed for the questions regarding use of the classrooms developed by this project, as per Figure 1. Through interviews with residents, comments such as "The classrooms are spacious. The interior is bright, and I don't recall any shortages during the evacuation" were obtained. Regarding the questions about auxiliary facilities (toilets/showers/laundry/washroom facilities) in Figures 2 to 5, although some

¹⁸ Among the 6 target facilities of this project, Libon Community College was chosen because it had the largest number of classrooms and auxiliary facilities developed (see Table 1). Sto. Domingo Central Elementary School was chosen because it is located closest to the Mayon Volcano. (Despite the fact there has been no evacuation of local residents due to eruption of the Mayon Volcano after the project completion, there is a high possibility of this school being used as an evacuation shelter during future evacuations.)

¹⁹ Sample size was 53 at Libon Community College and 48 at Sto. Domingo Central Elementary School. Sample characteristics were as follows: (1) All people have experience of evacuation to this project's facility due to typhoons or heavy rain both before and after the project; (2) Gender: 11% male, 89% female; (3) Occupation: 64% homemakers, 15% self-employed/company employees/factory workers, 14% barangay staff, 6% farmers, 1% students. Although the percentage of females was large with regard to (2) Gender, this was because the beneficiary survey was conducted on weekdays, during the daytime, when women were most often at home. On weekends, many families leave their homes and it was difficult to acquire many male samples. With regard to prospects of bias and the interpretation of results, it is judged that statistically significant results were not obtained for the population because the current beneficiary survey does not represent strictly equal interval sampling.

responses suggested "I never used it during evacuations,"²⁰ a generally high degree of satisfaction was confirmed. Interviews with residents obtained comments such as "It is clean. Overall, the facility is new and easy to use."; therefore, it can be observed that the auxiliary facilities developed by this project were also well received. Figure 6 is a question about the degree of improvement in the sanitary environment when using the auxiliary facilities outlined above, to which many responded "It has improved" or better. Comments from residents were also obtained to the effect that "Because there is an orientation about how to use the facility and how to dispose of garbage during evacuation, a better sanitary environment is maintained. I think we should use the new facility as cleanly as possible." As a result, it is observed that the sanitary environment of the auxiliary facilities has improved after the project completion. Figure 7 is a question about changes in understanding and awareness of disaster reduction and evacuation activities, to which many responded "It's improved" or better. Likewise, residents commented that, "On-site training and workshops on disaster reduction are being held for residents. Awareness of disaster reduction has increased even at normal times. At times of evacuation, the local municipality is supportive and evacuees cooperate with each other." From the comments obtained, it can be judged that understanding and awareness of disaster reduction and evacuation activities are high. Figure 8 is a question related to the degree of contribution of this project to disaster risk mitigation, to which many responses suggested that the project contributed. Interviews with residents yielded comments such as, "There were no casualties or missing persons after the latest typhoon or heavy rain, and we know that the structure (vertical supports, outer walls) of the facility is robust and very safe. It feels safer than evacuating to/waiting at home." Based on the responses above, it seems that residents have come to depend upon the facilities developed by this project, while at the same time, it is judged that the project has been effective in raising understanding and awareness concerning disaster prevention and evacuation activities, as well as raising awareness toward disaster risk reduction.

²⁰ This is because accommodation time at facilities is short. During typhoons and torrential rains, evacuated residents stay for 1 to 2 days at most (they usually stay only overnight, for about 6 to 12 hours on average).

