DEPARTMENT OF FINANCE (DOF)
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS (DPWH)
DEPARTMENT OF INTERIOR AND LOCAL GOVERNMENT (DILG)
THE REPUBLIC OF THE PHILIPPINES

THE URGENT DEVELOPMENT STUDY ON THE PROJECT ON REHABILITATION AND RECOVERY FROM TYPHOON YOLANDA IN THE PHILIPPINES

FINAL REPORT (I)

MAIN REPORT

VOLUME 3: QUICK IMPACT PROJECTS

JUNE 2015

JAPAN INTERNATIONAL COOPERATION AGENCY

ORIENTAL CONSULTANTS GLOBAL CO., LTD.
CTI ENGINEERING INTERNATIONAL CO., LTD.
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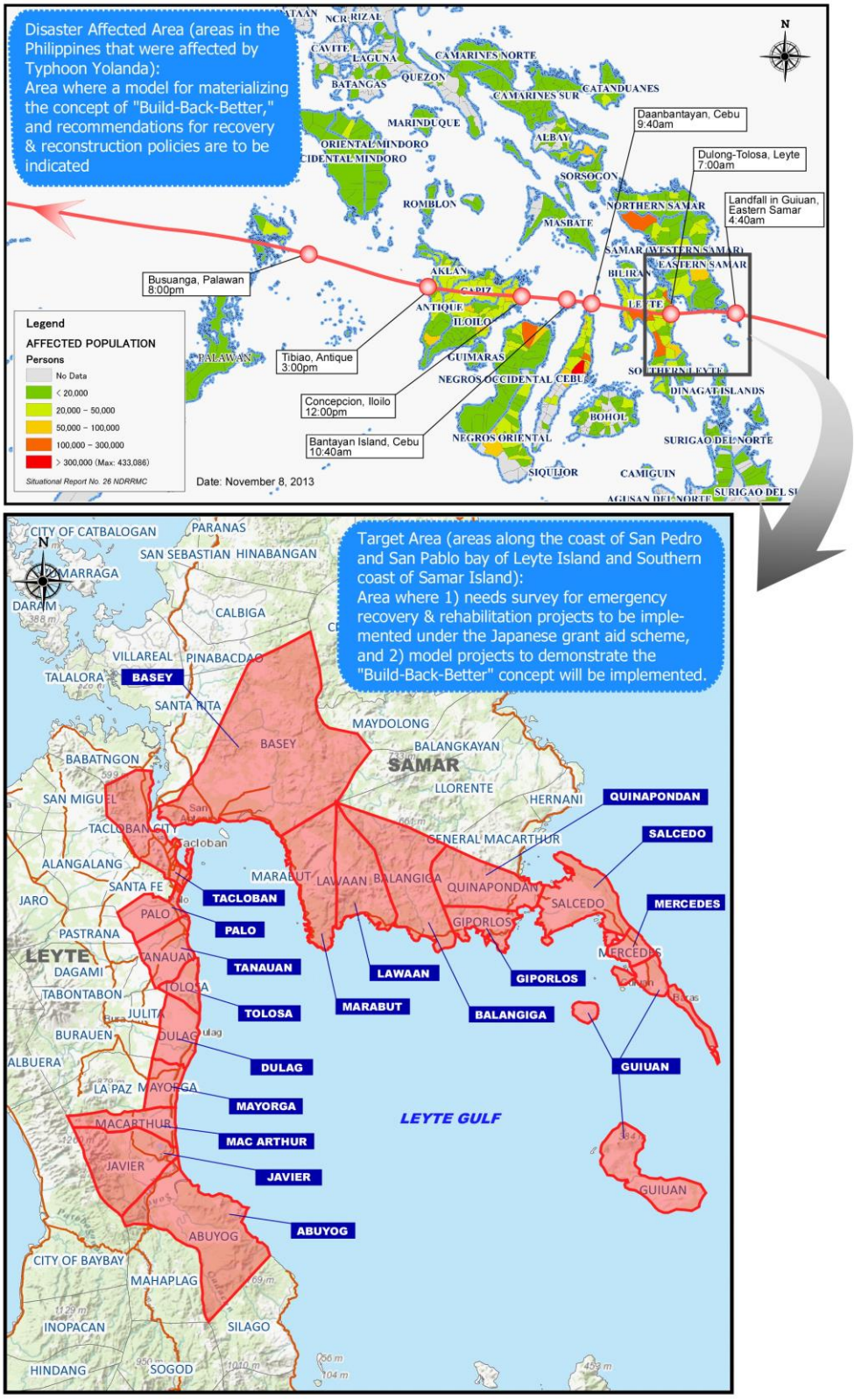
Composition of Final Report (I)

Summary		
Main Report	Volume 1	Recovery and Reconstruction Planning
	Volume 2	General Grant Aid Project
	Volume 3	Quick Impact Projects
Appendix	Technical Supporting Report	

US$ 1.00 = Phillipines Peso (PHP) 44.56 = Japanese Yen ¥ 123.96

(June, 2015)



Map of the Disaster Affected Area and Target Area

Republic of the Philippines

The Urgent Development Study on
The Project on Rehabilitation and Recovery from Typhoon Yolanda

Final report (I)

Main Report
Volume 3: Quick Impact Projects

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Abbreviations

ADB	:	Asian Development Bank
BFAD	:	Bureau of Food and Drug
BFAR	:	Bureau of Fisheries and Aquatic Resources
BOQ	:	Bill of Quantities
CD	:	Capacity Development
CHB	:	Concrete Hollow Block
DAC	:	Development Assistance Committee
DAR	:	Department of Agrarian Reform
DILG	:	Department of Interior and Local Government
DOH	:	Department of Health
DOLE	:	Department of Labor and Employment
DOST	:	Department of Science and Technology
DPWH	:	Department of Public Works and Highways
DRRM	:	Disaster Risk Reduction and Management
DSWD	:	Department of Social Welfare and Development
DTI	:	Department of Trade and Industry
EVRMC	:	Eastern Visayas Regional Medical Center
FAO	:	Food and Agriculture Organization of the United Nations
FIC	:	Food Innovation Center
FY	:	Fyscal Year
GMFDC	:	Guiuan Marine Fisheries Development Centre
GoP	:	Government of the Philippines
HDPE	:	High Density Polyethylen
IOM	:	International Organization for Migrants
JICA	:	Japan International Cooperation Agency
LGU/PLGU/CLGU/MLGU	:	Local Government Unit/Provinial LGU, City LGU, Municipal LGU
LMBTC	:	Leyte Marine Biotoxin Testing Center
LTO	:	Licence to Operate
NAS	:	National Agriculture School
NHS	:	National High School

NIFTDC	:	National Integrated Fisheries Technology Development Center
OJT	:	On the Job Training
PCA	:	Phillipine Coconut Authority
PCIC	:	Philippine Crop Insurance Corporation
PE	:	Polyethylen
PHO	:	Provincial Health Office
PPE	:	Personal Protection Equipment
PQ	:	Pre-Qualificaiton
PWD	:	Persons with Disorders
QIP	:	Quick Impact Project
RAY	:	Reconstruction Assitance on Yolanda
RHU	:	Rural Health Unit
SCWFA	:	Santa Cruz Women Fisheries Association
SMACHS-EV	:	Strengthening Maternal and Child Health Services in Eastern Visayas
TESDA	:	Technical Education and Skills Development Authority
UNDP	:	United Nations Develpment Programme
VSU	:	Visaya State University

Chapter 1 Formulation of Quick Impact Projects

1.1 Background and Objectives of Quick Impact Projects

1.1.1 Background of Quick Impact Projects

With the strong efforts of the Government of the Republic of the Philippines (GoP) and with support from various International Organizations, donor countries and NGOs in humanitarian assistance including provision of shelter, food, drinking water, sanitation, education and support for the vulnerable, the areas hit by Typhoon Yolanda somewhat managed to avoid the worst-case scenario of humanitarian crisis. However, although many of the humanitarian assistance organizations had been gradually withdrawing, the people still lack appropriate measures for issues such as securing material for construction of shelters, support for resuming livelihood activities, disposal of fallen coconut trees, recovering of community facilities, recovery of equipment for fisheries, support for inter-cropping, securing of coconut seedlings, and have been dependent on external support.

Under such circumstance, the GoP prepared the Reconstruction Assistance of Yolanda (RAY). However, the RAY is yet to be implemented in a comprehensive form, and issues on substantial means for recovery of livelihood and rebuilding of the community are still evident. Also, with more typhoon seasons coming near, every possible measure should be undertaken in order to reconstruct the functions of the government and community, and to strengthen their capacity for disaster risk reduction and management.

1.1.2 Objectives of Quick Impact Projects

The Quick Impact Projects (QIPs) are implemented with the aim of promoting the process of reconstruction by contributing to the restarting of economic activities, reconstruction of daily lives, and strengthening of government organizations' capacities in implementing supportive measures for disaster management in the Target Area. At the same time, they also need to be completed within the Project Period, maintain appropriate quality, and secure a concrete structure for operation and maintenance.

1.2 Principles for Selection of Quick Impact Projects

Discussions on the directionalities for the selection of QIPs were made between the Japanese side and relevant organizations of the Philippines in order to select QIPs that are both necessary and effective for the disaster hit areas, and that can materialize the above aim to the maximum extent. As a result, the following directionalities were determined.

- Projects having high impact due to their implementation
- Projects having high synergetic effect when combined with the Japanese Grant Aid projects

- Projects contributing to the sharing of Japanese experience and technology
- Projects contributing to the reconstruction of livelihoods and the community
- Projects contributing to the strengthening of capacities of administrative organizations in supporting disaster management activities
- Projects that are not duplicating the activities of other donors

Based on the above, the Study Team developed the following three principles in order to materialize the six directionalities as actual candidate QIPs that respond to actual local needs. Apart from these principles, the two directionalities "projects with high impact" and "Projects that are not duplicating" were considered at the time of actual selection of the QIPs.

1.2.1 Reflecting Lessons Learned and Technologies Accumulated through Past Disasters in Japan to Recovery and Reconstruction

(1) Utilization of lessons learned in Higashi-Matsushima City of Miyagi Prefecture

In Higashi-Matsushima City, which suffered serious damage in the Great East Japan Earthquake, the local people used prefabricated facilities which were donated with the support of Germany as meeting places. It is said that the facilities were effectively used as places where the local people discussed their community rehabilitation plans. Through the experiences of Higashi-Matsushima City, early reconstruction of multi-purpose facilities (daycare centers) that can be utilized as venues for community meetings with prefabricated building units have been found to be very effective for recovery and reconstruction from disaster damage.

The peninsula-like topography of the area somewhat limits the access for construction material and other resources, making it difficult to procure them in sufficient quantity. Prefabricated building units using technologies applied in Japan shall be applied for early reconstruction of the destroyed daycare centers that can be used for multiple functions, as they can be transferred to construction sites easily and can be installed in a relatively short time and at small cost. At the same time, these units can maintain a certain level of rigidness. The reconstructed daycare centers, which will have a standard size of around $50m^2$, will be used for infants as daycare centers in the day time, while in the night time and weekends, they will be used as meeting places of the community to discuss topics such as issues on reconstruction of Barangays and necessary requests to government organizations.

(2) Utilization of Knowledge and Technologies of Japanese Skilled Builders

In both the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake that Japan has experienced in recent years as large-scale disasters, many skilled builders worked in the fields from all over the country during the recovery period. They used highly developed techniques in the reconstruction of public facilities and the construction of temporary housing so that disaster resilient public facilities were restored. However, in the affected areas of

Typhoon Yolanda, besides the use of construction material with due quality, the quality of local craftsmanship for construction is of concern, and improvement of local craftsmanship for construction is urgently needed to recover and re-construct public facilities in the near future.

In the Philippines, the Technical Education and Skills Development Authority (TESDA) is in charge of providing technical training to nurture skilled builders. In order to train skilled builders with the knowledge and technology applied in Japan, on-site technical training shall be given through the repairing of damaged school facilities. The graduates of TESDA training courses on carpentry, who will be involved in repair and reconstruction works as skilled builders, will be targeted as trainees. Sites for training shall be selected among school plots with buildings constructed through past Japanese Grant Aid Projects. The Buildings to be repaired shall be in the same plot, but constructed by local funds. Moreover, the training shall be recorded on video as training material and handed over to TESDA in order to enable continued training of Japanese technology by TESDA.

(3) Synergetic Effect with Grant Aid projects

Under the framework of this Project, the reconstruction of selected Rural Health Units (RHUs), which are the primary access points for basic medical services, and the Eastern Visayas Regional Medical Center (EVRMC), which is a tertiary medical facility, have been selected as candidate projects to be implemented under the Japanese Grant Aid scheme from the viewpoint of rehabilitating regional medical services.

Currently, the Provincial Health Office (PHO) of Leyte, which oversees the activities of RHUs, is also still damaged and has received no assistance from any donor organization. Rehabilitation of the PHO shall be selected in order reestablish the coordination structure with primary and tertiary medical facilities and to enable the RHUs to fully function after they are reconstructed through the Japanese Grant Aid project.

1.2.2 Supporting the Regeneration of Livelihood Activities and the Community

(1) Regenerating Livelihoods of Coconut Farmers

Agriculture and fisheries, which are the main industries of the area, suffered devastating damages by Typhoon Yolanda. The damage to agriculture is particularly significant in the coconut farms. According to estimates by the Philippine Coconut Authority (PCA), a total of 33 million coconut trees (295,191 ha) has been damaged in the whole of the Eastern Visayas (Region VIII). Accordingly, more than 1 million coconut famers have lost their means of income and are in critical situations. In order to rehabilitate the damaged coconut fields, fallen and standing decayed coconut trees must be removed and coconut seedlings must be newly planted. However, even if this is done, it will take nearly 10 years for local coconut trees or 6 to 7 years for improved varieties to start bearing fruits. In order to endure this period, farmers

will have to practice integrated farming such as intercropping and combination of crop production and livestock.

In response to the situation, the PCA and other international organizations such as the UNDP are supporting the removal of fallen or standing decayed coconut trees by providing chainsaws to the LGU or local residents. However, removal of the trees is not necessarily being done in an efficient manner due to the huge amount of trees and issues such as difficulties in management of the chainsaws. Trunks of fallen coconut trees are processed as timber for construction, and it has become a source of cash income. However, the quality of coco lumber is not suitable for building material, and it is expected that the supply of coco lumber will soon overwhelm the demand for the building material because the number of fallen trees is too large. On the other hand, the removal of damaged coconut trees is of urgent importance because they may induce an upsurge of pests that can also affect the remaining coconut trees.

Under such circumstance, charcoal production from fallen and standing decayed trees shall be introduced as an effective measure to cope with the removal of the damaged trees. Production of charcoal will not only satisfy the needs of farmers, but will also create a temporary source of income. In the process of charcoal production, charcoal vinegar may be collected as a by-product. However, since the effect as well as harm that charcoal vinegar may have depends on its ingredients. Therefore, collection and utilization of charcoal vinegar will be considered only if their effects are verified by local research centers.

(2) Regenerating Livelihood of Fisherfolk

Fisheries in the Eastern Visayas (Region VIII), which includes the islands of Leyte and Samar, suffered devastating damages from Typhoon Yolanda. More than 20,000 boats, mainly owned by small independent fisherfolk were damaged, taking away the livelihood of more than 21,000 families. Most of the fish cages in the area were also washed away. Furthermore, damage was observed in all sorts of fishery related infrastructure in the area (i.e. company owned industrial fish cages, freezing facilities, hatcheries). After being hit by Typhoon Yolanda, the Government of the Philippines has promptly established the AHON Fisheries Rehabilitation Project in order to provide support for the affected fisher folks. However, support for rehabilitation of fish culture activities has not shown significant progress.

The Basey Mariculture Park located in San Juanico Strait, with an annual production of 600,000 tons, is one of the major production centers for milkfish culture in Region VIII. The site was severely damaged by the storm surge caused by Typhoon Yolanda, with 265 ships and 110 rafts either destroyed or washed away. Under such conditions, fish-culture activities, which have been the main source of income for the facility, still remains shut down.

Depletion of aquatic resources in neighboring waters has been a crucial issue in the whole of the Philippines from the times before Typhoon Yolanda. With the situation becoming more

and more difficult for fisherfolk to secure sufficient income through capture fishery by gill nets or fishing, the GoP has shown its direction to satisfy the market demand and secure the livelihoods of fisher folks through mariculture. Also under such circumstance, restarting mariculture activities is an urgent issue.

Under such circumstance, Japanese technologies for typhoon resilient high-density polyethylene (HDPE) submersible fish cages shall be introduced in cooperation with BFAR, together with "Gawabari" techniques, which will improve the resiliency of fish cages against strong waves. The increased resilience of these facilities against typhoons will contribute to realizing the Build-Back-Better concept in rehabilitation of mariculture. Furthermore, submersible fish cages were already introduced in Palawan Island and have managed to endure Typhoon Yolanda.

Guiuan Bay which is located at the south eastern end of Samar Island has suitable habitat for the high-priced fish, grouper, and annually produces 100 tons (about 200 million pesos) from fishing and aquaculture using natural fingerlings. The live fishes were shipped to markets such as Manila and Hong Kong. However, the foundation for livelihood has collapsed due to the loss of fishing boats and fish cages due to the storm surge of Typhoon.

In consideration of the above, disaster resilient fish cages (high-density polyethylene submerged fish cage with improved mooring) shall be introduced to fisherfolk villages with relatively high dependency on fish farming in order to not only resume the livelihood of the fisherfolk but also to stabilize production in the medium-to-long term by improving productivity and applying operational measures that have less burden on natural resources.

On the other hand, support for oyster culture, which is practiced in a small scale in the Target Area, should be done with considerations on natural production capacity of the waters by utilizing Japanese knowledge and technology.

Working together with BFAR and MLGU in introducing the above disaster resilient mariculture technology is expected to enable the said technology to further expand to other areas in the islands of Samar and Leyte, and furthermore to the whole of the Philippines.

(3) Regeneration of Local Small-Scale Industries

There were cases in the Target Area where MLGUs were promoting processing activities for primary food products. Some local residents' groups were actually processing agricultural and fishery products under the support of DOLE and DSWD, which provided them with the necessary training and equipment. However, these groups could not resume their activities because Typhoon Yolanda brought serious damage to the buildings and manufacturing equipment for the processed food production site of these groups.

The main products produced by the residents' groups were fried noodles made with vegetables

and fish meat, boneless fish products, meat products (sausage, seasoned meat, salami, etc.), and banana chips. There are significant needs for the resuming of these activities since these products were important sources of additional income for the local residents, particularly for women.

In consideration of the above, diversification of local income sources shall be promoted by supporting the residents' groups by the repairing of multi-purpose buildings, which will be used as the venues for processing of agro-fishery products, and provision of necessary equipment. Furthermore, gathering of individual processing activities to a single location near the Municipal Hall which has good accessibility is expected to contribute to further promotion of processing activities to nearby areas since they will have demonstration effects.

Diversification of income sources in areas that are largely dependent on coconut farming and fisheries is expected to contribute to the formulation of a more disaster resilient community in the area.

1.2.3 Strengthening Public / Community Facilities and their Disaster Resiliency

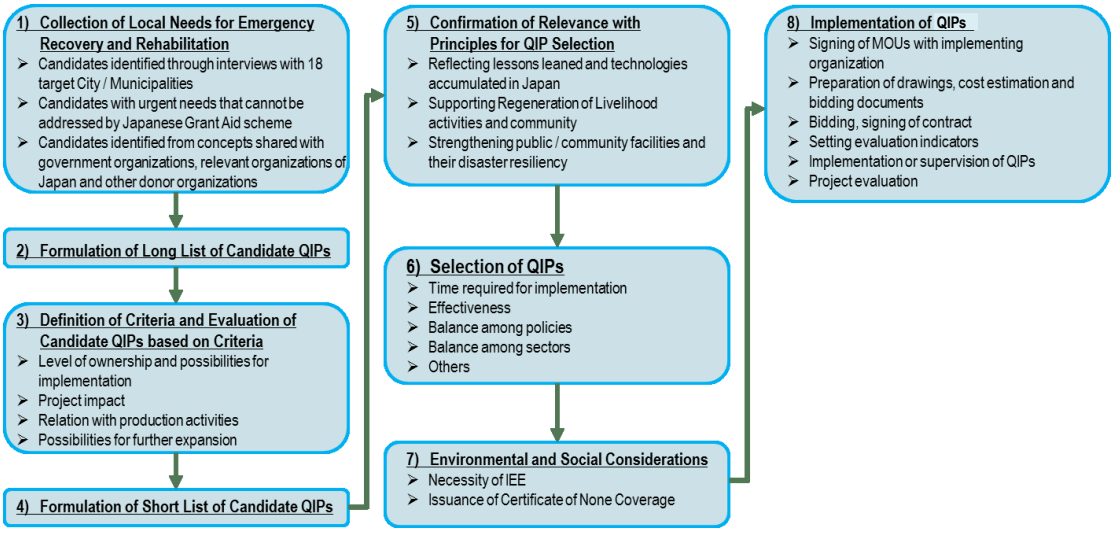
Huge numbers of houses and public facilities have suffered devastating damages from Typhoon Yolanda, of which the majority are yet to be reconstructed. The National Structural Code of the Philippines basically follows the design criteria applied in the USA. However, in reality, there are many difficulties in actually applying the code due to reasons such as; insufficiency in human resources that can prepare technical drawings based on the code, tendency of non-compliance due to financial issues, insufficient manpower in government offices to review the drawings, inappropriate construction supervision, and contractors not precisely following the technical designs. There are also cases observed where the institutional structures of some MLGUs were not necessarily sufficient for managing the technical quality of drawings and construction works. While Yolanda was indeed a typhoon with extraordinary power, a part of the reason for the extensive damage can also be found in the above. Although the MLGUs are in a position to reconstruct their public facilities and to resume their services to their constituents, realization of the concept of "Build-Back-Better" may not be easy under their current limitations.

In consideration of the above, the capacity of MLGU staff for management of technical drawings, cost estimation, bidding, contract and construction supervision in relation to repairing and reconstruction of public facilities shall be aimed at through co-working with the engineers and relevant offices during the whole process. Knowledge and technology on points to be focused on in repairing and strengthening of damaged points, as well as those for construction supervision will also be transferred to the relevant officers.

Increasing the capacity of MLGU officers through the above is expected to contribute to further recovery and reconstruction of other public facilities in a "Build-Back-Better" manner.

1.3 Flow of Quick Impact Project Formulation

Based on the above principles, the QIPs were selected through the process indicated in the Figure Below.



Source: JICA Study Team

Figure 1.3-1 Flow of Formulating Quick Impact Projects

1.3.1 Collection of Information Regarding Local Needs for Emergency Recovery and Rehabilitation

Candidate projects were selected from projects identified based on: 1) needs for rehabilitation and recovery of the 18 target City/Municipalities that were collected through interviews with their representatives, 2) urgent requirements that cannot be materialized through the Japanese Grant Aid scheme and 3) concepts that were shared from government agencies and other donor organizations.

Moreover, taking into consideration that the 18 target City/Municipalities have already prepared, or are currently preparing their City/Municipal Rehabilitation and Recovery Plans based on the instruction of the central government, the Study Team requested all target City/Municipalities to select projects with urgent need from their Rehabilitation and Recovery Plans in the light of the criteria listed below, and to present their information in Project Card formats prepared by the Study Team.

In addition to the above, Project Cards were also prepared for concepts that were shared from other organizations and urgent requirements that cannot be materialized through the Japanese Grant Aid scheme, after reviewing their conformity with the same criteria. The format for the Project Card is shown in Figure 1.3-2.

- No duplication with activities implemented by other donor organizations
- Physical access to the project site is easy

- Period required for implementation is within around 6 to 10 months
- Adverse impact to the natural and social environment can be avoided, mitigated or handled with feasible countermeasures
- Impact of the QIPs are very high
- Agreements on operation and maintenance are made with local stakeholders

The Long List of candidate QIPs has been formulated by gathering the Project Cards prepared through the above.

Date: / /2014	Leyte	Samar	East Samar
City / Municipalty	Tacloban / Palo / Tanauan / Tolosa / Dulag / Mayorga / Macarthur / Javier / Abuyong	Basey / Marabut	Law aan / Balangiga / Giporlos / Quinapondan / Salcedo / Mercedes / Quiuan
Name of Program / Project / Activity			Priority
Contact Parson			
Type of Program / Project / Activity	Infrastructure Road / Bridge /Sport Facility / LGU's Facility / Street Light / Dranage / Others	Economy Public marcket / Fishery / Agriculture / Others	Social Food control / Health Facility / School / Nurthly / Day Care Center
Barangay			
Damage	Damage of Facility Totally / Partially	Cause Heavy Rain / Big Wind / Tidal Wave (H = m)	
Out Put	Rehabilitation Facility / Equipment / Others	Reconstruction Facility / Equipment / Others	Capacity Building Training / Disaster Reduction / Others
Scale / Volume / Accessibility			
Estimated Cost			
Objective / Impact			
Beneficiaries			

Source: JICA Study Team

Figure 1.3-2 Project Card Format

1.3.2 Evaluation of Candidate Quick Impact Projects Based on the Criteria

The contents of the Project Cards were further scored in terms of four items (Table 1.3-1), in order to narrow down the candidate projects in the Long List into those with high impact and a possibility for implementation. The criteria for scoring the four items are indicated in Table 1.3-2. Each of the items was evaluated with a maximum score of 5 points, whereas for item (1), a maximum score of 5 was applied as a total of its three sub-items.

Average Project Cost is expected to be around 20 million yen (approximately 8 to 9 million pesos) per project. However, particular importance was not attached to this item for scoring, since the costs indicated in the Project Cards were very course estimates.

Based on the results of scoring done through the above process, a Short List of candidate projects was prepared by selecting the three top-score projects from each City/Municipality. Initially, some projects for new construction of sea-walls and installation of landfills were indicated in the

Short List. However, these projects were later excluded from the short list because the outputs from Component 1 of this Urgent Development Study (basic policies for rehabilitation and reconstruction), which can only be produced at later stages of the Study, needed to be considered for designing their scale and capacity.

In the process of reviewing the shortlist, some other projects were also excluded, such as; projects concerning repairing / reconstruction of buildings that are expected to be done with the support of DILG, projects with contents that are likely to duplicate the work of other donors and relevant organizations, and projects that are expected to receive budgeting from other sources.

Table 1.3-1 Items Evaluated

Items	Reason	Corresponding Content of the Project Card
(1) Ownership and possibility	Short implementation periods and high possibilities for actual implementation are to be selected as Quick Impact Projects among those identified in the City / Municipal Rehabilitation and Recovery Plans. The item was set so as to evaluate these points, Three sub-items will be included in this item. The "Priority" refers to the priority determined by the City / Municipality among the projects indicated in the Rehabilitation and Recovery Plans. The "Scale / Volume / Accessibility" as well as the "Estimated Cost" are set to evaluate whether or not the City / Municipality has a concrete plan for the project in terms of project scale and necessary cost, and to confirm that there are no problems in physical access to the project sites.	Priority Scale/Volume/ Accessibility Estimated Cost
(2) Impact	The item was set to evaluate the magnitude of impact that may be derived from the project.	Beneficiaries
(3) Productivity	The item was set to evaluate whether the implementation of the project will contribute to recovering economic activities and means of livelihood.	Type of Program / Project /Activity、Objective / Impact
(4) Expandability	The item was selected to evaluate the probabilities of project effects to further expand in the area through collaboration with other activities / organizations. This will further provide indication of the sustainability of the project activities. The item particularly focuses on aspects of economic, regional, and institutional expansibility, as well as that in terms of human resource	Type of Program / Project / Activity / Objective / Impact

Source: JICA Study Team

Table 1.3-2 Evaluation Points

Evaluation Items		Evaluation Points		
(1) Ownership and possibility	Priority	Priority 1,2, 3,4	Priority 5,6,7,8	Priority 9,10
		3	2	1
	Estimated Cost	Not more than 9 million pesos		More than 9 million pesos
		1		0
	Scale / Volume / Accessibility	Clearly described		Not clearly described or not described
		1		0
(2) Impact		Not less than 1,000	Less than 1,000	Not described
		5	2	0
(3) Productivity		Income/Working Supports	Consumer/Vocational Supports	No relations to Livelihood
		5	2	0
(4) Expandability		Over Local Economy/ Organizational Development	Local Economy/Independent Development	No Relations to Economy or Capacity Development
		5	2	0

Source: JICA Study Team

1.3.3 Selection of Emergency Recovery and Reconstruction Projects to be Implemented as Quick Impact Projects

Site surveys and interviews with City / Municipal engineers and other relevant officers were conducted for the candidate QIPs listed in the Short List. Information was collected on items such as; whether there are concrete implementation plans prepared, whether the C/MLGU is prepared to be proactively involved in the bidding process and construction supervision, and whether there are plans for operation and maintenance after the completion of the QIPs.

Subsequently, the selection of QIPs was done based on the policies discussed above, by confirming which policy the candidate QIP falls in. Furthermore, candidate QIPs were further narrowed down taking into consideration their effectiveness under the respective policies which they fall in, areal distribution projects, balance among the respective policies, and possibilities and means for further expansion of project activities in the future. The selected QIPs were then prioritized in consideration of implementation period, effectiveness, balance among individual policies and different sectors. The list of prioritized QIPs and reasons for prioritization of individual QIPs are indicated in Table 1.3-3 and Table 1.3-4, respectively.

The QIPs were basically planned to be able to deliver their outcomes independently. However, considerations were also made so that further synergy could be obtained when implemented together with the planned Japanese Grant Aid projects and other QIPs. For example, the milkfish produced in Basey (QIP-1), milkfish and oyster produced n Tanauan (QIP-15) and lapu-lapu produced in Guiuan (QIP-8) could be linked to the Guiuan Marine Fisheries Development Center (GMFDC), where equipment will be rehabilitated through a Japanese Grant Aid project. The GMFDC can contribute to these QIPs as one of the providers for fingerlings. Furthermore, a part of the lapu-lapu harvested from QIP-8 can be sold through the public market in Guiuan, which is reconstructed through QIP-9. The project for sales promotion (QIP-14) aims at formulating a value chain from production of raw material to processing and sales, which is expected to significantly contribute to improving the livelihoods of the affected population. The two Rural Health Units (RHUs) in Leyte, which are also planned to be reconstructed in disaster resilient forms through Japanese Grant Aid projects, will contribute as a center for emergency medical activities during disasters. These facilities are expected to provide more functional and disaster resilient services to the users through collaboration with the Provincial Health Office, which will be reconstructed through QIP-2. Besides, The technical training to TESDA graduates and provision of training material (video and manual) are expected to largely contribute to the reconstruction of disaster resilient structures through collaboration with LGUs. The location and inter-relations of various activities from the view of the above synergies are indicated in Figure 1.3-4.

Table 1.3-3 List of Selected QIPs

QIP No.	Priority Group	Municipality	Project Name	Main Counterpart Agency	Supporting Agency	Remarks
QIP-1	I	Basey	Regenerating Livelihood through Introduction of Disaster Resilient Submersible Fish Cage (Milk Fish Culture)	Municipal Govt. of Basey	BFAR	
QIP-2	I	Palo	Recovery of Rural Public Health Service Support System through Reconstruction of Provincial Health Office	DOH	Leyte Province	
QIP-3	II	Tolosa	Regenerating Local Livelihoods through Processing of Agriculture and Fishery Products by Small-Scale Community Groups	Municipal Govt. of Tolosa	VSU	
QIP-4	II	Balangiga	Training on Disaster Resilient Construction Technologies through Reconstruction of National Agriculture School	TESDA		Trainers' and Graduates' training for TESDA and evaluation
QIP-5	II	Dulag	Training on Disaster Resilient Construction Technologies through Reconstruction of National High School	TESDA	DepED	Trainers' and Graduates' training for TESDA and evaluation
QIP-6	II	Salcedo	Reconstruction of Daycare Center for Community Rehabilitation (Vitalizing Peoples' Dialogue)	Municipal Govt. of Salcedo		
QIP-7	II	Guiuan	Reconstruction of Daycare Center for Community Rehabilitation (Vitalizing Peoples' Dialogue)	Municipal Govt. of Guiuan		
QIP-8	II	Guiuan	Regenerating Livelihood through Introduction of Disaster Resilient Submerged Fish Cage (Lapu-lapu Culture)	Municipal Govt. of Guiuan	BFAR	
QIP-9	III	Guiuan	Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market	Municipal Govt. of Guiuan		Capacity Development on LGU officers
QIP-10	IV	Dulag	Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Slaughter House	Municipal Govt. of Dulag		Capacity Development on LGU officers
QIP-11	IV	Mercedes	Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market	Municipal Govt. of Mercedes		Capacity Development on LGU officers
QIP-12	IV	Mayorga	Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market	Municipal Govt. of Mayorga		Capacity Development on LGU officers
QIP-13	V	Basey, Mercedes, Tacloban ,Tanauan and Tolosa*	Promotion of Local Products to Improve Livelihoods for the Survivors of Typhoon Yolanda	DTI	BFAR, Chamber of Commerce, DA, DOST, Relevant LGUs	
QIP-14	II	Mercedes	Regenerating Livelihood through Production of Coco Charcoal Briquette	Municipal Govt. of Mercedes	DA, PCA	
QIP-15	I	Tanauan	Integrated Culture of Oyster and Milkfish Improvement for Sustainable Aquaculture and Livelihood	Municipal Govt. of Tanauan	BFAR	

Source: JICA Study Team

* Other possible areas to be identified through the QIP.

Note:

BFAR: Bureau of Fisheries and Aquatic Resources, DA: Department of Agriculture, DepED: Department of Education, DOH: Department of Health, DOST: Department of Science and Technology, NFTDC: National Integrated Fisheries and Technology Development Center, PCA: Philippines Coconut Authority, TESDA: Technical Education and Skills Development Authority, VSU: Visaya State University

Table 1.3-4 Establishment of Priority Groups for QIPs and their Reasons

Priority Group	Project Title	Project Site	Points Considered for the Categorization of Priority Groups
I	QIP-1 Regenerating Livelihood through Introduction of Disaster Resilient Submersible Fish Cage (Milk Fish Culture)	Basey	The QIP aims to re-establish milkfish farming, which was a conventional economic activity practiced in the area, in a form that is more resilient to typhoons by introducing Japanese technologies for submersible fish cages. The Municipality will co-manage the fish cages with BFAR and will lease them to the local fisherfolk. The fisherfolk will be responsible for the operation and daily maintenance, while the Municipality / BFAR shall take charge of large-scale repair and renewal of the structures. In order to do this, the Municipality/BFAR shall charge minimum service fees for the use of the equipment. Through this process, the Municipality/ BFAR will be able to obtain the know-how for the operation and management of the fish cages, and will be able to further expand the activities within the Municipality, as well as in the other areas in the region. Ultimately, the disaster resistant technology can be expected to be utilized in all areas affected by typhoons in the country, with Basey Mariculture Park being its model. At the same time, the QIP is also expected to contribute to the formulation of a value chain for fish through its future linkage with Guiuan Marine Fisheries Development Center, which is planned to be supported through the Japanese Grant Aid scheme. As indicated above, the QIP will contribute to reconstructing the local industry in a form that is more resilient to disasters and will directly contribute to the regeneration of local livelihoods. Furthermore, its effect is expected to expand beyond the borders of the Municipality. In consideration of such benefits, the QIP is categorized in Priority Group I.
I	QIP-15 Integrated Culture of Oyster and Milkfish Improvement for Sustainable Aquaculture and Livelihood	Tanauan	The QIP aims to re-establish oyster farming, which was a conventional economic activity practiced in the area. Local material will be used for the construction of fish-pens and oyster racks, so that the facilities can be easily re-established by the fisherfolk once it is damaged by possible future typhoons. Techniques for sustainable integrated culture of oyster and milkfish will be introduced in consideration of the natural production capacity of the site. The water quality of the site will be regularly monitored by the Leyte Marine Biotoxins Testing Center in order to avoid overcrowding of milkfish and oyster, which may result in eutrophication of the waters. Necessary technologies for the production system will be accumulated in the Municipality of Tanauan and BFAR (Leyte Province and Region 8 Office). A part of the products will be processed in order to add value. At the same time, the QIP is also expected to contribute to the formulation of a value chain for fish through its future linkages with the Guiuan Marine Fisheries Development Center, which is planned to be supported through the Japanese Grant Aid Scheme. Furthermore, the milkfish produced is also expected to be sold to the participants of another QIP (Regenerating Local Livelihoods through Processing of Agriculture and Fishery Products by Small-Scale Community Groups) which is also working on value adding to local agro-fishery products. As indicated above, the QIP will contribute to reconstructing the local industry in a form that is more sustainable, and will directly contribute to the regeneration of local livelihoods. Furthermore, the areas suitable for fish-pen culture of milkfish

Priority Group	Project Title	Project Site	Points Considered for the Categorization of Priority Groups
			widely exists in the area, the effect of the QIP is expected to expand beyond the borders of the Municipality. In consideration of such benefits, the QIP is categorized in Priority Group I.
I	QIP-2 Recovery of Rural Public Health Service Support System through Reconstruction of Provincial Health Office	Palo	The QIP aims to recover the functions of the Provincial Health Office (PHO) in supporting the Rural Health Units (RHUs), which are the terminal public health service providers in the region. The functions of the PHO include; 1) support for the 44 RHUs in the Province for the implementation of central policies and programs, and monitoring of services provided, 2) Coordination between the central administration and RHUs, 3) Collection of Provincial and Municipal level data related to public health services and health indices. Reconstruction of the PHO office as well as support for necessary equipment will enable the resumption of stagnated services (issuance of birth certificates and health certificates, provision of administrative training for RHUs, distribution of vaccines, etc.) and contribute to enhancing basic health services in the Province. Furthermore, appropriate designing and construction for the repair works will contribute to increasing the disaster resiliency of the supporting structure for basic health services. As indicated above, the QIP contributes to the reconstruction of the basic public health services of the entire Province by early recovery of the supporting structure for public health services. The QIP is also expected to have synergetic effects with the RHUs which are planned to be rehabilitated under the Japanese Grant Aid scheme. Moreover, urgent recovery is required by the PHO for the stagnated services, such as provision of vaccines to RHUs and issuance of documents necessary for visa applications by migrant workers (birth certificates and health certificates). In consideration of these aspects, the QIP is categorize into Priority Group I.
II	QIP-8 Regenerating Livelihood through Introduction of Disaster Resilient Submerged Fish Cage (Lapu-lapu Culture)	Guiuan	The QIP aims to re-establish grouper (Lapu-lapu) farming, which was a conventional economic activity practiced in the area, by introducing disaster resilient fish cages (submerged fish cages made of high-density polyethylene and improved mooring) and a fish culture system with less load on natural resources (regulation of capturing natural fingerlings and gradual transition to artificial assorted feed), in order to regenerate the economic foundation of fish farmers and to stabilize its production in the mid to long term. The Municipality will co-manage the fish cages with BFAR and will lease them to the local fisherfolk. The fisherfolk will be responsible for the operation and daily maintenance, while the Municipality/ BFAR shall take charge of large-scale repair and renewal of the structures. In order to do this, the Municipality/BFAR shall charge minimum service fees for the use of the equipment. Through this process, the Municipality/BFAR will be able to obtain the know-how for the operation and management of the fish cages, and will be able to further expand the activities within the Municipality. In the future, seedlings used for grouper farming will shift to artificially raised fingerlings that will be produced in the Guiuan Marine Fisheries Development Center, which is planned to be supported through a Japanese Grant Aid scheme, so as to reduce the dependency on natural fingerlings. Furthermore, the QIP is expected contribute to the establishment of the entire value chain through its linkage with

Priority Group	Project Title	Project Site	Points Considered for the Categorization of Priority Groups
			the later mentioned QIP titled "Improving Municipal Capacity for Disaster Resilient Construction Project Management (Reconstruction of Guiuan Public Market)." As indicated above, the QIP will contribute to reconstructing the local industry in a form that is more resilient to disasters and will directly contribute to the regeneration of local livelihoods. Furthermore, its effects are expected to expand beyond the borders of the Municipality. However, since the sites suitable for grouper farming is rather limited, the magnitude of expansion is expected to be lower than the QIPs in Priority Group I. Therefore, the QIP is categorized into Priority Group II.
II	QIP-3 Regenerating Local Livelihoods through Processing of Agriculture and Fishery Products by Small-Scale Community Groups	Tolosa	The QIP will contribute to promoting the diversification of income sources for the local residents by supporting residents' organizations for food processing activities through repairing a multi-purpose building that can be used as processing centers, and by providing necessary equipment for processing activities. Processing activities of agro-fishery products (deboning of milkfish, producing noodles from fish meat and vegetables, production of sausages, etc.) were already practiced by small-scale residents' groups before Typhoon Yolanda. Therefore, it is expected that it will be relatively easy to resume these activities by installing a processing center with a kitchen and necessary equipment (small equipment such as refrigerator, tables and common kitchenware, hand operated pasta machine, etc. Necessary equipment will be decided through discussions with the residents' groups). In addition, gathering of the individual processing activities, which were practiced in dispersed locations, to a site with good access near the Municipal Hall is expected to bear demonstration effects to neighboring areas. Through such effect, it is expected that processing activities will also expand to areas outside of the borders of Tolosa. With local means of livelihoods largely biased on coconut farming and fisheries, diversification of livelihood activities is expected to contribute to formulating a community that is more resilient to disasters. As indicated above, the QIP is expected to contribute to increasing disaster resiliency of the area by promoting diversification of economic activities. Furthermore, the effect of the QIP is expected to expand beyond the borders of the Municipality. However, considering that the scale of activities and area of expansion is expected to be lower than those of the QIPs in Priority Group I, the QIP is categorized into Priority Group II.
II	QIP-14 Regenerating Livelihood through Production of Coco Charcoal Briquette	Mercedes	The QIP aims to accelerate the removal of fallen trees and standing dead stocks from the coconut fields damaged by Typhoon Yolanda, in order to resume the production of coconut production and to promote inter cropping, which will be an important income source for the coconut farmers until the replanted coconut trees start baring fruits. Promotion of inter cropping after the coconut fields are cleared is also expected to increase the resiliency of coconut farmers because their sources of income will be diversified, meaning that they will be able to obtain a certain amount of income even when coconut trees are damaged again by possible future typhoons. The fallen trees and standing dead stocks will be processed into charcoal by applying "*Fuse Yaki*" method, which is a simple method for charcoal production that has been practiced

Priority Group	Project Title	Project Site	Points Considered for the Categorization of Priority Groups
			in Japan. The produced charcoal will be sold to markets in order to generate cash income, which will be an incentive for the coconut farmers for clearing their coconut fields. Since charcoal produced from coconut trunks are products that have not been used in the area, and because the quality of this charcoal is not as high as those produced from coconut shells, possibilities for processing them into charcoal briquettes will also be examined. Briquetting equipment and techniques will also be introduced to the area if briquetting is proved to add value to the products. As indicated above, the QIP is expected to contribute to the re-establishment of coconut farming through the clearing of coconut fields. The QIP will also directly contribute to the local livelihood through providing means for supplemental cash income. The activities are simple and can be expanded beyond the borders of the Municipality. However, taking into consideration that there are also other means for clearing the damaged coconut fields such as cash for work activities, the QIP is categorized into Priority Group II.
II	QIP-4 Training on Disaster Resilient Construction Technologies through Reconstruction of National Agriculture School	Balangiga	The QIP aims to enhance the technical skills of skilled workers by utilizing the reconstruction of Balangiga National Agriculture School (mainly providing vocational training) as a training material for teaching disaster resilient design and construction techniques. Training will be provided in collaboration with the Technical Education and Skills Development Authority TESDA, an organization providing a series of vocational training including construction techniques, and graduates of TESDA training courses, who will be involved in the construction / repair works as skilled workers will be targeted as the trainees. The QIP will start by reviewing the technical drawing that is already being prepared by TESDA and training will be conducted by utilizing an existing OJT scheme (as a part of its curriculum, TESDA is sending its trainees to contractors for OJT). In the QIP, TESDA trainers and training course graduates shall be employed by a contractor in order to perform OJT under the supervision of the Study Team during the whole process of reconstruction. A skilled worker from Japan will be invited to the site, particularly at the stage of preparation to fixing of trusses and tiling of the roof, which is a critical stage as it largely influences the susceptibility to typhoons, so that the trainees can obtain the knowledge and techniques applied in Japan. Training activities with the Japanese skilled worker will be recorded on video and handed over to TESDA as training material, so that the technique can be further taught to future trainees. By widely sharing knowledge and technology for disaster resilient designing and construction among the trainees, the QIP is expected to contribute to the reconstruction of the disaster hit areas based on appropriate skills, and contribute to the reconstruction of disaster resilient public facilities. At the same time, the knowledge and technologies transferred to the TESDA trainers are also expected to be further inherited by future trainees after the QIP is completed. As for indirect effects, with skills improved through the training, the access of trainees to income opportunities is also expected to improve. The reconstruction of the Balangiga National Agriculture School (vocational school) will benefit the disaster hit