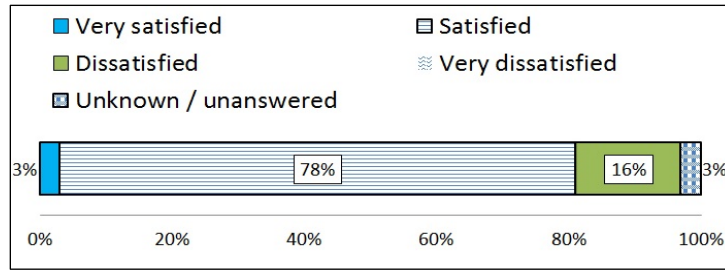


Figure 1: Satisfaction Level When Using the Developed Classroom at Evacuation (N=101)

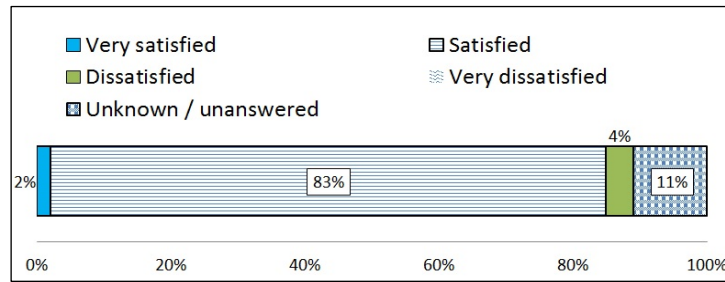


Figure 2: Satisfaction Level When Using the Developed Toilets (N=101)

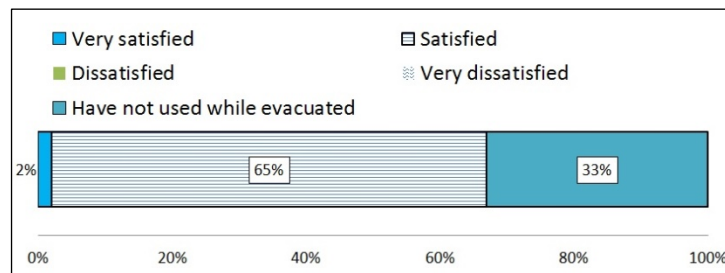


Figure 3: Satisfaction Level When Using the Developed Showers (N=101)

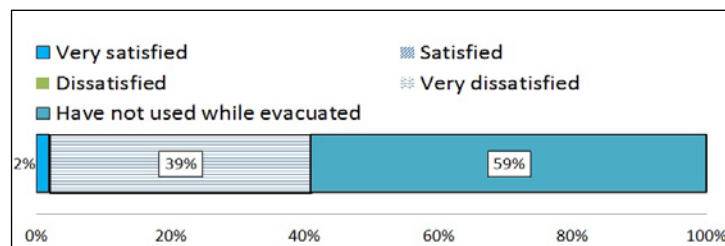


Figure 4: Satisfaction Level When Using the Developed Laundry (N=101)

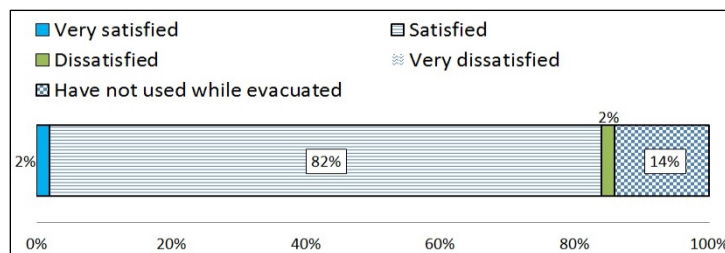


Figure 5: Satisfaction Level When Using the Developed Washroom (N=101)

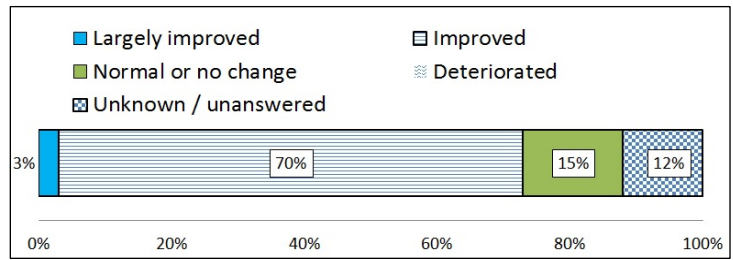


Figure 6: Sanitary and Environmental Conditions When Using the Auxiliary Facilities Regarding Figures 2 to 5 (N=101)

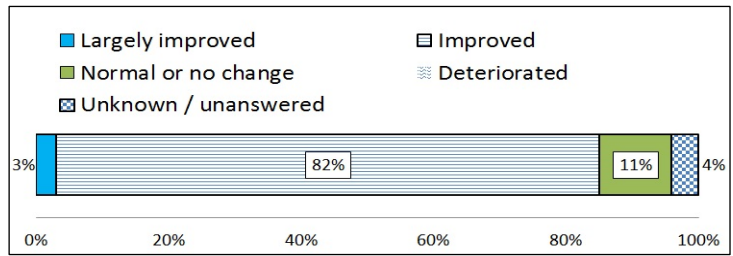


Figure 7: Changes in Understanding/Awareness of Disaster Reduction and Evacuation Activities (N=101)

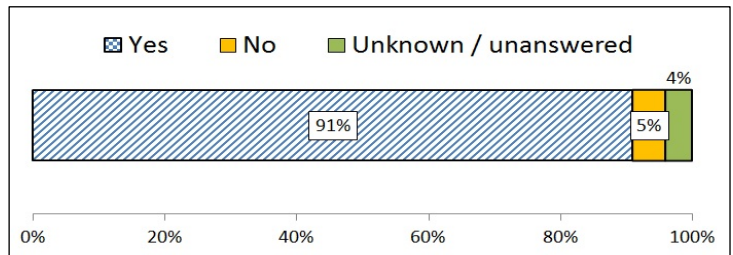


Figure 8: Contribution Degree of this Project to Disaster Risk Mitigation (N=101)

3.4.2 Other Positive and Negative Impacts

3.4.2.1 Impacts on Natural Environment

During the project implementation, it was confirmed through a questionnaire for APSEMO and interviews with staff at APSEMO and various schools designated as evacuation shelters that there was no negative environmental impact. Moreover, it was also confirmed by observation during this field survey and interviewing staff of various schools designated as evacuation shelters that there was no negative impact on air pollution, water quality, noise and vibration, or the ecosystem.

Each school designated as an evacuation shelter is responsible for environmental monitoring of this project. If a serious problem arises, the school will report to the local municipalities with jurisdiction and the municipalities will take steps to resolve the problem. However, since no

serious problem concerning the environment has been found after completion of this project, no particular countermeasure has been implemented based on the results of monitoring.

3.4.2.2 Land Acquisition and Resettlement

There were no cases of land acquisition or resettlement in this project.

3.4.2.3 Other Unintended Positive Impacts (Consideration to elderly people, pregnant women, and those with disabilities)

Ramps and booths for wheelchairs were installed in every school designated as an evacuation shelter in this project. During evacuation caused by occurrence of a natural disaster, elderly people, pregnant women, and those with disabilities among local residents are to be preferentially evacuated under the initiative of the local municipalities. In addition, the courtyard was developed for easier accessibility, in order to be able to see from anywhere in the classrooms and auxiliary facilities, and therefore consideration is also given to the use at night. Thus, in this project, efforts to ensure priority evacuation for the more vulnerable population have been confirmed.

The operation and effect indicators for the schools designated as evacuation shelters developed by this project such as accommodation capacity of the evacuation shelters, the number of usable classrooms, accommodation area per user, and degree of overcrowded condition per room were mostly achieved, and it can be judged that their functions in terms of evacuation shelters have been improved. It also can be judged that the overcrowded condition during use as classrooms at normal times has been alleviated and that the educational environment is improving. In addition, according to the results of the beneficiary survey, residents' level of satisfaction with the facilities developed by this project is high, and impacts such as improved awareness of disaster reduction and evacuation activities and the project's contribution to disaster risk reduction have also been confirmed.