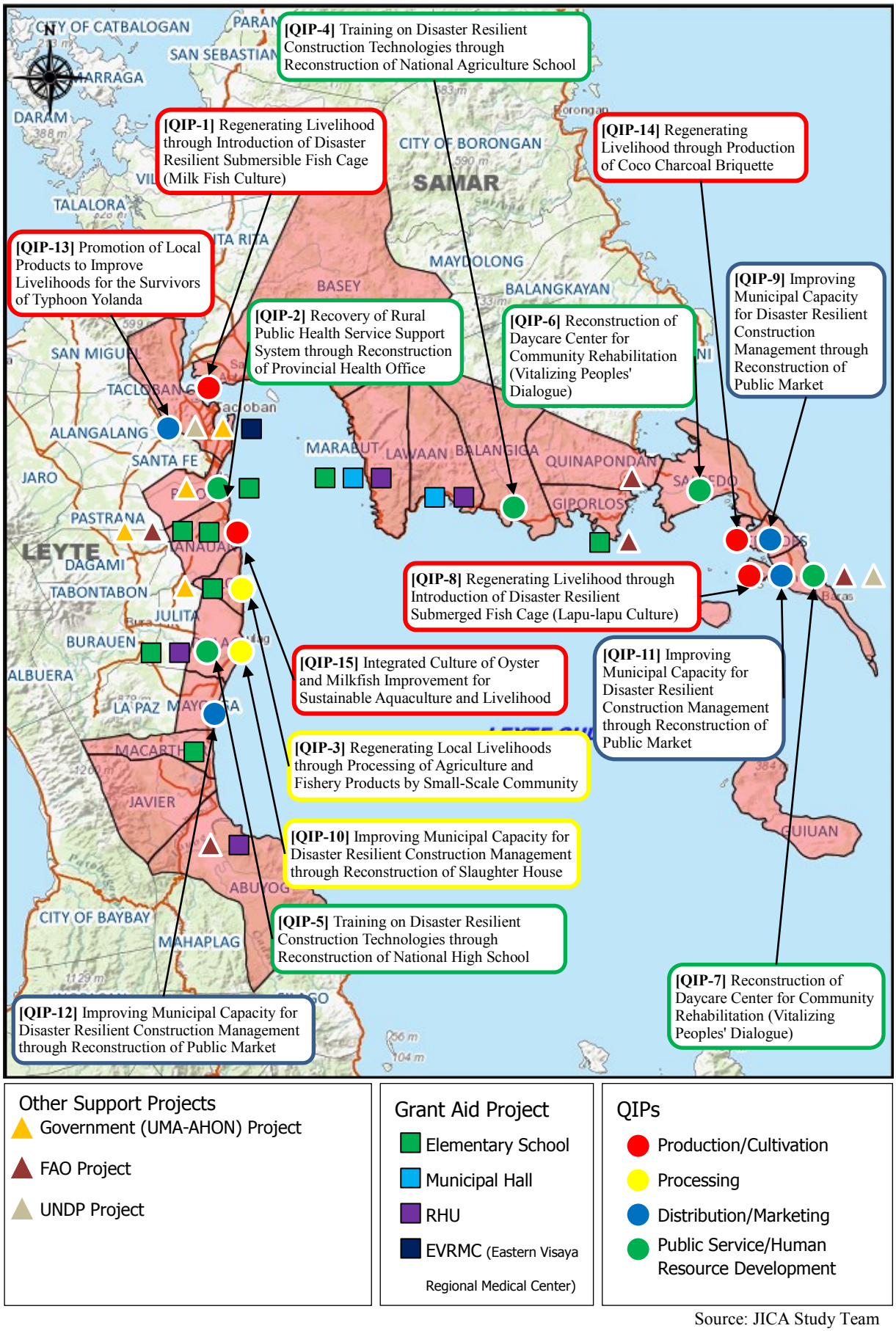
Priority Group	Project Title	Project Site	Points Considered for the Categorization of Priority Groups
			population as a place for acquiring skills and knowledge for livelihood activities. It is also expected to contribute to the local economy through dissemination of knowledge regarding agriculture, which is one of the main industries in the area. As indicated above, the QIP is expected to contribute to strengthening the disaster resiliency of the area through improving the capacities of skilled workers involved in reconstruction of the facilities. The effect of the QIP is expected to expand beyond the borders of the Municipality. However, considering that the area of expansion and the number of direct beneficiaries is expected to be lower than those of the QIPs in Priority Group I, and that the economic impact to the area is not large, the QIP is categorized into Priority Group II.
II	QIP-5 Training on Disaster Resilient Construction Technologies through Reconstruction of National High School	Dulag	The QIP aims to enhance the technical skills of skilled workers by utilizing the reconstruction of Dulag National High School as training material for teaching disaster resilient design and construction techniques. Training will be provided in collaboration with the Technical Education and Skills Development Authority TESDA, an organization providing a series of vocational training including construction techniques, and graduates of TESDA training courses, who will be involved in the construction / repair works as skilled workers will be targeted as the trainees. The QIP will start by reviewing the technical drawings that are already being prepared by DepED and training will be conducted by utilizing an existing OJT scheme (as a part of its curriculum, TESDA is sending its trainees to contractors for OJT). In the QIP, TESDA trainers and training course graduates shall be employed by a contractor in order to get OJT under the supervision of the Study Team during the whole process of reconstruction. A skilled worker from Japan will be invited to the site, particularly at the stage of preparation to fixing of trusses and tiling of the roof, which is a critical stage as it largely influences the susceptibility to typhoons, so that the trainees can obtain the knowledge and techniques applied in Japan. Training activities with the Japanese skilled worker will be recorded on video and handed over to TESDA as training material, so that the technique can be further taught to future trainees. By widely sharing knowledge and technology for disaster resilient designing and construction among the trainees, the QIP is expected to contribute to the reconstruction of the disaster hit areas based on appropriate skills, and contribute to the reconstruction of disaster resilient public facilities. At the same time, the knowledge and technologies transferred to the TESDA trainers is also expected to be further inherited by future trainees after the QIP is completed. As for indirect effects, with skills improved through the training, the access of trainees to income opportunities is also expected to improve. As indicated above, the QIP is expected to contribute to strengthening the disaster resiliency of the area through improving the capacities of skilled workers involved in the reconstruction of the facilities. The effect of the QIP is expected to expand beyond the borders of the Municipality. However, in consideration of the fact that the area of expansion and the number of direct beneficiaries is expected to be lower than those of the QIPs in Priority Group I, and that

Priority Group	Project Title	Project Site	Points Considered for the Categorization of Priority Groups
			the economic impact to the area is not large, the QIP is categorized into Priority Group II.
II	QIP-6 Reconstruction of Daycare Center for Community Rehabilitation (Vitalizing Peoples' Dialogue)	Salcedo	At the time of the Great East Japan Earthquake, Higashi-Matsushima City, one of the areas strongly hit by the quake received prefabricated building units that can be used as venues for community meetings under the support of Germany. The building units are said to have been very useful for the local population to discuss issues on recovery and reconstruction. In order to utilize this experience in the areas hit by Typhoon Yolanda, this QIP aims at introducing Japanese pre- fabricated building technology, which can be easily transported and installed, and at the same time, can secure a certain level of rigidness, as a model for emergency recovery of facilities at times of disasters. The 7 daycare centers (5 in Salcedo and 2 in Guiuan) that are to be reconstructed through the QIP will primarily function to foster the healthy growth of children both physically and mentally, support working mothers in raising their children, protect children from abuse, and support expected mothers. On the other hand, the facilities should also be opened to the public during times when they are not used as daycare centers (night time, weekends, etc.) as a venue for community gathering. Its use as a venue for discussion by communities on issues on reconstruction and for enlightenment activities for disaster risk reduction and management (DRRM) should be promoted so as to strengthen the ties of the community and increase their capacity in DRRM. Since the requirements for installing prefabricated building units are relatively simple, preparation of bidding documents for the QIP is expected to be rather easy. In addition, introduction of simple but high quality prefabricated building unit technology is expected to function as a model for early recovery for neighboring Municipalities. As indicated above, the QIP is expected to be a model for early recovery from disaster damage, and at the same time, provide a venue for community meetings in order to strengthen their resilience to future calamities. The effect of the QIP is expected to expand beyond the borders of the Municipality. However, in consideration of the fact that the impact of the project is smaller than those of the QIPs in Priority Group I, and that there is small direct impact to the local economy, the QIP is categorized into Priority Group II.
II	QIP-7 Reconstruction of Daycare Center for Community Rehabilitation (Vitalizing Peoples' Dialogue)	Guiuan	
III	QIP-9 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market	Guiuan	The QIP aims at improving the project management capacity of Guiuan Municipality in terms of planning, procurement, construction supervision, operation and monitoring, through the reconstruction of public facilities. The improved capacity of the Municipality is expected to contribute to further reconstruction of public facilities with due quality, which will result in improved disaster resiliency. The public market to be reconstructed will also become more resilient to disasters and will contribute to securing access to safe foods during times of disasters. Furthermore, the reconstruction of the public market will contribute to resuming the revenue of the Municipality, which indirectly contributes to securing necessary budget for recovery and reconstruction of the Municipality. Moreover, the QIP is expected to contribute to the establishment of a value chain through its linkage with the

Priority Group	Project Title	Project Site	Points Considered for the Categorization of Priority Groups
			former mentioned QIP titled "Regenerating Livelihood through Introduction of Disaster Resilient Submerged Fish Cage (Lapu-lapu Culture)." As indicated above, the QIP will improve the project management capacity of the Municipality. The QIP will also contribute to further reconstruction of the Municipality through resuming the revenue of the Municipality. On the other hand, the accumulation of know-how for management of projects for disaster resilient public structures will be limited within the Municipality and is not expected to extend beyond its borders. However, in consideration of the fact that the QIP is interlinked with another QIP to bear synergy (which is different from the later mentioned projects related to reconstruction of public facilities), the QIP is categorized in Priority Group III.
IV	QIP-10 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Slaughter House	Dulag	The QIP aims at improving the project management capacity of Dulag Municipality in terms of planning, procurement, construction supervision, operation and monitoring, through the reconstruction of public facilities. The improved capacity of the Municipality is expected to contribute to further reconstruction of public facilities with due quality, which will result in improved disaster resiliency. The meat center to be reconstructed will also become more resilient to disasters and will contribute to securing access to safe foods during times of disasters. Furthermore, the reconstruction of the meat center will contribute to resuming the revenue of the Municipality, which indirectly contributes to securing necessary budget for recovery and reconstruction of the Municipality. As indicated above, the QIP will improve the project management capacity of the Municipality. The QIP will also contribute to further reconstruction of the Municipality through resuming the revenue of the Municipality. On the other hand, the accumulation of know-how for management of projects for disaster resilient public structures will be limited within the Municipality and is not expected to extend beyond its borders. Also, in consideration of the fact that there are no linkages with other QIPs for synergetic effects, the QIP is categorized into Priority Group IV.
IV	QIP-11 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market	Mercedes	The QIP aims at improving the project management capacity of Mercedes Municipality in terms of planning, procurement, construction supervision, operation and monitoring, through the reconstruction of public facilities. The improved capacity of the Municipality is expected to contribute to further reconstruction of public facilities with due quality, which will result in improved disaster resiliency. The public market to be reconstructed will also become more resilient to disasters and will contribute to securing access to safe foods during times of disasters. Furthermore, the reconstruction of the public market will contribute to resuming the revenue of the Municipality, which indirectly contributes to securing necessary budget for recovery and reconstruction of the Municipality. As indicated above, the QIP will improve the project management capacity of the Municipality. The QIP will also contribute to further reconstruction of the Municipality through resuming the revenue of the Municipality. On the other hand, the accumulation of know-how for management of

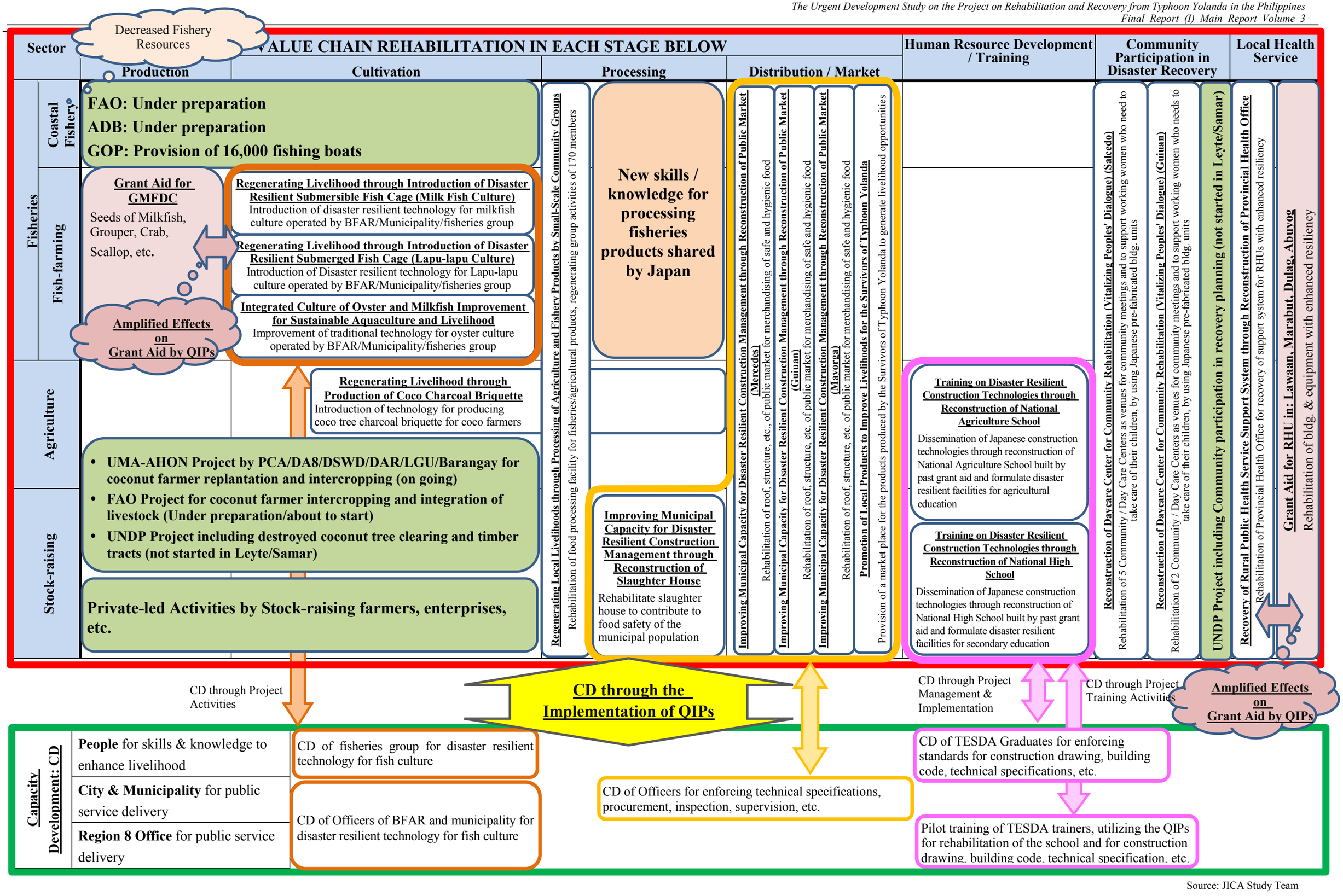
Priority Group	Project Title	Project Site	Points Considered for the Categorization of Priority Groups
			projects for disaster resilient public structures will be limited within the Municipality and is not expected to extend beyond its borders. Also, in consideration of the fact that there are no linkages with other QIPs for synergetic effects, the QIP is categorized into Priority Group IV.
IV	QIP-12 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market	Mayorga	The QIP aims at improving the project management capacity of Mayorga Municipality in terms of planning, procurement, construction supervision, operation and monitoring, through the reconstruction of public facilities. The improved capacity of the Municipality is expected to contribute to further reconstruction of public facilities with due quality, which will result in improved disaster resiliency. The public market to be reconstructed will also become more resilient to disasters and will contribute to securing access to safe foods during times of disasters. Furthermore, the reconstruction of the public market will contribute to resuming the revenue of the Municipality, which indirectly contributes to securing necessary budget for recovery and reconstruction of the Municipality. As indicated above, the QIP will improve the project management capacity of the Municipality. The QIP will also contribute to further reconstruction of the Municipality through resuming the revenue of the Municipality. On the other hand, the accumulation of know-how for management of projects for disaster resilient public structures will be limited within the Municipality and is not expected to extend beyond its borders. Also, considering that there are no linkages with other QIPs for synergetic effects, the QIP is categorized into Priority Group IV.
V	QIP-13 Promotion of Local Products to Improve Livelihoods for the Survivors of Typhoon Yolanda	Basey, Mercedes, Tacloban, Tanauan and Tolosa. Other areas to be identified through the QIP.	The QIP aims to examine effective means to promote sales of value added products that are produced through other QIPs under the Study (Basey: processed milkfish, Tanauan: processed milkfish and oyster, Tolosa: processed milkfish and meat products, and Mercedes: charcoal products). A task force will be formulated to study the overall framework for promoting the sales of the processed products examining their target markets, requirements for sales (quality, production volume, certificates, etc.), and means for approaching the market. Furthermore, the formulated frameworks will be partially implemented to further look into possible improvements. The necessity of establishing a sales promotion center for local products will also be examined through the QIP. As indicated above, the QIP will identify and approaches that will further contribute to the recovery and reconstruction of the regional economy. The activities also cover a number of LGUs. However, in consideration that the QIP is dependent on the activities of the other QIPs and stable production of processed products will be a pre- condition for success, the QIP is categorized into Priority Group V.

Source: JICA Study Team



Source: JICA Study Team

Figure 1.3-3 Location of QIPs



Source: JICA Study Team

Figure 1.3-4 Image of Quick Impact Projects for Livelihood & Community Rehabilitation

Chapter 2 Implementation of Quick Impact Projects

2.1 Contents of Quick Impact Projects

2.1.1 Regenerating Livelihood through Introduction of Disaster Resilient Submersible Fish Cage (Milk Fish) (QIP-1)

In this project, milkfish farming will be regenerated in a disaster resilient form by introducing submersible fish cages and the "Gawabari" mooring system, which are unique Japanese technology. Municipality and BFAR will co-manage the equipment to be introduced, and will lent to the fish farmers. The fish farmers will do the farming activities and routine maintenance of equipment. A part of the produced fish will be processed with soft bone technique by the women's group for adding values and diversifying supply options for the products. This QIP will also support the promotion of the local products by emphasizing its odorless characteristics, which is due to its "off-bottom" production style, by adding value through processing, and by conducting sales promotion events based on existing distribution routes.

(1) Location

Barangay Tinaogan, Barangay Cambayan, Barangay Amandayehan and Barangay San Antonio at Municipality Basey in Samar Province.

(2) Beneficiaries

Direct beneficiaries: 885 fish farmers, BFAR

Indirect beneficiaries: 5,278 people living in 4 fishery villages (Barangay Tinaogan: 1,270, Barangay Cambayan: 429, Barangay Amandayehan: 995, Barangay San Antonio: 2,584)

(3) Background

After being hit by Typhoon Yolanda, the GoP has promptly established the AHON Fisheries Rehabilitation Project in order to provide support for the affected fisher folks. However, support for rehabilitation of fish culture activities has not shown significant progress. The Basey Mariculture Park located in San Juanico Strait, with an annual production of 600,000 tons, is one of the major production centers for milk fish culture in Region VIII. The site was severely damaged by the storm surge caused by Typhoon Yolanda, with 265 ships and 110 rafts were either destroyed or washed away. Under such conditions, fish culture activities, which has been the main source of income for the area, still remains shut down.

On the other hand, submersible fish cage developed in Japan, which were introduced in Palawan, escaped physical damages of Typhoon Yolanda. The Japanese style submersible fish cage is made of high-density polyethylene (HDPE), and has durability and resistance to high

waves. Further in Japan, there is a farming technique using "Gawabari (grid mooring)" which is strong to waves. Therefore, the introduction of these farming technologies in the site is highly effective in helping to foster local aquaculture industry strong to the disaster and to achieve livelihood more stable, not only to improving livelihood of individual farming fisherman. In addition, the restoration of equipment to Guiuan Marine Fisheries Development Center by Japanese grant aid can expand choice of fingerling supply sources, and it can be expected that the disaster resilient aquaculture technology can also be deployed in other farming suitable sites through cooperation with Municipality and BFAR.

(4) Purpose of the Project

The purpose of the Project is to restore and improve the livelihood of fishing families by introducing disaster resilient submersible fish cage for milk fish farming.

(5) Expected Outcome of the Project

- Disaster resilient farming cages are installed and BFAR obtains techniques for their procurement, management and operation.
- Disaster resilient farming cages are installed and the fish farmers obtain techniques for their management and operation.
- The fish farmers resume the milk fish farming.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-1.

1) Introduction of the disaster resilient submersible fish cages and the "Gawabari" fish cages.
2) Training for fishing families on the operation techniques of the disaster resilient submersible type fish cages.
3) Introduction of fish processing techniques for women's groups.
4) Promotion of milk fish products.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-2.

Table 2.1-2 Implementation Schedule for QIP-1

	Activities	2014									2015		
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	Review of the damages caused by typhoon	■											
2	Bathymetrical survey		■										
3	Designing typhoon resistant fish cages			■	■								
4	Procurement of equipment, feeds and fingerlings								■	■	■	■	■
5	Establishment of the fish cages					■	■	■					
6	Training for fishing families on the new technology							▲	▲	▲	▲		
7	Stocking / culture / management of the fish stocks									■	■	■	■
8	Harvesting of fish										Scheduled after April 2015		
9	Marketing, processing and value-adding of fish										■	■	■
10	Evaluation												▲

Source: JICA Study Team

2.1.2 Recovery of Rural Health Service Support System through Reconstruction of Provincial Health Office (QIP-2)

The Project aims at enhancing basic medical services across the Province by repairing the Provincial Health Office (PHO) main building that have lost most of the roof, ceilings and windows, and by procuring necessary equipment for its operations. The Project also aims at the formulation of a disaster resilient health services system through application of appropriate design and repair works for the PHO facilities.

(1) Location

Barangay Candahug at Municipality Palo in Leyte Province.

(2) Beneficiaries

Direct beneficiaries: A total of 58 PHO staff and employee

Indirect beneficiaries: Users of PHO, 9 District Hospitals in Leyte Province, 3 Community Hospitals, 44 Rural Health Unit (RHU)

(3) Background

Leyte Provincial Health Office (PHO) is the only administrative office to manage health service by Rural Health Unit (RHU) of each LGU and takes the following rolls.

- Operation support and monitoring of 44 RHUs in Leyte Province for implementing central policies and programs, as well as monitoring of their service quality.
- Mediator between central administration and each RHU.
- Data collection of health index and health service at provincial and municipal levels.

PHO is the core coordinating organization for the services provided by the DoH, Municipal Hospitals and RHUs. However, the damage caused by Typhoon Yolanda has totally destroyed its office roof. With its office building still not repaired, the PHO is facing significant difficulties in their routine works, namely the distribution of medicines and vaccines to the RHU and technical training and guidance to RHU staff.

On the other hand, the reconstruction of 4 RHUs is planned as Japanese grant aid projects. Taking into consideration the role of PHO in regularly monitoring and controlling the RHUs, recovering the functions of the PHO is considered essential to resume basic medical services in Leyte Province and to maintain its service quality. Also, reconstruction of RHUs through Japanese grant aid projects will contribute to improving disaster resiliency of the facilities through its firm structures. Through collaboration of the PHO and RHUs, it is expected that a more functional and disaster resilient structure for providing medical services will be established for the whole Province.

(4) Purpose of the Project

The purpose of the Project is that the health administrative service of Leyte is restored with the functional recovery of Leyte PHO by the disaster resilient system.

(5) Expected Outcome of the Project

- Office building of PHO is reconstructed in a disaster resistant form.
- Supporting services to RHU by the PHO are restored.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-3.

1) Rehabilitation of PHO building (mainly repair of roof, ceiling, walls, windows)
2) Procurement of equipment (air-conditioners, refrigerators and freezers for vaccines).

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-4.

Table 2.1-4 Implementation Schedule for QIP-2

	Activities	2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Prepare Tender Documents													
2	Selection of Contractor													
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)													
4	Coordination with related agencies for Building permission and / or others													
5	Technical Seminar													
6	Construction work by the Contractor													
7	Construction Supervision													
8	Supply of Equipment													
9	Operation of PHO													
10	Inspection for Defective liability Period													2015/ Jun

Source: JICA Study Team

2.1.3 Regenerating Local Livelihood through Processing of Agriculture and Fishery Products by Small-Scale Community Groups (QIP-3)

Tolosa Municipality intends to consolidate the venue of individual processing activities into a processing facility constructed in the compound of the Municipal Office. The Municipality expects that such measures will contribute to the enhancement of food processing because the women's groups will able to demonstrate the production of processed vegetable, fish and meat products to a wide range of residents that are currently not engaged. The Project will support the Municipality in promoting livelihood improvement activities by reconstructing as the Tolosa Multi-purpose Livelihood Building and by promoting the use of the facility by local residents. Furthermore, the food processing activities can be expanded to other municipalities. The QIP will also support promotion of processed products by participating in sales promotion such as those using tents.

In restarting the activities by the women's groups engaged in food processing, supporting activities by the Municipality as well as the group activities will be reviewed and possible measures for improvement will be examined in order to further enhance their sustainability and possibilities for further development. It is expected that technical support will be provided from Visaya State University (VSU) of Tolosa School which supported the women's groups to start their activities. The VSU has curriculums focusing on fisheries industry, and is also studying

seafood processing. Tolosa Municipality is going to find other groups involved in the processing activities through meetings with Women's Associations of all 15 barangays.

(1) Location

Barangay Poblacion at Municipality Tolosa in Leyte Province.

(2) Beneficiaries

Direct beneficiaries: Residents' groups engaged in food processing (5 groups) and its members (170 members)

Indirect beneficiaries: Clients of the residents' groups engaged in food processing, consumers, groups of the 15 barangays which have interest in starting processing activities

(3) Background

Tolosa Municipality, with its population of 17,921 heads and 3,922 households (2010 Census), is considered as a middle-sized Municipality in the Target Area. Under the initiative of the Municipality in promoting activities for food processing from local primary products with the aim of improving local livelihoods, there were five women's groups that started food processing activities with the support of DOLE and DSWD in terms of necessary training and equipment. However, those groups cannot resume the activities because the Typhoon Yolanda caused serious damage to the buildings and manufacturing equipment for the processed food production site of these groups.

The main products produced by the resident's groups were fried noodles made with vegetables and fish meat, boneless fish products, meat products (sausage, seasoned meat, salami, etc.), and banana chips. Production was basically done upon order from clients, and the scale was relatively small, only aiming at local consumptions. However, one group that succeeded in the production of fried noodles used to earn an average of 3,000 pesos/member/month. The group also has a sustainable structure; apart from the support by the Municipality, the group allocates 30% of their benefit for running their business (mainly for purchase of raw material), while 70% was distributed among the group members. Through the women's groups as well as the Tolosa Municipality strongly intend to continue the activities for food processing, there are currently no perspectives for restarting the works.

(4) Purpose of the Project

The purpose of the Project is to contribute sustainable livelihood activities for food processing of agriculture and fishery by women's group through integrated reconstruction of multi-purpose public facility for livelihood activities.

(5) Expected Outcome of the Project

- Place of the processed food production is rebuilt as a Multi-purpose Livelihood Building for the groups.
- Group members involved in processed food production resume the food processing activities.
- Group activities and supporting measures of Tolosa Municipality are reviewed and production activities are improved from before Typhoon Yolanda.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-5.

1) Reconstruction of Tolosa Multi-purpose Livelihood Building (including facility and equipment).
2) Guidance for the women's groups (processing techniques and management).
3) Promotion of processed products.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-6.

Table 2.1-6 Implementation Schedule for QIP-3

	Activities	2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Prepare Tender Documents													
2	Selection of Contractor													
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)													
4	Coordination with related agencies for Building permission and/or others													
5	Technical Seminar													
6	Construction work by the Contractor													
7	Construction Supervision													
8	Supply of Equipment													
9	Temporary Start of Food Production													
10	Start of Food Production at new Building													
11	Inspection for Defective liability Period													2015/ Jun

Source: JICA Study Team

2.1.4 Training on Disaster Resilient Construction Technologies through Reconstruction of National Agriculture School (QIP-4)

The school buildings which were constructed with the past Japanese Grant Aid projects, as well as those built with local finance in the same compound will be repaired and reconstructed. The Technical Education and Skills Development Authority (TESDA) will learn the disaster resilient design through improvement of the drawing designed by a local architecture who was asked by TESDA. The TESDA trainers related to construction, as well as those of schools associated with TESDA, and graduates of TESDA training courses will have the opportunity to learn and obtain skills for repairing and construction through the training for repair and reconstruction of the school buildings.

A contractor will employ the TESDA graduates, TESDA will dispatch the TESDA trainers and the project will provide them opportunity to learn Japanese construction techniques under the supervision of JICA Study Team by inviting Japanese skilled specialists especially for the works from truss building and installation up to roofing works, which was a major cause of typhoon damage.

(1) Location

Barangay Poblacion 01 at Municipality Balangiga in Eastern Samar Province.

(2) Beneficiaries

Direct beneficiaries: Graduates of TESDA training courses related to construction, TESDA, Relevant trainers of schools associated with TESDA

Indirect beneficiaries: Teachers and students of the agriculture school to be repaired

(3) Background

The buildings of the Balangiga National Agriculture School operated under TESDA have been significantly damaged by the enormous winds of Typhoon Yolanda. Two of the school buildings which were constructed through a Japanese Grant Aid project have received damages mainly on its roofs and ceilings, while other buildings constructed with local finance were more severely damaged with damaged/lost roofs and collapsed pillars. The situation is affecting the school curriculum as classes cannot be appropriately held.

On the other hand, in the great Hanshin-Awaji Earthquake and the Great East Japan Earthquake that Japan has experienced in recent years as the large-scale disaster, many skilled builders worked in the fields from all over the country during recovery period. They showed highly developed techniques in the reconstruction of public facilities and the construction of temporary housing so that disaster resilient public facilities were restored. However, in the affected areas of Typhoon Yolanda, quality of local craftsmanship for construction is of

concern, and improvement of local craftsmanship for construction is of urgent needs to recover and reconstruct public facilities in near future.

Meanwhile, TESDA is responsible to develop the middle-level manpower in the Philippines, and is also associated with 130 schools including 9 TESDA training centers/training schools in Region VIII. The main training courses related to construction are Carpentry, Welding, Masonry, Plumbing, and Electrical Work in 7, 28, 6, 14 and 23 schools for each course.

As TESDA conducts vocational trainings in the region, it is expected that technologies for constructing more disaster resilient structures can be transferred to TESDA by involving them in the repair works of the damaged Agriculture School buildings. This will further contribute to the future development of a disaster resilient society in the region. In addition, as the diversification of trainings on agricultural technology including livestock raising, processing technology of agricultural products are also planned in the school, it is expected to contribute to disseminating technologies for intercropping and alternative crops of coconut farmers, which can increase in near future, and for the processed agricultural products.

(4) Purpose of the Project

The purpose of the Project is to disseminate the disaster resilient construction technologies through reconstruction of National Agriculture School in Balangiga, Eastern Samar Province.

(5) Expected Outcome of the Project

- The points of improvements for the construction are understood through the design/ reconstruction of TESDA Agriculture School, and disaster resilient construction techniques are learned.
- TESDA Agriculture School is rebuilt with disaster resilient structure.
- Training curriculums of TESDA Agriculture School are resumed.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-7.

1) Preparation of training programs.
2) Construction technique training through the repair and reconstruction of TESDA Agriculture School buildings.
3) Preparation of training video and text.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-8.

Table 2.1-8 Implementation Schedule for QIP-4

	Activities	2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Prepare Tender Documents													
2	Selection of Contractor													
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)													
4	Coordination with related agencies for Building Permission and/or others													
5	Technical Seminar													
6	Construction work by the Contractor													
7	Construction Supervision													
8	Provide the Trainee List by TESDA													
9	Dispatch of Skilled Workers from Japan for Trainers													
10	Technical Training													
11	Preparation of Training Video and Text													
12	Implementation of new and / or revised Curriculum using prepared Video and Text in TESDA													
13	Inspection for Defect Liability Period													2015/ Jun

Source: JICA Study Team

2.1.5 Training on Disaster Resilient Construction Technologies through Reconstruction of National High School (QIP-5)

The school buildings which were constructed with the past Japanese Grant Aid projects, as well as those built with local finance in the same compound will be repaired and reconstructed. The Technical Education and Skills Development Authority (TESDA) and the Department of Education (DepED) will learn the disaster resilient design through improvement of the drawing designed by DepED. The TESDA trainers related to construction, as well as those of schools associated with TESDA, and graduates of TESDA training courses will have the opportunity to learn and obtain skills for repairing and construction through the training for repair and reconstruction of the school buildings.

A contractor will employ the TESDA graduates, TESDA will dispatch the TESDA trainers and the project will provide them opportunity to learn Japanese construction techniques under the supervision of JICA Study Team by inviting Japanese skilled specialists especially for the works

from truss building and installation up to roofing works, which was a major cause of typhoon damage.

(1) Location

Barangay Cabacungan at Municipality Dulag in Leyte Province.

(2) Beneficiaries

Direct beneficiaries: Graduates of TESDA training courses related to construction, TESDA, Relevant trainers of schools associated with TESDA

Indirect beneficiaries: Teachers and students of the national high school to be repaired

(3) Background

The buildings of the Cabacungan National High School have been significantly damaged by the enormous winds of Typhoon Yolanda. One of the school buildings which was constructed through a Japanese Grant Aid project has received damages mainly on its roofs and ceilings, while other buildings constructed with local finance were more severely damaged with their roofs completely lost. The situation is affecting the school curriculum as classes cannot be appropriately held.

On the other hand, in the great Hanshin-Awaji Earthquake and the Great East Japan Earthquake that Japan has experienced in recent years as the large-scale disaster, many skilled builders worked in the fields from all over the country during recovery period. They showed the highly developed techniques in the reconstruction of public facilities and the construction of temporary housing so that disaster resilient public facilities were restored. However, in the affected areas of Typhoon Yolanda, quality of local craftsmanship for construction is of concern, and improvement of local craftsmanship for construction is of urgent need to recover and reconstruct public facilities in near future.

Meanwhile, TESDA is responsible to develop the middle-level manpower in the Philippines, and is also associated with 130 schools including 9 TESDA training centers/ training schools in Region VIII. The main training courses related to construction are Carpentry, Welding, Masonry, Plumbing, and Electrical Work in 7, 28, 6, 14 and 23 schools for each course.

As TESDA conducts vocational trainings in the region, it is expected that technologies for constructing more disaster resilient structures can be transferred to TESDA by involving them in the repair works of the damaged School buildings. This will further contribute to the future development of a disaster resilient society in the region.

(4) Purpose of the Project

The purpose of the Project is to disseminate disaster resilient construction technologies through reconstruction of National High School in Dulag, Leyte Province.

(5) Expected Outcome of the Project

- The points of improvements for the construction are understood through the design/ reconstruction of High School, and the disaster resilient construction techniques are learned.
- High School is rebuilt with disaster resilient structure.
- Curriculums of High School are normalized.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-9.

1) Preparation of training programs.
2) Construction technique training through the repair and reconstruction of High School buildings.
3) Preparation of training video and text.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-10.

Table 2.1-10 Implementation Schedule for QIP-5

Activities		2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Prepare Tender Documents													
2	Selection of Contractor													
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)													
4	Coordination with related agencies for Building Permission and/or others													
5	Technical Seminar													
6	Construction work by the Contractor													
7	Construction Supervision													
8	Provide the Trainee List by TESDA													
9	Dispatch of Skilled Workers from Japan for Trainers													
10	Technical Training													
11	Preparation of Training Video and Text													
12	Implementation of new and / or revised Curriculum using prepared Video and Text in TESDA													

13	Inspection for Defect Liability Period													2015/ Jun ▼

Source: JICA Study Team

2.1.6 Reconstruction of Daycare Center for Community Rehabilitation (Vitalization of Peoples' Dialogue) (Salcedo) (QIP-6)

In nighttime or weekend when the buildings are not used as daycare center, they will be used for places for communication in the communities, to encourage discussion among residents on community rehabilitation, for places of disaster prevention education, in order to regenerate peoples' relations and improve the capacities of disaster prevention.

(1) Location

Barangay Sitio Guba (Bagtong), Sta Cruz, San Roque, Matarinao, Sitio Layag (Burak) at Municipality Salcedo in Eastern Samar Province.

(2) Beneficiaries

Direct beneficiaries: Children attending the daycare centers in the 5 barangays, their mothers and families

Indirect beneficiaries: Residents of the 5 barangays (children of the next generation)

(3) Background

In Higashi-Matsushima City which received serious damage in the Great East Japan Earthquake, the local people used prefabricated facilities which were donated with the support of Germany as meeting places. It is said that the facilities were effectively used as places where the local people discussed the community rehabilitation plans.

Each barangay is obligated under the legislation of the Philippines to establish one daycare center in order to provide services of child healthcare, pre- and postpartum support for mothers, and to function as shelters from child abuse. The daycare centers in the 5 barangays of Salcedo Municipality have been almost totally destroyed by Typhoon Yolanda and have not been reconstructed up to now. There is increasing importance of support for children, working mothers and their families in this critical stage for starting reconstruction, as well as for recovering livelihood. In this regard, reconstruction of daycare centers is an issue that must urgently be solved.

On the other hand, the peninsula-like topography of the area somewhat limits the access of construction material and other resources, making it difficult to procure them in sufficient quality. Prefabricated building units using technologies applied in Japan can be a solution for early reconstruction of the destroyed daycare centers, as they can be transferred to

construction sites easily and can be installed with relatively short time and small cost. At the same time, these units can maintain a certain level of rigidness. The sizes of single units also fit with the average size of the daycare centers, which is around 50 m^2. Since prefabricated building units can be built by assembling parts brought from other locations, it will be an efficient means for constructing many daycare centers in limited time.

(4) Purpose of the Project

The purpose of the Project is to recover the function of the daycare center and to promote the vitalization of community dialogues including disaster enlightenment through reconstruction of the daycare center by Japanese style prefabricated building.

(5) Expected Outcome of the Project

- Function of daycare center is restored and the users (children and mothers) are supported.
- Daycare center is used as a place for communication of local people; the residents learn knowledge of disaster prevention.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-11.

1) Production and transport of prefabricated building units.
2) Reconstruction of daycare centers (5 sites for 5 barangays).
3) Site visits to observe construction process of daycare center.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-12.

Table 2.1-12 Implementation Schedule for QIP-6

Activities		2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Prepare Tender Documents													
2	Selection of Contractor													
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)													
4	Coordination with related agencies for Building permission and/or others													
5	Technical Seminar		▼											
6	Construction work by the Contractor													

7	Construction Supervision													
8	Site Visits to observe construction of Prefab-system			▼	▼	▼								
9	Activity of Day Care Center													
10	Inspection for Defective liability Period													2015/ Jun ▼

Source: JICA Study Team

2.1.7 Reconstruction of Daycare Center for Community Rehabilitation (Vitalization of Peoples' Dialogue) (Guiuan) (QIP-7)

In nighttime or weekend when the buildings are not used as daycare center, they will be used for places for communication in the communities, to encourage discussion among residents on community rehabilitation, for places of disaster prevention education, in order to regenerate peoples' relations and improve the capacities of disaster prevention.

(1) Location

Barangay 9-A Poblacion, Gahoy at Municipality Guiuan in Eastern Samar Province.

(2) Beneficiaries

Direct beneficiaries: Children attending the daycare centers in the 2 barangays, their mothers and families

Indirect beneficiaries: Residents of the 2 barangays (children of the next generation)

(3) Background

In Higashi-Matsushima City which received serious damage in the Great East Japan Earthquake, the local people used prefabricated facilities which were donated with the support of Germany as meeting places. It is said that the facilities were effectively used as places where the local people discussed the community rehabilitation plans.

Each barangay is obligated under the legislation of the Philippines to establish one daycare center in order to provide services of child healthcare, pre- and postpartum support for mothers, and to function as shelters from child abuse. The daycare centers in the 2 barangays of Guiuan Municipality have been almost totally destroyed by Typhoon Yolanda and have not been reconstructed up to now. There is increasing importance of support for children, working mothers and their families in this critical stage for starting reconstruction, as well as for recovering livelihood. In this regard, reconstruction of daycare centers is an issue that must urgently be solved.

On the other hand, the peninsula-like topography of the area somewhat limits the access of

construction material and other resources, making it difficult to procure them in sufficient quality. Prefabricated building units using technologies applied in Japan can be a solution for early reconstruction of the destroyed daycare centers, as they can be transferred to construction sites easily and can be installed with relatively short time and small cost. At the same time, these units can maintain a certain level of rigidness. The sizes of single units also fit with the average size of the daycare centers, which is around 50 $m^{2.}$ Since prefabricated building units can be built by assembling parts brought from other locations, it will be an efficient means for constructing many daycare centers in limited time.

(4) Purpose of the Project

The purpose of the Project is to recover the function of the daycare center and to promote the vitalization of community dialogues including disaster enlightenment through reconstruction of the daycare center by Japanese style prefabricated building.

(5) Expected Outcome of the Project

- Function of daycare center is restored and the users (children and mothers) are supported.
- Daycare center is used as a place for communication of local people; the residents learn knowledge of disaster prevention.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-13.

1) Production and transport of prefabricated building units.
2) Reconstruction of daycare centers (2 sites for 2 barangays).
3) Site visits to observe construction process of daycare center.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-14.

Table 2.1-14 Implementation Schedule for QIP-7

Activities		2014							2015			
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	Prepare Tender Documents											
2	Selection of Contractor											
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)											
4	Coordination with related agencies for Building permission and/or others											

5	Technical Seminar		▼									
6	Construction work by the Contractor		▬	▬	▬	▬	▬	▬	▬			
7	Construction Supervision		▬	▬	▬	▬	▬	▬	▬			
8	Demonstration of Prefab-system			▼	▼	▼						
9	Activity of Day Care Center								▬	▬	▬	▬
10	Inspection for Defective liability Period											2015/ Apr ▼

Source: JICA Study Team

2.1.8 Regenerating Livelihood through Introduction of Disaster Resilient Submerged Fish Cage (Lapu-Lapu Culture) (QIP-8)

The QIP introduces the disaster resilient submerged fish cages, and sustainable environment-friendly grouper (lapu-lapu) aquaculture system. Municipality and BFAR co-manage the cages and lent the fish farmers the cages. The fish farmers cultivate groupers and maintain the cages. BFAR trains the fish farmers in environment-friendly grouper aquaculture system and monitors cultivation activities.

(1) Location

Barangay Victory Island and Camparang at Municipality Guiuan in Eastern Samar Province.

(2) Beneficiaries

Direct beneficiaries: 1,183 people (Victory Is. 742 people, Camparang 441 people)

Indirect beneficiaries: Fishing villages in Guiuan Bay, people related to fishery distribution (a population of around 10,000, taking into consideration the Municipal population of 50,000)

(3) Background

Guiuan Bay which is located at southeastern end of Samar Island has suitable habitat of the high-priced fish, grouper, and produces annually 100 tons (about 200 million pesos) from fishing and aquaculture using natural fingerlings. The live fishes were shipped to Manila, Hong Kong, and etc. However, the living foundations collapsed losing fishing boats and aquaculture cages due to the storm surge of Typhoon Yolanda. In particular, the area around Guiuan was severely damaged as 1,723 fish cages were collapsed and washed out in Eastern Samar, in contrast to 323 in Leyte and 458 in Samar. However, supports to restore aquaculture have not been promoted.

In this QIP, fishing villages of Barangay Camparang and Victory Island, which have a higher

percentage of fish farmers (over 80%) in Guiuan Bay are targeted, and the disaster resilient fish cages will be introduced (high-density polyethylene submerged fish cage and improved mooring) to increase the productivity. Also, a sustainable form of operation will be introduced (gradual shifting to restriction of natural fingerling capture and use of artificially formulated feed) will be introduced. Based on this, the QIP aims at recovery of livelihoods for fish farmers as well as its stabilization in the medium-to-long-term.

For the introduction of fish cages (the hardware), the existing technologies in the Philippines will be improved. The experiences of Japan and Southeast Asia, where Japan has been providing technical support, will be introduced for the environment-friendly aquaculture. In the future, artificial fingerlings of groupers produced by Guiuan Marine Fisheries Development Center supported by Japanese Grant Aid will be used to reduce the dependence on the natural fingerlings.

(4) Purpose of the Project

The purpose of the Project is to improve livelihoods of Typhoon affected fisherfolk families though restoration of lapu-lapu fish farming with environment-friendly and disaster resilient fish cage culture system.

(5) Expected Outcome of the Project

- Grouper aquaculture is resumed with the disaster resilient submerged fish cage.
- Sustainable environment-friendly grouper aquaculture system is introduced.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-15.

1) Introduction of the disaster resilient and environment-friendly submerged fish cages.
2) Training for fishing families on the operation techniques of the submerged fish cages.
3) Training of environment-friendly culture technology.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-16.

Table 2.1-16 Implementation Schedule for QIP-8

	Activities	2014								2015	
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1	Designing and testing prototype cages and developing operational guideline for environmentally friendly farming										
1-1	Bathymetrical survey	▼▼									

	Activities	2014								2015	
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1-2	Design of typhoon resistant cage										
1-3	Prototype production and field test										
1-4	Developing operational guideline										
2	Construction and installation of cages										
2-1	Construction of cages by the manufacturer										
2-2	Delivery of cages to the sites										
2-3	Installation of cages										
3	Training on environmentally friendly cage fish culture										
3-1	Training on cage culture operation										
3-2	Baseline survey										
3-3	Monthly monitoring by BFAR & LGU										
3-4	End line survey and evaluation										
4	Supply of supplemental pellet feeds										
4-1	Procurement of feeds										
4-2	Supply of (artificial) feeds								Scheduled after Mar.		
5	Cage culture operation by fishermen										
5-1	Stocking of fingerlings										
5-2	Feeding and management of fish cages										
5-3	Grading fish and changing net										
6	Harvesting								Scheduled after Aug.		

Source: JICA Study Team

2.1.9 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market (Guiuan) (QIP-9)

Design, quantity surveying, tender, contract and construction supervision are implemented with the engineers of Guiuan Municipality and technical transfer of technical points to strengthen structure and construction management is promoted through the repair of public market building for the wet section of fish and meat sales.

(1) Location

Barangay 06 at Municipality Guiuan in Eastern Samar Province.

(2) Beneficiaries

Direct beneficiaries: Market stall, farmer and fisherfolk producing the merchandise sold in the market, Guiuan Municipality which manages the facility and its engineers

Indirect beneficiaries: Consumers of Guiuan Municipality

(3) Background

Guiuan Municipality is located at the end of the south-eastern peninsula in Samar Island and has a population of 47,037 and households of 10,002 (2010 Census), and the Municipality is larger scale compared with other municipalities in the area. In the Municipality, fishery industry is so active that fish is shipped to other areas. Even wet section for fish and meat in the public market is 440 m^2. Including other sector, this public market is operated by financial affairs division of the Municipality and the Municipality gave operating license to the fish stalls at 1,350 peso and the meat stalls at 1,650 peso per year in the wet section and collected respectively 5 peso and 20 peso from fish stalls and meat stalls per day as a rent. In addition the Municipality collected a fee according to the products from the supplier of fish and meat to the market. Although this market supported daily consumption by local people and became the source of income for stalls and the Municipality, the whole roof received serious damage and was destroyed during Typhoon Yolanda and there is no prospect to repair the market.

On the other hand, the reason that the roof was destroyed is not only technical problems of design and construction but also the undeveloped system to manage the quality of construction by the Municipality. Therefore, the reconstruction of the public market will contribute not only to restore the public market function but also to improve disaster recovery capacity of the Municipality with the improvement of techniques from design to construction supervision of the Municipal engineers through the reconstruction works. This is highly effective in promoting disaster resistant urban development. In addition, the disaster resilient public market can ensure access to safe food for the residents if an emergency arises, and lead to ensure revenue of the Municipality. The public market also can contribute to restore a value chain in collaboration to the QIP of Lapu-Lapu Culture (see section 2.1.8).

(4) Purpose of the Project

The purpose of the Project is to improve the capacity of disaster resilient project management of the Municipality and its engineers through reconstruction of Public Market in Guiuan, Eastern Samar Province.

(5) Expected Outcome of the Project

- Through the collaborative works of design, quantity surveying, tender, contract and construction supervision for the repair and reconstruction works of public facilities, engineers of Guiuan Municipality learn knowledge and skills necessary for construction project management.
- The public market (wet section of fish and meat sales) is rehabilitated with disaster resilient structure.
- Function of the public market (wet section of fish and meat sales) is recovered.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-17.

1) Collaborative implementation of design, quantity surveying, tender and contract.
2) Repair of the public market building (wet section for fish and meat sales).
3) Collaborative implementation of construction supervision.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-18.

Table 2.1-18 Implementation Schedule for QIP-9

Activities		2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Prepare Tender Documents													
2	Selection of Contractor													
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)													
4	Coordination with related agencies for Building permission and/or others													
5	Technical Seminar		▼											
6	Construction work by the Contractor													
7	Construction Supervision													
8	Inspection for Defective liability Period													2015/ Jun ▼

Source: JICA Study Team

2.1.10 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Slaughter House (QIP-10)

Design, quantity surveying, tender, contract and construction supervision are implemented with the engineers of Dulag Municipality and technical transfer of technical points to strengthen structure and construction management is promoted through the repair of slaughter house building.

(1) Location

Barangay Salvacion at Municipality Dulag in Leyte Province.