This project has largely achieved its objectives. Therefore effectiveness and impact of the project are high.

3.5 Sustainability (Rating: ②)

3.5.1 Institutional Aspects of Operation and Maintenance

In this project, APSEMO bears overall responsibility as the executing agency, under the

jurisdiction of the provincial government of Albay. Meanwhile, the institutional aspects of operation and maintenance of the six schools designated as evacuation shelters developed by this project are as follows.

APSEMO is responsible for operation and maintenance of the schools designated as evacuation shelters during evacuation of residents. APSEMO coordinates with the Albay provincial office and the Legazpi municipal office of the Department of Education, as well as local municipalities under the jurisdiction of the Province of Albay, and has responsibility during times of evacuation.²¹

At normal times, each of the schools designated as evacuation shelters is in charge of the operation and maintenance. The municipality of Libon is responsible for the operation and maintenance of Libon Community College; the Legazpi municipal office of the Department of Education is responsible for Gogon Central Elementary School; while the Albay provincial office of the Department of Education is responsible for four facilities: Oas South Central Elementary School, Sto. Domingo Central Elementary School, Polangui North Central Elementary School, and Manito Central Elementary School.²² In actuality, however, the roles and responsibilities of each organization are not clear. It is unclear which organization bears responsibility for specific operations and maintenance, or whether and how to divide the burden of operation and maintenance costs. Particularly remarkable is the case of four facilities: Oas South Central Elementary School, Sto. Domingo Central Elementary School, Polangui North Central Elementary School, and Manito Central Elementary School.²³ Although the Albay provincial office of the Department of Education allocates a regular operation and maintenance budget (Maintenance and Other Operating Expenses, hereinafter referred to as "MOOE"²⁴) for school management to each school designated as an evacuation shelter, this does not include the funds able to cover large-scale repair works. Even when these four facilities request such funds

²¹ When this project's facilities are used as evacuation shelters in event of a disaster, each school's disaster prevention committee (composed mainly of staff at each school) constructs and operates a coordinated response with APSEMO, the local municipality and other stakeholders in each barangay. Through interviews with these stakeholders, this evaluation study has confirmed that a collaborative system for evacuation of local residents was established at an early stage and that evacuation activities are undertaken swiftly.

²² There are 19 staff members (full-time employees) engaged in the operation and maintenance of APSEMO, 4 in the Albay provincial office and 10 in Legazpi municipal office of the Department of Education, and 13 in the municipality of Libon. The provincial Engineering Office under the provincial government of Albay also performs activities such as regularly (quarterly) visiting each school designated as an evacuation shelter, monitoring maintenance and operation, if necessary, reporting on matters to the provincial government.

²³ One such example is the case of Manito Central Elementary School, as per the column "Basic infrastructure challenges in facility operations." Even if the school wants to increase the number of water supply pipe, it is not clear whether local municipalities will handle this or whether the Albay provincial office of the Department of Education will handle it, and the division of operation and maintenance costs is unclear.

²⁴ Department of Education budget. In the Philippines, allocated amounts are determined according to the number of enrolled children and then allocated to each school.

from their local municipalities, it is unclear which organizations should allocate these funds in the first place. Therefore, it is desirable that stakeholder organizations including APSEMO, the Albay provincial office of the Department of Education, and local municipalities promptly clarify the systems and responsibilities of operation and maintenance. As described in the column earlier (“Basic infrastructure challenges in facility operations”), despite the necessity of “securing a stable supply of electricity and water” being cited as one of the lessons learned from similar past projects in the ex-ante evaluation of this project, it is concerning that a satisfactory response has not yet been made.

Therefore, it is judged that some concerns remain about the institutional aspects of operation and maintenance of this project.

3.5.2 Technical Aspects of Operation and Maintenance

Regarding times of evacuation, APSEMO, the Albay provincial office and Legazpi municipal office of the Department of Education, and the municipality of Libon regularly conduct training for employees on disaster reduction, communications technology, etc. Themes of training conducted recently include “Training for administrative staff for disaster risk reduction and adaptation to climate change” and “Climate change workshop” organized by APSEMO, as well as “On the Job Training during tsunami occurrence” and “Information and Communication Technology (ICT) capacity building training” organized by the Albay provincial office and Legazpi municipal office of the Department of Education, and “Training on power and water supply operations” organized by the municipality of Libon. Each organization also conducts On the Job Training (OJT) for new staff. The content of this training ranges from orientation sessions after hiring to practical training.

It was confirmed through staff interviews that faculty and staff at each school designated as an evacuation shelter recognized the importance of routine operation and maintenance at normal times for the facilities developed by this project. It was also confirmed that problems with technical aspects have not yet occurred in the current state of operation and maintenance.²⁵ There is no particular manual covering the operation and maintenance of the schools designated as evacuation shelters.²⁶ Personnel at each facility rarely need to receive a high level technical

²⁵ With regard to years of experience, it was confirmed that the staff of each organization largely comprises a mix of young and more experienced staff, and that work-based experience is generally shared. No particular lack of experience or knowledge was evident. Since all organizations are public institutions, staff have entered via the civil service examinations, and have deepened their experience and knowledge through work and training. Most positions are occupied by employees who have obtained at least a 4-year university degree.

²⁶ Due to the nature of the facility’s structure, highly difficult levels of maintenance and management are not

and professional training on operation and maintenance.

Thus, it can be judged that there is no concern about technical aspects of operation and maintenance for the facilities developed by this project.

3.5.3 Financial Aspects of Operation and Maintenance

Table 4 shows MOOE (target schools for this project are Oas South Central Elementary School, Sto. Domingo Central Elementary School, Polangui North Central Elementary School, and Manito Central Elementary School) allocated to all 555 schools under jurisdiction of the Albay provincial office of the Department of Education. Table 5 shows MOOE (target school for this project is Gogon Central Elementary School) allocated to all 56 schools under the jurisdiction of the Legazpi municipal office of the Department of Education. Table 6 shows operation and maintenance costs allocated by the municipality of Libon to Libon Community College.

Table 4: Maintenance and Other Operating Expenses (MOOE) Which Albay Provincial Office of the Department of Education Allocates to Schools
(Unit: 1,000 PHP)

2013	2014	2015
87,129	89,313	114,554

Source: Albay provincial office of the Department of Education

Table 5: Maintenance and Other Operating Expenses (MOOE) Which Legazpi Municipal Office of the Department of Education Allocates to Schools
(Unit: 1,000 PHP)

2014	2015	2016
13,856	14,175	17,914

Source: Legazpi municipal office of the Department of Education

Table 6: Maintenance and Other Operating Expenses (MOOE) Which Municipality of Libon Allocates to Libon Community College
(Unit: 1,000 PHP)

2013	2014	2015
4,468	4,392	6,000

Source: Municipality of Libon

Tables 4 to 6 show the allocation of operation and maintenance-related expenses for the previous three years. Although these generally show an increasing trend, allocated amounts are determined by the number of students enrolled each year. According to interviews with the required.

Albay provincial office and the Legazpi municipal office of the Department of Education and the municipality of Libon about operation and maintenance costs, comments from each suggested that the allocated amounts were not necessarily sufficient and that only the minimum necessary budget was being allocated. The allocated amounts are devoted to relatively minor expenditure such as school operating expenses, extracurricular activities expenses, equipment purchase expenses, utility expenses, and similar. On the other hand, as stated in 3.5.1 Institutional Aspects of Operation and Maintenance, particularly for the four facilities under the jurisdiction of the Albay provincial office of the Department of Education (Oas South Central Elementary School, Sto. Domingo Central Elementary School, Polangui North Central Elementary School, and Manito Central Elementary School), these schools do not have the budget required for large-scale repairs. For this reason, each organization—APSEMO, the Albay provincial office of the Department of Education, and the local municipality—should clarify the system for allocating the operation and maintenance budget, and should strive to secure the budget.²⁷

Therefore, it can be judged that slight concerns remain about the financial aspects of operation and maintenance for the facilities developed in this project.