(2) Beneficiaries

Direct beneficiaries: workers, meat suppliers, livestock farmers, Dulag Municipality to manage facility and the architecture engineers

Indirect beneficiaries: Consumers of Dulag Municipality

(3) Background

Dulag Municipality has a population of 41,757 and households of 9,101 (2010 Census), and the Municipality is the larger scale compared with other municipalities in the area. For the residents, meat such as beef and pork is a basic food material as well as local seafood. The slaughter house worked in order to process the meat in a sanitary manner. The slaughter house operated by the Municipality was a relatively large processing facility which had about 250 m^2 floor area with storage field, and processed the meat of 7 – 8 animals per day. Pig farmers or meat suppliers from neighboring municipalities as well as in the Municipality brought livestock, and the Municipality collected fees to provide them a place in order to store the livestock for the inspection of diseases, and to slaughter the livestock. However, the slaughter house received serious damages and especially buildings and equipment were destroyed by Typhoon Yolanda, and there is no prospect to repair the facility. Therefore, sanitary meat processing has not been done since the Typhoon Yolanda.

On the other hand, the reason that the roof was destroyed is not only technical problems of design and construction but also the undeveloped system to manage the quality of construction by the Municipality. Therefore, the reconstruction of the slaughter house will contribute not only to restore the slaughter house function but also to improve disaster recovery capacity of the Municipality with the improvement of techniques from design to construction supervision of the Municipality engineers through the reconstruction works. This is highly effective in promoting the disaster resistant urban development. In addition, the disaster resilient slaughter house can ensure access to safe food for the residents if an emergency arises, and lead to ensure revenue of the Municipality.

(4) Purpose of the Project

The purpose of the Project is to improve the capacity of disaster resilient project management of the Municipality and its engineers through reconstruction of Slaughter House in Dulag, Leyte Province.

(5) Expected Outcome of the Project

- Through the collaborative works of design, quantity surveying, tender, contract and construction supervision for the repair and reconstruction works of public facilities, engineers of Dulag Municipality learn knowledge and skills necessary for construction project management.
- The slaughter house is rehabilitated with disaster resilient structure.
- Function of the slaughter house is recovered.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project indicated in Table 2.1-19.

1) Collaborative implementation of design, quantity surveying, tender and contract.
2) Repair of the slaughter house building.
3) Collaborative implementation of construction supervision.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-20.

Table 2.1-20 Implementation Schedule for QIP-10

	Activities	2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Prepare Tender Documents													
2	Selection of Contractor													
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)													
4	Coordination with related agencies for Building permission and/or others													
5	Technical Seminar		▼											
6	Construction work by the Contractor													
7	Construction Supervision													
8	Inspection for Defective liability Period													2015/ Jun ▼

Source: JICA Study Team

2.1.11 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market (Mercedes) (QIP-11)

Design, quantity surveying, tender, contract and construction supervision are implemented with the engineers of Mercedes Municipality and technical transfer of technical points to strengthen structure and construction management is promoted through the repair of public market building.

(1) Location

Barangay I, Poblacion at Municipality Mercedes in Eastern Samar Province.

(2) Beneficiaries

Direct beneficiaries: Market stalls, farmers and fisherfolk producing the merchandise sold in the market, Mercedes Municipality which manages the facility and its engineers

Indirect beneficiaries: Consumers of Mercedes Municipality

(3) Background

Mercedes Municipality has a population of 5,369 and households of 1,133 (2010 Census), and the Municipality is the smallest in the area. The public market of the Municipality has about 350 m^2 where fish, meat, vegetable, dry food and general merchandise are sold. The Municipality gave operating license to the stalls at 1,500 peso per year and collected 150 peso per month as a rent. The feature of this market is that it has a refrigerator and the Municipality used to buy 50 kg of fish and meat from local farmer and supported them by temporarily keeping a part of them in this refrigerator for later sale. Although this market supported daily consumption by local people and became the source of income for stalls and the Municipality, the facility was almost totally damaged with the roof lost and posts collapsed during Typhoon Yolanda and there is no prospect to repair the market.

On the other hand, the reason of fully-destroyed damage to public market is not only technical problems of design and construction but also the undeveloped system to manage the quality of construction by the Municipality. Therefore, the reconstruction of the public market will contribute not only to restore the public market function but also to improve disaster recovery capacity of the Municipality with the improvement of techniques from design to construction supervision of the Municipal engineers through the reconstruction works. This is highly effective in promoting disaster resistant urban development. In addition, the disaster resilient public market can ensure access to safe food for the residents if an emergency arises, and lead to ensure revenue of the Municipality.

(4) Purpose of the Project

The purpose of the Project is to improve the capacity of disaster resilient project management of the Municipality and its engineers through reconstruction of Public Market in Mercedes, Eastern Samar Province.

(5) Expected Outcome of the Project

- Through the collaborative works of design, quantity surveying, tender, contract and construction supervision of the repair and reconstruction works of public facilities, engineers of Mercedes Municipality learn knowledge and skills necessary for construction project management.
- The public market is rehabilitated with disaster resilient structure.
- Function of the public market is recovered.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-21.

1) Collaborative implementation of design, quantity surveying, tender and contract.
2) Repair of the public market building.
3) Collaborative implementation of construction supervision.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-22.

Table 2.1-22 Implementation Schedule for QIP-11

Activities		2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Prepare Tender Documents													
2	Selection of Contractor													
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)													
4	Coordination with related agencies for Building permission and/or others													
5	Technical Seminar													
6	Construction work by the Contractor													

7	Construction Supervision													
8	Inspection for Defective liability Period													2015/ Jun ▼

Source: JICA Study Team

2.1.12 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market (Mayorga) (QIP-12)

Design, quantity surveying, tender, contract and construction supervision are implemented with the engineers of Mayorga Municipality and technical transfer of technical points to strengthen structure and construction management is promoted through the repair of public market building for fish, meat, vegetable and general merchandise.

(1) Location

Barangay Poblacion Zone 1 at Municipality Mayorga in Leyte Province.

(2) Beneficiaries

Direct beneficiaries: Market stalls, farmers and fisherfolk producing the merchandise sold in the market, Mayorga Municipality which manages the facility and its engineers

Indirect beneficiaries: Consumers of Mayorga Municipality

(3) Background

Mayorga Municipality has a population of 14,694 and households of 3,197 (2010 Census), and the Municipality is a middle scale compared with other municipalities in the area. The public market of the Municipality is a small scale compared with population and about 20 stalls were operated for fish, meat, vegetable and general merchandise. Suppliers are not only local. They are also from larger nearby municipalities such as Abuyog, Dulag, Tacloban city and Davao city. Mayorga Municipality gave operating license to each stall at 3,000 peso per year and collected 500 peso per month as a rent. In addition the Municipality collected a fee per steer, granter or a truck of fish from the supplier of fish and meat to the market. But especially whole roof received serious damage and was destroyed during Typhoon Yolanda and there is no prospect to repair and reopen the market.

On the other hand, the reason that the roof was destroyed is not only technical problems of design and construction but also the undeveloped system to manage the quality of construction by the Municipality. Therefore, the reconstruction of the public market will contribute not only to restore the public market function but also to improve disaster recovery capacity of the Municipality with the improvement of techniques from design to construction supervision of

the Municipal engineers through the reconstruction works. This is highly effective in promoting disaster resistant urban development. In addition, the disaster resilient public market can ensure access to safe food for the residents if an emergency arises, and lead to ensure revenue of the Municipality.

(4) Purpose of the Project

The purpose of the Project is to improve the capacity of disaster resilient project management of the Municipality and its engineers through reconstruction of Public Market in Mayorga, Leyte Province.

(5) Expected Outcome of the Project

- Through the collaborative works of design, quantity surveying, tender, contract and construction supervision of the repair and reconstruction works of public facilities, engineers of Mayorga Municipality learn knowledge and skills necessary for construction project management.
- The public market is rehabilitated with disaster resilient structure.
- Function of the public market is recovered.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-23.

1) Collaborative implementation of design, quantity surveying, tender and contract.
2) Repair of the public market building.
3) Collaborative implementation of construction supervision.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-24.

Table 2.1-24 Implementation Schedule for QIP-12

Activities		2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Prepare Tender Documents													
2	Selection of Contractor													
3	Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)													
4	Coordination with related agencies for Building permission and/or others													
5	Technical Seminar													

	Activities	2014							2015					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
6	Construction work by the Contractor													
7	Construction Supervision													
8	Inspection for Defective liability Period													2015/ Jun ▼

Source: JICA Study Team

2.1.13 Promotion of Local Products to Improve Livelihoods for the Survivors of Typhoon Yolanda (QIP-13)

The task force will study the framework of promotion activities for the processed products produced by the disaster victims and implement the promotion activities. In the framework, the possibilities for promotion center will be studied, which may become a center to offer information about the QIPs and local products to internal / external people including buyers, and which may work as a billboard of the local products.

(1) Location

Basically the LGUs of, Basey, Mercedes, Tacloban, Tanauan and Tolosa. Other possible target areas to be identified through the activities of the QIP.

(2) Beneficiaries

Direct beneficiaries: 3,238 people (Basey 885, Tanauan 1000, Tolosa 170, Mercedes 1,000)

Indirect beneficiaries: 221,174 people (population of Tacloban City), aid workers, tourists

(3) Background

There are four QIPs in Basey (Regenerating Livelihood through Introduction of Disaster Resilient Submersible Fish Cage (Milk Fish)), Tanauan (Integrated Culture of Oyster and Milk Fish Improvement for Sustainable Aquaculture and Livelihood), Tolosa (Regenerating Local Livelihoods through Processing of Agriculture and Fishery Products by Small-Scale Community Groups) and Mercedes (Regenerating Livelihood through Production of Coco Charcoal Briquette), which have been planned to support the livelihoods of victims of the Typhoon Yolanda through adding value to agricultural / marine products through processing. Expected products are milk fish processed products (Basey, Tanauan), boneless milk fish and processed meat products (Tolosa), charcoal briquettes made from fallen coco trees (Mercedes). However, these products produced by the disaster victims are not well known and the products have to be promoted widely in order to sustainably sell these local products.

Meanwhile, before the Typhoon Yolanda, some local products who participated in a trade fair

in Manila had contracts with buyers. However, the contracts were not completed because they were not able to transport their products. Besides, some buyers advised them that access point in Tacloban could work for the trade of local products. Moreover, the local producers used to be individually supported for the promotion of products and there were no overall promotion activities for the local specialties.

Therefore, the QIP will formulate a task force with organizations related to promotion activities in cooperation with Department of Trade and Industry (DTI) which supports promotion for the local products. The task force will study the contents of promotion activities for the processed products produced by the disaster victims.

(4) Purpose of the Project

The purpose of the Project is to establish the framework of promotion activities for the local processed products by the disaster victims and to promote the sales of the local processed products.

(5) Expected Outcome of the Project

- The framework of promotion activities for the products produced established through the promotion activities.
- The local products become recognized by consumers through the promotion activities.

(6) Activities and Task Allocation

Activities for the Project are as follows. Task allocation for the Project is not clarified because framework of promotion activities for the processed products is not finalized by taskforce yet.

1) Study of the framework of promotion activities for the processed products with the task force.
2) Implementation of the framework of promotion activities for the processed products.
3) Examine possibilities of a promotion center.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-25.

Table 2.1-25 Implementation Schedule for QIP-13

Activities		2014							2015		
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	Coordination meeting	▼									
2	Setting up Task Force		▬	▬							

3	Conduct Task Force Meeting			▼							
4	Examine Promotion Activities										
5	Conduct Promotion Activities*			▬	▬	▬	▬	▬	▬	▬	▬
6	Examine possibilities of promotion centers										

Source: JICA Study Team

*: Promotion activities were conducted through individual QIPs (QIP-03, QIP-14 and QIP-15)

2.1.14 Regenerating Livelihood through Production of Coco Charcoal Briquette (QIP-14)

Farmers' groups are established, and be provided necessary tools. They are also trained for building charcoal kiln and production. The member farmers individually produce the charcoal after they are trained in management and use of the tool. They will sell the quality charcoal, and low quality charcoal can be used for home consumption to reduce the expenditure. Further, possibilities for production of briquette using charcoal by sharing the low quality charcoal to add value will be examined. The QIP will also support promotion of charcoal by participating in events such as sales in tents.

(1) Location

Barangay Buyayawon and Busay at Municipality Mercedes in Eastern Samar Province.

(2) Beneficiaries

Direct beneficiaries: Coconut farmers (2 groups with approximately 20 persons / group)

Indirect beneficiaries: Other coconut farmers who are interested in charcoal production

(3) Background

Region VIII was third rank in coconut-producing areas in the Philippines with 46 million coconut trees planted on 420 thousand ha, and 1.7 million people involved in the industry of coconut production according to Philippines Coconut Authority (PCA) before the disaster of Typhoon Yolanda. Mixed cropping under the coconut trees were also important for the local economy, the production scale of abaca was the second highest, banana was the seventh highest, and sweet potato was the first highest in the country. However, 15 million coconut trees have been non-producible, and 20 million coconut trees have further been severely damaged by Typhoon Yolanda. The inter cropping of banana, sweet potatoes and abaca were also seriously devastated. Therefore, the reproduction of coconut cultivation is urgent and indispensable to the local economy. Trunks of fallen coconut trees are processed as timbers for construction, and it has become a source of cash income. However, the quality of coco timber is not suitable for building material, and it is expected that the supply of coco timber will soon

overwhelm the needs for building materials because the number of fallen trees is too large.

In this context, the removal of fallen trees and standing dead stocks in the agricultural land, which are the obstacle for replanting of coconut and intercropping, is an urgent issue in order to ensure the livelihood of coconut farmers and recovery of coconut industry in the region. The disposal is also a major issue as same as the removal of the stems. The stems can also be processed to charcoal or organic fertilizer besides from the building materials. It will be precious income resources until the farmers can start harvesting the coconut. The fallen coconut trees that do not require the process of logging, which is prohibited by law, will become suitable charcoal material.

However, the charcoal made from the trunk of coconut has not been present in the market up to now. Therefore, trainings are necessary for preparing charcoal kiln and producing better quality charcoal. Generally, as the charcoal made from coconut tree burns fast, it is expected to be sold at high price by molding charcoal briquette with mixing a binder of crushed cassava. The quality of charcoal made from coconut shell is better, but it is realistic to use the roots and trunks of coco trees, because coconut cannot be harvested for a considerable time due to the disaster, meaning that coconut shells are not produced. In addition, even landless farmers can easily produce the charcoal in gardens.

(4) Purpose of the Project

The purpose of the Project is to contribute to livelihood of the coconut farmers by introducing charcoal production technique.

(5) Expected Outcome of the Project

- The coconut farmers produce the charcoal made from fallen coco trees.
- Cleaning of the fallen trees and standing dead stocks which are left in the farmlands proceeds.
- The damage caused by coconut pest breeding in the fallen trees is relieved.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project is indicated in Table 2.1-26.

1) Invitation of participant farmers and group formulation.
2) Provision of necessary tools.
3) Examine possibilities for charcoal briquetting.
4) Provision of training.

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-27.

Table 2.1-27 Implementation Schedule for QIP-14

Activities		2014							2015		
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	Invitation of Participant Farmers and Group Formulation				■						
2	Provision of Necessary Tools				■						
3	Examine Possibilities for Charcoal Briquetting						■	■	■	■	■
4	Provision of Training				■	■	■	■			
5	Production and Sales of Charcoal				■	■	■	■	■	■	■

Source: JICA Study Team

2.1.15 Integrated Culture of Oyster and Milk Fish Improvement for Sustainable Aquaculture and Livelihood (QIP-15)

In this QIP, Japanese side will provide the necessary equipment and materials, the fish farmers will conduct balanced culture of oysters and milk fish with the cooperation of bathymetrical survey by BFAR Region VIII Office and Leyte Province. Tanauan Municipality will be responsible for the project implementation at the site in conjunction. Debris from Typhoon Yolanda such as the remaining material of destroyed fish pens and fallen coconut trees, which are obstructing transportation of local residents by canoes, will be removed during the initial stage of the QIP through Cash-for-Work activities. The QIP will also support promotion of processed milkfish by organizing sales campaigns.

(1) Location

Barangay Santa Cruz at Municipality Tanauan in Leyte Province.

(2) Beneficiaries

Direct beneficiaries: 1,000 people (Barangay Santa Cruz, 836 population, processing workers, buyers)

Indirect beneficiaries: Assumed 5,000 people: oyster farmers, processing workers, buyers

(3) Background

Sta. Cruz island in the mouth of the river, which was a preferred place of oyster cultivation due to the nutrition from the river and clean ocean currents of Leyte Gulf facing the open ocean, was known for a production area of cultured oyster with traditional oyster farming.

However, the oyster farming sites have been filled by fish pen farming of milkfish which was more profitable in recent years. Mass mortality of milkfish eventually occurred from deterioration of water quality by eutrophication due to overcrowding of milkfish farming in 2012. It had suspected ties to the cause of red tide in recent years. It can be said the situation represents a typical "The Tragedy of the Commons" occurred in few productive brackish water sites in Leyte Gulf. In this island, there were 10 households engaged in oyster farming, and 55 households in fish pen farming of milk fish before Typhoon Yolanda, which were all lost due to the typhoon.

This QIP aims to establish a sustainable fishing village economy by recovery of the oyster farming through sustainable use of village farming resources to maintain the ecological balance between the farming of milk fish and oyster. BFAR Region VIII Office and Marine Biotoxins Testing Center of Leyte Province are in charge of environmental monitoring, and Tanauan Municipality oversees the farmers' groups in the field. In addition to selling as fresh oyster, a part of produced oyster is planned to be smoked to add values and increase the shelf life so as to increase the volume of sales by diversifying the market destinations. The recovery of the former oyster farming with the balanced milk fish farming operation can improve the economic base of fishing village by diversification of income sources.

(4) Purpose of the Project

The purpose of the Project is to manage community aquaculture resources and to secure the livelihood of Typhoon affected fishermen's families by establishment of integrated culture of oyster and milk fish or 'Talabangusan' as a strategy for sustainable aquaculture.

(5) Expected Outcome of the Project

- The oyster farmers learn the oyster culch technology.
- Farming facilities of milkfish and oyster are installed.
- Milkfish farming and oyster farming are resumed.

(6) Activities and Task Allocation

Activities for the Project are as follows and Task allocation for the Project indicated in Table 2.1-28.

1) Removal of debris from cultivation sites through cash-for-work.
2) Installations of oysters and milk fish farming facilities.
3) Improvement of oyster farming technology.
4) Training on smoked oyster processing technology with supply of tools.
5) Provision of equipment for the Marine Biotoxins Testing Center and Monitoring (marine biotoxin / red tide).

(7) Implementation Schedule

The Implementation schedule for the QIP is indicated in Table 2.1-29.

Table 2.1-29 Implementation Schedule for QIP-15

	Activities	2014								2015	
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1.	Delineation of area for talabangusan										
1-1	Clearing of site from debris			▼							
1-2	Application for preferred site by fishermen			▼							
1-3	Site survey and delineation			▼							
1-4	Approval of application				▼						
1-5	Accomplishment of licensing requirements				▼						
2.	Designing of talabangusan										
2-1	Design and field testing			▬							
2-2	Approval of design			▼							
3.	Construction of talabangusan										
3-1	Procurement of materials				▼▬	▬					
3-2	Construction of talabangusan					▬	▬	▬		▬	
4.	Rehabilitation of Leyte Marine Biotoxins Testing Center (Red Tide Laboratory)										
4-1	Replacement/procurement of equipment and tools					▬	▬	▬	▬	▬	▬
4-2	Re-assignment of PLGU personnel to work in the laboratory and red tide monitoring and management							▼			
5.	Training and technology transfer										
5-1	Trng. of talabangusan operators on integrated culture of oyster & milkfish										
5-2	Training on fish processing (including deboned and smoked bangus, smoked oyster)				▼	▼		▼	▼	▼▼	▼
5-3	Training on mollusk disease diagnosis and health management								Scheduled after Aug.2015		
5-4	Transfer of Japanese technology on oyster spat collection								▼		
6.	Talabangusan operation and monitoring										
6-1	Sediment analysis before operation (by BFAR)								▼		
6-2	Procurement of oyster seeds on cultch						▼			▼	
6-3	Installation of talaba seeds on cultch to talabangusan (by fishermen)						▼			▼	
6-4	Procurement of milkfish fingerlings and feeds (by fishermen)						▬	▬	▬	▬	▬
6-5	Stocking bangus fingerlings (by fishermen)						▬	▬	▬	▬	▬
6-6	Feeding and management of stock (by fishermen)						▬	▬	▬	▬	
6-7	Water quality monitoring (twice a month, by BFAR)								▼	▼	▼

	Activities	2014								2015	
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
6-8	Plankton and shellfish toxin analysis (at least twice a month, by PLGU)								▼	▼	▼
6-9	Sediment analysis after operation (by BFAR)								Scheduled after Oct. 2015		
7.	Harvesting										
7-1	Milkfish								▬	▬	▬
7-2	Oyster								Scheduled after Aug.2015		
8.	Study on gonad development of oyster at various places										▼
9.	Evaluation										▼

Source: JICA Study Team

2.2 Achievement of Quick Impact Projects

2.2.1 Regenerating Livelihood through Introduction of Disaster Resilient Submersible Fish Cage (Milk Fish) (QIP-1)

(1) Inputs

Input 1: Design of Submersible Cage

Under this QIP project, a new type of cage culture system, Submersible Cage (Figure 2.2-1), which is resilient to typhoons and other natural calamities were designed, constructed and installed in Basey Mariculture Park located in the municipal waters of Basey.

The Project contracted Nitto Seimo Co. Ltd., a fishing gear equipment company in Japan which has a patent to produce submersible cages in Japan, to design and construct a typhoon resilient cage suitable for the site condition. The design tailored to the conditions and actual construction with locally available materials was realized by Nitto Seimo in cooperation with a local fishing gear company, INCA Philippines Inc. Two Japanese engineers were assigned to transfer the Japanese submersible cage technology.

Input 2: Bathymetrical Survey

Prior to the construction of Submersible Cages, the Project in cooperation with Region-8 office of Bureau of Fisheries and Aquatic Resources (BFAR) surveyed the site condition to obtain necessary environmental data for the design. The Figure 2.2-2 shows the bathymetric map of the site as an output from the survey.

Input 3: Construction of Submersible Cages

Three main technical inputs were incorporated into the design of new cages to make it resilient to typhoons; 1) circular high density polyethylene (HDPE) frame, 2) submersing and floating device, and 3) grid mooring system. The first technical input makes the cages physically

durable at the same time flexible to absorb physical shocks. The second input makes cages to be able to avoid the rough sea surface condition, while the last input secures the position of whole cage system at the surface.

Input 4: Formation of Fish Farming Associations

The cages were distributed to five fish farming associations formed in four target barangays: Tinaogan, Cambayan, Amandayehan, and San Antonio (Table 2.2-1). Distribution of cages was based on the site condition and number of cage fish farmers prior to the typhoon Yolanda. Majority of members received basic training for fish farming by BFAR Region-8 and had been waiting for the facilities but lost the opportunities due to the Typhoon.

Input 5: Training on Operation of Submersible Cage

The members of beneficiary fish farming associations were provided with a series of training on the operations of submersible cages; 1) installation of cage nets to circular frame 2) construction of circular cage nets, and 3) operations of submersible and floating devices.

Input 6: Supply of Fingerlings and Feeds

BFAR Region-8 being a responsible partner institution for supplying the required 600,000 milkfish fingerlings into the cages successfully selected two local suppliers through a public tender in November 2014.

Basey Municipal Agriculture Office which is responsible for supply of feed to the farming associations for the first year cycle.

Input 7: Market Survey on Milkfish

A market study for finding appropriate form of milkfish processed product was conducted in May 2014. The project staff interviewed fish farmers who were carrying out milkfish farming in Basey Mariculture Park in the target barangays and also interviewed dealers at the wholesale market at Sagkahan in Tacloban city, called by the name of “shed”. They also collected existing statistical data from the municipal agriculture office of Tacloban and from BFAR Region-8.

Input 8: Training on Pressure Cooked Milkfish with Supply of Equipment

A product form of pressure cooked milkfish was developed in QIP-1 with the women’s association of Barangay Sta. Cruz in cooperation with Leyte Provincial Agriculture Office in QIP-15 as reported later. The developed technique was transferred to the women in the four target barangays in Basey through a series of hands-on training sessions made between the women members of Basey and Tanauan.

(2) Achievement of the Project

Achievement 1: Strengthening Typhoon Resilience of Cage Culture System by Introduction of Japanese Submersible Cage Technology

There were a total of 40 units of cages constructed and installed under this QIP. Based on the site conditions found through the environmental study mentioned above, twenty units out of 40 were made as floating cages due to insufficient site depth for installation of submersible cages and the rest of 20 units were made as submersible cages. All cages are made of circular HDPE frame and equipped with grid mooring technology.

The equipment supplied in QIP-1 are shown in Table 2.2-2 and Table 2.2-3. Table 2.21

Table 2.2-2 Submersible and floating Cages

	Item	Specification	Quantity
1	Submersible cage	Frame cum float: HDPE 225mm circular with submersible device with one unit of compressor Net: 10 m diameter , 6 m depth, PE 400/12 14k, knotted mesh Grid Mooring,	20 units (2 grid mooring systems)
2	Floating cage	Same as above without submersible device	20 units (2 grid mooring units)

Source: JICA Study Team

Table 2.2-3 Supplemental netting materials for construction of smaller mesh nets

	Item	Specification	Quantity
1	PE net	PE 400/9 14k, 200MD knotted mesh	48 bundles
2	PE rope	8mm (#16), 200m/roll	90 rolls
3	Nylon twine	Nylon 210/21, 1 lb/spool	197 spools
4	Fishing net needle	150mm	100 pieces

Source: JICA Study Team

When the strong typhoon Ruby hit the region on December 6, 2014, cages made of bamboos and some cages made of steel pipes had heavy damages in the Basey Mariculture Park. All 40 cages constructed under this QIP project located in the same park survived without any damage. At the time of Typhoon Ruby, the JICA cages were not set with cage nets as no fingerlings were available yet. They were not submerged either because no compressor was supplied yet. Therefore, the constructed cage structure was not yet completely tested for the designed resilient strength against typhoon, but at least, it can be said that the Ruby incident proved its relative strength to the ordinary cage system.

In regards to the expected increase in production and income for the target fisherfolk, the Project has yet to achieve the target benefits as the actual production has not been realized due to delay in fingerling stocking.

Achievement 2: Organizing Beneficiary Fisherfolk through Establishment of Fish Farming Associations

All 20 submersible cages were installed at Barangay Tinaogan which has deeper and relatively calm site condition suitable for submersible cage installation and is highly dependent on fishing activities for the village economy. These twenty cages were set in two grid mooring systems which are integral units for the cage farming operation. Two fish farming associations were established in Barangay Tinaogan in consideration for operational necessity.

Barangay Amandayehan received 10 floating cage units in a grid mooring system. The remaining 10 floating cage units in one grid mooring system was shared by Barangay Cambayan and Barangay San Antonio which had smaller fisherfolk numbers with cage farming experience.

Establishments of the five fish farming associations were done in the last week of July 2014 under supervision of the officers from Basey Municipal Agricultural Office and witnesses of the Project staff. Associations' officials were elected through a unanimous vote and the constitutions were adopted on the same day. Assisted by the Municipal Agricultural Office, these associations were officially registered to Department of Labor and Employment (DOLE) in the following month.

Achievement 3: Technology Transfer on Operation of Submersible Cage

The members of beneficiary fish farming associations were provided with a series of training on the operations of submersible cages. Those fisherfolk underwent these training sessions and successfully demonstrated the operation of fish farming practices with the newly installed cages on the turn-over ceremony carried out on the 24th of March, 2015. List of training conducted under QIP-1 was shown in Table 2.2-4.

Table 2.2-4 List of Training conducted in QIP-1

	Title	Date	Participants
1	Training on Change Net Construction	Nov. 26, 2014	60
2	Hands-on Training on Soft Bone Bangus Processing (Barangay Amandayehan)	Nov. 27, 2014	45
3	Hands-on Training on Soft Bone Bangus Processing (Barangay San Antonio)	Nov. 28, 2014	40
4	Hands-on Training on Soft Bone Bangus Processing (Barangay Tinaogan)	Nov. 29, 2014	41
5	Hands-on Training on Soft Bone Bangus Processing (Barangay Cambayan)	Nov. 30, 2014	45
6	Training on Submersible Device Operation	Jan. 23, 2015	85

Source: JICA Study Team

Achievement 4: Supply of Fingerlings and Feeds to Recommence Fish Farming Operation by Fisherfolk

BFAR Region-8 being a responsible partner institution for supplying the required 600,000 milkfish fingerlings into the cages successfully selected two local suppliers through a public tender in November 2014. Both of the winning suppliers were unfortunately hit by large scale typhoons between December 2014 and January 2015: Ruby, Seniang and Amang. They received damages on dikes and lost the fingerlings prepared for stocking into the submersible cages at Basey. BFAR Region-8 then decided to transport the fingerlings reared in one of its substations, Lavezares farm located at Northern Samar, to the Basey cages. The first stocking of milkfish fingerlings to the cages was made on the 30th of January 2015 with the fingerlings from Lavezares.

Basey Municipal Agriculture Office which is responsible for supply of feed to the farming associations for the first year cycle supplied the feed on time for the fish stocked in the cages.

Achievement 5: Determination of Product Form for Processed Milkfish Based on Market Survey

The market study for finding appropriate form of milkfish processed product concluded in May 2014 found that the production of commonly known processed products of milkfish such as deboned, marinated, and smoked ones are likely to face difficulties in competing with those imported from outside of the region where fish are produced and processed at cheaper cost. Thus, the study recommended taking a marketing strategy to produce a unique product that is sold at local markets and avoiding competition with imported products from outside regions. The Project came to a conclusion to choose pressure cooked milkfish as the processed product to be developed based on this recommendation.

Achievement 6: Transfer of Processing Technology from QIP-15 to QIP-1

The Project successfully transferred the technology of producing pressure cooked milkfish from the women of Sta. Cruz of Tanauan (QIP-15) to the women of four target barangays of Basey (QIP-1). Those women's associations sold the produced milkfish product within the respective barangays and obtained a new opportunity for income generation.

The first training of transfer of technology between the women groups were done on the 13-14th of August 2014 when selected representative members of Basey women's associations came to learn the technique from the Tanauan women at Barangay Sta. Cruz. The second technology transfer was done from 27th to 30th of November 2014 when selected members of the women association of Tanauan came to demonstrate and advise on the pressure cooking of milkfish to all members of the women's associations of four target barangays of Basey.

Prior to the second training, each women association in Basey were provided with all equipment necessary for production and marketing of pressure cooked milkfish, including tricycles for peddling the products as listed in Table 2.2-5.

Table 2.2-5 Pressure cooking equipment

	Item	Specification	Quantity
1	Pressure cooker	All American® Pressure Cooker 941	4 units
2	Refrigerator	LG® GN-B201SLZ	4 units
3	Cooking utensils	Various small utensils	4 sets
4	Peddling tricycle	Tricycle with steamer	4 units

Source: JICA Study Team

The production by the women association, however, is still occasional due to lack of source material, milkfish, from the Basey Mariculture Park. The first large scale milkfish cage culture production had started in November 2014 from rehabilitated structures of a private company, but it stopped the production after being hit and damaged heavily by Typhoon Ruby.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-6 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Milkfish farmed in submersible fish cage is harvested (kg/m^3)	9.2 kg	8.6	0	0	
2) Farming families gain stable income by farming milkfish (PHP/farmer/year)	162,495 PHP	161,250	0	0	
3) Farmers gain the capacity for management and farming technology using submersible fish cage (number of farmers)	95 farmers	0	0	95	95
4) Processing members start the processing fish from submersible fish cage (number of members)	116 members	0	0	0	116
5) BFAR and Municipal officers master the technology for procurement, management and operation of disaster resilient submersible fish cage. (number of BFAR and Municipal officers)	5 persons	0	0	2	5

Source: JICA Study Team

2.2.2 Recovery of Rural Health Service Support System through Reconstruction of Provincial Health Office (QIP-2)

(1) Inputs

Input 1: Design of Reconstruction of Provincial Health Office (hereafter called PHO)

Through the damage assessment survey conducted by JICA Study Team on PHO, it was found that the upper part (roofing system) of the building was severely damaged but the concrete structure (building frame) had no serious damage and was still stable. Hence, the

reconstruction of PHO was planned through repairing works on the upper parts (roofing system), interior partition/exterior walls of the building including the replacement/provision of equipment.

Also, PHO had a separate building for vaccine storage which was also damaged during the typhoon. However, PHO didn't have plans yet for the repairing of the said building including the fact that it doesn't have the resources to fund for the repair works. Storage and distribution of vaccines for the Leyte Province was one of the main functions of the agency and after Yolanda it was difficult for them to handle the distribution due to the damaged building and all their storage equipment were damaged. So in order for them to have a smooth handling of vaccines, a Vaccine Storage Room was incorporated in the design of the building.

Additionally, a ramp at the entrance of the building was included as requested by PHO for the access of the elderly and handicapped people. The ramp was designed according to the design requirements for accessibility of Person with Disabilities (PWD).

A profile of the project with Building Perspective is shown in Figure 2.2-3.

In general, it can be seen that the upper portion of the building, such as the trusses and roof were severely or remarkably damaged compared to the lower portions of the building, i.e. column and foundation, which was the same scenario for all the building that were damaged by Typhoon Yolanda in Leyte and Samar. Hence, JICA Study Team, considered the necessity for strengthening and proper reinforcement of trusses and roof especially on the critical section. The As-Built Drawing provided by the Leyte Provincial Office was then used as guide for preparation of construction drawing for the Reconstruction of Provincial Health Office.

Input 2: Bidding and Contracting for Reconstruction of PHO

In order to assist the local contractors or the persons concerned to learn the disaster-resilient technology through the reconstruction from the disaster, bidding participants were limited among the local contractors. In the selection of the local bidders, the JICA Study Team requested from Leyte Province Office and PHO for the recommendation of contractors. A Pre-Qualification (hereinafter called PQ) evaluation of recommended contractors was conducted through their submitted company profile and eligibility documents. JICA Study Team then issued the invitation to bid to the contractors who qualify in the PQ.

JICA Study Team adopted the open/competitive bidding system using the two-envelope system to ensure the transparency and fairness in the conduct of bidding. A Two-Way Envelope System is a of bid opening system wherein the bidder will submit an envelope containing two separate envelopes, the Technical Envelope bearing the technical proposal, which consists of the execution plan/construction methodology, organizational chart, construction schedule, and equipment/manpower schedule, shall be evaluated first to examine

the local contractor's capability, and the Financial Envelope bearing the financial proposal/bid cost. In the process of bid opening, the Technical proposals will be opened first and will be evaluated; those bidders with complying/passing Technical Proposal are the only qualified for the next round of evaluation, the opening of Financial Envelopes. Complying Financial proposals will then be compared and the one with the lowest bid will be the first priority for Arithmetical Evaluation.

Since the project was the repair or rehabilitation works, additional quantities or change order are expected. Therefore, BOQ/fixed unit cost system was adopted in the contract, which could adjust easily on account settlement at the completion of construction. This system is generally used for the contract of construction in the Philippines.

Generally, the rate of Advance Payment on the contract conditions in the Philippines is 15%, the financial condition of the local contractors and their difficulty in raising construction funds just after the disaster were considered. Hence, a suitable payment condition was applied to avoid any construction delay caused by financial deficit, referring to the rate of the local consignment contract of JICA. In addition, since the contract term was short for six months, price escalation clause was not considered. Although the Defects Liability Period was usually within a year, three months was adopted from restrictions of the contract term of QIPs.

Input 3: Reconstruction of PHO

The damages caused by Typhoon Yolanda in the building were mostly attributed to the poor construction of the building and the usage of substandard construction materials. In the QIPs, JICA Study Team organized the inspection team and observed strict compliance in quality control by 1) inspecting on the important works such as foundation/excavation, re-bar, formwork, concrete and welding, 2) checking the working situation and 3) providing technical assistance.

Moreover, JICA Study Team had regular monthly or bi-monthly site meetings with the contractor together with the PLGU Engineer/technical staff and PHO Staff to monitor construction progress based on the submitted construction schedule, the quality of work and most importantly the discussion of technical issues that the contractors encountered.

Input 4: Equipment for Reconstruction of PHO

Office furniture and equipment of PHO were totally damaged by the typhoon. Therefore, provision of office furniture, i.e. tables and chairs, computers, air-conditioners and vaccine storage equipment, i.e. refrigerators and freezers, were necessary for the resumption of PHO management’s function and operation.

However, due to the limited budget, QIPs were not able to cover the cost for the provision of office furniture and computers. Thus, JICA Philippines Office coordinated with JICA

SMACHS-EV Project (Strengthening Maternal and Child Health Services in Eastern Visayas), an on-going project of JICA with the Department of Health in Eastern Visayas, for the procurement of the said items. So, QIPs only provided the air-conditioners and vaccine storage equipment.

(2) Achievement of the Project

Achievement 1: Revising Design of PHO for Disaster Resilient Reconstruction

The damages caused by Typhoon Yolanda, were mostly found in the superstructure of the building, which includes the connection joints of the building frame and truss, the roofing system itself, i.e. trusses, purlins and roof. It was in the same situation for PHO.

Based on the provided As-Built Drawing by the Leyte Provincial Office, JICA Study Team reviewed on the strengthening measure for the critical parts of the superstructure and incorporated Japanese-Technologies for reinforcement measures as follows:

a) In the Philippines "Hug method" was the common practice for truss anchorage wherein the extended/extra length of vertical re-bars in the column are the ones used to fix/hold the trusses to column, which was not stable and considered a weak type of anchorage that was partly the cause of the damages in the roofing system during the Typhoon.

   Thus, in QIPs, stable and proper connection was adopted by 1) embedding anchor bolts in the existing concrete column, 2) fixing the anchor/base plate with the embedded anchor bolts, and 3) full welding of trusses to anchor/base plate.

b) Superposed web type was mostly used in welding of truss members or joints. Actual fabricated truss does not fit as planned due to misconnection of truss members. Because of superposed type of web connections, truss members were not welded on the same plane, so there were misalignments of truss members and also, full weld length were not attained due to improper location of spot welds. As a result, the connection of truss members was weak and trusses were easily destroyed during the Typhoon.

   To resolve the said defects, gusset place was used at the connecting portions to secure the right position or alignment of truss members, to attain the required welding length and the proper connection of truss members.

c) In the Philippines, the most commonly used roofing sheet is the Galvanized Iron (G.I.) Corrugated type, which has the characteristic of low pitch corrugation, thin base metal and has weak resistance to bending or vertical motion, thus, it was easily damaged and blown off during the Typhoon. On the other hand, for school buildings built by JICA grant project in 1991, the Mega-Rib roof sheets were used that was made of thick base metal with high pitch or rib that has high resistance for bending. During Typhoon

Yolanda said JICA Buildings hardly suffered damages. And said roofing materials were imported from Japan.

In QIPs, the same roofing system, Mega-Rib type was adopted. However, the same material was not used due to the difficulty in procuring and it entails a high cost. Therefore, domestically available materials were used instead having 0.5mm thickness, pre-coated Mega-Rib Type Galvanized Sheet. The roofing material for PHO was fabricated by process of bending the G.I. Sheet to the same rib height with the JICA Grant Building and it has high resistance to deflection due to its durable design and strength.

d) For the purlins, the common type of material used is the C-Purlin, a C-shape bended plate with 1.2mm thickness mostly used locally. It is easy to install because it is lightweight. Only that it is weak due to its thin base metal, so before the wind load could be transmitted from the roof to the truss, the C-Purlin is already damaged due to its weak resistance to shearing force.

   In order to improve this situation, in QIPs, Steel C-Channel Purlin, C-shape cold rolled steel purlin with 2-mm thickness was adopted for it to assure the transfer of load from roof to truss.

e) As the construction work has started, there were noted deflections or inclinations of about 10cm on some part of the beams and floor slab. PHO was not aware of this situation and the cause could not be identified. However, despite the noted deflections, its building frame was still stable. JICA Study Team then decided that the existing building frame will still be used for the reconstruction, and so there were some corrections and adjustment in the elevations for the installation of base plate and mounting of trusses to ensure the correct horizontal alignment for the roof framing structure.

Achievement 2: Bidding/Contract of Reconstruction of PHO

JICA Study Team collected the company profile and eligibility documents from four (4) companies that were recommended by Leyte Provincial Office and PHO. Pre-Qualification process was conducted based on their submitted documents and after PQ three (3) bidders passed and were likewise sent with the bid invitation.

Two-way envelope system was adopted for the opening of bid proposals as described previously. Bid opening was done with the presence of the bidders, PHO Representative and Leyte Provincial Office Representative. First opened were the technical proposals of the three qualified bidders. Two technical proposals passed and were qualified for the next round of evaluation. Financial proposals of the 2 qualified bidders were opened after checking, the lowest bid was determined. COLLERA CONSTRUCTION has the lowest bid and the first priority for Arithmetical and Detailed Bid Evaluation. In the bidding procedure, both technical

and financial proposal were fully examined and questions were made to the contractors for documents or items that needs clarifications. After conduct of arithmetical and detailed bid evaluation, COLLERA Construction's bid proposal was found complying and was the Lowest Calculated Responsive Bid. Awarding and perfection of contract documents then followed.

BOQ/fixed unit cost system was adopted for easy adjustments in the project cost in the settlement of working quantity variations at the project completion.

In order to facilitate financing of the local contractor, the payment condition was carefully adjusted with 40% for advanced payment, 40% for an interim progress payment, and 20% for final payment. Contract period was as short as six months, so the price escalation was not applied.

Defect Liability Period is usually one year in the Philippines, but for the project was within three months in consideration for the contract term of QIPs.

During the project implementation, the contractor requested for a 60 Calendar Days Contract Time Extension due to the following reasons: 1) the provision additional leveling concrete for height adjustment for the truss anchorage, 2) shortage of the construction materials after typhoon Yolanda, 3) anchorage adjustment correction in preparation for the truss installation and 4) the weather condition and occurrence of typhoon Ruby which affected the number of working days for the project. JICA Study Team, PHO Representative and Leyte Provincial Office discussed and evaluated the reasons for time extension and were found valid and acceptable, hence, the 60 Calendar Days' time extension was granted to the contractor.

Achievement 3: Reconstruction of PHO in a Disaster Resilient form through Appropriate Construction Management

JICA Study Team required the contractor to submit and seek approval of work requests prior the start of any work item. Likewise, prior to the start of concrete works or installation of specific materials, contractor was required to submit necessary documents such as concrete design mix and mill certificates or sample of every construction material in advance. Steel materials and concrete samples were tested at a Material Testing Laboratory accredited by DPWH by tensile test and compression test, respectively including other construction materials that require material testing to ensure the strength and quality of materials to be used. As the welder played an important role for the strengthening measures of the critical parts of steel superstructures. JICA Study Team conducted an orientation and skills assessment on the welding skills of the welders to ensure quality work from them. Welders who passed the skills assessment were the ones allowed to fabricate the trusses and do the major welding works.

Moreover, JICA Study Team made a monitoring/deployment plan of Project Inspectors based on the construction schedule submitted by the contractors to for quality control. Major works

such as re-bar, formworks, concrete, welding, truss fabrication and roof installation, etc. were considered in the monitoring schedule.

Proper installation of reinforcing bars for columns and beams before formworks closure was strictly monitored as it will be difficult to check/correct after concreting. Concrete works was inspected through trial mixing, cement-sand-gravel-water mixing ratios, skills of mixer operator and placing method and operation of vibrator. Site instructions were given to contractors in case of any failure or defects in the works.

In worst cases, correction, demolition or rework of a specific structure or work item were instructed.

The following are some of the instructions made to the contractor during the construction period of PHO

- Some delivered concrete hollow blocks at site were rejected with poor quality and was ordered for replacement.
- Correction stiffener at Lintel beam should be corrected.
- Honeycombs were found on concrete surfaces, so JICA Study Team instructed the contractor to use concrete vibrator properly on concrete pouring to avoid the same defects. Concrete epoxy was advised for use in repairing of honeycombs.
- Leveling mortar should be poured evenly.
- Anchorage on roof beams should be corrected properly.

JICA Study Team required the contractors to submit the documents below as basic data for construction. However, the contractor's technical experience in documentation was not enough to prepare the documents correctly, so the JICA Study Team provided technical assistance in the preparation of such documents. The contractor could not sufficiently acquire the knowledge for these documentations through Reconstruction of PHO, and they need to learn more in order to be able to effectively manage their construction schedules.

- Monthly Construction Schedule and S-Curve
- Bar Bending Schedule
- Shop drawing of Truss
- Catch-up Plan

Achievement 4: Support for Resuming Operation through Equipment Procurement

Although the vaccines were stored and distributed at PHO before typhoon Yolanda, the numbers of vaccines handled was not reaching its target due to equipment's trouble. In QIPs, the vaccine storage equipment (refrigerators and freezers) were provided in order to handle the required vaccine volume as indicated below. The specifications of equipment were adjusted based on availability in Tacloban City.

Table 2.2-7 Equipment for PHO

Equipment	No. of Doses	Capacity (cubic feet)	set	Item for storage
Freezer	6,068 160,204	15	2	Bacille Calmette Guerin (BCG), Pneumo-Conjugate Vaccine (PCV13)
Refrigerator	18,205 9,709	10	2	Hepatitis B Vaccine, Measles Vaccine
Chiller	19,419 8,107 12,161 160,200	11	4	Measles Mumps Rubella (MMR), Tetanus Toxoids (TT), Oral Polio Vaccine (OPV), Pentavalent Vaccine
Chiller		11	2	Ice packs

Source: JICA Study Team

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-8 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) The amount of vaccine and medicine that are distributed to the RHU is restored. (%)	100%	100%	0	100%	
2) Medical and birth certificates are issued normally by PHO (certificates/month)	500 issues	534	148	272	
3) Number of monitoring of RHU by PHO returns to normal (locations / quarter)	44 locations	44	0	0	
4) Number of times for RHU training returns to normal. (times / year)	4 times	4	0	0	

Source: JICA Study Team

2.2.3 Regenerating Local Livelihood through Processing of Agriculture and Fishery Products by Small-Scale Community Groups (QIP-3)

(1) Inputs

Input 1: Design of Reconstruction of Multi-purpose Livelihood Building

Through the damage assessment survey conducted by JICA Study Team on the Livelihood Buildings utilized by the Women's Group situated in the different barangays of Tolosa, it has been noted that most of the building structures and food production's processing equipment suffered serious damage. As a result and by request of the LGU, the Multi-Purpose Livelihood Building was identified to be included in the reconstruction effort under QIPs. Assessing further of the site condition, a 2-story building with concrete roof deck was designed beside the Municipal Hall which could also serve as evacuation center during calamities.

In preparation of the drawing, the structural frame of the building (i.e., foundation, column, and beam) was reinforced and improved, thus enhancing the Drawing provided by LGU, for it

to be used as construction drawing for the Multi-purpose Livelihood Building. A profile of the project is shown in Figure 2.2-4.

Input 2: Bidding/Contract of Reconstruction of Multi-purpose Livelihood Building

In the same way as PHO (see section 2.2.2) in selection of the local bidders, JICA Study Team requested nominee of contractor's from LGU- TOLOSA. JICA Study Team issued the invitation for bid to contractors who have passed the PQ.

Also in the same way as PHO, JICA Study Team adopted open/competitive bidding system and two-envelope system. Similarly, BOQ / Fixed Unit Cost system was adopted for the contract.

Payment condition was also stipulated in the same way as PHO to avoid any delay caused by the financial deficit.

Input 3: Reconstruction of Multi-purpose Livelihood Building

In the same way as PHO, JICA Study Team made the deployment/monitoring plan of Inspectors for quality control. Moreover, JICA Study Team called for regular site meetings with the contractor to monitor the progress and quality of construction as compared with the contractor's submitted construction schedule, and discussed the technical issues encountered by the contractor.

Input 4: Technical Transfer to LGU Engineer

Through the collaborative works of design, estimation, tender, contract and construction supervision of the reconstruction of Multi-purpose Livelihood Building, JICA Study Team transferred knowledge and skills to engineers of the Municipality of TOLOSA, with the purpose of enabling them to handle recovery projects by themselves in the future.

Input 5: Guidance for the Women's Groups (processing techniques and management)

Before the landing of Typhoon Yolanda, there were five women's associations engaged in production and sales of processed agro-fishery products in Tolosa, supported by organizations such as LGU, DSWD, DOLE, VSU, etc. Activities of these women's association before Typhoon Yolanda was examined in order to identify whether these activities can be resumed under the support of the QIP, and to select the associations to be supported. In the course of the QIP, guidance for operation of the equipment to be procured, as well as instructions for accounting, were provided to the women's associations. In addition, training for processing techniques and sanitary management was provided by VSU to an association that requested such support.

Input 6: Procurement of Equipment for Restarting Processing Activities by Local Women's Groups

Almost all of the equipment that were being used for processing activities before Typhoon Yolanda were either washed away or destroyed and were not functional. Necessary tools and equipment for resuming the activities of the women's association participating in the QIP were examined, procured and provided to the LGU for their use by the women's associations.

Input 7: Promotion of Processed Products

Support was provided to the women's association for promoting the sales of processed products in nearby areas.

(2) Achievement of the Project

Achievement 1: Revising Design of Multi-purpose Livelihood Building for Disaster Resilient Reconstruction

Boring test was conducted to obtain the bearing capacity, and it was confirmed that the size of designed foundation was enough. As column and beam were important parts to receive the building load, they were modified in consideration of wind load. In addition, the beams were arranged to receive the load of stairs and a stairs hut.

Achievement 2: Bidding/Contract of Reconstruction of Multi-purpose Livelihood Building

Four contractors were recommended by LGU, and JICA Study Team issued the invitation for bids to four contractors who passed the PQ.

As described above, JICA Study Team adopted open/competitive bidding system and two-envelope system.

Bid opening was done with the presence of the bidders. First, technical proposal was opened then second, is the financial proposal of the bidder who passed through evaluation of technical proposal, was opened for comparison. Two companies participated the bidding, and one of them passed through technical review. Subsequently, the financial proposal of TRIAD A CONSTRUCTION, which passed through the technical review, was opened. After confirming that the financial proposal was within QIP's budget, TRIAD A CONSTRUCTION was nominated as the first priority for arithmetical evaluation. As bidding procedure, both of technical and financial proposals of the contractors were fully examined and evaluated. Since the bid of TRIAD A CONSTRUCTION qualified the evaluation after arithmetical evaluation, JICA Study Team issued Award and made the contract with the contractor. In the same manner with PHO (see section 2.2.2), BOQ/Fixed Unit Cost system was adopted for the Contract.

The same conditions with the PHO were applied for the payment conditions of the contract to avoid any delay caused by financial deficit. Also, since the contract period was only as short as six months, price escalation clause was not applied. And the similar to PHO project, three months was adopted for the "Defects Liability Period" in consideration for the contract term of QIPs.

During the project, the contractor issued the request for time extension with the following reasons: 1) shortage of the construction materials after typhoon Yolanda; 2) heavy rain in year-end and 3) occurrence of typhoon ruby, etc. JICA Study Team and LGU discussed and evaluated the reasonability, and granted the extension of 60 days.

Achievement 3: Reconstruction of Multi-purpose Livelihood Building in a Disaster Resilient Form through Appropriate Construction Management

In the same way as PHO, JICA Study Team confirmed all of construction material. As the welder played an important role in the strengthening measure for the critical section of the superstructure, JICA Study Team conducted the practical test of welding skill in advance, and permitted skilled welder who was assessed by JICA Study Team, to perform the welding operation.

JICA Study Team made the deployment/monitoring plan of Inspectors for quality control based on the construction plan and schedule submitted by the contractor.

The inspectors inspected center line, depth and bearing capacity of foundation excavation. Re-bar of column was inspected before formwork closure prior to concreting. Critical part of the building such as column and beam, bar installation was inspected in detail on dimensions, position, splicing lap & location, hoop, etc.

They inspected concrete works through trial mix, mixing ratio, slump test, the skill of mixer operator, placing method and vibrator operation, etc. At slab concrete of floor and roof of second floor, as concreting took long time at high elevation, the inspectors inspected full-time to avoid any defect. In case any failure or defaults in the works were noted, the inspectors issued site instruction to the contractor which resulted in correction, demolition or sometimes rework.

The following are some of the site instructions given to the contractor during the Reconstruction of Multi-purpose Livelihood Building:

- Sample of concrete hollow blocks has failed during testing. It was rejected and advised to procure from other supplier.
- Sand/Fine Aggregates was pointed out to be sub-standard. The contractor was advised to use the material according the specification.
- Concrete slump did not meet the specification and the contractor was advised to follow

the ratio of approved trial mix.

- Lack of concrete spacers was noted. JICA Study Team instructed to place more spacers.
- The proper use of concrete vibrator was instructed during concrete pouring
- Honeycombs were found on concrete surface. JICA Study Team instructed the contractor to use concrete vibrator properly during concrete pouring to avoid further honeycombs. Use of concrete epoxy was advised for repairing of honeycombs.
- Gravel beddings were noted uneven and not properly leveled. Contractor was instructed to lay and compact it evenly.
- Splicing of top bars on beam was not sufficient. The contractor was instructed to replace it as specified.

In the same case with PHO, regarding documentations required for submission, the contractor didn't acquire sufficient knowledge through Reconstruction of Multi-purpose Livelihood Building. They need to learn more in order to be able to effectively manage their construction schedules.

Achievement 4: Technology Transfer to LGU Engineer

Through the collaborative works of the reconstruction of Multi-purpose Livelihood Building, JICA Study Team transferred knowledge and skills to engineers of the Municipality of Tolosa as below, with the purpose that they would become able to handle future recovery projects by themselves.

a) Conducted explanation on the modifications made by the JICA Study Team on the technical drawing prepared by the LGU. Improved their understandings on the points to be reinforced in order increase capacity for wind load.

b) Indicated the details of the BOQ, and improved their understandings on the cost composition of construction, and the calculation method of budget.

c) Requested presence of engineers during bid opening, and improved their understandings on fair and competitive bidding using Two-envelope system.

d) Requested presence of engineers during the kickoff meeting, and improved their understandings on the procedures of the construction project.

e) Requested presence at the inspection during work, site meeting and completion inspection, and improved their understandings about construction supervision including quality control.

Achievement 5: Initial Arrangements with Participant Women's Groups

Prior to providing support to the women's associations, the Study Team interviewed the chairpersons of the five women's associations (Olot, Tanghas, Telegrapho, Burak, Imelda) that were engaged in production and sales of processed agro-fishery products before Typhoon

Yolanda. The Study Team confirmed the participation of four women's associations (five products) based on the activities that the groups were engaged in (Table 2.2-9), as stable supply of raw material for banana chip production by Imelda women's' association was considered to be difficult since most of the banana trees in the area were damaged by Typhoon Yolanda.

Table 2.2-9 Past Activities of Women's Associations in Tolosa

Name of Association	Activity (Product)	Participation to QIP
Olot	Longganiza, Tocino	Yes
Tanghas	Boneless Bangus	Yes
Telegrapho	Embutido	Yes
Burak	Vegi-fish Noodles	Yes
Imelda	Banana Chips	No

Source: JICA Study Team

Discussions were held with individual associations to collect basic information such as the number of members and scale of operation, and necessary arrangements for the re-starting of processing activities were discussed. Since the Tolosa Multi-Purpose Livelihood Center was still under construction at this time, a temporary processing place was determined with the support of the Municipality of Tolosa in a chapel near the municipal hall.

Among resuming processing and sales activities, guidance was provided to the women's association for the operation of tools and equipment and accounting for procurement of raw material and record of sales.

Achievement 6: Support for Resuming Processing Activities through Procurement of Equipment

A list of equipment required for resuming conventional processing activities was prepared by Municipality of Tolosa. Details of this list was further refined through discussions with the women's associations, and with VSU, which used to support the associations in technical aspects. Based on the final list, necessary equipment was procured by the Study Team. The list of equipment procured is indicated in Table 2.2-10.The temporary processing place provided in the chapel near the municipal hall was used for storage of the equipment, except for the freezer and refrigerator, which were placed inside the municipal hall. Though most of the equipment were procured by October 2014, the noodle machine and fryer required for the production of vegi-fish noodle, which were manufactured among order had to wait until January 2015 for its delivery.

Table 2.2-10 List of Procured Equipment

NO.	QTT.	UNIT	ITEM	NO.	QTT.	UNIT	ITEM
Production				18	3	pcs.	Carajay/Baong
1	1	set	Noodle Cutter	19	3	pcs.	Colander
2	1	set	Noodle Molder	20	5	sets	Ladle
4	3	sets	Measuring Cup	21	3	pcs.	Kitchen Scissors
5	6	sets	Kitchen Knives	22	6	pcs.	Basin
6	6	pcs.	Cutting Board	23	6	pcs.	Pail
7	3	sets	Processing Table	**Packaging**			
8	3	sets	Pressure Cooker	24	2	pcs.	Plastic Sealer
9	1	doz.	Mosquito forceps	25	1	pcs.	Vacuum Sealer
10	6	pcs.	Food Tray	**Marketing and Other Uses**			
11	1	pcs.	Board Cutter	26	12	units	Plastic Crates
12	1	pcs.	Meat Grinder	27	2	pcs.	Push Cart
13	2	pcs.	Weighing Scale	**Fixtures**			
14	1	pcs.	Weighing Scale	29	1	unit	Freezer
Kitchen Accessories				30	1	units	Refrigerator
16	3	sets	Heavy-duty gas stove	30	2	units	Cooler Box
17	3	sets	Stainless Steel Kettle				

Source: JICA Study Team

Achievement 7: Restarting of Processing Activities

The three groups of Olot, Tanghas and Telegrapho restarted processing and sales of their products in October 2014. However, the Burak women's association could not join the other groups on time due to the delay of equipment procurement and political conflicts between the municipality and barangay. The activities of Burak were finally resumed in February 2015, after the conflict was resolved.

On the other hand, access to the temporary processing place, which was supposed to be available through Monday to Saturday, was found to be more difficult than initially expected. Due to duplications with church events and difficulty in contacting the caretaker of the chapel, the women's associations could use the venue only for 1 – 3 days per week. Taking into consideration the limitation of access will result in lower production, it was decided that some of the processing activities should be temporarily done in the barangays of the respective associations.

Achievement 8: Restarting of Production and Sales of Processed Products

The situation of production and sales by the three associations during October 2014 to February 2015 is indicated in Table 2.2-11. All three associations have managed to gradually increase their sales and benefit. Initially, all products were only sold to the neighbors of the women's association members and were only produced among order. However, from January 2015, the association started to sell their products in a local canteen on a consignment basis. Also, each association is selling their products to regular customers such as workers in nearby factories and farmlands. The frequency of production activities, which started with a thrice a month is now ranging from one to two times a week.

In order to maximize the profit from the processing activities, it is ideal that the associations further increase their production and sell more products on a regular basis. However, the women's associations are not necessarily active in developing new clients such as store keepers in public markets and local super markets. As for Burak women's association, they have merely started trial production at the end of February 2015. Therefore, there are no active sales of vegi-fish noodles up to this point.

Furthermore, support for hygienic / quality management and formulation of business plans with the assumed full-scale operation at the Tolosa Multi-Purpose Livelihood Center has not yet been provided to any of the associations.

Table 2.2-11 Situation of Sales of the Processed Products

Product	Amount sold	Unit Price	Total Sales	Gross Profit*	Main Costumers
Longganiza	439 Pack	60-70/pack	30,230	4,988	Barangay residents, local sari-sari store, LGU Staff, local factory workers, farm labors
Tocino	443 Pack	60-70/pack	30,590	5,047	Barangay residents, local sari-sari store, LGU Staff, local factory workers, farm labors
Boneless Bangus	126.7 kg	300/kg	38,016	11,975	Barangay residents, local sari-sari store, LGU Staff, local factory workers
Embutido	Approx. 1,000Pcs	50-60/pc	64,580	17,867	Barangay residents, local sari-sari store
Vegi-fish Noodles	-	45/pack	-	-	-

Source: JICA Study Team

*Roughly calculated from amount of sales and cost of raw material

Achievement 9: Training Activities

Training for accounting was conducted in November 2014 for the three associations that already started their production. Simple formats to record income and expenditures were prepared and explained to the associations. The chairpersons of the associations were instructed to record and submit their balance on a monthly basis. However, only one association (Telegrapho) has been submitting its balance on a regular basis. The other two associations submit their records when repeatedly requested, but the records often lack information and reporting is usually delayed.

For the Burak women's association, training by VSU on processing activities and hygienic management has been provided in February 2015, as they requested for recurrent training, because of the long gap after they suspended their activities.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-12 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Participate in Livelihood Activities in the multi-purpose facility (participant)	50 persons	125	0	71	104
2) Livelihood Activities in the multi-purpose facility is carried out (number of activities)	10 activities	5	0	0	
3) Stable income by Livelihood Activities in the multi-purpose facility (number of people with revenue)	50 persons	0	0	71	
4) Group members are trained by orientation for food processing. (total number of participants)	50 persons	125	0	0	104

Source: JICA Study Team

2.2.4 Training on Disaster Resilient Construction Technologies through Reconstruction of National Agriculture School (QIP-4)

(1) Inputs

Input 1: Design of Reconstruction of NAS

Through the damage assessment survey conducted by JICA Study Team on NAS, it was found that food-processing classroom building was damaged completely including the foundation, and the two-unit school building which was built by JICA grant Project, had minor damage. Therefore, the food-processing classroom building was planned to be reconstructed and the two-unit school building be repaired on damaged portion only.

The JICA Study Team reviewed the as build drawing of the existing food processing class room building received from TESDA. As a result of review, necessary modifications were made for foundation, pillars and beams which were found with insufficient strength. The roofing system was also revised in the same manner with the PHO (see section 2.2.2) in order to reinforce its structure. The modified drawing was used for reconstruction of the food-processing classroom building. Regarding the two-unit school building, the repairing plan was made based on the damage survey. The project profile is shown in Figure 2.2-5.

Input 2: Bidding/Contract of Reconstruction of NAS

The bidding procedure was done in the same way with PHO (see section 2.2.2). JICA Study Team requested nominee of contractor's from the Municipality of Balangiga and TESDA, and issued the invitation for bids to the contractors who passed PQ.

The contractor was selected by adopting an open/competitive bidding system using the two-envelope system. BOQ/Fixed Unit Cost system was adopted for the Contract.

Considerations were made for payment conditions to avoid any delay caused by financial deficit.

Input 3: Reconstruction of NAS

In the same way with PHO (see section 2.2.2), JICA Study Team organized the inspection team and carried out quality control. Moreover, JICA Study Team called for regular site meetings with the contractor to monitor the progress of construction periodically, and discussed the technical issue that the contractor encountered, quality and construction schedule.

Input 4: Equipment of reconstruction of NAS

The previously-existing equipment of food-processing classrooms was totally damaged by the typhoon. Therefore, the equipment for curriculum of Food Processing and Root Crop Processing was supplied in QIPs for resumption of NAS management.

Input 5: Training of Construction Technology

In QIPs, JICA Study Team provided the training to TESDA welding course graduates (certificate holder) and welding trainers through the reconstruction of NAS for learning of Japanese construction technology. Japanese experts conducted the practical training on the basic technology and construction methodology for the local people to study the building construction reliably, especially in the important welding, truss and roof installation.

Moreover, the orientations were also widely conducted targeting relevant staff of neighboring LGUs and the contractors of QIPs.

JICA Study Team also documented the training activities and submitted it to TESDA so that they can use it as one of their training material for continued training activities.

(2) Achievement of the Project

Achievement 1: Revising Design of NAS for Disaster Resilient Reconstruction

In the same way as PHO (see section 2.2.2), based on As Built Drawing provided from TESDA, JICA Study Team reviewed strengthening measures for the critical section of the superstructure such as truss and roof, and added Japanese-style reinforcing measure as follows:

a) In the same way with PHO, more stable and solid connections were employed by: 1) embedding anchor bolt in the concrete column, and 2) mounting truss welded and resting on base plate.

b) In the same way with PHO, gusset plate was placed at the connecting portion of the member of truss, to secure the right position, required welding length and connection of truss members.

c) In the same way with PHO, Mega-Rib was adopted for roofing system with domestically available material (0.5mm thickness, pre-coated galvanized sheet).

d) In the same way with PHO, C-type mold steel (2-mm thickness) was adopted for purlin to assure the transfer of load from roof to truss.

e) Since the groundwater level was high, the foundation design was modified using footing tie beams and gravel bedding of 20 cm thickness instead of 10 cm, in order to increase the stability of the foundation.

f) Two-unit school buildings that were originally constructed through Japanese grant aid were repaired partially at roofs and interior/exterior walls. As the original roof material was imported from Japan and difficult to procure due to cost, JICA Study Team ordered from local suppliers but still adopting the same pitch and corrugation for replacement.

Achievement 2: Bidding/Contract of Reconstruction of NAS

JICA Study Team collected the company profile from four companies that were recommended by LGU and NAS, and sent bid invitation to three companies selected through PQ (Pre-Qualification) procedure.

As described above, JICA Study Team adopted the open/competitive bidding system and two-envelope system.

Three companies participated the bidding, and three of them passed through technical review. After opening of the three financial proposals, ESPRERAS CONSTRUCTION AND DEVELOPMENT CORPORATION was found to have the lowest bid offer which was also within QIPs budget, so the said company was nominated as the first priority for arithmetical evaluation. As part of the bidding procedure, both of technical proposal and financial proposal were fully examined and queries were made to the contractor. Since its position as first priority was not changed, JICA Study Team issued and made the Contract Award to the said contractor.

BOQ/Fixed Unit Cost system was adopted for the Contract since additional quantities or change order were expected.

Considerations were made for payment conditions to avoid any delay caused by financial deficit. Also, since the contract period was only as short as six months, price escalation clause was not applied. And the similar to PHO project, three months was adopted for the "Defects Liability Period".

During the project implementation, the contractor issued the request for time extension with the following reasons: 1) the delays caused by excessive groundwater ponding during footing's pit excavation; 2) additional work due to introduction of footing tie beams with excavation and concrete, 3) backfill material, and 4) a typhoon ruby, etc. JICA Study Team and LGU discussed and evaluated the reasonability, and granted the extension of 60 days.

Achievement 3: Reconstruction of NAS in a Disaster Resilient form through Appropriate Construction Management

In the same way with PHO (see section 2.2.2), JICA Study Team confirmed all of the construction material. Also, since the welder played an important role in the strengthening measure of the vulnerable portion of superstructure, JICA Study Team conducted the practical test of welding skill in advance, and permitted skilled welder who was assessed by JICA Study Team, to perform the welding operation.

JICA Study Team also made the deployment/monitoring plan of Inspectors for quality control based on the execution plan and detailed construction schedule which was submitted by the contractor.

The inspectors inspected center line, depth and bearing capacity of foundation excavation. Re-bar of column was inspected before formwork closure prior to concreting.

Inspection of concrete works were conducted on trial mix, mixing ratio, slump test, the skill of mixer operator, placing method and vibrator using, etc.

In case any failure or defaults in the works were noted, inspector issued site instruction to contractor, instructing correspond corrections, demolition and sometimes rework.

Repair works of the two buildings originally built through Japanese grant aid were finished by December 2014. In response to TESDA, who requested the JICA Study Team that they intend to use these buildings for providing training on electric works, partial handover of these buildings were done in January 2015.

The following are the main site instruction given to the contractor during the reconstruction of NAS:

- Excavated foundation elevation should be inspected.
- During foundation works, it was instructed to the contractor to use barrel and submersible pump for dewatering of underground water
- Proper compaction of base foundation was instructed.
- Casted concrete should not be submerged in underground water at least 24 hours.
- Rebar placement should be inspected before form works closure of column.
- Tensile strength test of angle bar sample has failed so the contractor was advised to procure from other supplier.
- Concrete slump should be inspected constantly.
- Honeycombs were found on concrete surface, so JICA Study Team instructed the contractor to use concrete vibrator properly on concrete pouring to avoid further honeycombs. Concrete epoxy was advised to use for repairing of honeycombs.
- Early removal of forms was founded so JICA Study Team instructed to the contractor to

keep specified period for Curing of concrete column.

- Proper compaction for backfill was instructed.
- Concreting of roof beams should be inspected.
- Concrete spacer was instructed to place properly.
- Compaction of backfilling materials should be inspected.
- Leveling concrete was instructed to make it horizontally.
- Fabrication of Trusses should be constantly inspected.

In the same case with PHO, regarding documentations required to be submitted, the contractor didn't acquire sufficient knowledge through reconstruction of NAS, and they need to learn more in order to be able to effectively manage their construction schedules.

Achievement 4: Support for Resuming Operation through Procurement of Equipment for Food Processing

The specifications of the equipment used in the food processing building were prepared with the support of the VSU (Visayas State University). Specifications were prepared so that equipment could be procured within the Philippines.

Table 2.2-13 Equipment for Food Processing

Equipment	set	Usage
Food Processing Equipment	1	Meat, fish and vegetables
Root Crop Processing	1	cassava
Kitchen tools and equipment	1	Processing, cutting, slicing, Simmering and sealing
Communication	1	Computers

Source: JICA Study Team

Achievement 5: Technology Transfer to Relevant Workers, Engineers and TESDA Trainers

a) Technology Transfer through Construction

Two Japanese experts, Mr. Noel Watanabe (welding specialist) and Mr. Katsuya Usui (roof specialist) were invited two times (Nov 5-Dec 23, 2014 and Jan 19-Feb 18, 2015). They conducted practical training at site to TESDA welding course graduates employed through the contractor and TESDA welding trainers during actual work. Main item of training was hands-on training on welding, truss fabrication, and roof installation. The topics of training are shown below.

1) Welding

- To create a safe environment for Welding.
- To weld uniformly without any defect.
- To weld fabrication of truss with strength.

2) Truss

- To estimate the necessary member, measure and cut.
- To assemble the member with gusset plate.
- To install truss on concrete column.

3) Roof

- To study the structure of roof.
- To install roof material.

Major Training Participants were as below;

Table 2.2-14 Major Training Participants

	TESDA Graduates	Non-TESDA Graduates	TESDA Trainers
Participants	4	3	1

Source: JICA Study Team

Training Program by Japanese expert workmen was as below;

Table 2.2-15 Training Program

No	Date		Subject	Participant
1	2014/11/5	Wed	Orientation	10
2	2014/11/12	Wed	Welding	7
3	2014/11/13	Thu	Welding	7
4	2014/11/17	Mon	Welding	7
5	2014/11/19	Wed	Welding	7
6	2014/11/20	Thu	Welding	7
7	2014/11/24	Mon	Welding	7
8	2014/11/25	Tue	Welding	7
9	2014/11/28	Fri	Welding	7
10	2014/12/1	Mon	Welding	7
11	2014/12/4	Tue	Welding	7
12	2014/12/5	Tue	Truss Fabrication	7
13	2014/12/9	Tue	Truss Fabrication	7
14	2014/12/10	Wed	Truss Fabrication	7
15	2014/12/15	Mon	Truss Fabrication	7
16	2014/12/16	Wed	Truss Fabrication	7
17	2015/1/23	Fri	Roofing Installation	7
18	2015/2/5	Thu	Roofing Installation	7
19	2015/2/9	Mon	Roofing Installation	7

Source: JICA Study Team

b) Site Orientation

In order to introduce the contents of technology transfer by the Japanese expert workmen to local Engineers, orientations regarding basic knowledge and skill of welding, truss and roof installation were organized by calling for Municipal Engineers, contractors recommended by LGU, TESDA welding course graduates (certificate holder) and welding instructors. The orientation program was prepared by summarizing the contents of the trainings

conducted through the reconstruction works, and were divided into three parts namely: welding, truss and roof installation. Detailed subject and participants are shown as below. Furthermore, an orientation targeting engineers of Tacloban were also held in collaboration with QIP-5, with 33 attendees.

Table 2.2-16 Site Orientation Program

No	Date		Title	Subject	Participants		
					Total	From	No.
1	Dec. 19, 2014	Wed	Welding	Knowledge	25	Trainee	6
				Basic		LGU	17
				Practice		TESDA Trainer	2
2	Jan. 23,2015	Fri	Truss Fabrication	Fabrication	26	Trainee	5
				Lifting		LGU	6
				Installation		TESDA Trainer	2
						Contractor	1
						TESDA Students	12
3	Feb. 9, 2015	Mon	Roofing Installation	Knowledge	22	Trainee	5
				Material		LGU	5
				System		TESDA Trainer	1
						Roof Supplier	2
						TESDA Students	9
Total							73

Source: JICA Study Team

c) Training material

Technical manuals on welding and roofing works, as well as video material for training were prepared in collaboration with TESDA based on the contents of activities for technology transfer conducted through this QIP and QIP-5 (reconstruction of National High School). The materials were submitted to TESDA Region 8 Office for further use in its training activities. It is expected that in the near future, the materials will be utilized in TESDA training activities in Region 8 (28 schools / course participants in 2014: 2,256 heads). Furthermore, TESDA Region 8 Office is intending to have the contents of the material to be reflected to its curriculum (SMAW NCII) so that it can be used in all TESDA courses in the country.

The manual for welding works targeted on “technologies for fabricating welded products”. The text book covers the items of; 1) fabrication of products in compliance to technical drawings so that the product can perform its designed function, 2) accurately fabricate the product in the exact sizes indicated in the drawing, and 3) improve the quality of external appearance and strength of product including welded portions up to demanded levels. As for the video, the actual works by the trainees for installing truss was recorded as training material. The contents of the video taken was checked with the TESDA welding trainers every week and edited to suit the demands for TESDA training.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-17 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) TESDA's graduates and trainers obtain disaster resilient construction technologies through the construction of building. (the number of TESDA's graduates and trainer)	6 persons	0	0	8	8
2) Engineers/technicians of LGU and contractors trained in disaster resilient construction technologies and techniques. (number of engineer/technicians trained)	26 persons	0	0	73	73
3) Students are trained normally in Agricultural School. (Persons in total/ year)	1,000 persons	1,028	434	2,683	
4) Curriculums in Agricultural School are restarted. (Number of curriculums / year)	12 course	12	3	11	

Source: JICA Study Team

2.2.5 Training on Disaster Resilient Construction Technologies through Reconstruction of National High School (QIP-5)

(1) Inputs

Input 1: Design of Reconstruction of National High School (hereafter called NHS)

When damage assessment of National High School was conducted, the following were noted; 1) Library and piloti building was collapsed completely, 2) one-story two-classroom building was damaged at upper part. and 3) school/administration building that was built by JICA grand project was slightly damaged on window, roof and wall.

Through discussion between JICA Study Team and DepED, the following plan was made for the reconstruction of NHS under the QIP.

Library/piloti building shall be demolished and six classrooms building (2-story) shall be built instead. Two-classrooms building shall be rehabilitated with new truss and roof. School/administration building shall be rehabilitated on damaged portion only.

The JICA Study Team reviewed the standard drawings of six classrooms building (2-story) and two-class room building received from DepED. As a result of review, necessary modifications were made for foundation, pillars and beams which were found with insufficient strength. The roofing system was also revised in the same manner with the PHO (see section 2.2.2) in order to reinforce its structure. As for the school/administration building, the repairing plan was made based on the damage survey. A project profile is shown in Figure 2.2-6.

Input 2: Bidding/Contract of Reconstruction of National High School

The bidding procedure was done in the same way with PHO (see section 2.2.2). JICA Study Team requested nominee of contractor's from DepED and the Municipality of Dulag, which is in charge of the management of the National High School, and issued the invitation for bids to the contractors who passed PQ.

The contractor was selected by adopting an open/competitive bidding system using the two-envelope system. BOQ/Fixed Unit Cost system was adopted for the Contract. Considerations were made for payment conditions to avoid any delay caused by financial deficit.

Input 3: Reconstruction of NHS

In the same manner with PHO (see section 2.2.2), JICA Study Team organized the inspection team and carried out quality control. Moreover, JICA Study Team called for regular site meetings with the contractor to monitor the progress of construction periodically, and discussed the technical issue that the contractor encountered, quality and construction schedule.

Input 4: Training of Construction Technology

Adopting the same method with NAS (see section 2.2.4), JICA Study Team provided the training program to TESDA welding course graduates (certificate holder) and welding trainers through the reconstruction of NHS. Japanese experts conducted the practical training on the basic technology and construction methodology for the local people to study the building construction reliably, especially in the important welding, truss and roof installation. Moreover, the orientations were also widely conducted targeting relevant staff of neighboring LGUs and the contractors of QIPs.

In the same way with NAS (see section 2.2.4), JICA Study Team also documented the training activities and submitted it to TESDA so that they can use it as one of their training material for continued training activities.

(2) Achievement of the Project

Achievement 1: Revising Design of NHS for Disaster Resilient Reconstruction

Standard drawings for the six classrooms building (2-story) and two-class room building received from DepED were reviewed by the JICA Study Team. In the same way with PHO (see section 2.2.2), JICA Study Team reviewed strengthening measures for the critical section of the superstructure such as truss and roof, and added Japanese-style reinforcing measure as follows:

a) In the same way with PHO, a more stable and solid connection was employed by: 1) embedding anchor bolt in the existing concrete column, 2) fixing anchor plate by the bolt,

and 3) full welding between anchor plate and truss.

b) In the same way with PHO, gusset plate was placed at the connecting portion of the member of truss, to secure the right position, required welding length and connection of truss members.

c) In the same way with PHO, Mega-Rib was also adopted for roofing system with domestically available material (0.5mm thickness, pre-coated galvanized sheet).

d) In the same way with PHO, C-type mold steel (2-mm thickness) was adopted for purlin.

e) Since it was found that the groundwater level was high during foundation excavation, the thickness of gravel has been increased from 10cm to 20cm.

f) According to boring test result, bearing capacity at north side of six rooms building was not sufficient. Therefore, wooden piles were driven additionally to reach enough value.

g) One of the school/administration buildings that were originally constructed by Japanese grant aid was repaired partially at the roof and interior/exterior walls. As the original roof material was imported from Japan and difficult to procure due to cost, JICA Study Team ordered from local suppliers but still adopting the same pitch and corrugation for replacement.

Achievement 2: Bidding/Contract of Reconstruction of NHS

JICA Study Team collected the company profile from three companies that were nominated by LGU and NHS, and sent bid invitation to three companies selected through PQ (Pre-Qualification) procedure.

As described the above, JICA Study Team adopted open/competitive bid system and two-envelope system.

Opening of the bids were done with the presence of the bidders. Fist, the technical proposals were opened. Cost proposals were opened for bidders who passed the technical review. Three companies participated for bidding, and two of them passed through technical review. After opening of their proposals, I.D.A. JR BUILDERS AND CONSTRUCTION SUPPLY was found to have the lowest bid offer which was also within QIPs budget, so the said company was selected as the first priority for arithmetical evaluation. As part of the bidding procedure, both of the technical proposal and financial proposal were fully examined and queries were made to the contractor. Since his position as first priority was not changed, JICA Study Team issued and made the Contract Award to the said contractor.

Following the same method with PHO (see section 2.2.2), BOQ/Fixed Unit Cost system was adopted to address settlement of working quantity variation during project completion.

Payment condition was stipulated to avoid any delay caused by the financial deficit. Since the contract term was as only short as six months, price escalation clause was not included. In the same manner with PHO, three months was adopted for the "Defect Liability Period".

During the project implementation, the contractor issued the request for time extension with the following reasons: 1) shortage of the construction materials after typhoon Yolanda, 2) high groundwater level, 3) one additional boring test, 4) shortage of the construction material caused by the construction rush of NGOs and 5), the effect of Typhoon Ruby, etc. JICA Study Team and LGU discussed and evaluated the reasonability, and granted the extension of 60 days.

Achievement 3: Reconstruction of NHS in a Disaster Resilient Form through Appropriate Construction Management

In the same way with PHO (see section 2.2.2), JICA Study Team confirmed all of the construction material. Particularly for the two-classroom building and six-classroom building, the welder played an important role in the strengthening measure of the vulnerable portion of superstructure. Therefore, JICA Study Team conducted the practical test of welding skill in advance, and permitted skilled welder who was assessed by JICA Study Team, to perform the welding operation.

JICA Study Team also made the deployment/monitoring plan of Inspectors for quality control based on the execution plan and detailed construction schedule which was submitted by the contractor.

The inspectors inspected center line, depth and bearing capacity of foundation excavation. Re-bar of column was inspected before formwork closure prior to concreting.

At slab concrete of floor of second floor, the works required the operation of three mixers. Since concreting took long time at high elevation, the inspectors inspected full-time and provided instructions on items such as the order of works, and location of vibrators to avoid any defect.

In case any failure or defaults in the works were noted, the inspectors issued site instruction to the contractor which resulted in correction, demolition or sometimes rework.

The following are the main site instruction given to the contractor during the Reconstruction of NHS:

- Foundation should be inspected for elevation and dimension.
- Alignment of Rebar should be instructed to be accurate.
- Honeycombs were found on concrete surface, so JICA Study Team instructed the contractor to use concrete vibrator properly on concrete pouring to avoid further honeycombs. Concrete epoxy was advised to use for repairing of honeycombs.

- Tensile strength test of angle bar sample has failed so the contractor was advised to procure from other supplier.
- Concrete slump should be constantly inspected during concreting.
- Submersible pump for dewatering should be used.
- Plastering material was instructed for proper mixing.
- Additional bracing for column formwork was instructed to avoid any movement during concreting.

In the same case with PHO, regarding documentations required to be submitted, the contractor didn't acquire sufficient knowledge through Reconstruction of NHS, and they need to learn more in order to be able to effectively manage their construction schedules.

Achievement 4: Technology Transfer to Relevant Workers, Engineers and TESDA Trainers

In the same way with NAS (see section 2.2.4), two Japanese experts, Mr. Noel Watanabe (welding specialist) and Mr. Katsuya Usui (roof specialist) were invited two times (Nov 5-Dec 23, 2014 and Jan 19-Feb 18, 2015). They conducted the practical training at site to TESDA welding course graduates employed through the contractor and TESDA welding trainers during actual work. In the same way as NAS, the contents of hand-on training was on welding, fabrication of truss and basic skills on roof installation.

a) Technology Transfer through Construction

The same training contents was adopted as NAS (see section 2.2.4). Major training participants were as below:

Table 2.2-18 Major Training Participants

	TESDA Graduates	Non-TESDA Graduates
Participants	5	3

Source: JICA Study Team

Training Program by Japanese expert workmen was as below:

Table 2.2-19 Training Program

No	Date		Subject	Participants
1	2014/11/6	Thu	Meeting	10
2	2014/11/7	Fri	Welding	8
3	2014/11/10	Mon	Welding	8
4	2014/11/11	Tue	Welding	8
5	2014/11/18	Tue	Welding	8
6	2014/11/21	Fri	Welding	8
7	2014/11/26	Wed	Welding	8
8	2014/11/27	Thu	Welding	8
9	2014/12/2	Tue	Welding	8
10	2014/12/9	Tue	Truss Fabrication	8

11	2014/12/10	Wed	Truss Fabrication	8
12	2015/1/21	Wed	Truss Fabrication	8
13	2015/1/23	Fri	Truss Fabrication	8
14	2015/1/26	Mon	Truss Fabrication	8
15	2015/1/27	Tue	Truss Fabrication	8
16	2015/1/28	Wed	Truss Fabrication	8
17	2015/1/29	Thu	Truss Fabrication	8
18	2015/1/30	Fri	Truss Fabrication	8
19	2015/2/2	Mon	Roofing Installation	8
20	2015/2/3	Tue	Roofing Installation	8
21	2015/2/4	Wed	Roofing Installation	8
22	2015/2/5	Thu	Roofing Installation	8
23	2015/2/9	Mon	Roofing Installation	8
24	2015/2/10	Tue	Roofing Installation	8
25	2015/2/11	Wed	Roofing Installation	8
26	2015/2/12	Thu	Roofing Installation	8

Source: JICA Study Team

b) Site Orientation

In order to introduce the contents of technology transfer by the Japanese expert workmen to local Engineers, orientations regarding basic knowledge and skill of welding, truss and roof installation were organized by calling for Municipal Engineers, contractors recommended by LGU, TESDA welding course graduates (certificate holder) and welding instructors. The orientation program was prepared by summarizing the contents of the trainings conducted through the reconstruction works, and were divided into three parts namely: welding, truss and roof installation. Detailed subject and participant are shown as below. Furthermore, an orientation targeting engineers of Tacloban were also held in collaboration with QIP-5, with 33 attendees.

Table 2.2-20 Site Orientation Program

No	Date		Title	Subject	Participants		
					Total	From	No.
1	Dec. 11, 2014	Fri	Welding	Knowledge	31	Trainee	7
				Basic		LGU	4
				Practice		TESDA Trainer	5
						DepED	6
						Contractor	9
2	Jan. 22,2015	Fri	Truss Fabrication	Fabrication	22	Trainee	6
				Lifting		TESDA Trainer	6
				Installation		DepED	5
						Contractor	2
3	Feb. 6, 2015	Mon	Roofing Installation	Knowledge	28	Trainee	6
				Material		TESDA Trainer	6
				System		DepED	7
						Contractor	4
						Roof Supplier	3
						TESDA Students	2
Total							81

Source: JICA Study Team

c) Training material;

In the same way with NAS (see section 2.2.4), the contents of technical transfer conducted through this QIP and QIP-4 (reconstruction of National Agricultural School) was incorporate into technical manuals and video material for training. The materials were submitted to TESDA Region 8 Office for further use in its training activities. It is expected that in the near future, the materials will be utilized in TESDA training activities in Region 8 (28 schools / course participants in 2014: 2,256 heads). Furthermore, TESDA Region 8 Office is intending to have the contents of the material to be reflected to its curriculum (SMAW NCII) so that it can be used in all TESDA courses in the country.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-21 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) TESDA's graduates and trainers obtain disaster resilient construction technologies through the construction of building. (the number of TESDA's graduates and trainer)	4 persons	0	0	8	8
2) Engineers/technicians of LGU and contractors trained in disaster resilient construction technologies and techniques. (number of engineer/technicians trained)	30 persons	0	0	81	81
3) Students return to high school. (Persons/ year)	500 persons	567	495	495	
4) Lessons in high school are normally conducted (Minutes of lessons in total/ year)	2,400 minutes	2,400	1,200	1,200	

Source: JICA Study Team

2.2.6 Reconstruction of Daycare Center for Community Rehabilitation (Vitalization of Peoples' Dialogue) (Salcedo) (QIP-6)

(1) Inputs

Input 1: Design of Reconstruction of Daycare Center

JICA Study Team conducted damage assessment survey of Daycare Centers, in Salcedo and identified five sites where the facilities were totally damaged and should be reconstructed under the QIP.

The standard size for Daycare Centers given by DSWD is at 56 square meters (7m x 8m). As selected sites had limited access, size of material/parts for prefabricated units had to be considered from the view of handling and transportation. However, based on the data collected by the JICA Study Team from the suppliers in the Philippines, Japanese style prefabricated

building units with suitable sizes of material/parts were not available. As a result, it was necessary to request a supplier who can provide Japanese style prefabricated building to newly prepare a basic design for the structure. JICA Study Team then revised this basic design with consideration to handling, transportation, assemblage and strength, and used it as the construction drawing for Daycare Center. A project profile is shown in Figure 2.2-7.

Input 2: Bidding/Contract of Reconstruction of Daycare Center

From the aspect of introducing Japanese technology and to assure the quality of products, JICA Study Team collected company profiles from several contractors who have experiences constructing Japanese prefabricated frame structures in the Philippines, and sent bid invitation to the contractors who qualified in the PQ.

In the same way as PHO (see section 2.2.2), JICA Study Team adopted open/competitive bidding system and two-envelope system.

BOQ/Fixed Unit Cost system was adopted for the contract. Payment condition was stipulated to avoid any delay caused by the financial deficit.

Input 3: Reconstruction of Daycare Center

JICA Study Team Engineer conducted the material inspection of panels for Daycare Center regarding the dimension, welding, and painting at the factory in Manila before delivering them to site. Quality Control on site was conducted in the same way as PHO (see section 2.2.2). JICA Study Team organized an inspection team and carried out quality control regarding site works such as excavation of foundation, installation of re-bars, formwork, placement of concrete and assembly works of panel, and called for site meetings with the contractor to monitor the progress of construction periodically, and discuss the technical issues that the contractor encountered such as quality and construction schedule.

Input 4: Equipment of Reconstruction of Daycare Center

In accordance with the request of LGU, JICA Study Team procured the desks and chairs for students.

Input 5: Orientation of Prefabricated Method

JICA Study Team made explanation to the participants regarding the merit of prefabricated method for Daycare Center during the handover ceremony.

(2) Achievement of the Project

Achievement 1: Designing of Daycare Center for Improving Disaster Resiliency

JICA Study Team designed Daycare Center buildings with frames bearable against typhoon wind, and at the same time easily handled for transportation and assembling on the following

points;

a) The foundation and floor concrete was designed not only for supporting the structural weight, but also for counter weight against wind load caused by typhoons.

b) Steel frames were fabricated by cutting of molded steel, welding and painted at the factory, and to be assembled with bolt at site.

c) Sandwich panel, with steel plates both side and insulation in center, for roof and wall, was factory - cut and to be assembled on site.

Achievement 2: Bidding/Contract of Reconstruction of Daycare Center

JICA Study Team collected the company profile from four companies who have experiences in construction of Japanese-style panel in the Philippines, and sent bid invitation to three companies which passed in PQ evaluation.

As previously described, JICA Study Team adopted open/competitive bid system and two-envelope system.

Bid opening was done with the bidder's presence. First, technical proposal was opened. Then, financial proposal of the bidder who passed the evaluation of technical proposal was opened for comparison. Two companies participated in the bidding, and only KVCC passed through technical review. The financial proposal of KVCC was opened and it was confirmed that the bid was within the QIP budget, so the company was nominated as the first priority for negotiation. As a bidding procedure, both of technical proposal and financial proposal were fully examined and question was made to the contractor. As a result, no deficiencies were found, and the JICA Study Team issued Award and made the contract with the contractor.

In the same manner with PHO (see section 2.2.2), BOQ/Fixed Unit Cost system was adopted for the contract since additional quantities or change order were expected.

Considerations were made for payment conditions to avoid any delay caused by financial deficit. Also, since the contract period was only as short as six months, price escalation clause was not applied. And the similar to PHO project, three months was adopted for the "Defects Liability Period".

During the project implementation, the contractor issued the request for time extension with the reasons of intensive rain during the period from October to December, and transportation of material affected by Typhoon Ruby. JICA Study Team and LGU discussed and evaluated the reasonability, and granted the extension of 45 days.

Achievement 3: Reconstruction of Daycare Center in a Disaster Resilient Form through Appropriate Construction Management

The necessary site clearing was shouldered by LGU as preparation works.

Assembly works of panels was done by KVCC's skilled workers, and simple works such as installation of septic tank was done by local labors.

Panels for Daycare Center were inspected by JICA Study Team engineer regarding quality and strength at the factory and transported to the site. JICA Study Team required the contractor to submit necessary data or sample of other construction materials in advance, and obtain approval of JICA Study Team. Steel materials and concrete were tested at laboratory by tensile test and compression test respectively.

In the same way as PHO (see section 2.2.2), JICA Study Team made schedule for the Inspectors for quality control, based on the execution plan and detailed construction schedule submitted by the contractor.

The inspectors inspected center line, depth and bearing capacity of foundation excavation. Inspection of concrete works were conducted on trial mix, mixing ratio, slump test, the skill of mixer operator, placing method and vibrator using, etc. As for the assembly works of panels, the inspectors checked the placing of panels and firmness of fixation by bolt.

In case they find any failure or defects in the works, they instructed the contractor for correction, demolition or rework.

The following are some of site instruction given to the contractor during the Reconstruction of Daycare Center:

- Proper compaction should be instructed.
- Some concrete aggregates were rejected due to excessive presence of clay.
- Gravel materials was rejected and instructed to use the ones specified in the plan.
- Replacement of bolts, nuts and washer was instructed as its sizes were sub-standard.
- Cracks on floor concrete were pointed out for repair.
- Concrete spacer was instructed to be placed properly.
- Vapor Barrier was instructed to be clean prior to concrete pouring.
- Proper placement of roof and wall panels was instructed.

In the same case as PHO, regarding documents required to be submitted, the contractor didn't acquire sufficient knowledge through Reconstruction of Daycare Center, and they need to learn more in order to be able to effectively manage construction schedules.

Achievement 4: Support for Resuming Operation through Procurement of Equipment

Based on the student's numbers provided from LGU, JICA Study Team procured necessary tables and chairs as shown below:

Table 2.2-22 Equipment for Daycare Center

Type of Furniture	Quantity
Table	12
Chair	50

Source: JICA Study Team

Achievement 5: Disseminating Information on Emergency Recovery Model for Public Facilities through Orientation of Prefabricated Daycare Center (main characteristics, procurement process and work period)

JICA Study Team made the explanation to the participants regarding the merit of prefabricated method for Daycare Center in the Handover Ceremony as indicated below.

- Level of strength and durability
- Steady quality
- Handling and transport / accessibility
- Low cost
- Availability of procurement from other supplier in case of material shortage
- Short-term work

Also, KVCC was introduced as the local construction company who had experienced in this project.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-23 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Recover utilization number of children in Day Care (total number of users / month)	500 persons	2,500	0	0	
2) Recover utilization number of women in Day Care Center (total number of users / month)	500 persons	670	0	0	
3) Recover utilization number of local communities in Day Care Center (total number of users / month)	150 persons	0	0	295	
4) Disaster enlightenment activities are carried out in Day Care Center (times / month)	5 times	0	0	0.4	

Source: JICA Study Team

2.2.7 Reconstruction of Daycare Center for Community Rehabilitation (Vitalization of Peoples' Dialogue) (Guiuan) (QIP-7)

(1) Inputs

Input 1: Designing of Daycare Center

JICA Study Team conducted damage assessment survey of Daycare Centers, in Guiuan and identified two sites where the facilities were totally damaged and should be reconstructed under the QIP.

In the same way with the Daycare Centers in Salcedo (see section 2.2.6), JICA Study Team requested a supplier who can provide Japanese style prefabricated building to newly prepare a basic design for the structure. JICA Study Team then revised this basic design with consideration to handling, transportation, assemblage and strength, and used it as the construction drawing for Daycare Center. A completion figure is shown in Figure 2.2-7.

Input 2: Bidding/Contract of Reconstruction of Daycare Center

From the aspect of introducing Japanese technology and to assure the quality of products, JICA Study Team collected company profiles from several contractors who have experiences constructing Japanese prefabricated frame structures in the Philippines, and sent bid invitation to the contractors who qualified in the PQ.