3.5.4 Current Status of Operation and Maintenance

Regarding operational status at normal times, one classroom is used as an office room, while the other classrooms are used as ordinary classrooms for children. The office is used for multiple purposes such as practical disaster response training, residents' meetings, PTA meetings, etc. Meanwhile, regarding the maintenance status at normal times, an appropriate number of office and cleaning staff are assigned and facilities such as toilets, laundry rooms, kitchens, shower rooms, etc. are largely kept clean.²⁸

Regarding operational status at times of evacuation, whenever a large typhoon arrives APSEMO coordinates and contacts local municipalities with instructions to evacuate, and local municipalities take prompt action in coordination with each facility. The office room is used as an evacuation shelter and disaster management administrative office. Local residents are

²⁷ Furthermore, at the time of ex-post evaluation, the provincial government of Albay is considering implementing an insurance premium program after the latter half of 2017 using a government-connected insurance company to cover costs for evacuation shelters (including for the schools designated as evacuation shelters developed in this project) when large-scale repair expenses are necessary due to damage caused by natural disasters. Every year, the provincial government would pay an insurance premium to the insurance company, and the insurance company would pay for any repairs needed for damaged facilities.

²⁸ Among these, the kitchens, shower rooms, laundry rooms, and generators are hardly used at normal times. However, cleaning and regular inspections are carried out. One exceptional case is the kitchen at Sto. Domingo Central Elementary School, which is effectively used to feed children of poor families.

familiar with appropriate timing for evacuation²⁹ and actions are undertaken quickly and smoothly both on the administrative side and the residents' side. The evacuation period for residents during occurrence of major typhoons is usually 6 to 12 hours, or 1 to 2 days in case of a lengthy typhoon.³⁰ Meanwhile, regarding the state of operation and maintenance at the time of evacuation, after residents return home, the facility staff and local municipal personnel clean up and return the facilities to their original state.

In the municipality of Polangui, due to the impact of Typhoon Glenda in July 2014, the roof and windows of the Polangui municipal office were damaged and became unusable. For this reason, from among the classrooms of Polangui North Central Elementary School (developed as part of this project) 6 classrooms were temporarily used as municipal facilities, although this use was halted in November 2016.

Based on the above, some minor problems have been observed in terms of the institutional and financial aspect. Therefore sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project developed designated evacuation shelters in existing schools in the Province of Albay, aiming to strengthen the function of facilities for safe evacuation of residents during eruption of the Mayon Volcano, as well as mudslides, debris flow, or flooding caused by typhoons, torrential rainfall, etc, in addition to ensuring a learning environment at normal times. Regarding the relevance, the Philippine government has placed an emphasis on disaster preparedness through legislation such as the Disaster Risk Reduction and Management (Republic Act). In the Province of Albay too—the target area of this project—the provincial government is moving ahead with the development of evacuation centers, mainly targeting barangay facilities. 26 facilities in total were developed in 2015, and there are plans to continue rolling these out in the future. Moreover, the project is also in line with the assistance policy of the Japanese government; thus, its relevance is high. Regarding the efficiency, although the costs of this project were almost as originally planned, the project period was partly delayed due

²⁹ The background for this is that in the Province of Albay, on-the-job training and seminars on disaster risk reduction are regularly implemented by local governments, and are considered successful, in addition to the fact that residents have built up experience and familiarity with evacuation procedures during natural disasters up to today.