In the same way with PHO (see section 2.2.2), JICA Study Team adopted open/competitive bidding system and two-envelope system.

BOQ/Fixed Unit Cost system was adopted for the contract. Payment condition was stipulated to avoid any delay caused by the financial deficit.

Input 3: Reconstruction of Daycare Center

In the same way with the Daycare Centers in Salcedo, JICA Study Team Engineer conducted the material inspection of panels for Daycare Center regarding the dimension, welding, and painting at the factory in Manila before delivering them to site. Quality Control on site was conducted in the same way as PHO (see section 2.2.2). JICA Study Team organized an inspection team and carried out quality control regarding site works such as foundation and assembly works of panel, and called for site meetings with the contractor to monitor the progress of construction periodically, and discuss the technical issues that the contractor encountered such as quality and construction schedule.

Input 4: Equipment of Reconstruction of Daycare Center

In accordance with the request of LGU, JICA Study Team procured the desks and chairs for students.

Input 5: Orientation of Prefabricated Method

JICA Study Team made explanation to the participants regarding the merit of prefabricated method for Daycare Center during the handover ceremony.

(2) Achievement of the Project

Achievement 1: Design Reconstruction of Daycare Center for Improving Disaster Resiliency

As described in the Daycare Centers in Salcedo (see section 2.2.6), JICA Study Team reviewed the basic design for easy handling during transport and assembly.

Achievement 2: Bidding/Contract of Reconstruction of Daycare Center

JICA Study Team collected the company profile from four companies who have experiences in construction of Japanese-style panel in the Philippines, and sent bid invitation to three companies which passed in PQ evaluation.

Two-envelope system with technical proposal and financial proposal was adopted for bidding, as mentioned earlier.

Bid opening was done with the bidder's presence. First, technical proposal was opened. Then, financial proposal of the bidder who passed the evaluation of technical proposal was opened for comparison. Two companies participated in the bidding, and only KVCC passed through technical review. The financial proposal of KVCC was opened and it was confirmed that the bid was within the QIP budget, so the company was nominated as the first priority for negotiation. As a bidding procedure, both of technical proposal and financial proposal were fully examined and question was made to the contractor. As a result, no deficiencies were found, and the JICA Study Team issued Award and made the contract with the contractor.

BOQ/Fixed Unit Cost system was adopted for the Contract since additional quantities or change order were expected.

Considerations were made for payment conditions to avoid any delay caused by financial deficit. Also, since the contract period was only as short as six months, price escalation clause was not applied. And the similar to PHO project, three months was adopted for the "Defects Liability Period".

During the project implementation, the contractor issued the request for time extension with the reasons of intensive rain during the period from October to December, and transportation of material affected by Typhoon Ruby. JICA Study Team and LGU discussed and evaluated the reasonability, and granted the extension of 45 days.

Achievement 3: Reconstruction of Daycare Center in a Disaster Resilient Form through Appropriate Construction Management

In the same manner with the Daycare Centers in Salcedo (see section 2.2.6), site clearing was shouldered by LGU.

Assembly works of panels was done by KVCC's skilled workers, and simple works such as installation of septic tank was done by local labors.

In the same way with the Daycare Centers in Salcedo (see section 2.2.6), panels for Daycare Center were inspected by JICA Study Team engineer regarding quality and strength at the factory and transported to the site. JICA Study Team required the contractor to submit necessary data or sample of other construction materials in advance, and obtain approval of JICA Study Team. Steel materials and concrete were tested at laboratory by tensile test and compression test respectively.

In the same way as PHO (see section 2.2.2), JICA Study Team made schedule for the Inspectors for quality control, based on the execution plan and detailed construction schedule submitted by the contractor.

The contents of quality control were the same with those for the Daycare Centers in Salcedo (see section 2.2.6).

In case they find any failure or defects in the works, they instructed the contractor for correction, demolition or rework.

The following are some of site instruction given to the contractor during the Reconstruction of Daycare Center:

- Gravel materials was rejected and instructed to use the ones specified in the plan.
- Leveling concrete was instructed to be placed evenly.
- Proper placement of roof and wall panels was instructed.

In the same case as PHO, regarding documents required to be submitted, the contractor didn't acquire sufficient knowledge through Reconstruction of Daycare Center, and they need to learn more in order to be able to effectively manage construction schedules.

Achievement 4: Support for Resuming Operation through Procurement of Equipment

Based on the numbers of students provided from LGU, JICA Study Team procured necessary tables and chairs as shown below;

Table 2.2-24 Equipment for Daycare Center

Furniture	sets
Table	12
Chair	50

Source: JICA Study Team

Achievement 5: Disseminating Information on Emergency Recovery Model for Public Facilities through Orientation of Prefabricated Daycare Center (main characteristics, procurement process and work period)

JICA Study Team made the explanation to the participants regarding the merit of prefabricated method for Daycare Center in the Handover Ceremony as indicated below.

- Level of strength and durability
- Steady quality
- Handling and transport / accessibility
- Low cost
- Availability of procurement from other suppliers in case material shortage
- Short-term work

Also, KVCC was introduced as the local construction company who had experienced in this project.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-25 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Recover utilization number of children in Day Care (total number of users / month)	200 persons	1,000	0	0	1,000
2) Recover utilization number of women in Day Care Center (total number of users / month)	200 persons	362	0	0	362
3) Recover utilization number of local communities in Day Care Center (total number of users / month)	60 persons	0	0	175	175
4) Disaster enlightenment activities are carried out in Day Care Center (times / month)	2 times	0	0	0.4	

Source: JICA Study Team

2.2.8 Regenerating Livelihood through Introduction of Disaster Resilient Submerged Fish Cage (Lapu-Lapu Culture) (QIP-8)

(1) Inputs

Input 1: Designing Submerged Grouper Cage

The Project together with Guiuan Marine Fisheries Development Centre (GMFDC, a production and research facility of BFAR Region-8) conducted a survey in the Guiuan municipality to study the current grouper culture technology of local fishermen and the environmental condition. Through the discussion and consultation with local fisherfolk, the Project came to a new design of grouper cage based on the existing system but using seamless HDPE circular frame and feeding float with circular concrete anchor which is more durable and stable than the existing structure (Figure 2.2-8).

Input 2: Construction and Delivery of Grouper Cages

The design was made into real products by a fishing gear company (INCA Philippines Inc.) selected through a nominated selective tender with three fishing gear manufacturers that BFAR Region-8 recommended as potential bidders. A total of 100 units of the newly-designed cages were produced and distributed to two sites; 70 units to Barangay Victory Island and 30 units to Barangay Camparang, in the municipality of Guiuan.

Input 3: Training of New Grouper Cage

Series of training were conducted by the Project to master the operation and maintenance techniques of new grouper cage. List of training conducted in QIP-8 was shown in Table 2.2-26.

Table 2.2-26 List of training conducted in QIP-8

	Title	Date	Participants
1	Orientation on quick Impact project: improved livelihood through environmentally sustainable grouper farming in typhoon resistant submerged cages	Sept. 22, 2014	100
2	Training on operation of grouper cage and construction of change net	Dec. 3, 2014	100
3	Training on conversion of net direction from diamond to square mesh	Feb. 15, 2015	62

Source: JICA Study Team

Input 4: Supply of Improved Diving Equipment

Use of diving equipment is necessary for carrying out the grouper farming developed at the Victory Island but the existing hookah system used by the resident fisherfolk is not reliable and potentially health hazardous to the divers. The Project introduced the SASUBA system in order to eliminate the health risk while supporting the locally developed indigenous grow-out technology.

(2) Achievement of the Project

Achievement 1: Formulation of Operational Guidelines for Sustainable Grouper Culture

The Project implantation team with staff from GMFDC and municipal agriculture office formulated a guideline for environment-friendly operation of aquaculture for the Project as the first activity and presented it at the opening ceremony on 23rd of September 2014.

Achievement 2: Construction and Delivery of Typhoon Resilient Grouper Cages

The design was made into real products by a fishing gear company (INCA Philippines Inc.) selected through a nominated selective tender with three fishing gear manufacturers that BFAR Region-8 recommended as potential bidders. All necessary parts were produced in Cebu or Manila factories and transported to the site where construction and assemblage were done.

The cages and other equipment supplied in QIP-8 were listed in Table 2.2-27 and Table 2.2-28.

Table 2.2-27 Grouper cages

	Item	Specification	Quantity
1	Grouper cage for Victory Island	Frame cum float: HDPE 50mm circular Net: 2 m diameter ,1.79 m height, PE 400/12 14k, knotted mesh Circular concrete ring anchor	72 units (2 units for BFAR Guiuan Marine Fisheries Dev. Center)
2	Grouper cage for Camparang	Sane as above but with double layer PE net of 400/12 12k mesh	30 units

Source: JICA Study Team

Table 2.2-28 Netting materials for change net and plastic trap

	Item	Specification	Quantity
1	Netting material for change net	PE Net 400/12 14k, 200MD, 100m	10 bundles
		PE net 400/12, 10k, 200MD, 100m	5 bundles
		PP Rope, 7mm, 7 ply, 200m/roll	15 rolls
		PP Rope, 3mm, 3 ply, 200m/roll	8 rolls
2	Materials for plastic trap	Amazon net, 1-inch mesh, 3ftx30.m	105 rolls
		Amazon net, 3/4-inch mesh, 3ftx30m	30 rolls
		Nylon monofilament thread. #100, 1.4mm	50 kg

Source: JICA Study Team

Construction and distribution of 100 cages as planned were completed in December 2014 which was about a month later than scheduled. The delay was caused partially by slow progress in construction of concrete anchor rings at the Victory Island site because of unavailability of quality aggregate materials and necessary transportation of them from the mainland to the island. Typhoon Ruby which forced all island population to evacuate out of the island also caused additional delay.

Achievement 3: Acquirement of Installation and Operation Techniques on the Introduced Grouper Cage through Participatory Training

The manufacturer demonstrated installation of the completed cages at Victory Island on November 24, 2014. The demonstration was conducted with the beneficiary fisherfolk of the two sites as a training session organized by the Project. Mastering the installation of cages is required for them as they have to do this every time they intend to stock/harvest the fish and change the nets.

The second training conducted for the beneficiary fisherfolk was on construction of change net which involves conversion of net meshes from diamond meshes to square meshes. The training was conducted at Barangay Camparang on December 3, 2014. The net construction materials (fishing net, rope, and twine) sufficient for one additional net to be used as a change net for every cage frame were distributed to the beneficiary fisherfolk before the training. A supplemental training session was carried out on February 15, 2015 to clarify on the method of cutting net for this conversion as monitoring of fish farming activities started in December, 2014 found the beneficiary fisherfolk in this barangay had been hesitating cutting net to implement the learnt mesh conversion because of some technical uncertainty.

Achievement 4: Installation of Grouper Cages with Fisherfolk

As of early February 2015, 28 beneficiaries out of 70 at Victory Island and 12 beneficiaries out of 30 at Camparang have installed their cages with fingerlings. Feeding at these cages had started. Installation of cages depends on the collection of fingerlings which is a responsibility of the beneficiary fisherfolk. Continuous rough sea condition after delivery of cage nets in the last quarters of 2014 made it difficult for the fisherfolk to collect the fingerlings.

Two activities which were planned but were not achieved within the project period were 1) Supply of pelleted feed and 2) harvesting grouper.

Supplemental pelleted feeds were to be supplied after the majority of cages were stocked with fingerling, which is expected to be done in the next season of fingerlings collection in the summer for the passive fishing methods recommended by the guideline (trap and hook and line). No harvesting was made by the end of March 2015. It is expected after about 8 months from the stocking of fingerlings. Delay in these activities occurred because of the delay in the installation of cages and collection of fingerlings which were affected by rough seas due to bad weather condition that continued in November – December including several typhoons that hit the region.

Achievement 5: Supply of Improved Diving Equipment

The Project introduced a new type of diving equipment (Surface Air Supply Underwater Breathing Apparatus, SASUBA) into the Victory Island for implementation of aquaculture

operation under this Project as shown in Table 2.2-29.

Table 2.2-29 SASUBA Diving equipment

	Item	Specification	Quantity
1	SASUBA diving equipment	Compressor with engine	2 units
		Reserve tank	2 units
		Airline hose and regulator set	2 units

Source: JICA Study Team

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-30 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Lapu-lapu farmed in environmentally-friendly and disaster resilient fish cage is harvested (kg/cage)	50 kg	46	0	0	
2) Fisherfolk gain stable income by farming lapu-lapu (PHP/family/year)	100,000 PHP	92,000	0	0	
3) Fisherfolk gain the capacity for management and farming technology using environmentally-friendly and disaster resilient fish cage (number of fisherfolk)	100 fisherfolk	0	0	100	100
4) BFAR and Municipal officers master the technology for procurement, management and operation of environmentally-friendly and disaster resilient fish cage. (number of BFAR and Municipal officers)	5 persons	0	0	5	5

Source: JICA Study Team

2.2.9 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market (Guiuan) (QIP-9)

(1) Inputs

Input 1: Design of Reconstruction of Guiuan Public Market

Through the damage assessment survey of Guiuan Public Market by JICA Study Team, it was found that the Upper part of the building was damaged, and the concrete structure (Building Frame) seemed not affected seriously. But as the Municipality reported that it had suffered from fire and earthquake, the quality of the concrete frame was suspicious by visual inspection and noted with disintegration. Thus the reconstruction of the whole concrete frame was planned.

The JICA Study Team reviewed the technical drawing for the Public Market prepared by the Municipality. As a result of review, necessary modifications were made for foundation, pillars and beams which were found with insufficient strength. The roofing system was also revised in the same manner with the PHO (see section 2.2.2) in order to reinforce its structure,

particularly for the truss and roofing. The modified drawing was used as the technical drawing for the Public Market. A completion figure is shown in Figure 2.2-9.

Input 2: Bidding/Contract of Reconstruction of Guiuan Public Market

In the same way as PHO, bidders were limited among local contractors. In selection of the local bidders, JICA Study Team requested recommended contractors from the Municipality. After collecting information on the recommended contractors, JICA Study Team issued the invitation for bid to the contractors who passed PQ.

In the same way as PHO, JICA Study Team adopted open/competitive bidding system and two-envelope system for the bid opening.

For the contract, BOQ system was adopted. Payment condition was also stipulated in the same way as PHO to avoid any delay caused by the financial deficit.

Input 3: Reconstruction of Guiuan Public Market

In the same way as PHO, JICA Study Team made the deployment/monitoring plan of Inspectors for quality control. Moreover, JICA Study Team called for regular site meetings with the contractor to monitor the progress and quality of construction as compared with the contractor's submitted construction schedule, and discussed the technical issues encountered by the contractor.

Input 4: Technical Transfer to LGU Engineer

Generally, it was noted that the poor construction quality intensified the damage of buildings caused by Typhoon Yolanda in Leyte and Samar. Through the collaborative works of design, technical specification, estimation, tender, contract and construction supervision of the reconstruction of Guiuan Public Market, JICA Study Team transferred the knowledge and skills to engineers of the Municipality, with the purpose of enabling them to handle recovery projects by themselves in the future.

(2) Achievement of the Project

Achievement 1: Revising Design of Guiuan Public Market for Disaster Resilient Reconstruction

Based on the technical drawings of the Guiuan Public Market prepared by the Municipality, JICA Study Team revised the designs for the critical section of the superstructure such as foundation, pillars and beams. Also, in the same way with the PHO, reinforcing measures were particularly examined for the truss and roof. Japanese style reinforcing measures that were applied are as follows.

a) Solid connection was employed by; 1) embedding anchor plate (L shape) in the concrete

column, and 2) fixing between anchor plate and truss by bolts.

b) Wooden truss was used for Guiuan Public Market adopting the existing Public Market for anti-corrosion effect as the location is near the coastal side.

c) In the same way as PHO, Mega-Rib was adopted for roofing system with domestically available material (0.5mm thickness, pre-coated galvanized sheet).

Achievement 2: Bidding/Contract of Reconstruction of Guiuan Public Market

JICA Study Team collected the company profile from five companies that were recommended by the Municipality and sent bid invitation to three companies that passed through PQ procedure.

As described above, JICA Study Team adopted the open/competitive bidding system and two-envelope system.

Opening of the bids were done with the presence of the bidders. Fist, the technical proposals were opened. Cost proposals were opened for bidders who passed the technical review. Three companies participated in the bidding and one of them passed through technical review. Subsequently, the financial proposal of PABLO S. LABASBAS CONSTRUCTION, which passed through the technical review, was opened. After confirming that the financial proposal was within QIP's budget, PABLO S. LABASBAS CONSTRUCTION was nominated as the first priority for arithmetical evaluation. As bidding procedure, both of technical and financial proposals of the contractors were fully examined and evaluated. Since PABLO S. LABASBAS CONSTRUCTION qualified the evaluation, JICA Study Team issued Award and made the contract with the contractor.

In the same manner with PHO (see section 2.2.2), BOQ/Fixed Unit Cost system was adopted for the contract since additional quantities or change order were expected.

Considerations were made for payment conditions to avoid any delay caused by financial deficit. Also, since the contract period was only as short as six months, price escalation clause was not applied. And the similar to PHO project, three months was adopted for the "Defects Liability Period".

In the course of the project duration, the contractor requested for time extension with the reasons of 1) shortage of the construction materials due to Typhoon Yolanda, 2) high groundwater level, 3) effect of Typhoon Ruby, and 4) shortage of truss timber material, etc. JICA Study Team and the Municipality discussed and evaluated the basis, and accepted the extension for 60 days.

Achievement 3: Reconstruction of Guiuan Public Market in a Disaster Resilient Form through Appropriate Construction Management

The quality of all construction material was controlled with the same method applied in PHO (see section 2.2.2).

Also in the same way with PHO, JICA Study Team made the deployment/monitoring plan of Inspectors for quality control based on the execution plan and detailed construction schedule which was submitted by the contractor.

The inspectors inspected center line, depth and bearing capacity of foundation excavation. Re-bar of column was inspected before formwork closure prior to concreting.

Inspection of concrete works were conducted on trial mix, mixing ratio, slump test, the skill of mixer operator, placing method and vibrator using, etc.

In case any failure or defaults in the works were noted, inspector issued site instruction to contractor, instructing correspond corrections, demolition and sometimes rework.

The following are some of the site instruction given to the contractor during the reconstruction of Guiuan Public Market.

- Equipment for Demolition works was instructed to augment as they were not sufficient to respond the demolition volume.
- Construction planning was required for on time deployment of manpower and equipment, and procurement of materials as scheduled.
- Use of submersible pump was instructed for dewatering.
- Proper compaction of backfilling using plate compactor was instructed.
- Misalignment of column on third lift was found and removal and replacement was instructed.
- Discard concrete mix, non-compliance of required time of pouring
- It was instructed that casted concrete should not be submerged in underground water at least 24 hours
- Some material for truss fabrication was rejected because of cracks.
- Some backfilling materials were instructed to be replaced due to sub-standard.

In the same case as PHO, regarding documentations required to be submitted, the contractor didn't acquire sufficient knowledge through reconstruction of Guiuan Public Market, and they need to learn more in order to be able to effectively manage their construction schedules.

Achievement 4: Technical Transfer to LGU Engineer

With the same methodology applied in the Tolosa Multi-Purpose Livelihood Building (see section 2.2.3), JICA Study Team transferred knowledge and skills to engineers of the

Municipality of Guiuan through the series of project activities with the purpose that they would become able to handle future recovery projects by themselves. The contents of technical transfer are also the same with those in the Tolosa Multi-Purpose Livelihood Building.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-31 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Municipal capacity and skills of its engineers for project management are improved.	Improved	Not Enough	Not Enough	Improved	Improved
2) Public Market is rebuilt with appropriate design and within construction schedule.	Rebuilt	Constructed	Collapsed	On Going	Rebuilt
3) Revenue by public market use fee is recovered. (Peso / Month)	4,000	3,750	0	0	

Source: JICA Study Team

2.2.10 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Slaughter House (QIP-10)

(1) Inputs

Input 1: Design of Reconstruction of Slaughter House

Through the damage assessment survey of Slaughter House by JICA Study Team, it was found that the roof of the main building and equipment were damaged, but the concrete structure (building frame) including the truss had no serious damage. Therefore, reconstruction Slaughter House was planned through repair of roof, interior/exterior renovation and provision for equipment. On the other hand, the livestock shed located next to the Slaughter House was completely destroyed and hence planned to be newly reconstructed.

The JICA Study Team reviewed the as built drawing for the Slaughter House prepared by the Municipality. As a result of review, necessary modifications were made for foundation, pillars and beams which were found with insufficient strength. The roofing system was also revised in the same manner with the PHO (see section 2.2.2) in order to reinforce its structure, particularly for the truss and roofing. The modified drawing was used as the technical drawing for the Slaughter House. A completion figure is shown in Figure 2.2-10.

Input 2: Bidding/Contract of Reconstruction of Slaughter house

In the same way as PHO, bidders were limited among local contractors. In selection of the local bidders, JICA Study Team requested recommended contractors from the Municipality.

After collecting information on the recommended contractors, JICA Study Team issued the invitation for bid to the contractors who passed PQ.

In the same way as PHO, JICA Study Team adopted open/competitive bidding system and two-envelope system for the bid opening.

For the contract, BOQ system was adopted. Payment condition was also stipulated in the same way as PHO to avoid any delay caused by the financial deficit.

Input 3: Reconstruction of Slaughter house

In the same way as PHO, JICA Study Team made the deployment/monitoring plan of Inspectors for quality control. Moreover, JICA Study Team called for regular site meetings with the contractor to monitor the progress and quality of construction as compared with the contractor's submitted construction schedule, and discussed the technical issues encountered by the contractor.

Input 4: Equipment of Reconstruction of Slaughter house

Most of the equipment used in the Slaughter House was damaged during Typhoon Yolanda and were not functional. In order to resume the functions of the Slaughter House, as set of lines for slaughtering cows and pigs needed to be repaired. Therefore the necessary equipment were examined with the Municipal Meat Inspector and repaired under the QIP.

Input 5: Technical Transfer to LGU Engineer

Generally, it was noted that the poor construction quality intensified the damage of buildings caused by Typhoon Yolanda in Leyte and Samar. Through the QIP, collaborative works on facility design, cost estimation, bidding, contract, and construction supervision were done with the relevant staff of the Municipality in order to transfer knowledge and skills with the purpose of enabling them to handle recovery projects by themselves in the future.

(2) Achievement of the Project

Achievement 1: Revising Design of Slaughter house for Disaster Resilient Reconstruction

Based on the as built drawings of the Slaughter House prepared by the Municipality, JICA Study Team revised the designs for the critical section of the superstructure such as foundation, pillars and beams. Also, in the same way with the PHO (see section 2.2.2), reinforcing measures were particularly examined for the truss and roof. Japanese style reinforcing measures that were applied are as follows.

a) In the same way as PHO, Mega-Rib was adopted with domestically available material (0.5mm thickness, pre-coated galvanized sheet).

b) In the same way as PHO, C-type mold steel (2-mm thickness) was adopted for purlins to assure the transfer of load from roof to truss.

c) In the same way as PHO, solid connection was employed at the livestock shed by; 1) embedding anchor bolt to the concrete column which in turn hold the base plate, and 2) fixing truss to the baseplate through full welding.

d) In the same way as PHO, gusset plate was placed at the connecting portion of the members of truss in the livestock shed, in order to secure the right position. It required full welding along length and connection of truss members.

Achievement 2: Bidding/Contract of Reconstruction of Slaughter house

JICA Study Team collected the company profile from four companies that were recommended by the Municipality and sent bid invitation to three companies that passed through PQ procedure.

As described above, JICA Study Team adopted the open/competitive bidding system and two-envelope system.

Opening of the bids were done with the presence of the bidders. Fist, the technical proposals were opened. Cost proposals were opened for bidders who passed the technical review. Two companies participated in the bidding and two of them passed through technical review. After opening of their cost proposals, NSDS Construction and Supply had the lowest bid which was also within the QIP budget. Therefore, NSDS Construction and Supply was nominated as the first priority for arithmetical evaluation. As a bidding procedure, both of technical proposal and financial proposal were fully examined and questions were made to the contractor. Since its position as first priority was not changed, JICA Study Team issued Award and made the contract with the contractor.

In the same manner with PHO (see section 2.2.2), BOQ/Fixed Unit Cost system was adopted for the contract since additional quantities or change order were expected.

Considerations were made for payment conditions to avoid any delay caused by financial deficit. Also, since the contract period was only as short as six months, price escalation clause was not applied. And the similar to PHO project, three months was adopted for the “Defects Liability Period”.

In the course of the project duration, the contractor requested for time extension with the reasons of 1) shortage of construction materials and labor due to Typhoon Yolanda, 2) effect of Typhoon Ruby, and 3) insufficiency of electricity for conducting the works, etc. JICA Study Team and the Municipality discussed and evaluated the basis, and accepted the extension for 60 days.

Achievement 3: Reconstruction of Slaughter house in a Disaster Resilient form through Appropriate Construction Management

The quality of all construction material was controlled with the same method applied in PHO (see section 2.2.2).

Also in the same way with PHO, JICA Study Team made the deployment/monitoring plan of Inspectors for quality control based on the execution plan and detailed construction schedule which was submitted by the contractor.

The inspectors inspected center line, depth and bearing capacity of foundation excavation. Re-bar of column was inspected before formwork closure prior to concreting.

Inspection of concrete works were conducted on trial mix, mixing ratio, slump test, the skill of mixer operator, placing method and vibrator using, etc.

Also, finding that the existing access road was suitable for use during construction, costs for concrete pavement in the premise of the facility was reduced from the contract.

In case any failure or defaults in the works were noted, inspector issued site instruction to contractor, instructing correspond corrections, demolition and sometimes rework.

The following are some of the site instruction given to the contractor during the reconstruction of the Slaughter House.

- Proper compaction was instructed.
- As instructed, splicing of C-Channels to be done resting directly on top chord of the truss. A 10mm gap between channels was also observed.
- Concrete slump was inspected constantly during concreting, before pouring into the structural forms.
- Proper use of concrete vibrator was instructed.
- Additional bracing on beam forms was instructed to prevent movements of forms during concreting.
- Connections without bolts were pointed out during C-Channel installation on the purlin cleat.
- Roof installation was inspected constantly.

In the same case as PHO, regarding documentations required to be submitted, the contractor didn't acquire sufficient knowledge through reconstruction of Slaughter House, and they need to learn more in order to be able to effectively manage their construction schedules.

Achievement 4: Support for Resuming Operation of Slaughter House through Procurement of Equipment

Through discussion with the Meat Inspector of the Municipality of Dulag, it was planned that hanging line such as rail and hook should be repaired while electronic equipment such as motor should be replaced to resume the below operation capacity.

Table 2.2-32 Equipment of Slaughter House

Equipment	Capacity	set
Slaughtering Line	400 kg/day	1

Source: JICA Study Team

Achievement 5: Technical Transfer to LGU Engineer

With the same methodology applied in the Tolosa Multi-Purpose Livelihood Building (see section 2.2.3), JICA Study Team transferred knowledge and skills to engineers of the Municipality of Dulag through the series of project activities with the purpose that they would become able to handle future recovery projects by themselves. The contents of technical transfer are also the same with those in the Tolosa Multi-Purpose Livelihood Building.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-33 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Municipal capacity and skills of its engineers for project management are improved.	Improved	Not Enough	Not Enough	Improved	Improved
2) Slaughter House is rebuilt with appropriate design and within construction schedule.	Rebuilt	Constructed	Collapsed	On Going	Rebuilt
3) Revenue by slaughter house use fee is recovered. (Thousand Peso / Month)	200	100	85	110	

Source: JICA Study Team

2.2.11 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market (Mercedes) (QIP-11)

(1) Inputs

Input 1: Design of Reconstruction of Mercedes Public Market

Through the damage assessment survey of Mercedes Public Market by JICA Study Team, it was found that the building, including the foundation was completely damaged.

The JICA Study Team requested the Municipality to prepare basic drawings for the Public

Market. Based on the basic drawings, necessary modifications were made for foundation, pillars and beams which were found with insufficient strength. The roofing system was also revised in the same manner with the PHO (see section 2.2.2) in order to reinforce its structure, particularly for the truss and roofing. The modified drawing was used as the technical drawing for the Public Market. A completion figure is shown in Figure 2.2-11.

Input 2: Bidding/Contract of Reconstruction of Mercedes Public Market

In the same way as PHO (see section 2.2.2), the Municipality was requested to recommend local contractors, The invitation to bid were issued to contractors who passed PQ.

In the same way as PHO, JICA Study Team adopted open/competitive bidding system and two-envelope system for the bid opening. For the contract, BOQ system was adopted.

Payment condition was also stipulated in the same way as PHO to avoid any delay caused by the financial deficit.

Input 3: Reconstruction of Mercedes Public Market

In the same way as PHO, JICA Study Team made the deployment/monitoring plan of Inspectors for quality control. Moreover, JICA Study Team called for regular site meetings with the contractor to monitor the progress and quality of construction as compared with the contractor's submitted construction schedule, and discussed the technical issues encountered by the contractor.

Input 4: Equipment of Reconstruction of Mercedes Public Market

Before Typhoon Yolanda, the Municipality supported the tenants of the Public Market by lending out refrigeration equipment for meat preservation. The Municipality used to temporarily purchase the meat products by volume and store it in their refrigeration equipment. This was an auxiliary policy of LGU to secure the handling of volumes of products of market tenant every day, and perform assistance in the storage of these goods. Each tenant could handle certain amounts of fresh fish/meat without loss, since any excess can be stored. JICA Study Team supplied this refrigeration equipment required as requested by the Municipality for operation resumption of Mercedes Public Market.

Input 5: Technical Transfer to LGU Engineer

Generally, it was noted that the poor construction quality intensified the damage of buildings caused by Typhoon Yolanda in Leyte and Samar. Through the QIP, collaborative works on facility design, cost estimation, bidding, contract, and construction supervision were done with the relevant staff of the Municipality in order to transfer knowledge and skills with the purpose of enabling them to handle recovery projects by themselves in the future.

(2) Achievement of the Project

Achievement 1: Revising Design of Mercedes Public Market for Disaster Resilient Reconstruction

Based on the basic drawings of the Public Market prepared by the Municipality, JICA Study Team revised the designs for the critical section of the superstructure such as foundation, pillars and beams. Also, in the same way with the PHO (see section 2.2.2), reinforcing measures were particularly examined for the truss and roof. Japanese style reinforcing measures that were applied are as follows.

a) In the same way as PHO, solid connections were employed by 1) embedding anchor bolts to the concrete column – roof beam, 2) fixing anchor plate with the anchor bolts, and 3) full welding between anchor plate and bottom chord of truss.

b) In the same way as PHO, gusset plate was placed at the connecting portion of the members of truss, to secure the right position, required welding length and connection of truss members were added in the plan specifications.

c) In the same way as PHO, Mega-Rib was adopted for roofing system with domestically available material (0.5mm thickness, pre-coated galvanized sheet).

d) In the same way as PHO, C - type mold steel (2-mm thickness) was adopted for purlins to assure the transfer of load from roof to truss.

e) It was confirmed with Municipality that the main drainage along highway shall be laid by responsibility of the Municipality to receive the discharged water from Mercedes Public Market.

Achievement 2: Bidding/Contract of Reconstruction of Mercedes Public Market

JICA Study Team collected the company profile from seven companies that were recommended by the Municipality and sent bid invitation to three companies that passed through PQ procedure.

As described above, JICA Study Team adopted the open/competitive bidding system and two-envelope system.

Opening of the bids were done with the presence of the bidders. Fist, the technical proposals were opened. Cost proposals were opened for bidders who passed the technical review. Three companies participated in the bidding and two of them passed through technical review. After opening of their proposals, DAYBREAK ENTERPRISES was found to have the lowest bid offer which was also within QIPs budget, so the said company was selected as the first priority for arithmetical evaluation. As part of the bidding procedure, both of the technical proposal

and financial proposal were fully examined and queries were made to the contractor. Since his position as first priority was not changed, JICA Study Team issued and made the Contract Award to the said contractor. In the same way as PHO (see section 2.2.2), BOQ contract was conducted to make settlement of working quantity variation at the project completion.

Payment condition was stipulated to avoid any delay coursed by the financial deficit. Since the contract term was as short as six months, the escalation clause was not applied. In the same manner with PHO, three months was adopted for the "Defect Liability Period".

During the course of the project, the contractor issued request for time extension with the following reasons, 1) shortage of the construction materials and labor after typhoon Yolanda, 2) the difficulty in procurement of material with sufficient quality, 3) shortage of necessary electric power for the construction works, 4) effect of Typhoon Ruby, etc. JICA Study Team and LGU discussed and evaluated the reasonability, and accepted the extension for 60 days.

Achievement 3: Reconstruction of Mercedes Public Market in a Disaster Resilient Form through Appropriate Construction Management

The quality of all construction material was controlled with the same method applied in PHO (see section 2.2.2). For the reconstruction of the Public Market, the welder played an important role in the strengthening measure of the vulnerable portion of superstructure. Therefore, in the same way with PHO, JICA Study Team conducted a practical test of welding skill in advance, and permitted skilled welder who was assessed by JICA Study Team, to perform the welding operation.

JICA Study Team also made the deployment/monitoring plan of Inspectors for quality control based on the execution plan and detailed construction schedule which was submitted by the contractor.

The inspectors inspected center line, depth and bearing capacity of foundation excavation. Re-bar of column was inspected before formwork closure prior to concreting.

Inspection of concrete works were conducted on trial mix, mixing ratio, slump test, the skill of mixer operator, placing method and vibrator using, etc.

In case any failure or defaults in the works were noted, inspector issued site instruction to contractor, instructing correspond corrections, demolition and sometimes rework.

Apart from the above, JICA Study Team requested the Municipality to turn off the electric current of the high-tension wires along highway during the construction period for safety measure, though it was distant from the working zone.

The following are the main site instruction given to the contractor during the reconstruction of the Public Market.

- Alignment of column footings was inspected and correction was instructed.
- Gravel materials was rejected and instructed to use the one specified on the plan.
- Concrete mixers broke out, so the contractor was instructed to bring another from their other site.
- Concrete slump should be inspected constantly during concreting.
- Tensile Strength Test of angle bar sample failed so the contractor was advised to use a different supplier.
- Welding joints on connecting angle bars on truss was inspected and corrected in some portion.

In the same case with PHO, regarding documentations required to be submitted, the contractor didn't acquire sufficient knowledge through reconstruction of Public Market, and they need to learn more in order to be able to effectively manage their construction schedules.

Achievement 4: Support for Resuming Operation of Mercedes Public Market through Procurement of Equipment

As described the above, JICA Study Team supplied refrigeration equipment for the auxiliary policy of the Municipality, as listed below.

Table 2.2-34 Equipment for Mercedes Public Market

Type of Storage Equipment	Set	Capacity (cu.ft.)	Items for Storage
Chiller	2	14	Fruits/Vegetables
Chest Type Freezer	2	15	Meat (Beef, Pork, Poultry, Fish)
Refrigerator	6	12	Combination of Meat, Vegetables and Fruits

Source: JICA Study Team

Achievement 5: Technical Transfer to LGU Engineer

With the same methodology applied in the Tolosa Multi-Purpose Livelihood Building (see section 2.2.3), JICA Study Team transferred knowledge and skills to engineers of the Municipality of Mercedes through the series of project activities with the purpose that they would become able to handle future recovery projects by themselves. The contents of technical transfer are also the same with those in the Tolosa Multi-Purpose Livelihood Building.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-35 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Municipal capacity and skills of its engineers for project management are improved.	Improved	Not Enough	Not Enough	Improved	Improved
2) Public Market is rebuilt with appropriate design and within construction schedule.	Rebuilt	Constructed	Collapsed	On Going	Rebuilt
3) Revenue by public market use fee is recovered. (peso / month)	3,000	3,000	0	0	

Source: JICA Study Team

2.2.12 Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market (Mayorga) (QIP-12)

(1) Inputs

Input 1: Design of Reconstruction Mayorga Public Market

Through the damage assessment survey of Mayorga Public Market by JICA Study Team, it was found that the roof and truss of the second story and the market facilities of the first story was completely damaged. However, the concrete structure (Building Frame) had no serious damage. Therefore, Reconstruction of the building included repair works of roof, truss, interior/exterior spaces, and market facilities.

The JICA Study Team reviewed the as built drawing for the Public Market prepared by the Municipality. Revisions were made on the drawing in the same manner with the PHO (see section 2.2.2) with particular focus on strengthening the critical sections of the truss and roofing. The modified drawing was used as the technical drawing for the Public Market. A completion anticipation figure is shown in Figure 2.2-12.

Input 2: Bidding/Contract of Reconstruction of Mayorga Public Market

In the same way as PHO (see section 2.2.2), the Municipality was requested to recommend local contractors, The invitation to bid were issued to contractors who passed PQ.

In the same way as PHO, JICA Study Team adopted open/competitive bidding system and two-envelope system for the bid opening. For the contract, BOQ system was adopted.

Payment condition was also stipulated in the same way as PHO to avoid any delay caused by the financial deficit.

Input 3: Reconstruction of Mayorga Public Market

In the same way as PHO, JICA Study Team made the deployment/monitoring plan of Inspectors for quality control. Moreover, JICA Study Team called for regular site meetings with the contractor to monitor the progress and quality of construction as compared with the

contractor's submitted construction schedule, and discussed the technical issues encountered by the contractor.

Input 4: Technical Transfer to LGU Engineer

Generally, it was noted that the poor construction quality intensified the damage of buildings caused by Typhoon Yolanda in Leyte and Samar. Through the QIP, collaborative works on facility design, cost estimation, bidding, contract, and construction supervision were done with the relevant staff of the Municipality in order to transfer knowledge and skills with the purpose of enabling them to handle recovery projects by themselves in the future.

(2) Achievement of the Project

Achievement 1: Revising Design of Mayorga Public Market for Disaster Resilient Reconstruction

Based on the as built drawings of the Public Market prepared by the Municipality, JICA Study Team revised the designs for the critical section of the superstructure, particularly for the truss and roofing, in the same way with the PHO (see section 2.2.2). Japanese style reinforcing measures that were applied are as follows.

a) In the same way as PHO, solid connection was employed by 1) embedding of anchor bolts to the existing concrete column, 2) fixing anchor plate with the anchor bolts, and 3) full welding between anchor plate and truss.

b) In the same way as PHO, gusset plate was placed at the connecting portion of the member of truss, to secure the right position, full welding was required along length and connection of truss members.

c) In the same way as PHO, Mega-Rib was adopted for roofing system with domestically available material (0.5mm thickness, pre-coated galvanized sheet).

d) In the same way as PHO, C-type mold steel (2-mm thickness) was adopted for purlins to assure the transfer of load from roof to truss.

Achievement 2: Bidding/Contract of Reconstruction of Mayorga Public Market

JICA Study Team collected the company profile from four companies that were recommended by the Municipality and sent bid invitation to three companies that passed through PQ procedure.

As described above, JICA Study Team adopted the open/competitive bidding system and two-envelope system.

Opening of the bids were done with the presence of the bidders. Fist, the technical proposals

were opened. Cost proposals were opened for bidders who passed the technical review. Three companies participated in the bidding and one of them passed through technical review. Subsequently, the financial proposal of JUCONS CONSTRUCTION & SUPPLY, which passed through the technical review, was opened and confirmed that it was within the QIP budget. As bidding procedure, both of technical and financial proposals of the contractors were fully examined and evaluated. Since JUCONS CONSTRUCTION & SUPPLY qualified the evaluation, JICA Study Team issued Award and made the contract with the contractor.

In the same manner with PHO (see section 2.2.2), BOQ/Fixed Unit Cost system was adopted for the contract since additional quantities or change order were expected.

Considerations were made for payment conditions to avoid any delay caused by financial deficit. Also, since the contract period was only as short as six months, price escalation clause was not applied. And the similar to PHO project, three months was adopted for the "Defects Liability Period".

During the project, the contractor issued request for time extension with the following reasons, 1) delay of tenants' transfer to a temporary structure, 2) shortage of materials and laborers due to typhoon Yolanda, 3) influence of Typhoon Ruby, 4) occurrence of additional construction works (foundation of concrete block wall), etc. JICA Study Team and LGU discussed and evaluated the reasonability, and accepted the extension for 60 days.

Achievement 3: Reconstruction of Mayorga Public Market in a Disaster Resilient Form through Appropriate Construction Management

The quality of all construction material was controlled with the same method applied in PHO (see section 2.2.2). For the reconstruction of the Public Market, the welder played an important role in the strengthening measure of the vulnerable portion of superstructure. Therefore, in the same way with PHO, JICA Study Team conducted a practical test of welding skill in advance, and permitted skilled welder who was assessed by JICA Study Team, to perform the welding operation.

JICA Study Team also made the deployment/monitoring plan of Inspectors for quality control based on the execution plan and detailed construction schedule which was submitted by the contractor.

The inspectors mainly inspected concrete works, assembly of re-bars and concrete formworks. Inspection of concrete works were conducted on trial mix, mixing ratio, slump test, the skill of mixer operator, placing method and vibrator using, etc.

In case any failure or defaults in the works were noted, inspector issued site instruction to contractor, instructing correspond corrections, demolition and sometimes rework.

The following are the main site instruction given to the contractor during the reconstruction of the Public Market.

- Caution on the existing sewerage pipe was instructed to avoid any damage.
- Concrete slump should be inspected during concreting.
- Some concrete hollow blocks were rejected because of low quality.
- Cover gaps between installed forms was inspected to avoid any leakage of poured concrete.
- Thickness of CHB plastering was pointed out for correction.
- Provisions for additional concrete spacers were pointed out.
- Connection gaps in between joints for truss members were corrected.
- Additional manpower was advised.
- Layout of fish tables was corrected.

In the same case with PHO, regarding documentations required to be submitted, the contractor didn't acquire sufficient knowledge through reconstruction of Public Market, and they need to learn more in order to be able to effectively manage their construction schedules.

Achievement 4: Technical Transfer to LGU Engineer

With the same methodology applied in the Tolosa Multi-Purpose Livelihood Building (see section 2.2.3), JICA Study Team transferred knowledge and skills to engineers of the Municipality of Mercedes through the series of project activities with the purpose that they would become able to handle future recovery projects by themselves. The contents of technical transfer are also the same with those in the Tolosa Multi-Purpose Livelihood Building.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-36 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Municipal capacity and skills of its engineers for project management are improved.	Improved	Not Enough	Not Enough	Improved	Improved
2) Public Market is rebuilt with appropriate design and within construction schedule.	Rebuilt	Constructed	Collapsed	On Going	Rebuilt
3) Revenue by public market use fee is recovered. (peso / month)	155,000	85,000	63,000	71,000	

Source: JICA Study Team

2.2.13 Promotion of Local Products to Improve Livelihoods for the Survivors of Typhoon Yolanda (QIP-13)

(1) Inputs

Input 1: Study of the Framework of Promotion Activities for the Processed Products with the Task Force

A Task Force, consisting of relevant government agencies, organizations and producers was formulated in order to examine various marketing strategies for the sales promoting of processed ago-fishery products produced through the four QIPs implemented under this Study. The QIPs and target products to be examined by the Task Force are indicated in Table 2.2-37.

Table 2.2-37 Relevant QIPs and Target Products Examined by the Task Force

QIP No.	Name of QIPs	Products
QIP-01	Regenerating Livelihood Through Introduction of Disaster Resilient Submersible Fish Cage (Milkfish)	Softbone Bangus
QIP-03	Regenerating Local Livelihoods Through Processing of Agriculture and Fishery Products by Small-Scale Community Groups	Longganiza, Tocino, Embutido, Boneless Bangus, Vegi-fish Noodles
QIP-14	Regenerating Livelihood Through Production of Coco Charcoal Briquette	Coco-trunk Charcoal
QIP-15	Integrated Culture of Oyster and Milkfish improvement for Sustainable Aquaculture and Livelihood	Softbone Bangus, Processed Oyster products

Source: JICA Study Team

Input 2: Implementation of the Framework of Promotion Activities for the Processed Products

There were initial plans for implementing the actual marketing strategies for the products produced through relevant QIPs. However, the overall strategies could not be developed within the planned period. On the other hand, individual actions for sales promotion were taken for the individual products produced through: "QIP-03 : Regenerating Local Livelihoods Through Processing of Agriculture and Fishery Products by Small-Scale Community Groups", "QIP-14 : Regenerating Livelihood through Production of Coco Charcoal Briquette", and "QIP-15 : Integrated Culture of Oyster and Milkfish improvement for Sustainable Aquaculture and Livelihood."

Input 3: Examine Possibilities of a Promotion Center

In addition to the above, possibilities for establishing a promotion center in order to sell the processed products as regional specialties were also planned to be examined by the Task Force. With the absence of actual marketing strategies, examination of the promotion center could also not be carried out.

(2) Achievement of the Project

Achievement 1: Selection of Task Force Members and Topics to be Discussed

Contents of the QIP and features of the products to be produced through their activities were explained to relevant officials of the Department of Trade and Industry (DTI) Region 8 office, and candidate members of the Task Force as well as the topics to be discussed were identified.

Table 2.2-38 Identified Candidate Task Force Members

Department of Trade and Industry	Tacloban City officials in charge of supporting business promotion
Bureau of Fishery and Aquatic Resources	QIP Participants
Department of Science and Technology	Organizations involved in QIP activities (LGUs, VSU, etc.)
Existing organizations and private business entities involved in the distribution / sales of local products	Other organizations that may relate to sales and distribution of local products (unions, restaurants, etc.)

Source: JICA Study Team

[Draft Agenda for Task Force Meetings]

1st Meeting: Understanding the features of processed products and examining their potential target markets and distribution routes

- Understanding the features and pricing of processed products produced through QIP activities
- Identification of potential markets for individual products
- Identification of possible distribution routes

2nd Meeting: Examination of means for sales promotion in consideration of the identified target markets and distribution routes

- Remaining agenda from 1st Meeting
- Examination of possible tools for promotion
- Examination of promotion center (necessity, effect of establishment, suitable location, means of operation, etc.)

3rd Meeting: Examination of promotion center

- Remaining agenda from 2nd Meeting
- Continued examination of promotion center (necessity, effect of establishment, suitable location, means of operation, etc.)

Achievement 2: Discussions for Sales Promotion of Processed Products in 1st Task Force Meeting

The 1st Task Force meeting was held on 5 August 2014. The participants in the meeting are as

shown below.

Table 2.2-39 Participants of the 1st Task Force Meeting

DTI, Region 8	VSU, Tolosa
DTI, Leyte Province	LGU, Tolosa
BFAR, Region 8	Women's Association, Tolosa
BFAR, Leyte Province	JICA Study Team

Source: JICA Study Team

However, at the time of the 1st Task Force meeting, actual production has not been started for most of the processed products. Information on the actual products such as their features, production capacities and prices could not be provided, and actual means for marketing of these products could not be discussed on a concrete basis.

Suggestions raised in the 1st Task Force meeting are as follows.

About the products:

- Information of the processed products should first be collected and reviewed to further examine their marketing strategies (production capacity, means of packaging, wholesale/retail price, situation of sales before being hit by Typhoon Yolanda, etc.)
- The market to be targeted will significantly differ depending on the quality of products and their packaging.
- The products and producers should be registered under DTI.

Immediate actions to be taken:

- Sales should be started during the Leyte Landing Ceremonies to be held in late October.
- Full scale production should be started so that products could be sold before Christmas season.

Marketing center:

- A certain level of production in terms of quantity must be realized before examining the possibilities for the establishment of marketing centers.

Achievement 3: Further Activities

In response to the suggestions raised through the 1st Task Force meeting, activities of relevant QIPs were further supported to restart (QIP-03) or newly start (QIP-15) the production of processed products.

As a result, the production of Softbone Bangus, prepared under QIP-15 has started to produce considerable amount of production. On the other hand, with the Multi-Purpose Livelihood Building in Tolosa being yet to be completed, the participants of QIP-03 have not been able to attain full-scale production because they lack access to venues for constant production.

Accordingly, they are also yet to formulate a business plan based on full production of products. Products under QIP-01 and oyster products of QIP-15 are also not being produced because their raw material is yet to be harvested. Moreover, charcoal produced through QIP-14 is already steadily sold in nearby areas and do not require promotion activities at this point.

Under such circumstances, examination of marketing strategies planned in the 2nd and 3rd Task Force meetings have not been actually commenced. Actual means for sales promotion are currently undertaken by individual QIPs taking into consideration the situation of their production. The activities conducted are as follows.

1) Participation in local events

The QIP participants have been participating in a series of local events to exhibit their products. Free tasting and sales of food products are also done within these events. So far, there are many queries about the products during the event, and the products seem to be accepted by the local people with favor. However, with the exception of events held in LGUs, where production is being done (Tanauan and Tolosa), amounts of sales after participation in these events did not significantly change.

Table 2.2-40 Participation in Local Events

Event	Date	Activity	Products
Launching Ceremony for QIP-15 (Tanauan)	6 Oct 2014	Exhibit	QIP-15: Softbone Bangus
Palo Leyte Landing (Palo)	20 Oct 2014	Exhibit Tasting Sales	QIP-03: Longganiza, Tocino, Boneless Bangus, Embutido QIP-15: Softbone Bangus
Tolosa Typhoon Yolanda Commemorial (Tolosa)	8 Nov 2014	Exhibit Tasting Sales	QIP-03: Longganiza, Tocino, Boneless Bangus, Embutido
JICA Seminar (Tacloban)	17 Nov 2014	Exhibit Tasting Sales	QIP-03: Longganiza, Tocino, Boneless Bangus, Embutido QIP-14: Coco-Charcoal / Briquette QIP-15: Softbone Bangus
JICA Forum (Tacloban)	23 Feb 2015	Exhibit Tasting Sales	QIP-03: Longganiza, Tocino, Boneless Bangus, Embutido, Vegi-Fish Noodles QIP-15: Softbone Bangus
JICA Forum (Manila)	5 Mar 2015	Exhibit Tasting	QIP-03: Vegi-Fish Noodles QIP-15: Softbone Bangus

Source: JICA Study Team

2) Preparation of flyers and banners for promoting locally produced products

Flyers indicating that the product is being made by local residents, and the purchasing of locally produced products will contribute to the recovery of local economy have been prepared in Warai-Warai Language, and distributed to the participants in the above events and to the consumers who purchase the products. Banners with the same contents were also prepared and are posted near the Women Friendly Space in Tolosa (where local women's groups frequently visit), and at the charcoal store that the QIP participants established near the main road passing through Mercedes.

3) Securing stores that regularly can merchandise the products

The products produced through QIP-03 and QIP-15 were introduced to local stores and canteens and conditions for merchandising these products were discussed in order to secure stable sales. As a result, one store in Tolosa started to constantly merchandise products of QIP-02 from January 2015, while another in shop in Tanauan started selling products of QIP-15 from March 2015.

4) Attainment of support from DOST

The processing method for Softbone Bangus produced through QIP-15 has caught the attention of DOST, when the participants delivered their product for microbial testing (Aerobic Total Counts) to determine its shelf life. As a result, DOST proposed and committed to specify the QIP participants engaged in processing activities as a Target Group for its supporting scheme in FY 2015. Through this scheme, DOST will be supporting the participants through 1) provision of consultancy service for product development, 2) support in providing training opportunities and 3) use of Food Innovation Center (FIC). The use of FIC, which is a facility accredited with License to Operate (LTO) by Bureau of Food and Drug (BFAD), can significantly contribute to increasing the production volume of the products and its LTO can be a large advantage when approaching the markets outside of barangay Sta. Cruz, such as large supermarkets in the area.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-41 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) The steering committee consisting of concerned municipalities has prepared the implementation plan for promotion of local agricultural/marine products.	Implementation Plan	No Plan	No Plan	Planning	Planning
2) Promotion activities for selling local agricultural/marine products have been done by production groups in QIPs-01, 03, 14 and 15. (number of activities)	4 activities	0	0	4	4
3) Income has been acquired through promotion activities for selling local agricultural/marine products in promotion groups. (number of members acquiring income)	100 members	10	0	91	91
4) The pamphlets for sales promotion of local processed products by the disaster victims are issued. (number of issued pamphlets)	8 issues	0	0	5	5

Source: JICA Study Team

2.2.14 Regenerating Livelihood through Production of Coco Charcoal Briquette (QIP-14)

(1) Inputs

Input 1: Invitation of Participant Farmers and Group Formulation

Out of the 18 LGUs in the Study Area, the Municipality of Mercedes is one of the LGUs that suffered most severe damages in its coconut farms. At the same time, the economy of the LGU has been conventionally dependent on coconut farming. The QIP aims to apply a process for clearing damaged coconut trees from the coconut fields and to generate cash income through processing them into charcoal in the Municipality. In implementing the QIP, two barangays were selected from the six proposed by the Mayor of Mercedes. Candidate participants for QIP activities were further called for through the barangay captains. The contents of the QIP were explained to the candidate participants and a production group was formulated in each of the barangays, consisting of those who showed their intensions to participate.

Input 2: Provision of Necessary Tools

Several methods for charcoal production were examined to identify a method most effective for producing charcoal from fallen coconut trees. As a result, *Fuse Yaki* method, which is relatively easy to apply and requires minimal initial cost, was selected and introduced to the barangays. The production groups were provided with minimum tools required for carrying out *Fuse Yaki*, while the kiln for *Fuse Yaki* was excavated by the production groups themselves.

Input 3: Provision of Training

An instruction manual for *Fuse Yaki* was prepared in Warai-Warai language and distributed to the production groups in order to provide them with the knowledge for charcoal production from fallen coconut trees. Hands-on training for charcoal production was also conducted to practice the actual techniques. Follow-up on production techniques were also made by visiting the production groups and providing them with technical advice after they started regular production. With regard to sales of the produced charcoal, the activities were supported through training for accounting and provision of advice for marketing.

Input 4: Examine Possibilities for Charcoal Briquetting

When compared with charcoal made from coconut shells (coco-shell charcoal) or illegally felled mangroves, which are commonly seen in the market, the quality of charcoal produced from fallen coconut trees (coco-trunk charcoal) is somewhat inferior in terms of burn time and heat produced. In consideration of its quality, possibilities for processing coco-trunk charcoal into charcoal briquettes were examined in order to add value and enhance their sales.

Briquettes samples were prepared from coco-trunk charcoal that was produced through the QIP on a trial basis, and their quality was compared with conventional briquettes made from coco-shell charcoal. The sample briquettes were also distributed to vendors in nearby markets to collect their comments on possibilities for future production and sales.

(2) Achievement of the Project

Achievement 1: Selection of Target LGU and Barangay

Apart from the other QIPs that were formulated based on needs identified from the LGUs, the activities for this QIP has been designed by the Study Team with the aim of accelerating the process of clearing damaged coconut trees from coconut fields, reviving and diversifying the local industry through replanting of coconut trees and practicing inter-cropping, and at the same time, utilizing the damaged coconut trees to generate cash income. Since none of the LGUs in the Study Area proposed such activities, the target LGU had to be selected before implementing the activities.

The criteria for selecting the target LGU for the QIP were: level of damage to coconut fields, general level of income of the residents, economic situation (situation of local industries), and level of economic dependence on coconut farming. By comparing the situations in each LGU, the Municipality of Mercedes has been selected as the target LGU for QIP implementation.

Table 2.2-42 Comparison of Damage and Dependency on Coconut Farming

LGU	Damaged tree / hectare	Income level*	Ratio of External / Local Revenue (Dependency on Central Govt.)**	Rate of coconut farming in major income source
Abuyog	19	10,000	6.9	60%
Dulag	46	3,500	4.1	20%
Javier	43	2,500	10.3	76%
Macarthur	71	3,000	5.7	65%
Mayorga	55	3,000	-	30%
Palo	10	-	4.2	ND
Tacloban	10	-	0.9	ND
Tanauan	29	2,000	2.8	5%
Tolosa	67	5,000	8.8	20%
Basey	31	8,000	24.6	10%
Marabut	19	6,000	38.9	20%
Balangiga	35	3,750	-	65%***
Giporlos	69	3,934	39.7	87%
Guiuan	48	5,000	4.4	15%
Lawaan	24	1,667	18.4	20%
Mercedes	**65**	**1,500**	**39.7**	**50%**
Quinapondan	61	3,500	19.6	65%
Salcedo	28	2,800	8.9	42%

Source: JICA Study Team, based on data from LGU and NSO

*: Indicative amount per household per month based on impression of LGU staff.
**: Higher figures indicate that the LGU does not have sufficient economic activities to gain necessary revenue for running the LGU, thus means that economic situation in the LGU is not active.
***: Figure for whole agricultural sector

Furthermore, in order to select the barangays for implementation of QIP activities, the Study Team explained the contents of the QIP to the Mayor of Mercedes and requested him to propose several candidate barangays that are in need of clearing of fallen coconut trees, and would be interested in participating in the activities. In response, the Mayor proposed the six barangays of Brgy-01, Brgy-02, Brgy-03, Brgy-04, Busay and Buyayawon. In consideration of the capacity for support, the Study Team selected the two barangays of Busay and Buyayawon, because they had large extents of coconut fields that could be continuously worked on after technical transfer for charcoal production was completed.

Table 2.2-43 Distribution of Coconut Fields in the Proposed Barangays

Barangay	Land area (km^2)	Area of coconut farm (ha)	Number of coconut farmers
Brgy. 01	70.5	8,740	247
Brgy. 02	53.3	6,603	212
Brgy. 03	38	4,712	156
Brgy. 04	81.4	10,097	262
Busay	257.4	31,918	325
Buyayawon	197.8	24,531	261

Source: JICA Study Team, based on Data from PCA

Achievement 2: Formulation of Production Groups

The contents of the QIP activities were explained to the captains of the two selected barangays, and the captains were requested to call for candidate participants. Trial production of coco-trunk charcoal was conducted together with the candidate participants to demonstrate the process of production. After this, one production group, consisting of candidates that showed interest in the activities, were formulated in each barangay. At the time of the formulation of the production group, one leader and one accountant was selected in each group. Furthermore, it was decided that decisions to be made in the groups will be done based on mutual discussions facilitated by the group leader. The number of members in each group is indicated in the following table.

Table 2.2-44 Members of the Production Groups

Barangay	Number of Members		
	Total	Male	Female
Busay	18	15	3
Buyayawon	31	25	6

Source: JICA Study Team

Achievement 3: Support for Initiating Charcoal Production through Installation of Kiln and Provision of Material

The basic structure of the kiln used for *Fuse yaki* is a simple ditch excavated in the ground. In addition, there are few other material required to formulate the fire opening and chimney. The size of the kiln for *Fuse Yaki* was decided based on two factors: the kiln should be small enough to ensure easy operation, and large enough to produce a certain amount of charcoal in

one production. As a result, the kiln was designed with a size of 1.5m width, 2.0m length and 0.3m depth, which is large enough to produce around 2.5 sacks[1] of charcoal in one production. The kiln was excavated by the candidate participants at the time of the trial production, where two were excavated in Busay and one was excavated in Buyayawon. The necessary material for charcoal production was provided by the QIP. The material provided are indicated in the following table.

Table 2.2-45 List of Material Provided for Charcoal Production

Material	Description	Quantity	
		Busay	Buyayawon
Shovel (round blade)	Excavation of kiln, harvesting of charcoal	4 units	4 units
Shovel (square blade)	Excavation of kiln, harvesting of charcoal	4 units	4 units
GI Sheet / tie wires	Formulation of chimney and roof for fire opening	2 sets	2 sets
Tarpaulin	Prevention of rain from falling on the kiln, tent for working under the sun	2 sheets	3 sheets
Brick	Formulation of fire opening	20 pcs.	40 pcs.
Screen	Separating harvested charcoal from soil	2 sets	2 sets
Others	Gloves, fans, etc.	1 set	1 set

Source: JICA Study Team

Apart from the above, the use of chainsaws is required for coco-trunk charcoal production, because the coconut trunks need to be cut into smaller pieces before burning. However, chainsaws were not provided through the QIP in consideration that each barangay in Mercedes has been allocated with chainsaws from the Philippine Coconut Authority (PCA) for the clearing of the coconut fields.

Trial production in Buyayawon was initially done in a low-lying area near the sea. However, the results of the trials conducted in this location were not successful and much of the raw material remained raw after burning. This may have been caused due to the sandy soils of the area, where moisture from rain water could easily penetrate through the soil. Based on this assumption, a kiln was newly excavated in the hilly area with loamy soil, which resulted in successful production of charcoal.

Achievement 4: Production of Coco-Trunk Charcoal

As earlier described, regular production of coco-trunk charcoal by the production groups was conducted after trial production.

In beginning regular production, both barangays requested the Study Team to provide necessary fuel for the chainsaws and fees for the chainsaw operators. However, this was not provided taking into consideration the sustainability of the activities after the support by the QIP is finished. Discussions were held with the production groups and decisions were made that each group member will provide a small share to pay for the necessary expenses, which

[1]In the Study Area, charcoal is measured and merchandised in sacks that are originally used for storing 50kg of rice.

will be returned after the products are sold. Furthermore, an amount will be kept from future sales to pay for the expenses for further production. The amount of production and sales of coco-trunk charcoal up to February 2015 are as follows.

Buyayawon:

A total of four trials have been conducted in Buyayawon during the period of 6-17 September 2014 (two trials in the lowland near the sea and two in the hilly areas). Regular production of coco-trunk charcoal has started from 20 September. The production group was keen to bare more production, and applied its own improvement to the production process. As a result, it succeeded to produce more charcoal in one production cycle. By November 2014, the group already removed most of the fallen coconut trees near the kiln. Due to this reason, the group decided to excavate another kiln in a different location and started its activities there. At this time, the group requested the Study Team to provide the necessary material for the establishment of a new kiln. This was provided to the group in premise that the amount required for the material will be reserved from the sales of charcoal so that it can further fund the expansion of the activities.

Production of charcoal was not active during December, when Typhoon Ruby hit the area, which was followed by the festive season of Christmas. However, production has resumed in January 2015, and the group has produced 127 sacks of coco-trunk charcoal up to February 2015. Based on the amount of charcoal produced, it is estimated that the group has cleared around 2 ha of farmland through its activities.

Busay:

After the trial production conducted in 31 August 2014, the production group committed to conduct regular production of coco-trunk charcoal. However, because most of its male members became engaged in the shelter program implemented by the International Organization for Migration (IOM) right after the trial, activities for charcoal production remained stagnant. Discussions were held with group members, and it was confirmed that the members intend to actively carry out their activities as soon as the shelter program finishes at the end of the year. In response, the group was provided with a round of training in December, and has re-started its activities in January 2015. Up to February 2015, the group has produced 22 sacks of coco-trunk charcoal, which is equivalent to raw material from 0.3 ha of damaged farmland.

Achievement 5: Sales of Coco-Trunk Charcoal

Conventionally, the charcoal merchandised in the southeastern areas of Eastern Samar province, where Mercedes is located, was produced in areas such as General Macarthur and Borongan, which are located some 30-70km away from the area. The average price of

charcoal was around 300-450 pesos per sack for coco-shell charcoal, which have better quality than others, and 160-240 pesos for charcoal produced from wood material. Prices of charcoal usually become high in rainy seasons. Typhoon Yolanda also affected the production of charcoal through the destruction of coconut farms. This resulted in scarce supply of coco-shell charcoal in the region and the average price for charcoal made from wood is currently around 240 pesos per sack

Based on the above situation, the sales price of coco-trunk charcoal was discussed with the production groups. Taking into consideration that the coco-trunk charcoal is a new product in the area and that it may take time for retailers and consumers to become familiar with the product, it was decided that the price should be 200 pesos per sack, which is cheaper than the charcoal produced from wood.

Attempts for marketing of charcoal were also made through the Mayor of Mercedes. With the aim of securing stable sales in large volume, the Mayor introduced coco-trunk charcoal to a fast food shop in the Municipality of Guiuan by providing free samples. However, the shop declined from patronizing the product since it sometimes crackled and resulted in the ashes flying in the air. Based on this experience, the group has decided to target individual customers instead of large scale clients.

Currently, the production group in Buyayawon sells their products to clients such as retailers in Guiuan, people passing through the barangay through the main road, and local residents in the Municipality. So far, they have been able to sell around 80 sacks, which is equivalent to 16,000 pesos. In overall, coco-trunk charcoal is selling relatively well. On the other hand, the production group in Busay has not yet been actively selling their products. They intend to wait until the rainy season for starting sales so that they can sell the product in better prices.

Taking into consideration that sales of coco-trunk charcoal is easily done in local areas including the market of Guiuan, sales of products in other areas such as Tacloban is not examined under the QIP because it will require additional costs items such as transportation.

As described above, the production group in Buyayawon has already sold around 16,000 pesos of charcoal, and Busay is also expected to follow. Sales of coco-trunk charcoal are expected to bare certain amounts of profit in the near future. However, up to this point, there have been no concrete business plans that determine the rules for profit distribution and internal reserves in both of the barangays.

Achievement 6: Possibilities for Marketing of Charcoal Briquettes

Samples of charcoal briquettes were prepared from the coco-trunk charcoal produced through the QIP in order to check their quality and to distribute them to retailers for their opinions. The quality of the sample briquettes were checked by burning it in parallel with commercial

briquettes made from coco-shell charcoal, and by observing the difference of burn-time, heat produced and state of ash, etc.

Table 2.2-46 Comparison of Charcoal Briquette Quality

Items		Briquette A (produced from coco-shell)	Briquette B (produced from coco-trunk)
Easiness to burn		Easy	Easy
Amount of smoke		Almost none	Almost none
Crackling		None	None
Burn time*	30 minutes	10% burned out	30% burned out
	45 minutes	20% burned out	50% burned out
	75 minutes	50% burned out	90% burned out
Heat		Stable and strong up to 74 minutes	Strong but fluctuates in accordance to burn time
Ash		Occurs but does not fly	Occurs but does not fly

Source: JICA Study Team

*: Based on visual observation

The briquettes produced from coco-trunk charcoal did not crackle or produce any smoke. However, the burn-time was significantly shorter that that produce from coco-shell charcoal, and the heat generated from burning was also observed to be lower.

The sample briquettes were also distributed to retailers of Guiuan, but up to this point, there are no promising feedbacks. The samples are also being presented by the Mayor to private enterprises in other areas of the country. However, results have not yet been provided as of February 2015.

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-47 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Coco charcoal and its briquette using acquired technique are produced. (kg/farmer/month)	Cha: 100 Bri: 50	Cha: 0 Bri: 0	Cha: 0 Bri: 0	Cha: 4 Bri: 0	Cha: 9 Bri: 0
2) Coco farmers draw their income by producing coco charcoal and its briquette (PHP/farmer/month)	10,000P	0	0	0	
3) Coco farmers gain production technique of coco charcoal and its briquette (number of farmers)	40 farmers	0	0	49	49
4) The standing decayed stocks and the fallen dawn trees of the coco are removed, and the farmlands are recovered. (total Recovered farmland in ha)	2 ha	0	0	0.6	2.3

Source: JICA Study Team

2.2.15 Integrated Culture of Oyster and Milk Fish Improvement for Sustainable Aquaculture and Livelihood (QIP-15)

(1) Inputs

Input 1: Cash for Work

The first input in this QIP was "Cash for Work" for clearing out debris, broken bamboos, torn nets, fallen coconut trunks, etc. caused by Typhoon Yolanda in the tidal flat where milkfish farming was carried out. A week long work by the typhoon victims successfully removed majority of the debris and returned the tidal flat water body to be passable safely by boats for the fisherfolk and other barangay people.

Input 2: Bathymetrical Survey and Planning Farm Layout

The Project in cooperation with BFAR-8 carried out a bathymetry study to obtain data on physical condition of the site for milkfish and oyster farming. It was found that the water body has limited area where sufficient depth remains for culturing fish during the low tide periods. Based on the study, the Municipal Agricultural Office determined to reduce the number of permits for fish farming to around 40 as well as the area for each permit to 1,000 m^2. Currently a total of 42 permits were issued. No permit is required for oyster farming as it is considered that the operation does not pollute water quality but cleans it by consuming plankton in water as food. There are currently 25 units of oyster racks of 100 m^2 each established in the tidal flat. The design of fish pen farming facilities and oyster growing racks are shown in Figure 2.2-13.

Input 3: Layout Fish Pens and Oyster Rack according to the Plan

The Project pegged out for every one of milkfish pens and oyster racks in the tidal flat water to make certain that each facility does not exceed the allowed size by the permits. There was at least 15 m distance between the adjacent milkfish pens to allow flow of tidal current and keep navigation passage for fisherfolk's boats. The finalized layout of milkfish pens and oyster racks is shown in Figure 2.2-14.

Input 4: Supply of Materials for Constructing Fish Pens

The materials required for construction of farming facilities were distributed to the owners who were members of Sta. Cruz Fish and Oyster Farmers Association and who lost their facilities by Typhoon Yolanda. Nomination for the beneficiaries were made by the association and approved by the Municipal Agriculture Office of Tanauan which subsequently issued the permits after scrutinizing the applications against pre-typhoon operation history and other records.

The Project also requested to each licensee to provide a proof of financial capability for supply of fingerlings and feeds as the Project will not provide any financial support for the

operational cost (fingerling and feeds). All beneficiaries provided this before receiving the materials.

Input 5: Supply of Materials for Construction of Oyster Seed Collection Facilities in Leyte Bay in cooperation with Leyte Municipal Government

The Project provided materials (bamboo poles, nylon monofilament thread, and empty oyster shells) for construction of oyster seed collection racks and seed collection cultches to the fisherfolk in 8 barangays selected by the Municipal Government of Leyte in Leyte Province (Figure 2.2-15). The barangay chairmen selected the fisherfolk who then constructed the oyster seed collection facilities.

A total of 3.8 million oyster spats collected by these collection facilities were purchased at 0.05 peso each by the Project in two different collection times in October 2014 and in January 2015. The purchased oyster spats were transported to Sta. Cruz and hanged on the oyster growing racks by the owners.

Input 6: Visit to Higashi Matsushima Town in Japan for Exchange of Experiences and Series of Training

The Project funded four persons working in this QIP project a trip to Higashi Matsushima City of Tohoku region in Japan where oyster farming industry is established. Series of training including this travel to Japan are conducted in QIP-15.

Input 7: Support for Developing Pressure Cooked Milkfish Product

The Project in cooperation with the Leyte Provincial Agriculture Office developed a product of pressure cooked milkfish with the members of Sta. Cruz Women Fisherfolk Association (SCWFA).

The Project funded the construction of temporary processing hut in the barangay and provided necessary equipment for production of the processed product.

The Project arranged for the members of SCWFA, a series of training on production of pressure cooked milkfish, sanitary and hygiene of processing, and simple bookkeeping and accounting.

Input 8: Support for Developing Aquaculture Insurance

An arrangement was made for a meeting with Philippines Crop Insurance Corporation (PCIC) for possible development of aquaculture insurance to cover the fish farming operation and facility.

Input 9: Supply of Laboratory Equipment to Leyte Marine Biotoxins Testing Center and Commencement of Plankton and Water Quality Monitoring

The Project provided laboratory equipment to Leyte Marine Biotoxins Testing Center (Red Tide Center) for re-activation of the Center. The activity will benefit this QIP project in detecting presence of toxic plankton and accumulation of them in oyster so that safe product distribution of oyster from the project site is assured.

Leyte Marine Biotoxins Testing Center started conducting monitoring of plankton from December 2014. BFAR Region-8 also started water quality analysis from the same time. These institutions will continue monitoring to the end of project period.

(2) Achievement of the Project

Achievement 1: Recovery of Main Livelihood Support Facility for Fisherfolk by Construction of Farming Facilities

Facility construction of 41 units of milkfish pens and 25 units of oyster racks was completed with the material supplied by the Project and labor by the beneficiary fisherfolk. Additional construction materials were also provided for strengthening the structure after some of them suffered partial damages by strong typhoons Ruby and Seniang.

The materials supplied for construction of fish pen materials and oyster racks were 12,000 bamboos poles, 84 bundles each of two type of polyethylene nets, 924 kg of nylon monofilament thread and 210 spools of nylon twine. The fish pen and oyster rack owners borne the cost for construction laborers, mostly employed within the barangay.

List of equipment supplied in QIP-15 is shown in Table 2.2-48.

Table 2.2-48 Materials for construction of Milkfish and oyster racks

Item	Specification	Quantity
Materials for construction of milkfish pen and oyster farming facilities	PE Net 400/9 17k, 200MD, 100m	84 bundles
	GG net, dark, 17k	84 bundles
	Nylon monofilament, #150	840 kg
	Nylon monofilament #100	84 kg
	PE twine 400/12, 200m	210 roll
	Fishing needle	84 pieces
	Bamboo poles	12000 pieces

Source: JICA Study Team

Achievement 2: Technology Acquirement and Improved Project Participation through Training Including Visit to Higashi Matsushima City in Japan

The president of milkfish and oyster farming association, Municipal Agriculturist of Tanauan, and two officers of Leyte Provincial Agricultural Office participated in the trip and learned through observation and discussion with people about oyster and fish farming industries at

Higashi Matsushima City of Tohoku region in Japan, post-harvesting technology and seafood marketing system. Some of the participants proposed technical improvements on the culture of milkfish and oyster, seeing from a new point of view based on the observations and discussions made during the trip to Japan, which in general increases the interest of stakeholders in participation of the project activities.

All trainings including this travel to Japan conducted in QIP-15 are shown in Table 2.2-49.

Table 2.2-49 List of training and seminar conducted in QIP-15

	Title	Date	Participants
1	Trail production of pressure cooking of milkfish at Office of Leyte Provincial Agriculture	July. 18, 2014	5
2	Trial production of pressure cooking of milkfish at Sta. Cruz, Tanauan	July. 30, 2014	20
3	Production of pressure cooked milkfish at Sta. Cruz, Tanauan with Basey fisherfolk women	August 13-14, 2014	40
4	QIP-15 Launching Ceremony (First stocking of milkfish and opening of processing hut)	Oct. 3, 2014	150
5	Improvement on Safety of soft bone bangus as food product (1)	Dec. 12, 2014	17
6	Improvement on Safety of soft bone bangus as food product (2)	Dec. 15, 2014	20
7	Aquaculture insurance meeting	Jan. 4, 2015	43
8	Simple accounting and book keeping (1)	Feb. 5, 2015	46
9	Food Safety and Good Manufacturing Practices	Feb. 11-12, 2015	25
10	Simple accounting and book keeping (2)	Feb. 13	45

Source: JICA Study Team

Achievement 3: Recovery of Main Livelihood Means by Harvesting Milkfish from Reconstructed Cages

All 41 owners licensed for milkfish pen operation and owners of 25 additional oyster racks under the Project completed the construction by December 2014. As of the end of February 2015, there were 17 units of milkfish farming pens stocked with fingerlings and feedings are on-going in these pens. Some of earliest pens stocked with fingerlings started harvesting fish from December 2014. Some are already in the second culture cycle, while others are yet to stock the first batch of fingerlings into their pens. The largest income source for most of these families has been or is going to be restored. Oyster farmers have stocked the seed oysters in their bamboo racks and are now taking care of them with the hope to harvest later this year.

Achievement 4: Strengthening Quick Recovery Capacity from Disasters by Development and Subscription of Aquaculture Insurance

An arrangement was made for a meeting with Philippines Crop Insurance Corporation (PCIC) for possible development of aquaculture insurance to cover the fish farming operation and facility. The fish farmers were provided with free insurance package (only for the year 2015) for the fish stock, applicable and renewable every culture period. PCIC also provided an

insurance package for the facility, tailored for the Sta. Cruz milkfish pen farming at 7 % premium charge of the covered value for the facility and 2% premium charge per crop cycle for the fish stock, which are under consideration for subscription by the association.

Achievement 5: Development of Pressure Cooked Milkfish Product as a New and Sustainable Livelihood Means for Fisherfolk Women

The members of SCWFA who learned the production of pressure cooked milkfish with the equipment supplied by the Project are now confident to make profit from sales of the product in and around the barangay. The association was able to distribute a divided of 900 pesos to each of the 14 active members from the accumulated profits before the Christmas holiday in 2014, in addition to the part-time payments for labor contribution for the production and the sales commission for each sale provided previously. The production of pressure cooked milkfish provided a new income source to the members of SCWFA. The pressure cooked milkfish by SCWFA is already an economically viable income generating activity.

Achievement 6: Establishment of Production Base of SCWFA for Pressure Cooked Milkfish through Equipment Supply and Training Implementation

The Project funded the construction of temporary processing hut in the barangay and provided necessary equipment for production of the processed product, including two units of peddling tricycles as listed in Table 2.2-50.

The Project arranged for the members of SCWFA, a series of training on production of pressure cooked milkfish, sanitary and hygiene of processing, and simple bookkeeping and accounting. The members of milkfish and pen farming association also participated in the training on simple bookkeeping and accounting. Resource persons for these training were called from various governmental and educational institutions in the region (Provincial and Municipal Agricultural offices, Department of Science and Technology (DOST), and Visayas State University (VSU)).

Table 2.2-50 Temporary hut for milkfish pressure cooking and cooking equipment

	Item	Specification	Quantity
1	Temporary hut for pressure cooking processing	4x4.5m concrete floor, bamboo mesh (amakan) and plywood wall, wooden poles, nipa thatched roof, tiled cooking table	1 building
2	Pressure cooker	All American® Pressure Cooker 941	2 units
3	Refrigerator	LG® GN-B201SLZ	1 units
4	Cooking utensils	Various small utensils	1 set
5	Peddling tricycle	Tricycle with steamer	2 units

Source: JICA Study Team

Achievement 7: Technical Improvement in Production of Pressure Cooked Milkfish

The Project submitted the pressure cooked milkfish product to DOST for microbial testing (Aerobic Total Counts) for determination of shelf life. The microbial counts for the sample

products produced after the series of training on sanitary and hygiene for pressure cooking for the SCWFA resulted far below the reference value set by the laboratory, showing the product safety objectively in the standard method. Through repeated examinations, the Project also found wrapping the product in banana leaves provided consistently lower bacterial counts. Leaning the similar natural antibacterial effects were observed and scientifically proven in international journals, banana leaf wrapping is now included in the standard processing flow for production of pressure cooked milkfish by SCWFA.

Achievement 8: Reduction of Mass Mortality Risk of Overcrowding by Laying out Fish Farming Facilities based on Licenses Issued

Milkfish farming pens and oyster racks were constructed according to the layout strictly monitored by the Project with limited area per pen (1000 m^2) and minimum space between the adjacent pens (15 m). Monitoring of their operation together with the water quality and plankton analysis will ensure environmental loading from the culture activity to be within allowable limit to reduce the risk of mass mortality although a clear guideline and operational warning system still needs to be developed in order to link systematically the scientific data collection and the production practices.

Achievement 9: Collection of Oyster Seeds and Transplantation for Expansion of Livelihood Potential by Oyster Farming

The fisherfolk in eight barangays who constructed bamboo racks for oyster seed collection in Leyte Bay in Leyte sold more than 3.5 million oyster spats at 0.05 peso to the Project. The oyster seeds were transported to Sta. Cruz in Tanauan to be hung on the bamboo racks of the oyster growers who expect its harvest in 8 months. The Project activity of collecting seed oysters in Leyte Bay to transplant them to Tanauan provided possibilities of new income generation for the fisherfolk at both ends of oyster seed transportation.

Achievement 10: Improvement in Monitoring Function with Commencements of Plankgon Analysis by Leyte Marine Biotoxins Testing Center with Supply of Laboratory Equipment and Water Quality Analysis by BFAR Region-VIII

The Project provided laboratory equipment to Leyte Marine Biotoxins Testing Center (Red Tide Center) for re-activation of the Center which had stopped the operation since the laboratory hit by Typhoon Yolanda as shown in Table 2.2-51. The activity will benefit this QIP project in detecting presence of toxic plankton and accumulation of them in oyster so that safe product distribution of oyster from the project site is assured. BFAR Region-8 also started monitoring of water quality in the tidal flat water body where oyster and milkfish oyster farming are conducted.

Table 2.2-51 List of equipment supplied to Leyte Biotoxins Testing Center

No	Name of Equipment	Quantity
1	Microscope	1
2	pH meter	1
3	Distilling apparatus	1
4	Blender Machine	2
5	Refrigerator	1
6	Upright freezer	1
7	Digital Balance	1
8	Hot plate/stirrer	1
9	Centrifuge	1
10	Gas Stove	1
11	Biological Safety Cabinet	1
12	Plankton net	16
13	Alcohol thermometer	16

No	Name of Equipment	Quantity
14	Sedgwick Rafter Count. Cells	10
15	Counter	2
16	Rubber aspirator	3
17	Glass stirring rod	12
18	Graduated cylinder, 1L	3
19	Mouse laboratory cage	35
20	Plastic reagent bottle, 50 ml	500
21	Desktop computer	1
22	Printer/scanner/copier	1
23	Auto voltage regulator	4
24	Portable diesel generator	1
25	Ventilator/Exhaust fan	2
26	Air conditioner	2

Source: JICA Study Team

(3) Objectively Verifiable Indicators for Project Evaluation

For monitoring and evaluation of the Project, objectively verifiable indicators will be adopted as follows.

Table 2.2-52 Objectively Verifiable Indicators

Objectively Verifiable Indicator	Goal	Before Yolanda	Before the Project	Interim	Upon Completion
1) Oyster and milkfish farmed by environmentally-friendly and sustainable integrated aquaculture system is harvested (Oyster: ton/rack, Milkfish: kg/m^2)	Oys: 2.4 Mlk: 3.2	Oys: 0.9 Mlk: 2.9	Oys: 0 Mlk: 0	Oys: 0 Mlk:1.9	Oys: Mlk:
2) Farming families gain stable income by integrated aquaculture system (Thousand PHP/farmer/year)	Oys: 36 Mlk: 114	Oys: 9 Mlk: 130	Oys: 0 Mlk: 0	Oys: 0 Mlk:164	Oys: Mlk:
3) Farmers gain the capacity for management and farming technology for oyster and milkfish (number of farmers)	Oys: 25 Mlk: 42	Oys: 10 Mlk: 50	Oys: 0 Mlk: 0	Oys: 0 Mlk: 2	Oys: Mlk:
4) Processing members start the processing fish from submersible fish cage (number of members)	20 members	0	0	14	20
5) BFAR and Municipal officers master the technology for procurement, management and operation of integrated aquaculture system. (number of Municipal officers)	2 persons	0	0	0	2

Source: JICA Study Team

Table 2.1-1 Activities and Task Allocation of QIP-1

Activity	Study team	BFAR / Basey Local Government Unit
1) Review of the damages caused by typhoon	• To conduct literature review and interviews	• To provide necessary information to study team
2) Bathymetrical survey	• To study environment such as water depth, bottom characteristics, current speed, etc. to examine the suitability of the sites for typhoon resistant Japanese mariculture technology	• To assist bathymetrical survey conducted by study team
3) Designing typhoon resistant fish cages	• To design typhoon resistant fish cages based on the results of bathymetrical survey and the availability of equipment • To finance for transfer of technology from Japan on submersible cage designing and construction	
4) Procurement of equipment, feeds and fingerlings	• To purchase equipment needed for the project • To supervise procurement activities of BFAR / Basey Local Government Unit	• To purchase feeds and fingerlings
5) Establishment of the fish cages	• To install the fish cages in the selected sites • To transfer technologies on construction and installation of fish cages from Japan to the Philippine side	• To participate in the establishment of the fish cages
6) Training for fishing families on the new technology	• To demonstrate new technology, in particular submersible cages by using compressor	• To coordinate training • To prepare manual for future extensions
7) Stocking / culture / management of the fish stocks	• To supervise cage culture operation managed by BFAR / Municipal Government of Basey	• To do day-to-day management of cage culture
8) Harvesting of fish	• To supervise harvesting of fish	• To provide necessary support to fisherfolk
9) Marketing, processing and value-adding of fish	• To provide necessary equipment for small scale processing for the harvested fish from fish cages • To conduct a training on fish processing • To support fisherfolk on marketing the produced fish	• To provide every possible cooperation for value-adding of milkfish
10) Evaluation	• To collect necessary information through interviews and surveys • To complete a joint evaluation report	• To arrange for the evaluation • To complete a joint evaluation report

Source: JICA Study Team

Table 2.1-3 Activities and Task Allocation of QIP-2

Activity	JICA Study Team	PHO
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare School Drawings and BOQ
2) Selection of Contractor	• Conduct Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Infrastructure
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist Supervision
8) Supply of Equipment	• Checking and Monitoring of installation	• Monitoring
9) Operation of PHO	• Coordination of activities	• Operation of PHO
10) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-5 Activities and Task Allocation of QIP-3

Activity	JICA Study Team	Tolosa Municipality
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare School Drawings and BOQ
2) Selection of Contractor	• Conducting Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Utilities
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist Supervision
8) Supply of Equipment	• Checking and Monitoring of installation	• Monitoring
9) Temporary Start of Food Production	• Coordination of activities	• Prepare temporary space for installation of equipment • Support food processing activities
10) Start of Food Production at new Building	• Coordination of activities	• Support food processing activities
11) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-7 Activities and Task Allocation of QIP-4

Activity	JICA Study Tam	TESDA
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare School Drawings and BOQ
2) Selection of Contractor	• Conduct Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Utilities
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist Supervision
8) Provide List of TESDA Trainees	• Monitoring	• Provide the List of Trainees
9) Dispatch of Skilled Workers from Japan as Trainers	• Dispatch Skilled Workers from Japan as Trainers	• Monitoring
10) Technical Training	• Conduct Technical Training	• Assist Technical Training
11) Preparation of training video and text	• Preparation of training video and text	• Provide existing curriculum
12) Implementation of new and/or revised curriculum using prepared video and text in TESDA	• Monitoring	• Implementation of new and/or revised curriculum using prepared video and text
13) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-9 Activities and Task Allocation of QIP-5

Activity	JICA Study Tam	DepED	TESDA
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare School Drawings and BOQ	• Assist design and BOQ
2) Selection of Contractor	• Conduct Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Utilities	• Monitoring
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others	• Monitoring
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist Supervision	• Assist Supervision
8) Provide List of TESDA Trainees	• Monitoring	• Monitoring	• Provide the List of Trainees
9) Dispatch of Skilled Workers from Japan as Trainers	• Dispatch of Skilled Workers from Japan as Trainers	• Monitoring	• Monitoring
10) Technical Training	• Conduct technical training	• Assist Technical Training	• Assist Technical Training
11) Preparation of training video and text	• Preparation of training video and text	• Monitoring	• Provide existing curriculum
12) Implementation of new and/or revised curriculum using prepared video and text in TESDA	• Monitoring	• Monitoring	• Implementation of new and/or revised curriculum using prepared video and text
13) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-11 Activities and Task Allocation of QIP-6

Activity	JICA Study Tam	Salcedo Municipality
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare Drawings and BOQ
2) Selection of Contractor	• Conduct Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Utilities
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist Supervision
8) Site Visits to observe construction of Prefab-system	• Conduct site visits	• Participate in site visits
9) Activity of Day Care Center	• Monitoring	• Activity of Day Care Center
10) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-13 Activities and Task Allocation of QIP-7

Activity	JICA Study Tam	Guiuan Municipality
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare Drawings and BOQ
2) Selection of Contractor	• Conduct Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Utilities
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist of Supervision
8) Site visits to observe construction of Prefab-system	• Conduct site visits	• Participate in site visits
9) Activity of Day Care Center	• Monitoring	• Activity of Day Care Center
10) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-15 Activities and Task Allocation of QIP-8

Activity	Study Team	BFAR / Guiuan LGU	Fishermen
1) Designing typhoon resistant cage and environmentally friendly operation	• Survey of project sites and marine environment • Designing submersed cage • Testing the prototype cage at the sites in Guiuan	• Survey of project sites and marine environment • Testing the prototype cage at the sites in Guiuan	• Providing assistance for survey of project sites and marine environment • Testing the prototype cage at the sites in Guiuan
2) Construction and installation of submersed cages	• Construction of new submersed cage for lapu-lapu farming for live fish market • Delivery of cage to the sites • Installation of new submersible cages	• Installation of new submersible cages	• Installation of new submersible cages
3) Training and monitoring on environmentally sustainable cage fish culture	• Preparation of training materials • Training on environmentally friendly cage fish culture • Baseline survey • End line survey and evaluation of the Project	• Preparation of training materials • Training on environmentally friendly cage fish culture • Baseline survey • Monthly monitoring and OJT for the farmers by BFAR Guiuan • Monthly monitoring for the live fish buying stations by LGU • End line survey and evaluation of the Project	• Participation to the training • Cooperating for the monitoring and evaluation
4) Supply of supplemental pelleted feeds	• Procurement supplemental pelleted feeds • Supply of supplemental pelleted feed	• Storage of supplemental pelleted feeds • Supply of supplemental pelleted feeds	
5) Cage culture operation		• Monitoring and recording for the fishermen's operation	• Collection/procurement of fingerlings • Stocking of fingerlings • Feeding and management of fish cage operation
6) Harvesting		• Monitoring and recording for the harvesting	• Partial harvesting • Final harvesting
7) Evaluation	• Evaluation of the QIP implementation	• Evaluation of the QIP implementation	• Cooperating for the evaluation

Source: JICA Study Team

Table 2.1-17 Activities and Task Allocation of QIP-9

Activity	JICA Study Tam	Guiuan Municipality
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare Drawings and BOQ
2) Selection of Contractor	• Conducting Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Utilities
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist Supervision
8) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-19 Activities and Task Allocation of QIP-10

Activity	JICA Study Tam	Dulag Municipality
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare Drawings and BOQ
2) Selection of Contractor	• Conducting Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Utilities
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist Supervision
8) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-21 Activities and Task Allocation of QIP-11

Activity	JICA Study Team	Mercedes Municipality
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare Drawings and BOQ
2) Selection of Contractor	• Conduct Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Utilities
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist Supervision
8) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-23 Activities and Task Allocation of QIP-12

Activity	JICA Study Tam	Mayorga Municipality
1) Prepare Tender Documents	• Prepare Tender Documents • Check BOQ and Drawings	• Prepare Drawings and BOQ
2) Selection of Contractor	• Conducting Tender • Prepare Evaluation Criteria • Negotiation with Contractor	• Assist Tender
3) Provide Public Utilities (Water Supply, Electric Supply, Drainage etc.)	• Monitoring	• Provide Public Utilities
4) Coordination with related agencies for Building permission and/or others	• Monitoring	• Coordination with related agencies for Building permission and/or others
5) Technical Seminar	• Conduct Seminar	• Coordination for Seminar
6) Construction work by the Contractor	• Monitoring	• Monitoring
7) Construction Supervision	• Construction Supervision	• Assist Supervision
8) Final Inspection (at the end of defect liability period)	• Conduct final inspection at the end of defect liability period	• Assist final inspection at the end of defect liability period

Source: JICA Study Team

Table 2.1-25 Activities and Task Allocation of QIP-14

Activity	JICA Study Team	Mercedes Municipality	QIP Participants
1) Invitation of Participant Famers and Group Formulation	• Confirm barangays where QIP will be implemented • Explain QIP contents to potential participants • Facilitate participants in formulating their statutes	• Appoint barangays for QIP implementation • Provide necessary information on barangays • Facilitate barangays for participation in QIP activities • Support the barangays in mediation	• Apply for participation in QIP activities • Prepare statutes
2) Provision of Necessary Tools	• Provide necessary tools and material for charcoal production from fallen coconut trees • Provide necessary equipment for charcoal briquette production if production is deemed feasible		• Ensure appropriate storage and use of provided equipment
3) Examine Possibilities for Charcoal Briquetting	• Conduct market survey on charcoal briquettes produced from fallen coconut trees • Examine possibilities of charcoal briquette production	• Facilitate possible sales of charcoal briquettes	• Participate in activities carried out by JICA Study Team
4) Provision of Training	• Conduct trial production • Provide necessary training and guidance for charcoal production from fallen coconut trees • Provide necessary training for charcoal briquette production if production is deemed feasible		• Participate in training activities
5) Production and Sales of Charcoal	• Conduct joint monitoring on production activities • Facilitate promotion of sales	• Appoint LGU staff for joint monitoring • Conduct joint monitoring of production activities • Secure access of barangays to chainsaws • Secure access of barangays for the use of fallen coconut trees • Facilitate sales of charcoal	• Produce charcoal from fallen coconut trees • Conduct sales of produced charcoal

Source: JICA Study Team

Table 2.1-26 Activities and Task Allocation of QIP-15

Activity	Study Team	BFAR/Leyte LGU (PLGU)/Tanauan LGU (MLGU)	Fishermen
1) Delineation of area for talabangusan	• Survey of project site • Clearing of project site from debris and other obstruction through "cash for work"	• MLGU through the Brgy. Council will implement the clearing of the project site through "cash for work" • MLGU accept fishermen's application for talabangusan and schedule survey of fisherman's preferred site for his talabangusan after coordinating with BFAR/PLGU • BFAR/PLGU survey site & delineates area if found feasible • MLGU approves application of fisherman based on favorable results from site survey & delineated area • MLGU limits the granting of one talabangusan of 1,000 sq.m. per fisherman, preferably those whose fish pens/talabahan were damaged during typhoon Yolanda and who are members of the association	• Participate in the clearing of the project site • Apply to MLGU for the preferred site of his talabangusan • Assist in the site survey • Accomplish requirements set by the MLGU for the legal operation of the talabangusan
2) Designing of talabangusan	• Collaboration with National Integrated Fisheries Technology Development Center (NIFTDC) on technology transfer of Tala-Isdaan • Approval of design of talabangusan	• PLGU designs talabangusan for review of the Study team • MLGU conforms to the design	• Conform to the design
3) Construction of talabangusan	• Procurement of materials for the construction of talabangusan	• PLGU/MLGU supervise the construction of talabangusan	• Construction of talabangusan
4) Rehabilitation of Leyte Marine Biotoxins Testing Center (Red Tide Laboratory)	• Replacement/procurement of equipment and tools	• PLGU re-assigns personnel to work in the laboratory and HAB monitoring and management	• Give oyster shellfish samples for monitoring and analysis

5) Training and Technology Transfer			
a. Training of talabangusan operators on integrated culture of talaba and milkfish	• Collaboration with NIFTDC on technology transfer of Tala-Isdaan • Preparation of training materials • Conduct of the training	• Collaboration with NIFTDC on technology transfer of Tala-Isdaan • Preparation of training materials • Conduct of the training	• Participation in the training
b. Training on fish processing (including deboned and smoked bangus, smoked oyster)	• Collaboration with NIFTDC on technology transfer of fish processing • Preparation of training materials • Conduct of the training	• Collaboration with NIFTDC on technology transfer of fish processing • Preparation of training materials • Conduct of the training	• Participation in the training
c. Training on mollusk disease diagnosis and health management	• Conduct of the training	• Participation of LMBTC staff	• Participation in the training on mollusk disease diagnosis and health management
d. Transfer of Japanese technology on oyster spat collection	• Collaboration between fishing communities in Leyte Province and oyster farmers of Higashi-Matsushima City, Miyagi Prefecture • Conduct of technology transfer	• Facilitation of the technology transfer • Participation in the technology transfer	• Participation in the technology transfer
6) Talabangusan operation & Monitoring	• Procurement of talaba breeders/spats from Leyte-Leyte	• BFAR gets and analyze sediment sample before operation of the talabangusan • BFAR monitors water quality twice a month and *E. coli* count once a month • PLGU performs plankton analysis (for Harmful Algal Bloom) and talaba shellfish analysis (for Paralytic Shellfish Poisoning toxin) twice a month or according to the protocol for HAB monitoring & management • BFAR gets and analyze sediment sample after harvest	• Installation of talaba breeders and cultch in talabangusan • Procurement of bangus fingerlings and feeds • Stocking of fingerlings • Feeding and management of bangus stock • Assist in the monitoring (e.g., provide boat) of BFAR/PLGU • Sampling of stock prior to harvesting

Source: JICA Study Team

Table 2.2-1 List of Beneficiary Fish Farming Association

Tinaogan Mariculture Operators Association

Date organized: July 26th 2014
President: Mariano A. Lar
Vice President: Edison M. Calirao
Secretary: Fabian A. Vale
Treasurer: Ariel P. Royo
Auditor: Jaime J. Calinao
Peace Officer: Generoso B. Padoc
P.I.O: Cerelo Alcaras Jr.