³⁰ After completion of this project, the Mayon Volcano erupted in September 2014, but there is no record of evacuation to any school designated as an evacuation shelter developed by this project. If the volcano did erupt, a longer period of use (about 1 to 2 months) could be expected.

to the necessity of site improvements at some schools, in addition to construction delays arising from disposal of excess soil during site preparation, and so the project period exceeded initial plans. Thus, project efficiency is fair. As for effectiveness and impact, as a result of development of schools designated as evacuation shelters by this project, target values for operation and effect indicators were largely achieved, including accommodation capacity of the evacuation shelters, number of classrooms which is usable as evacuation shelters, square meters of capacity at evacuation shelters per person, and congestion per room during evacuation. Also, as results of the beneficiary survey show, given the fact that resident satisfaction with the facilities developed through this project is high, and that impacts including improved awareness of disaster prevention and evacuation activities and contribution to disaster risk reduction were also confirmed, its effectiveness and impact are high. Regarding the sustainability, the roles and responsibilities of operations and maintenance at the time of the ex-post evaluation were not necessarily clear among stakeholder organizations such as the provincial government of Albay, APSEMO, Albay Provincial Office of the Department of Education, local municipalities, etc. (for example, each school designated as an evacuation shelter has not been allocated budget for expenses capable of supporting large scale repairs, and it is unclear which organization takes the lead on this) Thus, sustainability of the project is fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

- The supply of electricity is not stable at several facilities developed by this project: Oas South Central Elementary School, Sto. Domingo Central Elementary School, Polanguí North Central Elementary School, and Manito Central Elementary School. With leadership from the provincial government of Albay, it is considered necessary for the stakeholder organizations (APSEMO, the Albay provincial office of the Department of Education, and local municipalities) to promptly discuss and determine which organization is responsible for paying the unpaid electricity charges to handle this matter.
- At Manito Central Elementary School, water supply pipe is used to convey water from a spring. However, there is only one water supply pipe, which makes it impossible to supply large amounts of water. With leadership from the provincial government of Albay, it is considered necessary for the stakeholder organizations (APSEMO, the Albay provincial office of the Department of Education, and the local municipalities) to promptly discuss the

water supply situation and facility budget in order to achieve an increase in the number of water supply pipe as well as water supply volume.

- Regarding operation and maintenance of this project, it remains unclear which organization essentially has the responsibility for specific operation and maintenance, as well as which organization should bear the operation and maintenance costs. Particularly remarkable is the case of four facilities: Oas South Central Elementary School, Sto. Domingo Central Elementary School, Polangui North Central Elementary School, and Manito Central Elementary School. With leadership from the provincial government of Albay, it is considered necessary for the stakeholder organizations (APSEMO, the Albay provincial office of the Department of Education, and local municipalities) to promptly discuss and clarify this issue as soon as possible.

4.2.2 Recommendations to JICA

- In regard to the above points, it is recommended that the JICA Philippines Office monitor the status of progress for the above recommendations and follow up with the executing agencies as necessary.

4.3 Lessons Learned

Necessity of establishing a system to demarcate responsibility for operation and maintenance at an early stage

- It is believed that either before project commencement or during project implementation, stakeholder organizations (the provincial government of Albay, APSEMO, the Albay provincial office of the Department of Education, and local municipalities) should have clarified and agreed upon the institutional aspects of operation and maintenance post completion. Despite the necessity of "securing a stable supply of electricity and water" being cited in the ex-ante evaluation of this project as one of the lessons learned from similar past projects, because the post-completion institutional aspects of operation and maintenance remains unclear, electricity and water supply are not necessarily adequate at some facilities. In order to share and maintain a common vision of the institutional aspects of operation and maintenance, including details of practical and specific maintenance tasks and projected budgetary requirements, it is suggested that stakeholder organizations (the Albay provincial government, APSEMO, the Albay provincial office of the Department of Education, and local municipalities) mutually discuss and clarify concrete aspects of

sharing of roles and responsibilities at the project formation stage and during project implementation, as well as creating an agreement document in a practical and sustainable form and ensuring subsequent communication among the relevant organizations in order to regularly confirm and share information.