Board members:
Mariano A. Lar
Edison M. Calinao
Febian A. Vale
Ariel Pl Royo
Jaime J. Calinao

Members: 30 members

Tinaogan Mariculture Fisherfolk Association

Date organized: July 28th 2014
President: John Jay S. Egonio
Vice President: Leonardo A. Llemos
Secretary: Mario C. Caillo
Treasurer: Randy A. Macalalad
Auditor: Nelson D. Gerallana
Board members:
John Jay S. Egonio
Leonardo A. Llemos
Leonardo A. Llemos
Randy A. Macalalad
Nelson D. Gerallana

Members: 30 members

Amandayehan Fisherfolk Cagers Association (AFCA)

Date organized: July 26th 2014
President: Monchito A. Lacaba
Vice President: Fidel R. Gillo
Secretary: Eugene A. Evardone
Treasurer: Nestor E. Deloverjes
Auditor: Kristan T. Cabigon

Board members:
Monchito A. Lacaba
Fidel R. Gillo
Eugene A. Evardone
Eugene A. Evardone
Kristan T. Cabigon

Members30 members

Cambayan Fisherfolk Association

Date organized: July 28th 2014
President: Andres O. Dagotdot, Jr
Vice President: Erwin A. Royo
Secretary: Marlou R. Deloverjes
Treasurer: Elorde O. Borja
Auditor: Benedicto M. Macalalad

Board members:
Andres O. Dagotdot, Jr
Erwin A. Royo
Marlou R. Deloverjes
Elorde O. Borja
Benedicto M. Macalalad

Member 20 members

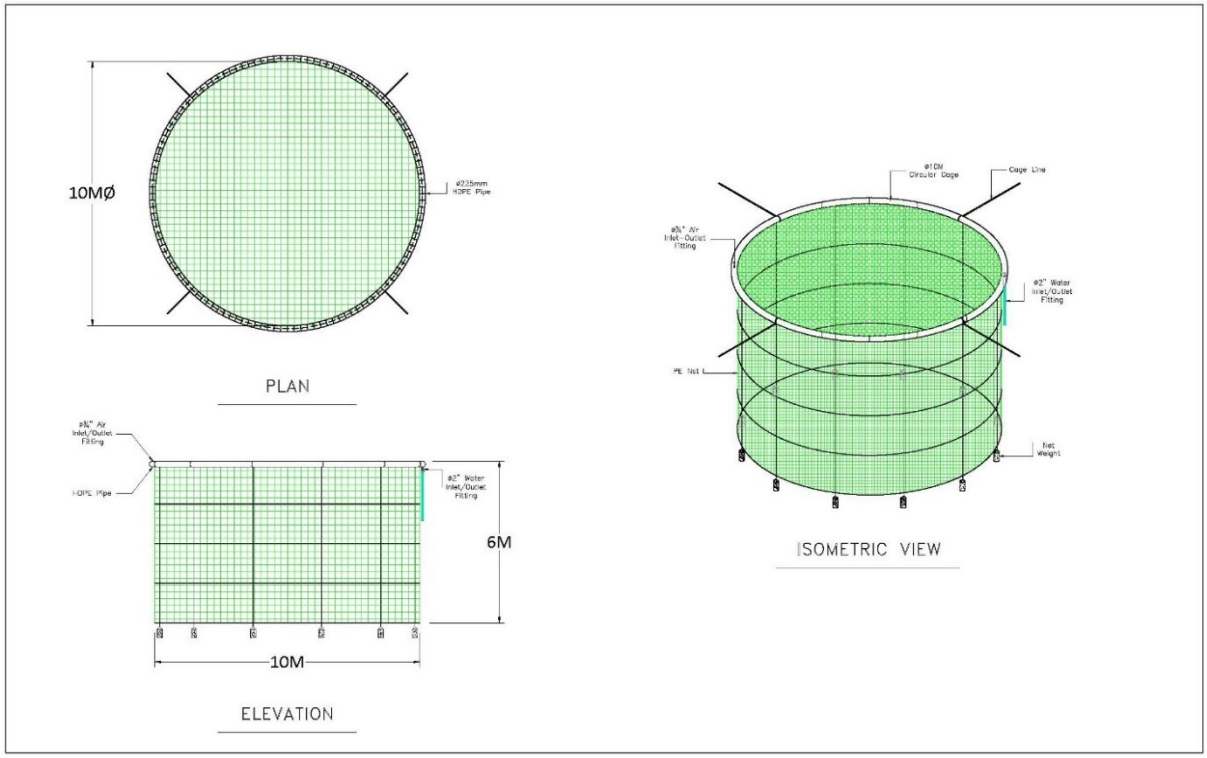
San Antonio Paragbangus Association (SAPBA)

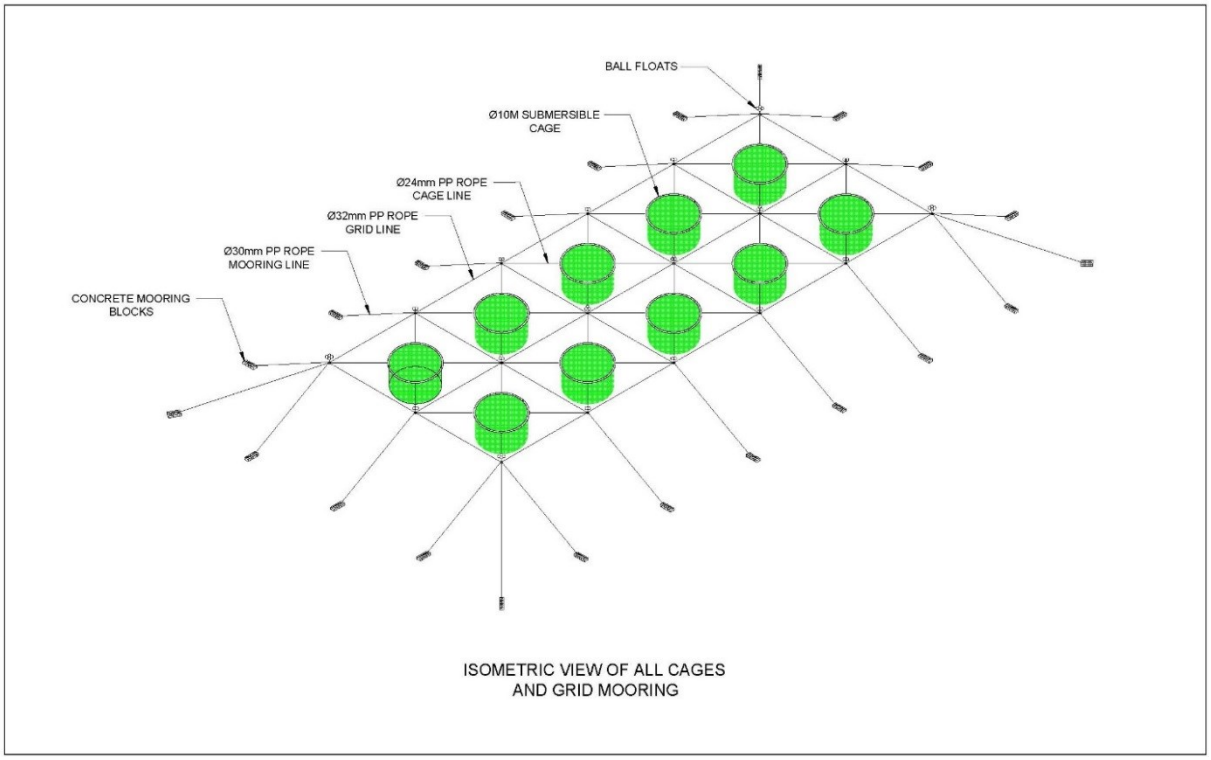
Date organized: July 28th 2014
President: Eugenio D. Jaway, Jr
Vice President: Rolando P. Robin
Secretary: John D. Andrade
Treasurer: Segundino A. Rias
Auditor: Victoriano A. Espina

Board members:
Eugenio D. Jaway, Jr
Rolando P. Robin
John D. Andrade
Segundino A. Rias
Victoriano A. Espina

Members: 20 members

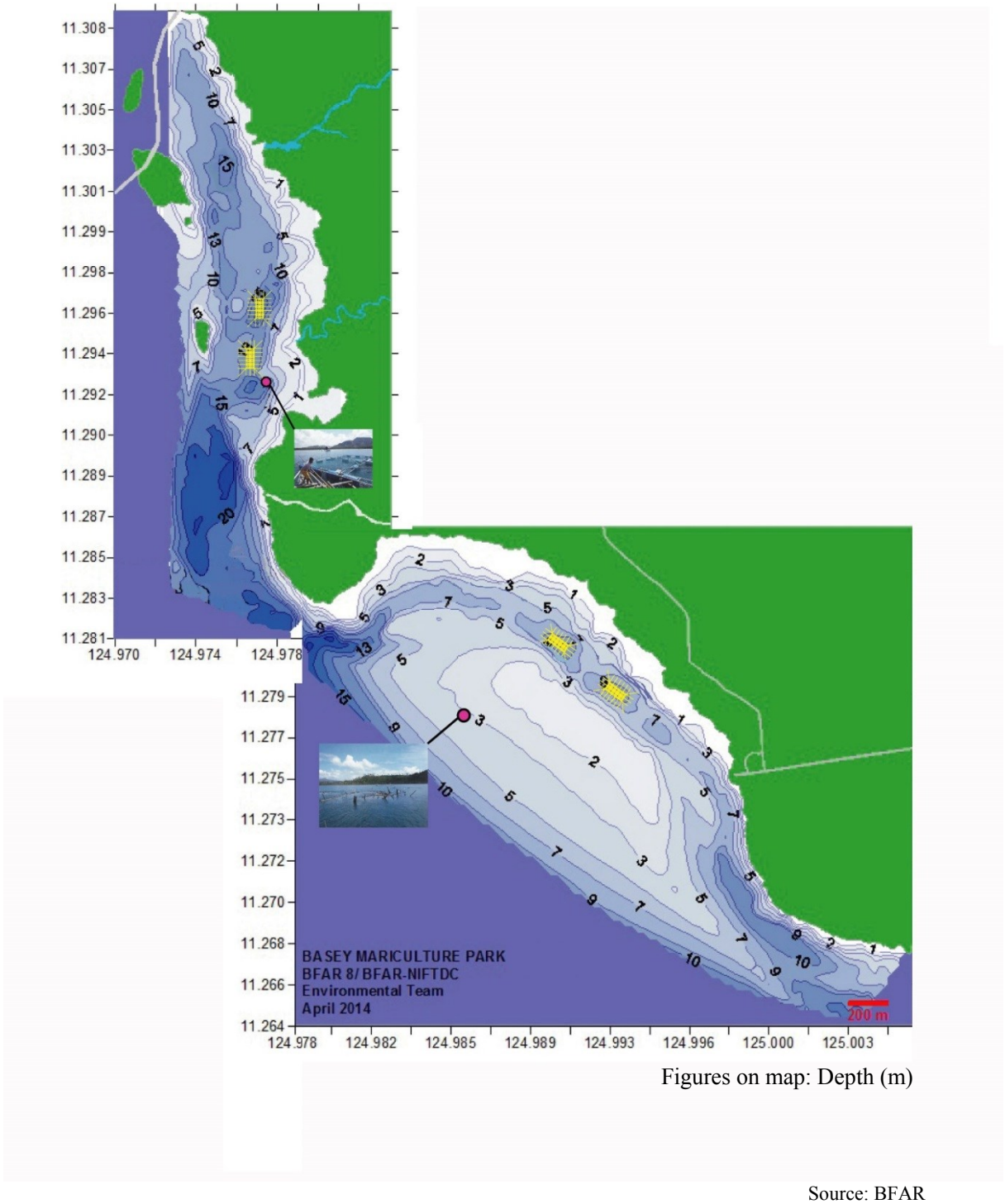
Source: JICA Study Team





Source: JICA Study Team

Figure 2.2-1 Design of Submersible Cage



Source: BFAR

Figure 2.2-2 Bathymetrical Survey

Source: JICA Study Team

Figure 2.2-3 Reconstruction of Provincial Health Office

Source: JICA Study Team

Figure 2.2-4 Reconstruction of Tolosa Multi-purpose Livelihood Building

Source: JICA Study Team

Figure 2.2-5 Reconstruction of Balangiga National Agriculture School
(Above: Food Technology Building, Below: Classroom Building)

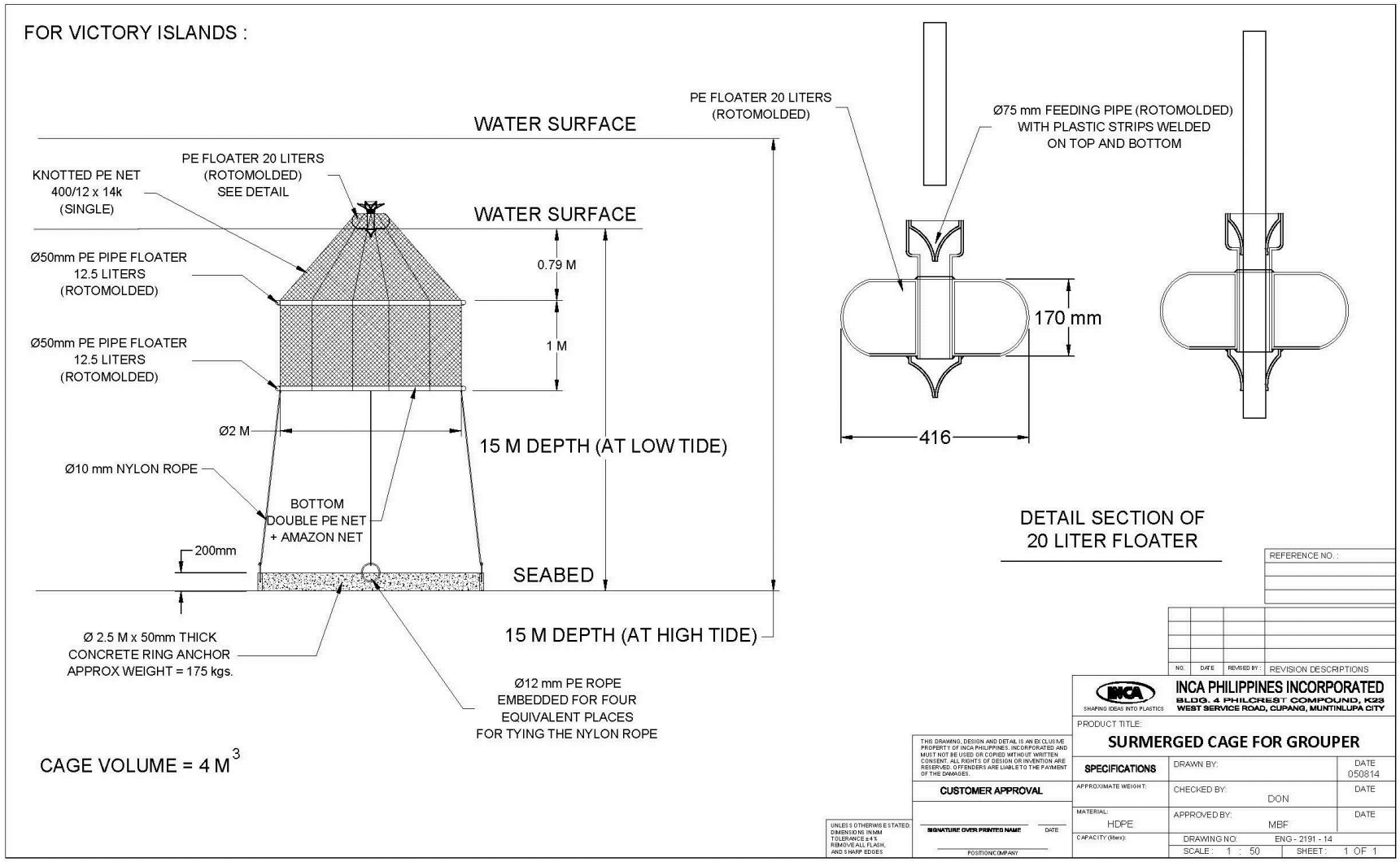
Source: JICA Study Team

Figure 2.2-6 Reconstruction of Cabacungan National High School

(Above: Two-story Classroom, Below: JICA Building)

Source: JICA Study Team

Figure 2.2-7 Reconstruction of Daycare Center (Salcedo: 5 Units, Guiuan: 2 Units)



Source: JICA Study Team

Figure 2.2-8 Design of Grouper Cage

Source: JICA Study Team

Figure 2.2-9 Reconstruction of Guiuan Public Market

Source: JICA Study Team

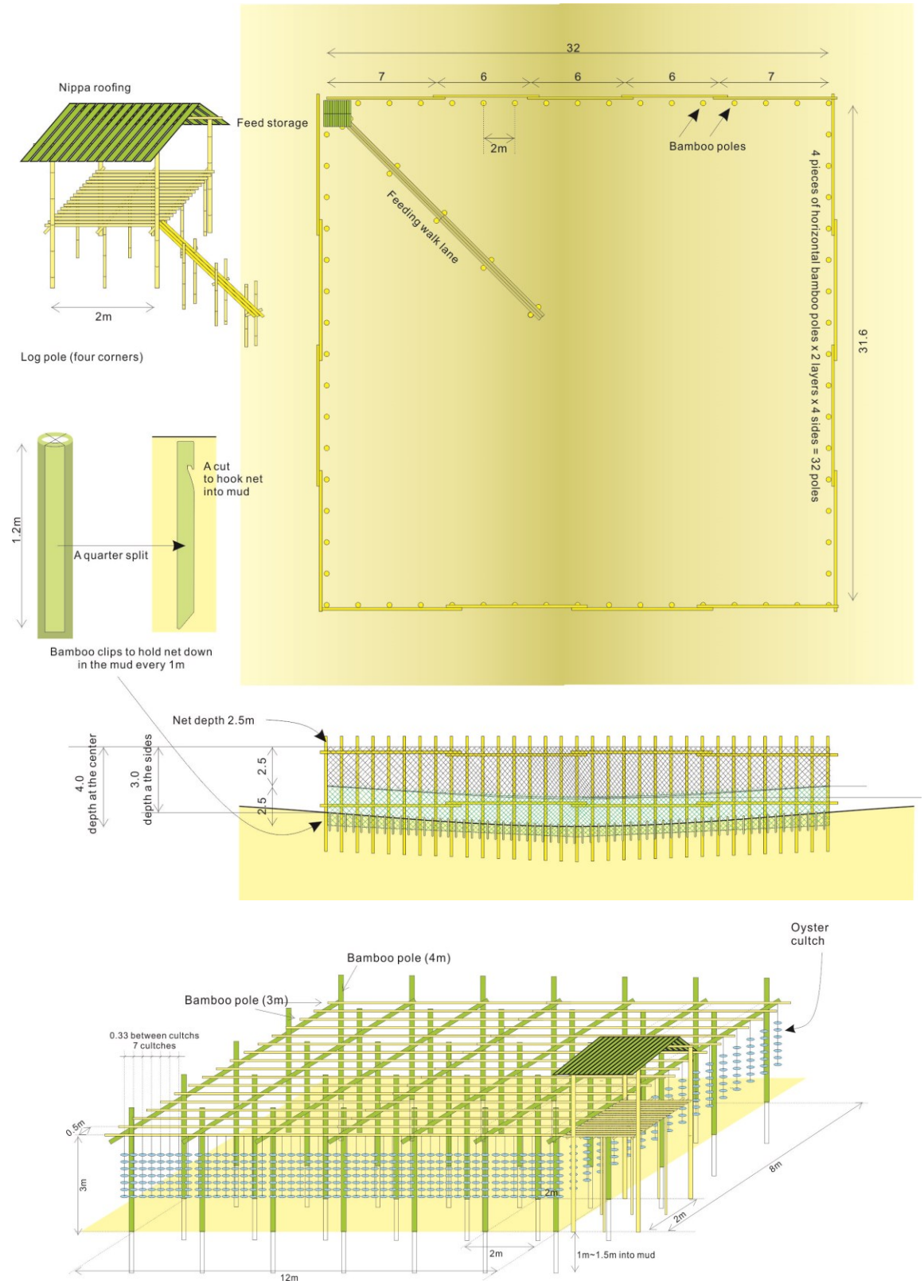
Figure 2.2-10 Reconstruction of Dulag Slaughter House

Source: JICA Study Team

Figure 2.2-11 Reconstruction of Mercedes Public Market

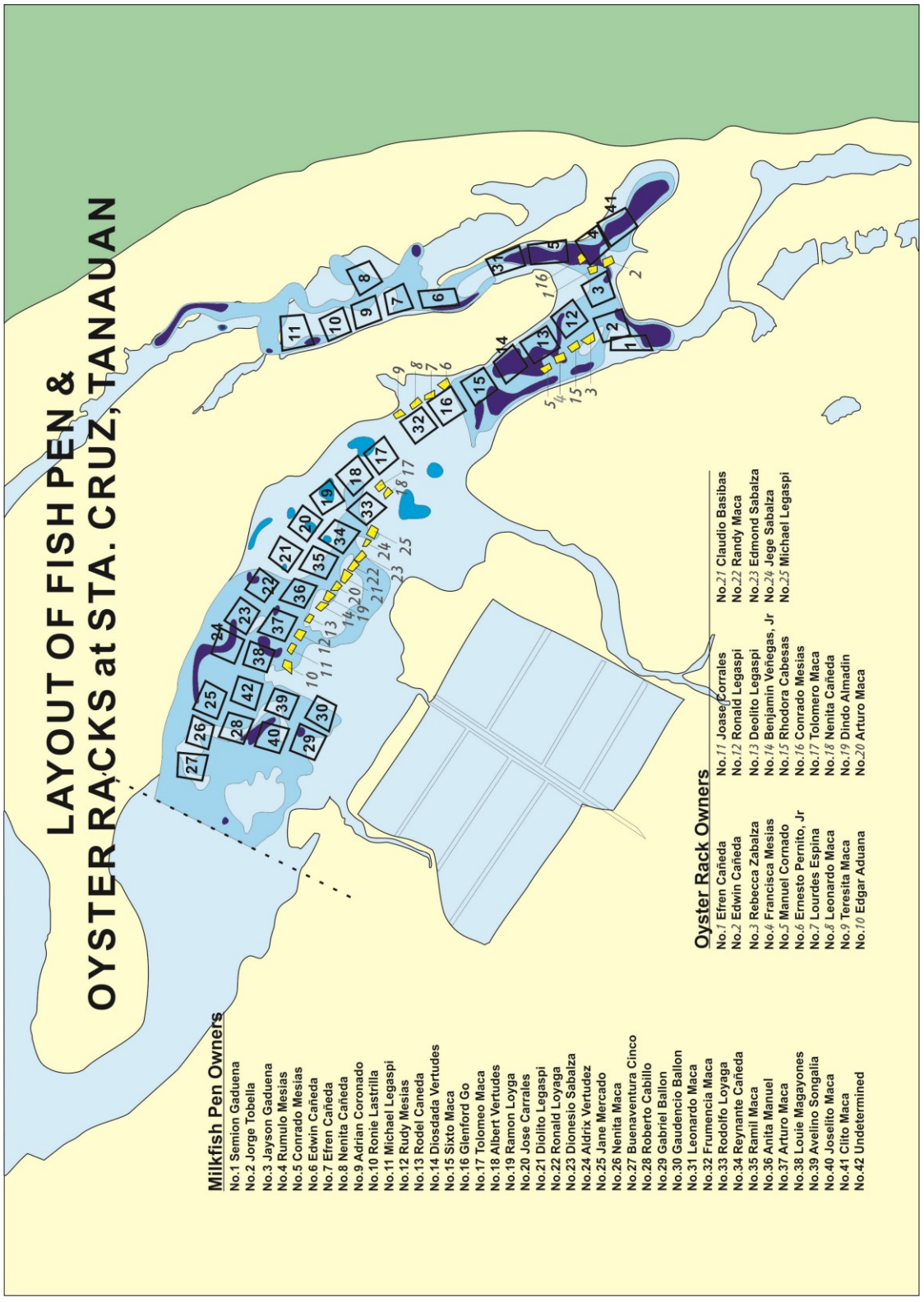
Source: JICA Study Team

Figure 2.2-12 Reconstruction of Mayorga Public Market



Source: JICA Study Team

Figure 2.2-13 Design of Milk Fish Pens and Oyster Racks



Source: JICA Study Team

Figure 2.2-14 Layout of Milk Fish Pens and Oyster Racks

Source: JICA Study Team

Figure 2.2-15 Locations of Barangays where Oyster Seeds Collection Racks are Installed

Chapter 3 Evaluation of Quick Impact Projects

3.1 Results of Evaluation (Overall Rating: B[2])

(1) Relevance (Rating: ③[3])

The implementation of the fifteen (15) Quick Impact Projects is consistent with the development policy and needs for QIPs both during the planning stage and ex-post evaluation. The three (3) principles of development policy for recovery and reconstruction from Typhoon Yolanda are derived by JICA study as:

i) Building Safer Cities,
ii) Recovering People's Daily Life, and
iii) Restoring Regional Economy and Promoting Local Industries.

Therefore, the relevance of Quick Impact Projects was high. (Rating: ③)

(2) Effectiveness and Impact (Rating: ③)

1) Effectiveness

The project purposes of the fifteen (15) Quick Impact Projects were as follows:

QIP-01: to restore and to improve the livelihood of fishing families in Basey by introducing disaster resilient submersible fish cage for milkfish farming

QIP-02: to restore the health administrative service of Leyte with the functional recovery of Leyte PHO by the disaster resilient system

QIP-03: to contribute to sustainable livelihood activities for food processing of agriculture and fishery products by women's group in Tolosa through reconstruction of multi-purpose livelihood center for livelihood activities

QIP-04: to disseminate knowledge and skills on disaster resilient construction technologies through reconstruction of National Agriculture School in Balangiga

QIP-05: to disseminate knowledge and skills one disaster resilient construction technologies through reconstruction of Cabacungan National High School in Dulag

QIP-06: to recover the function of the daycare center in Salcedo and promote the vitalization of community dialogues including disaster enlightenment through reconstruction of the daycare center by Japanese style of prefabricated building

QIP-07: to recover the function of the daycare center in Guiuan and promote the

[2] Overall Ratings are A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, and D: Unsatisfactory.
[3] Ratings by DAC evaluation criteria are ③: High, ②: Fair, and ①: Low.

vitalization of community dialogues including disaster enlightenment through reconstruction of the daycare center by Japanese style of prefabricated building

QIP-08: to improve livelihoods of typhoon affected fisherfolk families in Guiuan though restoration of lapu-lapu fish farming with environmentally-friendly and disaster resilient fish cage culture system

QIP-09: to improve the capacity of disaster resilient project management of the Municipality and its engineers through reconstruction of Public Market in Guiuan

QIP-10: to improve the capacity of disaster resilient project management of the Municipality and its engineers through reconstruction of Slaughter House in Dulag

QIP-11: to improve the capacity of disaster resilient project management of the Municipality and its engineers through reconstruction of Public Market in Mercedes

QIP-12: to improve the capacity of disaster resilient project management of the Municipality and its engineers through reconstruction of Public Market in Mayorga

QIP-13: to establish a framework of promotion activities for local processed products by the disaster victims and to promote the sales of the local processed products in QIPs -03, -01, -15, and -14.

QIP-14: to contribute to livelihood of the coconut farmers in Mercedes through introducing charcoal production technique

QIP-15: to manage community aquaculture resources and to secure the livelihood of typhoon affected fisherfolk families in Tanauan by establishment of integrated culture of oyster and milkfish as a strategy for sustainable aquaculture

The QIPs mostly achieved the planned project purposes, judging from the results of objectively verifiable indicators set in each QIP. Although expression of some of objectively verifiable indicators in QIPs is delayed, which is due to the delay of completion of the building construction, it is expected to express in the future immediately.

2) Impact

Positive impacts can be seen in some of the QIPs as follows:

In QIPs -04 and -05, TESDA has been much interested in introducing the training materials and video on disaster resilient construction technologies by Japanese skilled workers, which were prepared through the QIPs, into TESDA construction training program and requested JICA for cooperation through QIPs.

In QIPs -06 and -07, LGU in charge of daycare centers has understood the idea of

multi-purpose use of daycare centers by the community people for community's vitalization during vacant times and will start the facilitation to the community after hand-over of daycare centers.

In QIP -15, the industrial processing of milkfish that have been started by women of fisherfolk families will be cooperated in future activities of QIP-13.

Therefore, the effectiveness and impact of Quick Impact Projects was high. (Rating: ③)

(3) Efficiency (Rating: ②)

The actual total QIPs costs were lower than the planned costs.

All of QIPs have been completed within the planned period. However, in some of QIPs, such as QIPs -02, -04, -05, -10, -09, -11, -12, and -06, building construction period have been extended for 45 to 60 days due to i) shortage of materials and manpower supply, ii) occurrence of typhoon "Ruby", and iii) unfavorable weather condition. Due to these reasons, some activities for the QIPs were delayed and the appearance of effects of the QIPs were also delayed.

The project cost was kept within the plan, but the project construction period was longer than the plan. Therefore, the efficiency of the QIPs was judged as fair. (Rating: ②)

(4) Sustainability (Rating: ②)

Through QIPs -04, and -05, disaster resilient construction technologies for truss fabrication and roof installation have been transferred to TESDA graduates, trainers, LGU engineers and contractors' technicians by Japanese skilled workers. Moreover, skill training program for building and construction are required to be reviewed and established comprehensively.

Municipal engineers have understood and mastered construction management for disaster resilient structures through QIPs -10, -09, -11, and -12. Capacity of tender process management to employ the contractor and construction management is required to be continuously developed.

In QIP-03, food processing activities of agriculture and fishery are resumed successfully. However, operational management system on production and sales of processed agriculture and fishery products by women's groups are required to be established.

In QIPs -01, -08, -15, and -14, outcome of the projects have been mostly obtained. However, operational management system on farming of lapu-lapu, milkfish, and oyster needs to be maintained. It is necessary to continuously support the stabilization of seedling production technology. Moreover, it is necessary to strengthen sales and the marketing of processed fishery products.

As seen above, it is necessary to support and to strengthen the activities continuously for sustainability of QIPs. Therefore, the sustainability of the QIPs was judged as fair. (Rating: ②)

3.2 Conclusion of Evaluation

In the fifteen (15) Quick Impact Projects, public facilities have been restored and local livelihood of disaster victims have been regenerated introducing disaster resilient technologies and management. The implementation of the QIPs is consistent with the three (3) principles of development policy and needs for Recovery and Reconstruction from Typhoon Yolanda both during the planning stage and ex-post evaluation. The relevance of QIPs was "high". (Rating: ③) The QIPs mostly achieved the planned project purposes, judging from the results of objectively verifiable indicators set in each QIP. Although expression of some of objectively verifiable indicators in QIPs is delayed, which is due to the delay of completion of the building construction, it is expected to express in the future immediately. Positive impacts can be seen in some of the QIPs. The effectiveness and impact of QIPs was "high". (Rating: ③) The project cost was kept within the plan, but the project construction period was longer than the plan. The efficiency of the QIPs was "fair". (Rating: ②) It is necessary to support and to strengthen the activities continuously for sustainability of QIPs. The sustainability of the QIPs was also "fair". (Rating: ②)

In light of the above, these QIPs are evaluated to be "satisfactory". (Overall Rating: B)

Chapter 4 Lessons Learned from Quick Impact Projects

4.1 Lessons Learned from Quick Impact Projects

4.1.1 Regenerating Livelihood

Lessons Learned 1: Cooperation with Local Institutions and People in Solving a Conflict in Installation of Cages with Local Fish Owners

One of the private cage owners in the project area of QIP-1, who restored cages and started the operation, claimed that the site intended to be used for the Cambayan cages of the Project belongs to him as it was occupied by his cages before the Typhoon Yolanda although he did not have cages at the same place yet. He was carrying out milkfish operation before Typhoon Yolanda. His claim was based on government rehabilitation policy that restoration of lost cages be given a priority. He did not obtain permission for the site from the Basey LGU.

This problem was solved amicably at a monthly meeting of Basey Mariculture Executive Management Council chaired by the Basey Mayor. The Project in cooperation with INCA Inc. carried out site survey again of the actual area that JICA cages were to occupy and the relative location to the current restored cages of the owner. It found his claim was an intention to secure a wide area for his future expansion plan rather than the actual area previously held. The project coordinated with BFAR Region-8, municipal agricultural office and the fish farming associations to attend the meeting to discuss on the issue. The meeting reached an agreement with the private cage owner to accept the installation of JICA cages at the site.

This incident reminded us of importance of local coordination to solve problems whose root goes beyond the commencement of project. This problem might have taken much longer time to solve if cooperation from the Basey Mayor, Municipal Agricultural Office, BFAR Region-8, INCA and fish farming associations was not obtained. Often emergency project like this one has to enter the site without sufficient prior study on the local situation and environment. Quick and decisive actions are required at the site under emergency situation. There is a good chance of making odd decisions if the staff implementing the project is not well informed on local social and physical environment conditions from the people for whom the project is working for.

Lessons Learned 2: Holistic Approach to Restore the Agricultural and Fishery Production and Practical Countermeasures to Prevent Delay in Stocking Fingerlings

The cage installation in QIP-1 was completed in October 2014 and the Project informed BFAR Region-8 that the cages were ready for stocking fingerlings. BFAR-8 which was responsible to provide 600,000 fingerlings for stocking into the JICA cages had held a tender for the supply and delivery of the required fingerlings in October but failed to get any offer.

The second tender held in November found two local fingerling suppliers for the JICA cages and made contracts with them. Unfortunately, Typhoon Ruby and Seniang hit the region in December and caused the collapse of dikes at the nursery ponds of these two suppliers and fingerlings prepared for stocking in the JICA cages were lost.

In response to the emergency situation, BFAR Region-8 made an arrangement to transfer as many fingerlings as possible from one of the substations located at Lavezares in Northern Samar to Basey. The first stocking of milkfish fingerlings was realized on January 2015 to a cage at the Amandayehan site. The second and the third fingerling stockings were made in the following month at the Tinaogan site. As of the end of February, 2015, 3 cages were filled with the fingerlings from Lavezares farm.

The stocking of fingerlings happened much later than the time expected originally. However, BFAR Region-8 in cooperation with the other partners including the Project team and the municipal agriculture office had made appropriate responses to handle the emergency situation and realized the stocking.

The shortage of fingerlings experienced in this QIP made us reaffirm that recovery of milkfish production requires not only the rehabilitation of production systems like cages and pens but also that of the supporting industries such as for fingerlings and feed suppliers. The Project was aware of the importance of taking a holistic approach for recovery of agricultural or fisheries productions and therefore planned this QIP project to cover the whole value chain from production and processing to marketing.

Nevertheless, severe shortage of fingerlings due to damages on fingerlings producers' facilities to an extent to result to different demands by sizes in the fingerlings supply market could not be anticipated until it actually happened. Understanding general problems in theory is another thing from anticipating practical problems in reality.

For this particular problem of fingerling shortage, use of nursery cages of smaller mesh size which may be attached inside of an ordinary mesh cage would be an idea to restart actual milkfish production earlier under the inevitable severe fingerlings shortage situation. How and what kind of countermeasures against the fingerling shortage the Project had taken in the actual implementation was explained in the next section.

Lessons Learned 3: Flexible Implementation to Countermeasure Unexpected Shortage of Fingerlings by Supply of Change Net Materials of Smaller Mesh Size

A part of the cause for the delayed fingerling stock in QIP-1 was due to the size of fingerlings required for stocking. The normal size of fingerlings required for stocking in this region is 4 – 6 inches depending on the mesh size of cage net used by the cage growers. The mesh size of the JICA funded cage was larger (12 knots mesh) for which 6 inch size fingerlings were required.

This large mesh size requirement is disadvantageous in obtaining fingerlings from suppliers when demand is high or supply is short as fingerlings tend to be sold earlier at smaller sizes. Currently, the supply is highly limited because majority of fingerling producers have yet to rehabilitate the damaged nursery ponds and other fingerling production facilities from Typhoon Yolanda. The situation is expected to get worse as restoration of production cages with support from BFAR is ongoing in the region to make demand for fingerlings to continue increasing in the next few years.

The Project in expectation of short supply of fingerlings to the JICA funded cages in Basey decided to supply a cage net in smaller mesh size (14 knots mesh) for each cage unit in addition to the original net (12 knots mesh). Supply of the second net will also support the farming operation in which operators usually change the cage net at the middle of culture period to clean it and remove the fouling materials naturally attaching on the net when it is under water. Without changing net, the fouling materials clog the meshes and block the exchange of water through the net, making a poor water quality condition inside the cage for the fish.

The fish farming associations were provided with sufficient materials for construction of smaller mesh nets and were trained for the construction of net. Fisherfolk are familiar with construction of square cage nets but not with circular cage nets. Change of mesh directions from diamond mesh to square mesh was another technique to learn for the fisherfolk as it is not required for fishing gear construction but it is important for construction of cage nets.

The supply of change net materials was not an activity included in the original plan for this QIP. Implementation of this unplanned activity was done carefully reviewing the potential effects to other activity components especially from the financial aspect. Fortunately, cancellation of resources personnel calling from outside of region and other saving measures taken made the Project implementation possible to carry out the supply of necessary materials for change net construction with associated training to the beneficiary fisherfolk.

Flexible implementation is sometimes necessary to countermeasure the unexpected problem, especially in emergency assistance project for natural disasters like this project. The Project learned it is necessary to expect unexpected situations in emergency projects.

Lessons Learned 4: Communicating with Target and Other Local Population in Organizing Fish Farming Associations

In the original plan of QIP-1, each cage was provided to a group made of three fisherfolk households to share the ownership. Each cage was considered as the basic unit for operation. In consultation with the fisherfolk in the target barangays, the basic unit of operation was changed to 10 units of cages which were in a grid mooring system.

This change was made primarily in response to the requirement for marketing the harvested fish. Fisherfolk informed that the harvest from one cage which can be expected to be 4 - 5 tons could affect the wholesale market price at Tacloban and reductions in the price could be expected if many cages are harvested at the same time. There is also seasonal variation in the market price so that they want to strategically set a harvesting schedule among the fishermen in the same group.

To realize this strategic harvesting schedule efficiently, the target fisherfolk were asked to form fish farming associations based on the grid mooring in which 10 units of cages were accommodated. This proposal was accepted by the fisherfolk in the target barangays. The five fish farming associations in four barangays were established through a series of meeting organized by the Basey municipal agricultural office.

This modification in formation of fish farming associations was another example of flexible implementation required to countermeasure the unexpected problem. The modification did not need any additional funding and no negative side effect was expected. A lesson learned from this change in the method of implementation activities was importance of communication with the target population and other local people who actually were involved and to be affected by the Project implementation. Trying to make frequent field visits and communicating with the target and surrounding people is necessary to realize flexible and appropriate project implementation.

Lessons Learned 5: Raising Awareness of Women's Association Members

In QIP-3, the three groups that restarted their activities in October 2014 have managed to produce and sell their products on a constant basis and have been obtaining a certain level of profit from these activities. However, the activities up to February 2015 were mainly conducted under the initiative of the Study Team, and unprompted actions by the associations themselves were very limited. The reasons for the situations can be assumed from the environment surrounding the associations before Typhoon Yolanda, where; 1) there were no necessities for autonomous actions or contraptions by the association because all arrangements for production and sales were done through external support in a spoon-fed manner, 2) the members of the associations have been conventionally dependent on their chairpersons and are not used to acting spontaneously, and 3) beliefs that processing activities will lead to economic benefit was not sufficiently developed because their activities were suspended before obtaining stable income due to Typhoon Yolanda.

The awareness of association members on the activities leading to economic benefit have been steadily growing after they actually started to accumulate profit. However, the members of the associations are still significantly dependent on their chairpersons. The chairpersons of the three associations are literally in the position to manage everything, including the accounts and

records of their activities. Moreover, the chairpersons of the associations cannot fully devote their time to the association activities since they often burden other various responsibilities such as assisting DSWD or coordinating with community. The concentration of responsibilities to the chairpersons was often observed to result in the stagnation of the activities of the associations. In terms of accounting, nobody besides the chairpersons knew the exact details on the situation of income and expenditure, and therefore, it was difficult for them to submit their records on time.

In order to maintain stable and sustainable activities by the women's associations after the support by the QIP is finished, roles and responsibilities for the activities should be decentralized and dispersed among association members. Awareness and capacity of individual members should also be raised so that members can participate in the decision making of the association, and at the same time, take autonomous actions to realize the decisions made.

Lessons Learned 6: Utilization of the Tolosa Multi-Purpose Livelihood Center for Increased Production

The three associations of Olot, Tanghas and Telegrapho, which are participant groups of QIP-3, have been initially conducting their processing activities in a chapel near the municipal hall. However, the associations were not always able to use the facility even when they wanted to produced their products, because of its availability for use. In response, the associations started temporary production in their respective barangays, but having no permanent facility for processing activities, the production was still limited. The women's association of Telegrapho is a group earning relatively large profits from its activities. Though the group intends to increase its production to enlarge sales volume, their production activities are limited to around two times a week due to limited availability of venue. Securing venues for processing activities is a bottle neck for active production at this moment. Therefore, the use of the Tolosa Multi-Purpose Livelihood Center, which is expected to be completed in April 2015, should be started as soon as possible.

Lessons Learned 7: Effect of Political Conflicts

One of the reasons for the delay in Burak women's association to re-start their activities in QIP-3 was the political conflict between the Barangay and the Municipality.

It is an unfortunate fat that political dynamics in the Philippines are often seen to affect the activities for supporting the local population. Especially at times of disaster recovery and reconstruction, the influence of political bias on access of the affected population to various supporting schemes must be eliminated. In order to do so, the providers of the assistance should be keen in taking preventative measures at the earliest stage possible, by understanding

the social dynamics surrounding the target women's association. However, since it is also difficult for external donors to fully understand such situations including its backgrounds and particulars, support should also be attained from other local resources.

Lessons Learned 8: Supporting Locally Developed Technology for Long Term Sustainability

QIP-8 targets fisherfolk in two different barangays in the Guiuan municipality: Barangay Victory Island in Victory Island and Barangay Camparang in Tubabao Island. The method of grouper cage culture is different between these two sites. The fish cages at Victory Island are set at the bottom of the sea at about 20 m from the surface, while those in Camparang are set near the surface of water around 5 m depth. The two have quite different physical and biological environmental conditions and the design of cage and the method of operation are also different.

The introduced cage design is the same in principle for the two sites but the nets attached to the cage frame were specified differently according to the practice at each site. The net for Camparang site was made of double layers of netting material of mesh size 10 knots, while that for Victory Island was single layer of mesh size of 14 knots. Specifying different net material was necessary for the beneficiaries to apply their traditional culture technology developed accordingly to the surrounding environment.

Similar to QIP-1, fisherfolk were not familiar with conversion of diamond mesh to square mesh in this QIP. The cage supplier, INCA Philippines Inc. constructed the nets at the Victory Island with hired fisherfolk, which made them learn in practice the mesh conversion. The fisherfolk at Camparang however missed the opportunity. The difference in mesh size from the Victory Island cage made it difficult for them to learn the technique from the Victory island fisherfolk. This situation made the supplied net materials for construction of change nets unused because the Camparang fisherfolk were afraid of wasting it by cutting wrongly. A special training was done for learning how to convert meshes to solve this technical problem only for the Camparang Barangay on Feb 5, 2015.

Accommodating different requirements for target populations sometimes demands extra work and time in the implementation but it would be worth to do so as it is expected to make the Project better in sustainability after the termination. Providing exactly the same cages in design to all the 100 beneficiaries in two islands was an easier choice for the Project implantation and would not have made the necessity of training on mesh conversion. The beneficiaries, however, could not apply their grouper culture techniques developed under the respective environment, which might lead in longer term to a situation in which the supplied nets will be less efficiently used. Conducting the supplemental training on the same subject (cutting net for mesh conversion) let us learn that extra and repeated work may be needed to ensure the long term project sustainability.

Lessons Learned 9: Make Haste Slowly in Mitigating a Conflict Between Utilization and Conservation of Natural Resources

In QIP-8, the method of deep water culture technique used at Victory Island involves diving operations for feed supply, cage maintenance and other day-to-day operations. The divers are supported for the underwater activities with locally constructed hookah diving system that supplies air for respiration through an airline tube from a compressor loaded on a fishing boat. This system is unreliable and potentially health hazardous to the diver. In addition, it is commonly used for illegal fishing with cyanide and other toxic compounds. Due to these two reasons, use of compressors in fishing is prohibited in the Guiuan waters by the municipal fisheries ordinance.

The Project intends to get a gratuitous permit provided in an article in the ordinance for the use of compressor in the Project at Victory Island with three main bases: 1) it is used for aquaculture and not for fishing, 2) the SASUBA system introduced by the Project is safe in all aspects of health hazardous risks explained in the ordinance, 3) it is a way to support the development of local technology. The Project held a series of meeting with concerned local and national governmental and non-governmental institutions for presentations of proposal to obtain a gratuitous permit.

QIP-8 aims to recover and improve the livelihoods of grouper farming fisherfolk through implementation of environment-friendly farming methods. This is in line with the government policy of developing aquaculture using limited natural resources in sustainable manners. Discussions on the project objectives and the methods being used on the occasions like these meetings is an opportunity for the Project to extend the project impacts to outside of the project area and is an important part of the Project implementation to achieve its aim of doing fish farming in environmentally friendly and sustainable manners. The process of granting the gratuitous permit requires an authorization from the municipal local council for the Mayor to sign. The council made the resolution on March 19th, 2015 and the permit is expected to be granted.

Introducing SCUBA equipment instead of SASUBA was an option the Project could have taken. A SCUBA system does not include a compressor on fishing boat and therefore is not in conflict with the current Guiuan fisheries ordinance. Accordingly, choosing SCUBA system would not make any problem in the implementation of the fish farming activity at Victory Island. Nevertheless the Project decided to take SASUBA because there is very little possibility of maintaining the SCUBA system by the beneficiaries due to the reasons; 1) the equipment is expensive, 2) the maintenance requires to refill cylinder which can be done only certified shops or government offices, 3) the beneficiaries are not familiar with the technique, 4) application in illegal fishing is difficult to control, and 5) health risk is higher because of

highly pressurized air in the cylinder and capability of going to deeper zone. All these problems make the sustainability of SCUBA to be used after the Project highly questionable. Choosing SCUBA will bring a short term convenience because it does not make conflict with the fishery ordinance but it does not solve the two fundamental issues associated with the current diving system, which are health risk to the divers and use for illegal fishing methods.

Choosing SASUBA, on the other hand, will bring us an opportunity to explain our position and let the concerned institutions and people to think about what is really necessary to conserve the precious natural resources of Guiuan and make use of them in sustainable manners for the people. Obtaining a gratuitous permit for use of SASUBA may take a long time for us. But it is an important part of activities that the Project needs to go through in order to make the grouper fish farming in the Guiuan water to be done by environmentally friendly methods as the Project aims for. Seeking real benefit for the target population to accomplish the project objective takes sometimes extra activities for the Project. Make haste slowly. This experience let us learn what it means in the project implementation.

Lessons Learned 10: Tasting and Sales of Processed Products in Local Events

Tastings of processed food products produced through relevant QIPs that were conducted during local events were generally accepted with favor by the attendees. In terms of leaving a good impression of the products to the potential consumers, the activities could be considered as a success. However, there were no concrete indications that participation in most of these events, which were mainly held in the urban areas of Tacloban and Palo, directly lead to increased sales of the products. On the other hand the orders for the products produced in QIP-03 notably increased after tasting was held in Tolosa, where the products are produced. Taking into consideration that there are no stores that regularly merchandise the processed products in Tacloban or Palo, extra costs such as travel/transportation fee are expected to occur when purchasing the products from their production areas. It is therefore assumed that even though the participation to events in Tacloban and Palo were effective in terms of notifying the existence of processed products, it did not lead to increased sales due to poor access to the products. In order to effectively promote the sales of processed products, indiscriminate participation in local events should be avoided. Participation in local events should be considered together with improving the access to products such as development of retailers that regularly merchandise the products. In other words, close coordination should be examined between promotion activities and sales strategies.

Lessons Learned 11: Access to External Supporting Schemes

The producers of Softbone Bangus in QIP-15 have been specified as a Target Group for the supporting scheme of DOST in FY 2015. Utilization of this support will enable the producers to increase their production, and significantly improve the accessibility of producers to

markets outside Brgy. Sta. Cruz, thus provides hope for future developments such as contracts with large-scale retailers and export to other areas of the country. This fact indicates that if products with due market potential can be developed, local small-scale producers also have the possibility of significantly accelerating their sales by accessing existing supporting schemes.

Lessons Learned 12: Duplication with other Supporting Activities

As a result of most of the male participants being engaged in the shelter program of IOM, the activities of QIP-14 in Busay has been significantly delayed. One of the reasons for this situation is assumed to be the intensive labor that the shelter program required because it had to be finished by December 2014. Under situations where external assistances for emergency recovery are concentrated in a short period, the local beneficiaries will have to choose which assistance they need to respond to. In such cases, activities such as cash for work and construction of housings, which are issues of urgent need, are expected to be chosen with preference. In contrary, the same priority was not attached to the activities of the QIP, which requires autonomous efforts of the participants for producing charcoal, despite the commitment of the barangay. On the other hand, the shelter program was not as intensively implemented in Buyayawon, and the production group in the barangay was actively participating in coco-charcoal production, resulting in more areas of coconut fields cleared of debris. This leaves a lesson for the selection of target areas, where interventions of various donors as well as the intentions of the beneficiaries needs to be duly examined before implementation.

Lessons Learned 13: Developing Ownership for the Activities through Obtaining Cash Benefit

In the past, charcoal production from coconut trunks has never been practiced in the areas including Mercedes. Charcoal products produced from coconut trunks were also never seen in the markets. When starting the activities of the QIP-14, the participants, although they showed interest in participation, were not fully convinced that the activities would really result in extra income. Initially, the participation of group members in charcoal production was also not as active as in the later stages of the project, and the activities had to be conducted under strong initiative of the Study Team. However, as soon as the charcoal started to sell, there were obvious changes observed in the attitudes of the group members. Particularly in Buyayawon, active production and sales of coco-trunk charcoal has been started in the early stages of the QIP. This indicates the importance of actually showing the benefits to the participants in a tangible form in order to raise their ownership on the activities, particularly when introducing a new practice. Such experience should be provided to the participants at the earliest stage of the activities as possible.

Lessons Learned 14: Utilization of Coconut Fields after Clearance of Debris

In the areas including Mercedes, some of the farmers have started re-planting of coconut trees and intercropping of crops such as sweet potato and cassava between the coconut trees, where fallen trunks have already been removed. However, according to the production groups of QIP-14, who are coconut farmers themselves, the productivity of soil in the region is low, and production of commercial crops cannot be done without fertilizers. On the other hand, there was a case in Dulag, Leyte, where donor organizations provided the local residents with seeds and seedlings of vegetable. There, the local residents started production of same types of vegetable at once, which resulted in the saturation of the market, leaving the residents without a place to sell their products. Another case was the cultivation of bananas, which can be harvested in six months. Though this was started in a vast area in the region, Typhoon Ruby hit the area in December 2014, one month before the bananas were ready to be harvested. As a result, most of the banana trees were damaged and could not be harvested. When making use of the coconut fields cleared through this QIP, crops to be planted should be selected from the viewpoint of avoiding effects of typhoons, low requirement of input, and high marketability. Crop rotation systems should also be developed to avoid replant failure and farmers should be provided with guidance for appropriate cultivation of the selected crops.

Lessons Learned 15: Working with Other Institutions for Finding Financial Partners for Operation of Fish Farming

Milkfish farming at Sta. Cruz in Tanauan (QIP-15) is practiced by a partnership between an "owner" who owns the farming facility and provides labor for operation and a "financier" (or an investor) who bears the operational costs (for supply of fingerling and feed). The Project provided materials for the facility to be built by the owners. However, for operation of the facilities built through the QIP, the owners had to find financers, and there was a risk of the owners not being able to operate if they could not find their financers. The Project, therefore, set a precondition for the owner to receive the material, which was that the owner had to submit a written consensus of the financer for his/her commitment for operation. At the early period of project implementation, it was not easy for the owners to find financiers as many of previous financiers lost their investments when Typhoon Yolanda hit. Seeing the situation, the procurement for the materials was separated into two phases. In the first phase, only ten owners were able to provide the signed documents of consent from financiers. Accordingly, materials sufficient for construction of 10 units of fish pens were procured in the first phase.

Among the remaining 32 units, 10 units were supported by OXFAM for the operational cost. This was realized through coordination by the Project working together with the provincial and municipal agricultural offices. Unlike the individual partnership between the owners and the financiers, the funds from OXFAM were deposited into a bank account of Sta. Cruz

Milkfish and Oyster Farming Association opened specifically for the OXFAM project for the funds to be revolved for continuation of production.

Observation of erected facilities after distribution of the first batch of construction materials encouraged the other potential financiers and made easier for the owners to find their partners thereafter. All the rest of materials for building 32 units of milkfish pens including those for the owner supported by OXFAM were procured in the second phase.

This experience made us realize the importance of working together with other institutions. OXFAM's financial assistance to the fish farming association was a significant factor to complete the facility construction in time, which was made possible by coordination with provincial and municipal agricultural offices.

Lessons Learned 16: Solving Problems by Active Participation of Beneficiaries in Control of Culture Area and Spacing Between Milkfish Pens

One fish farmer in QIP-15 started the construction of his pen with his own funds before the Project started distributing the materials. This farmer made his pen culture area about 2,000 m^2 or twice the size that the municipal agricultural office approved for an issued permit. This was then illegal but it was the size this farmer previously held before Yolanda.

He belongs to the fish farming association and accepted an offer made through the association together with advices from the municipal agricultural office to remove the facility as a condition to receive the material from the Project. The size limit under the municipal permit (not more than 1,000 m^2) is kept for all the facilities built in the site.

The Project did not intervene directly in this problem but let the fish farming association play the main role to solve it as an internal issue, and also asked the association to consult the municipal agriculturist which holds legal responsibility to issue the license for fish farming and make them compliant to the conditions associated with the issuance. The problem rooted far before the time of Typhoon Yolanda and was expected to be complicated by personal and social issues among the members in the fish farming association. The solution therefore required understanding on the background and history that made the problem emerge, which may be beyond the comprehension of the Project.

The Project brought the funds and technical expertise but these resources needed to be applied to the activities of the target people to achieve the aim of recovery of fish farming activity. That application of project resources was only possible by active participation of the target people. The solution of this problem made the Project learn on the limitation of project intervention and necessity of active participation of the target people without which the resources provided by the Project would not have achieved its target output.

Lessons Learned 17: Increased Cost in Procurement of Construction Materials from Local Market

Procurement of materials for construction of fish farming facilities in QIP-15, especially bamboo poles, faced difficulty in obtaining the required quantity in time because of shortage in the local market caused by damages or losses due to Typhoon Yolanda in the early phase of recovery and because of high demand from the recovery constructions that started at the same time in the later phase. Materials transported from outside of the region were still available but materials which were sourced locally such as bamboo poles for construction of fish pen wall and oyster racks were in severe shortage in the market. Price of bamboo poles increased twice or more compared to the price before Yolanda.

Super Typhoon like Yolanda causes heavy damages on the economy of the region and brings a temporary chaos. Loss of property makes sudden increase in demand, resulting in hikes of prices for the goods. Budgeting for an emergency project to assist the victim needs to consider on the demand and supply condition of goods in the aftermath of the incident.

Lessons Learned 18: Practical Details for Developing an Insurance Package for Milkfish Farming Operation to Complement the Physical Structural Weakness

Typhoon Ruby which hit the region in December 2014 caused minor damages on the milkfish and oyster farming facilities built under QIP-15. The bamboo poles of some facilities inclined although no loss of stocked fish occurred. Another strong Typhoon Seniang hit the region at the end of the same month and this time a total of 7,760 fingerlings were lost in 6 units of fish pens. Some pens which had bracing on the poles did not get damaged. Assessment of damaged facilities made the Project to decide supplying additional bamboo poles for putting braces for the bamboo walls for all structures.

Milkfish pens and oyster racks constructed in this project are made of bamboo poles in a basic design following the traditional design. Remedy such as adding braces for the bamboo poles are limited in increasing the structural strength. The farming facility is fundamentally weak, and it is not expected to survive in super typhoon like Yolanda with extreme storm surge and wind.

The Project therefore recommended to the fish farming association of Sta. Cruz to consider protecting their facility and operation by insurances. It is a strategy to protect the property by increasing software resilience because increasing hardware resilience is limited. Following this strategy, the Project coordinated to invite an insurance company to discuss with the fish farming association's members on possible development of an aquaculture insurance.

Philippine Crop Insurance Corporation (PCIC) which was providing free limited time insurance to farmers and fishermen as a response to the Yolanda incident with government

subsidy accepted the invitation. Meeting with PCIC resulted in provision of insurance packages for the facility and also for the aquaculture operation tailored to the condition for the Sta. Cruz milkfish farming. In addition, the members and other barangay fisherfolk were provided an opportunity for applying their limited time free insurance packages for their farm stocks as well as for personal injury and life. Households with swine production and some milkfish farmers who started operation earlier completed the application.

Preparation in formulating an emergency project is inevitably limited. Structural weakness of the milkfish pen facility which is made of bamboo was apparent at the time of project formulation. There were several options to complement the weakness in theory. Software protection such as by insurance was one of those options, but how to combine the idea into practicality was not done well until the Project actually saw the damaged bamboo fish pen walls at the site.

The meeting with PCIC and the fish farming association revealed the following two points to be considered for insurance application. The owners informed that they need the insurance to cover the operations only during the time of typhoon season not all year around. They also wanted to cover only the materials which needs to be bought from outside but to exclude labor cost which may be managed within the community in the emergency situation. These factors would affect the amount of insurance premium considerably. Without these details it would be difficult to formulate a proper countermeasure for the problem, and thus there might be a chance of going to lead the project implementation into a wrong direction. Working in this issue made the Project realize the importance of understanding real situations at the field.

Lessons Learned 19: Modification in the Oyster Seed Collection Activity that could Result in an Expansion of Impacts

Oyster farming started in Sta. Cruz barangay during early 1990s by transplantation of oyster seeds from northern Leyte. QIP-15 intended to obtain them from Leyte Bay to restore the oyster culture which was damaged completely by Typhoon Yolanda. The original idea was to transport the oyster seeds one time and allow the shells to breed in same water thereafter.

The one time transportation was found not sufficient to fill up the planned 25 units of bamboo rack which requires about 5,000,000 seeds. The number of transportation has to increase at least to three times. It was also found that this much number of oyster seed collection needs special seed oyster collection facilities to be built at the source locations. Fortunately the Project obtained cooperation from the Leyte municipal agriculture office to establish oyster seed collection facilities in eight barangays recommended by the mayor.

Six out of eight barangays participated in the oyster seed collection program in Leyte Bay and successfully collected oyster seeds, so far 3.8 million seed oysters were harvested and

transplanted to the oyster growing racks of Sta. Cruz. A total of 400,000 pesos were paid to the fisherfolk who build the facility with the supplied materials and collected the seed oysters.

The selling of oyster seeds was a new opportunity of income generation for the Leyte Bay fisherfolk. If the procurement of oyster seeds is proved to be an economically viable way for the Sta. Cruz oyster growers more than collecting oyster seeds from self-breeding mother oysters within the tidal flat water, there would be continuous purchasing of oyster seeds from Leyte Bay by the Sta. Cruz oyster growers. The Project aims to collect enough economic and biological data to conclude the viability.

In the oyster seed collection activities, the original plan of single transplantation was changed to a plan of multiple-transplantation, and this change created an opportunity for the fisherfolk working for collection of seed oysters at the source barangays. This could be an unexpected impact of the Project not included in the original plan. Modification of the original plan has to be done with careful considerations of its effects, but flexible implementation is sometimes necessary when the expected benefits due to the modification surpass the cost. This was the case in the change of oyster seed collection plan in this QIP.

Lessons Learned 20: Potential Economic Impact of Milkfish Production for Future Planning

QIP-15 also now started seeing some farmers harvesting milkfish from the newly established fish pens. Each cycle of grow-out takes about 4 months, which means every pen could harvests three times in a year. At the full scale operation of 42 units of fish pens, therefore, it is possible to see three harvest operations in every week. Each harvest is expected to be about 3 tons, making maximum potential annual production of 12 tons per unit of pen. For 42 units, the total maximum production could reach over 500 tons in volume and 55 million pesos in value. A very rough net profit estimate of 1/3 of gross sales makes 18 million pesos for the barangay. About half of it would go to pay to the financiers who may be staying outside of the barangay, but the other half (9 million pesos) could remain in the barangay. For a barangay of about 150 households, this will be sufficient income generation to boost the whole economy.

This is a theoretical maximum economic benefit that could be achieved by the Project. In practice, half or less than half might be realized due to practical reasons which hamper the real operations of the fish farmers. The Project needs to find the reality and remove these obstacles that are preventing for the beneficiaries to achieve the theoretical maximum in the project implementation.

Lessons Learned 21: Future Potentials in Integration of Milkfish Farming and Processing and Required Continuous Supports for the Women's Association

QIP-15 sees the processing women association or SCWFA in confidence making profit from sales of the newly learnt pressure cooked milkfish around the barangay. With the continuous full scale operation of milkfish farming from the fish pens restored by the Project, the women association will have secure and cheaper source of milkfish to increase the production of processed milkfish. Even a mere 5 % of the total maximum annual production of the 500 tons estimated in the above section would supply 25 tons of material fish for the processing, which could generate a gross sales of 6.25 million pesos. This provides them an opportunity to expand the business into a new step with continuous production for the market outside of the barangay.

In seeing this new opportunity, the Project with advices obtained from relevant government and education institutions guided SCWFA to learn sanitary and hygiene procedure to produce a safe product for selling outside of barangay. The Project also tested the product for the safe shelf life period in bacterial count examination. This process was still underway as of end of February 2015.

During the interventions toward upgrading of production level and quality, an excellent opportunity and assistance commitment was offered to SCWFA. Department of Science and Technology (DOST) Region 8 identified the association as a target group for the fiscal year of 2015 and committed for; 1) provision of consultancy service for product development, 2) support in providing training opportunities and 3) use of Food Innovation Center (FIC) which is accredited with License to Operate (LTO) by Bureau of Food and Drug (BFAD).

With the expected increased milkfish production from fish pens within the barangay and supports offered from outside of institutions like DOST and VSU, it is very realistic to upgrade the production level to more than 6 tons/year, which is equivalent to 500 kg/month or 125 kg/week (4.2 styrofoam boxes of milkfish per week). The production has to be made one styrofoam box of milkfish processed for every weekday.

This would be about 10 times of the current production level based on the records. Such an operation would demand division of functions such as for resources procurement, production, marketing, accounting and facility maintenance. It would be quite difficult for the women's group which formed last year to realize the required transformation by itself. Continuous support from the Project to perform as a leading coordination agency in addition to the expected supports from the various institutions would be necessary to realize the potential into practices. Realization of such potential would be a shining example to encourage the other groups especially women's groups.

4.1.2 Construction Work

Lessons Learned 1: Quality Identification of Steel Material

For construction related QIPs, quality of steel material was essential and confirmed by mill certificate and tensile test. For the approval of the steel materials to be used for the project, contractor has to submit mill certificate and corresponding sample subject for tensile test. JICA Study Team Inspector would witness the conduct of laboratory testing of the steel material. For testing results that failed to meet the requirements, contractor was advised by JICA Study Team Inspector for the replacement of supplier. Hence, all materials to be incorporated to the project must undergo material testing aside from the issued mill certificate prior to the approval for quality control and assurance.

Lessons Learned 2: Concrete Aggregate

In QIP-7, the JICA Study Team Inspector noted and observed that the delivered concrete aggregates at site were not the approved kind of material that had passed laboratory testing. With this, JICA Study Team Inspector instructed the contractor for the replacement of the aggregates from qualified suppliers in Tacloban as the quarry sites of Samar are not suitable and not approved by the Department of Public Works and Highways. Hence contractor had to strictly follow the compliance of procuring approved and quality materials to be incorporated to the project.

Lessons Learned 3: Quality Assurance of Welding Works

In the early stage of the welding works for the fabrication of steel trusses it was noted and observed that the welding works of the contractor were of poor quality. JICA Study Team inspector instructed to re-work and come with the standard protocol for welding works. With this, JICA Study Team planned out for skills enhancement on welding works to all QIPs sites. Orientation was undertaken to all welders of the contractor for proper and exact welding methodology. Furthermore JICA Study Team conducted competency test ensuring that all welders are qualified to handle the welding works for the project. Then, JICA Study Team reasonably formalizes the conduct of the proper training on welding works for skills advancement.

Lessons Learned 4: Control of Concrete Workability

The presence of honeycomb on concrete surface after removal of formwork was noted and observed. It was because concrete mix could not flow properly due to re-bar placement on columns and beams. Although honeycomb does not affect the integrity of concrete's strength, it affects the structure appearance. Accordingly the correction of the noted honeycombs as instructed by JICA Study Team to the contractor is the application of

concrete epoxy. To prevent such occurrence, JICA Study Team finds it necessary to educate the local contractor with the proper mixing fluid concrete within allowable range of slump, and using vibrator well.

Lessons Learned 5: Support Installation

Traditionally the distance between supports on the concrete slab is 50cm as executed by local contractors in the Philippines with the following reasons 1) dead load is small because slab concrete thickness is about 10cm. and 2) live load is also small because pouring speed using portable concrete mixer is slow subsequently no accident was experienced. But with limited support, formwork may get distorted, or collapse by biased load, or concrete weight on concreting. For safety construction, JICA Study Team instructed the contractor for additional measure, showing required numbers for total concrete weight of slab and beam and requiring more reinforcing for support. JICA Study Team believed it necessary to educate the contractors on exact calculation and theory in adjusting the distances of support subject to the slab thickness and site situation to secure the safety work.

Lessons Learned 6: Foundation Works and Installation of Scaffolding

Traditionally in the Philippines, scaffoldings both horizontal and vertical are of timbers material as guide for the frames, formworks of columns and beams and support. Also this can serve as support for excavation work but good for shallow distance only. In the case of NAS where excavation reached to 1.50m deep, the working efficiency became down as no machine was available and the work was done manually. Because of the soil condition, dewatering was needed with the plan of connecting the foundation but because of the timber problem dewatering was undertaken individually. While, in the case of NAS where excavation reached to 1.50m deep, the working efficiency became down as no machine was available and the work was done manually. Because of the soil condition, dewatering was needed with the plan of connecting the foundation but because of the timber problem, dewatering was undertaken individually. Construction schedule were delayed for these reasons. And so, JICA Study Team found the necessity to instill to the contractor the proper working sequence including scaffolding, foundation excavation, confirmation of bearing capacity on foundation works to avoid occurrence of any delay.

Lessons Learned 7: Fixing of Column Formwork

In one of the concrete works of the project, it was noted and observed by the JICA Study Team Inspector that after form work removal, a concrete column was not placed vertical. Therefore, the contractor was instructed to remove and replace it. The defects were due to lack of support on the formworks. The local contractor usually carries out placing of concrete using a 1-bagger mixer where the rising speed of concrete is slow, and the

concrete pressure is not so big against formwork. In such cases, the contractor tends to install the column formwork without due attention to its rigidness. This showed that it is necessary to teach the contractor reinforcing method using horizontal tie bar or brace to fix the top of formwork to prevent any moving by the concrete weight or pouring impact.

Lessons Learned 8: Site Inspection

After excavation for foundation of stockyard area in QIP-10, the contractor intended to lay aggregates and prepared for re-bar fabrication. It was noted and observed by the JICA Study Team Inspector that the gravel did not undergo the required material testing for bearing capacity at the excavated point. JICA Study Team Inspector instructed stoppage of work and comply with the required material testing for approval.

In another incident, the JICA Study Team Inspector confirmed with the contractor on the status of ordering roof material. The contractor was aware that the material was already ordered, but it was not aware of the quantity. It was noted and observed that the ordered volume of roof material was only intended for slaughterhouse and material for stockyard was not included. The incidence shows that the contractor did not have sufficient knowledge to carry out work proper construction management. This is because they have no experience in proper rigorous construction supervision. To resolve the issue, constant supervision and inspection of work at site is important in order to let the contractor to comply the standard technical requirement of the project.

Lessons Learned 9: Safety Management

In the reconstruction of Mayorga Public Market, the truss was designed to be interconnected with concrete beam and column due to existing structure. In Japan, the common practice of lifting of trusses is by using equipment like crane and fabrication is done on the ground for safety measures. As there was no available crane in this case, welding works on connections on trusses were completed after it was lifted up to its location on the concrete column and beam. It was very common for the local contractor to work welding operation in high place without concerning safety measures. Therefore, JICA Study Team instructed them to have working platform for welding operation to make safety working condition as same as work on the ground. This showed that it is necessary to supervise the local contractor to work with safety condition with appropriate steps to avoid hazardous situations and with full awareness of safety management.

Lessons Learned 10: Alternative for Important Works

Initially, the concrete placing method of second floor slab in QIP-5 was planned for using concrete pump and concrete plant due to big volume requirement. But, as the bridge on the way to site suffered damage by a typhoon, access became not available for heavy

equipment/vehicle. Therefore, the contractor needed to change the concrete mixing method from the plant to site mixing. Concreting was done using scaffolding, slope, three portable concrete mixers with 75 labors engaged for 13 hours. Not only for this project, but in cases of recovery projects after disasters, there are possibilities of surrounding facilities being damaged. This may affect the project's compliance to planned out schedules. Consequently, JICA Study Team had recognized the need for alternative procedure for important works to be considered in order to avoid delays in the process.

Lessons Learned 11: Payment Condition

QIP Projects adopted the ratio for Advance Payment as much as 40% of the contract worth for the contractor to finance the initial construction phase. Local bank guarantors for the Advance Payment Bank Guarantee could not easily issue such document. With this, contractor had difficulty availing the advance payment. As a result the contractor carried out the construction works of his own finances until the project accomplishment reached 50%. Even though JICA Study Team introduced other banks, the contractor couldn't use them as they are required to deposit the same amount of the advance payment that will be held by the bank. The high rate of advance payment may create financing difficult for small scale contractors.

Lessons Learned 12: Contractor's Skill for Documentation

Documentations for the project were deemed necessary thus requiring the contractor to submit construction schedule, bending schedule, work requests and shop drawings for Engineer's approval. The purpose of the documentation would hasten the construction operation from the procurement of construction materials, deployment of manpower and equipment and control of the construction flow to lessen the delays and low quality results. As a reality, it was noted and observed that contractor's find it hard to comply with such requirements. So, JICA Study Team ascertained the need for coaching the contractor to develop the necessary documentation for control of work progress and maximizing construction resources.

Lessons Learned 13: Technical Transfer to LGU Engineer

Through reconstruction of market and livelihood facilities, JICA imparted to the Local Government Units (LGU) during the Kick-off/progress meetings regarding 1) reinforcement measure of building drawing, 2) estimation and construction cost, 3) project procedure and 4) supervising including quality control and assurance. The purpose of which for the LGU Engineers to undertake recovery projects on their own since noted and observed of their superficial understanding on their supervising skills for a quality Project. For lack of positive understanding on the necessity of precise procedure and method, JICA

Study Team recognizes for the continuing education to the Engineers regarding proper project supervision for a good quality Project.

4.2 Recommendations

4.2.1 Regenerating Livelihood

(1) Working with the People in Emergency Livelihood Support Projects

Livelihoods of people are built on various environmental, social and financial factors which surrounds them. Supporting to improve it needs understanding on the interactions among the factors and identification of the root factors at which a project can render an intervention.

It is important to realize in principle that an emergency project coming from the outside to help the victims of severe natural disaster cannot know much about the target people because it did not have sufficient time to prepare. Planning of an emergency project has to be done in a short time without making thorough study on the factors which affect the livelihoods of target people.

This means the probability is high to encounter situations which were not expected in the project plan in various aspects. On emergency project planning, it could be said generally that incompleteness is a part of presumed characteristics that have to be taken as granted. In other words, uncertainty of the plan should be taken as presumption rather than exception.

Project implementation is a process of rendering the activities defined in the plan. In a normal project cycle of plan-do-see, implementation carries out precisely what are listed in the plan. Modification on the plan, if necessary, could be applied after evaluation in the "see" process in an ordinary project cycle.

In an emergency project where uncertainty is presumption, implementation is not just a step to render the planned activities but it is a step in which the uncertainty hidden in the plan could be revealed and turned to certainty while planned activities are being carried out. This requires performing of "do" and "see" steps within the same project cycle of implementation.

The best way to do in practice is to ask the target people whose livelihoods are intended to be improved. It is also important to consult local institutions and coordinate with other organizations working in the same region and in the same technical field. In other words, an emergency livelihoods support project needs to take a participatory approach as a principal strategy.

In the QIP-1 submersible cage project, the Project faced a conflict between a private cage

owner and the beneficiary cage farming association for the location of cage installation. Working closely with the members of beneficiary fish farming associations found the owner is one of the major private fish farmers in the Basey Mariculture Park and operates a business of providing harvesting and marketing services for the cage growers. A large part of the fish farming association's members are expected to ask him harvesting services when the fish in their cages grow to the harvest sizes. The Project realizing the situation for the beneficiaries then tried to avoid the direct conflict between the concerned owner and the project beneficiaries but asked the municipal agriculture office of Basey to take the issue to Mariculture Coordination Committee where the problem could be mediated by the chair, Mayor of Basey municipal government. The committee reached an amicable solution for the private owner and the project beneficiaries.

The similar conflict between different members of fish farming association of Sta. Cruz, Tanauan about the area and location of fish pen in QIP-15 of integrated oyster and milkfish fish farming project was solved by mediation of the agriculturist of municipality of Tanauan.

These were other examples where communication with beneficiaries and supplemental information on the root cause of problem helped implement the QIP projects. The Project was able to make necessary modifications based on the additional information obtained during the implementation period.

In QIP-1, the Project through enquiries with the beneficiary members found that individual ownership of supplied cage is not compatible with the operation requirement especially with the existing marketing condition. Thus it asked them to form fish farming associations based on 10-cage grid mooring unit instead of single cage ownership originally planned.

In QIP-15 of oyster and milkfish integrated farming project, the Project found financiers for the milkfish farming are vital for the operation and thus a written proof from each financier was one of the conditions for releasing the construction materials.

Working with the beneficiary people and relevant local organizations is a basic requirement for any project implementation. Nevertheless, it has a special importance in emergency livelihood projects as lack of local information is a presumed condition.

(2) Flexible Implementation

This recommendation is closely related with the first recommendation of working closely with beneficiary people. As it was explained that emergency project planning often have to be done with incomplete background / local information, thus chances for making necessary modification in the original plan during implementation is high. Emergency project has to be aware of this fundamental requirement and have to make quick decision

making for timely and swift implementation. Some examples of flexible implementation made in fisheries QIPs include;

- Supply of supplemental net of small mesh for facilitating stocking of smaller sized fingerlings (QIP-1)
- Forming fish farming associations based on 10-cage grid mooring unit (QIP-1)
- Supply of SASUBA diving equipment and obtain a gratuitous permit based on fishery ordinance (QIP-8)
- Reducing number of permit for fish farming based on bathymetry study (QIP-15)
- Method of oyster seed collection and transplantation (QIP-15)

Without making these modifications, these projects would have been delayed or even gone to different directions away from the intended project outputs.

(3) Holistic approach to restore aquaculture production

Industrial production needs input materials to be processed and markets to receive the output products. For example, fish farming production requires seeds and feeds supplied by supporting industries. The fish produced have to be sold at markets. Lack of any component does not realize actual production. Resumption of industrial production from a severe natural disaster site where all components are damaged will not start until all components start functioning. An emergency livelihood project which aims restoration of industrial production, therefore, needs to consider all aspects of production. In general, an emergency project is recommended to take a holistic approach although it does not mean that the project needs to make actual inputs to all components. Information on relevant sectors has to be collected and efforts have to be made to complement the insufficient components.

In QIP-15 of integrated oyster and milkfish project, the Project provided the materials for milkfish pen farming facility. The cost of operation fundamentally for supply of fingerlings and feeds were left to the beneficiaries' responsibility. At Barangay Sta. Cruz, it was customary to form a team of an owner taking responsibility for facility construction and operation labor and a financier taking responsibility of supplying fingerling and feeds to operate the milkfish farming. This joint operation system had been working well before Yolanda and was taken as a condition for the project.

In the actual implementation, however, the owner (project beneficiaries) faced difficulty in finding financiers as many of the previous financiers lost their investments paid as fingerlings and feeds costs (which were paid in advance before realizing the profits from the harvests) when Typhoon Yolanda hit. The Project had to separate the procurement of material into two phases as only 10 owners (about a quarter of beneficiary) secured

financiers. At the beginning of implementation, the rest of three quarters (32 units) had no definite beneficiaries.

While constructing 10 units of milkfish pen facilities, the Project made two efforts to secure the financiers. One was to seek cooperation with other NGOs to share the project costs and the other was to inform fingerling suppliers on the JICA support to the Sta. Cruz fish farming association. The former effort resulted in financial support for the operation of 10 pen farming units by OXFAM (with USAID funds) working at the same barangay. The later effort resulted in early restoration of fingerling supply facility located in the same barangay (owned by a restaurant owner in Tacloban) and commencement of fingerlings supply for the 10 units of constructed pen facilities. The earlier-than-expected restoration of fish pen farming operation encouraged the other financiers to return to the investment.

This was an example of how a holistic approach works in emergency project. The QIP-15 project targets the fish pen owners to restore the production. The project input was limited in material supply for the facility but its activities had to be extended to the other components such as fingerlings and feed supplies.

In QIP-1 of submersible cage project, the Project supplied smaller mesh net to the beneficiaries as a countermeasure to prevent the expected delay of fingerlings stocking due to different demands for fingerlings by size. The Project made a through enquiry on how the shortage of fingerlings occurred and causing the delay, and decided to do unplanned activity to prevent the further delay. The previous section of Lessons Learned for QIP-1 explains the detail for another example of holistic approach taken by the Project.

(4) Follow-up supports

Emergency livelihood projects aim to restore the previous livelihood activities which have sustained the victim's life but were destroyed by the incident and caused the emergency. The resumed livelihood activity, therefore, is assumed for its sustainability. This is however not always the case because the condition surrounding the livelihood activity changes rather drastically after the severe incident like super typhoon Yolanda. Restoring the previous activity as exactly the same as it was before does not guarantee the sustainability of activity under a condition where social and economic conditions are changed drastically.

The recommendation of flexible implementation is important in this regard because adjusting implementation according to the social and economic environmental changes will remedy the possibly impaired sustainability due to incompatibility with the suddenly changed environment.

Flexible modification if applied in project implementation means there are outcomes which

come out as response to the modified implementation, including such outcomes not expected in the original plan. This further means that an emergency livelihood project which is implemented under an aftermath of chaotic social and economic condition has a good chance of generating various unexpected impacts.

One of good examples of unexpected outcomes in fisheries QIPs was development of pressure cooked milkfish by SCWFA of Tanauan, It was not an output listed in the original plan but an auxiliary activity started as preparation of oyster processing development which was in the original plan. Milkfish processing was included as an input for the submersible cage project (QIP-1) in Basey. But because the Tanauan was closer to the Project base in Tacloban (later in Palo) and local resources personnel was available in Leyte Provincial Agriculture Office, the initial works for development of pressure cooked milkfish were carried out at Tanauan, Leyte, for convenience. The active and diligent participation of SCWFA made the pressure cooked milkfish of high potential through various opportunities given by the Project. The processing activity has already established its economic viability and now seems to be able to step up to a higher stage of commercial activity. It has acquired the recognition of DOST with its commitment for supporting as a target group for the fiscal year 2015.

SCWFA which was established to be a viable cottage industry group just six month ago with the support of this Project now has an opportunity to be a commercial entity. This transformation needs a fundamental change in the association's nature. The product has to be accredited by government authorities. The association has to comply with the legal obligations as a commercial entity. For SCWFA to realize the opportunity which was grabbed by their diligent endeavor, continuous assistance is essential because of the very rapid development and is not yet sufficient to accomplish the required transformation.

Another reason for necessity of continuous support for the emergency livelihood support projects is related to the basic policy of Yolanda recovery and rehabilitation program. The Yolanda program has its catch phrase of "Build Back Better" which emphasizes the mind of taking the disaster event not only as a tragedy but also as an opportunity for re-building the society better than before Yolanda. In accordance to this BBB phrase, the fisheries QIP projects introduced some technical inputs which were not included in the livelihood activities before the Yolanda incident. QIP-1 introduced submersible cage technology imported from Japan. QIP-8 also introduced improved grouper cages. QIP-15 introduced concept of integration of oyster and milkfish farming. These technical inputs are characteristic to the Japanese assistance and continuous monitoring is recommended, especially if the implementation did not progress as it was originally planned by various reasons. There were delays observed of fingerlings stocking in QIP-1 and QIP-8. In both projects, harvesting operations planned in the original schedule were not accomplished

within the project period. QIP-15 progress as planned for the first 10 units of milkfish pens and harvesting started in December 2014. But the Project had to separate the implementation into two phases of procurements because of insecurity in finding financiers for the farming operation.

An emergency livelihood support project has a good chance of having unexpected outcomes because they are operated under chaotic environment which demands provision of unplanned inputs as timely countermeasures. Depending on the nature of outcome, follow-up of the project implementation becomes necessary. Follow-up support also tends to become necessary when emergency project emphasizes improvement of livelihoods rather than just restoration of livelihoods because the newly input factors for causing such livelihoods improvements takes time to be absorbed by the people and the society.

(5) Strengthening of organizational capacities for group activities

The implementation of the QIP-3 has resulted in several women's associations in the Municipality of Tolosa attaining a certain level of economic benefit through processing and sales of agro-fishery products. However, autonomous contraptions or efforts by the women's associations in enhancing their production or expanding their market were very limited. Also, there was a general tendency of association members being dependent on their chairpersons and reluctant to proactively participate in the activities without their instructions. Such situation is assumed to gradually change by continuous efforts for enlightenment activities and accumulation of successful experiences through continuation of the activities. However, it is also assumed that such process will take considerable time.

Considering the further expansion of the activities of QIP-3, which will involve new establishments of women's groups to start processing activities, efforts for raising the awareness of the participants should be emphasized from the very first stages of the activities. Enlightenment activities should be carried out so that decisions do not have to be fully made by external supporters, but by the participants themselves to enhance their spontaneity in their future activities.

(6) Developing ownership for the activities through obtaining cash benefit

At the initial stage of QIP-14, although the participants were interested to participate in the activities, they were not fully convinced that the activities will bring them cash income. However, their enthusiasm for charcoal production has significantly increased after the products actually began to sell. Particularly in Buyayawon, active production of coco-trunk charcoal has been started from the early stages of the Project. Generation of cash income is a strong motive for the participants, especially when introducing new products or technologies for improving livelihood. When planning production activities, target

consumers should be identified before production and measures should be taken so that participants can obtain cash income at early stages of the activities.

(7) Necessity of technical support in restarting agricultural activities

Production of coco-trunk charcoal through QIP-14 will generate a certain amount of cash income as long as there are fallen coconut trunks to be processed. However, utilization of the cleared coconut fields (replanting of coconut trees and practice of intercropping) should be urgently planned in order to secure income sources after the clearing of debris. Even if coconut trees are replanted, it will take several years until coconuts could be stably harvested. During this time, crops produced through intercropping will be an important income source for the coconut farmers. Moreover, intercropping will also contribute to diversify the income source of coconut farmers, and its continuation after the maturing of coconut trees will decrease the risk of losing income sources by possible future typhoons. However, in order to do so, appropriate crops should be selected and cultivated with suitable techniques, so that cultivation will not deprive the soil of its nutrients. This will further lead to reduced cost for input, increased productivity and more profit for the coconut farmers. Furthermore, the products to be cultivated also need to be examined in terms of marketability. Examination of such issues would be difficult to be done by the farmers alone, and thus external support from donors or research institutions will be necessary for surveying natural environment, soil, markets, and to establish a crop rotation system consisting of suitable crops, and to provide guidance to farmers for their cropping techniques.

(8) Continuous Support for the Activities that Have not Achieved Objectives

The three fisheries QIPs (No. 1, 8 and 15) completed the rehabilitation of fish farming facilities and the farming activities have started with fingerling and seeds stocked. The beneficiary fisherfolk are busy operating the farming activities, however, waiting for harvests to realize the material gains from the sales, The Project has yet to proof the effectiveness of farming activities in supporting their livelihoods in practice with the sales revenue. In addition, though production of processed food products and charcoal have been started in livelihood related QIPs (No. 3 and 14), the state of which resident groups obtain stable profit is yet to be reached. The QIP for sales promotion (No. 13) is has also not achieved the preparation and implementation of overall promotion strategies mainly due to the delay in realizing stable production of processed products. In order for the QIP activities, including the sales of processed products produced through the fishery QIPs, to truly contribute to the livelihoods of the local residents in a sustainable form, stable production and sales should be achieved based on appropriate business plans and profit should be constantly attained by the participant groups. In this context, it is recommended that the following support are further provided for the QIPs.

- QIP-1: Harvests of milkfish have not made though the fingerling stockings have started. The first harvest is expected in May 2015 after which successive harvests would follow. The Project should aim to build an efficient implementation system of farming activities between the 5 fish farming associations and Basey LGU.
- QIP-3: Full-scale productions of processed products by utilizing the Tolosa Multi-purpose Livelihood Building are yet to be accomplished, and business plans from the view of full-scale production capacity is also not yet prepared. Further support should be provided to the Women's Association for business plan development, as well as their organizational strengthening (including business management and product quality/hygienic control) for their sustainable operation and development.
- QIP-8: Stocking of grouper fingerlings in the cages is under way but no harvest has yet made as the fish needs 8 months to grow to the marketable size. The first harvest is expected in July 2015. The Project needs to implement environmentally friendly fish farming methods without high dependency to natural marine resources for demonstrating the sustainability. It needs to strengthen both LGU's monitoring capacity and fish farming associations' implementation capacity.
- QIP-13: Though individual activities for sales promotion were conducted under each QIP, development and implementation of an overall strategy for sales promotion is yet to be accomplished. Support for identification of target markets for individual products as well as requirements for approaching them should be provided. This can be done by matching the products with private business entities in order to conduct trial sales and by receiving their feedback from the viewpoint of commercial sales.
- QIP-14: Production and sales of charcoal is already being done by the participant groups. However, there are still necessities for their organizational strengthening particularly in terms of business management. Furthermore, the marketability of charcoal briquettes is yet to be confirmed. Support should be continued to develop the capacity of participant groups. Also, since removal of damaged coconut trunks are progressing, measures for effectively utilizing the cleared coconut fields should also be examined to recover the livelihoods of affected coconut farmers.
- QIP-15: The milkfish farmers started harvesting from December 2014, but the oyster farmers are still waiting for growing the oysters hung on the bamboo racks as they take 8 months to reach the harvest size. The first harvest would start from August 2015. The Project needs to reduce operation risk for the milkfish farming and to demonstrate contribution for livelihood for the oyster farming, by strengthening organizational capacity of fish farming associations under supervision of Tanauan LGU.

4.2.2 Construction Work

(1) Payment Condition

For QIPs related to construction works, the percentage for Advance Payment for the contractors was adjusted to a higher ratio to enable the contractor to start the work with adequate fund. In exchange for the released Advance Payment, contractor's submitted a Bank Guarantee equivalent to the amount of Advance Payment. However, some contractors, especially the ones with smaller scale had difficulty securing the Bank Guarantee due to the high amount required from them to be posted on the bank in exchange of the Bank Guarantee. In some cases, contractors encountered financing problem for the construction since a bigger sum of their fund where on hold at the banks for the Bank Guarantee. In future projects, it is recommended that contractor's financial capability should be considered in the preparation of guidelines for Payment Conditions especially on the Advance Payment and Progress Payment.

(2) Technical Transfer to LGU Engineers

Through the collaborative works in the preparation of building designs, technical specification, estimation, tender, contract and construction supervision of the reconstruction of facilities under the QIPs, JICA Study Team was able to equip and improve the technical skills of LGU Engineers particularly in terms of supervising and management method for recovery projects. However, it wasn't sufficient as some of the LGU Engineers were not present all the time during site inspections and meetings.

Lack of skills and drive in project supervision of the LGU Engineers can be mostly attributed to: 1) their common professional practice and work background as LGU Engineers; 2) they are loaded with responsibilities due to lack of support staff in their department and 3) rare experience in extensive construction supervision specially on recovery projects.

Therefore, to improve their deficiencies in terms of project management and supervision, it is necessary for the continued support on them through provisions of capability trainings related to construction and management as well as the updates on new constructions technologies and recent revisions in structural and building codes. In addition, due to the Engineers' work load, it is necessary to expose and involve the other LGU Staff in construction supervision using basic monitoring method and by providing them checklists to enable them to supervise the project in the absence of the Engineers.

(3) Documentation skill of the contractor

Most of contractors could not submit Construction Schedules on time. Moreover, they were

not able to prepare the correct Bending Schedule (showing bending and installation of re-bar) and Shop Drawings (showing truss fabrication). Therefore, JICA Study Team has fully supported them through the provision of technical support in terms of documentation.

Additionally, in relation to the construction schedule, it was found that they couldn't prepare it because they didn't have the proper format for calculation of the quantity of required materials, equipment and labor/manpower work, and construction progress/statement of work accomplishment, and because they didn't know the proper calculation method for the construction volume and quantity per unit item, etc. Thus, it is very useful and important to teach the contractors as well as LGU Engineers, the basic skills for preparation of construction schedule, and through these they can be able to prepare working plans with scheduled material/labor, so that delays caused by construction materials shortage and poor quality of work can be prevented.

For shop drawings, it was noted that most contractors do not have skilled personnel/CAD operators that have the basic knowledge in the preparation of drawings for the placement of re-bars and truss diagrams, and details of welding works. These drawings are very useful for the procurement and fabrication of materials. Also, it is important for the quality control and assurance of materials as well as for the benefit of the contractor in terms of profit.

(4) Welding Skills

JICA Study Team Engineer noted that most of contractor's welders for the QIPs acquired there welding skills only through work experience. Hence, JICA Study Team provided Orientation to all QIPs contractors' welders to equip them with the fundamentals or basic knowledge for welding and the proper methods for welding works. Moreover, JICA Study Team conducted a skills assessment on the welders on site through actual welding and evaluated them. And so, the welders who passed the evaluation were the ones who were allowed to do the major welding works for the QIPs. As stated above, it is necessary to evaluate workers in advance especially for those assigned on structures/works items that require special skills such as welding works and to provide them as well the necessary education or knowledge related to the works.

Also, JICA Study Team provided trainings on truss welding, truss anchorage and roofing installation, which were conducted by Japanese experts. This was carried out as a measure to enhance the local technology/techniques in the strengthening and reinforcement of the superstructure of buildings, which had remarkable damage after Typhoon Yolanda. Although, the training was done in a short period (twice a month), the trainees (TESDA Graduates and Trainers) were able to acquire the knowledge and techniques as targeted; only the number of trainees were very limited.

Hence, QIPs provided training video and manual entitled "The Technology of Welding, Truss and Roof" to TESDA. It is expected that through these training materials, TESDA will be able to train a large number of skilled workers and improve their trainings substantially.

(5) Concreting Management

In QIPs, all contractors used portable concrete mixers for concrete production at site. Consequently the quality of mixed concrete would depend greatly on the skill of the mixer operators. More so the quality of concrete in columns, beams in relation to pouring and vibrating, would significantly be influenced by the skill of the supervisor/foreman or site engineer. Therefore it is important to teach the contractor regarding these points for them to be able to achieve high quality standard of concrete.

(6) Support Installation

Traditionally in the Philippines, the distance between supports on concrete slab is 50cm. This is decided without any calculation and practiced widely by local contractors. Depending on the situation on site, JICA Study Team instructed the contractor to reinforce this with additional support. Without sufficient support, formwork may get distorted, or collapse by biased load or concrete weight. It is important to install support properly for safety construction. The required numbers of support need to be calculated depending on the total concrete weight of slab and beam at every site. For safety construction, JICA Study Team instructed the contractor for additional measures, showing actual figures for total concrete weight of slab and beam and explaining about the requirements for reinforcing more support. JICA Study Team believed it necessary to educate the contractors on exact calculation and theory in adjusting the distances of support subject to the slab thickness and site situation to secure the safety work.

(7) Installation of Scaffolding

In the Philippines, most of the local contractors use timber or lumber scaffoldings around pillars prior to excavation of the foundation. They tend to use the scaffoldings to mark the locations of the structure. There may be no problem with this if only shallow excavation is required for the foundation, but in case of deep excavations, workability using machines will be interrupted. Moreover, in the cases where dewatering is necessary due to high groundwater level or in cases where the soil bearing capacity is low, scaffolding may disturb the implementation of proper countermeasures since it physically occupies the working space. As a result this may lead to delay of work since scaffolding may have to be removed or some work may have to be done manually. Hence, it is necessary to teach the contractor proper working sequence including the installation of scaffoldings, foundation

excavation works and the investigation or checking of soil bearing capacity to avoid any construction delays.

(8) Quality Identification of Material

For QIPs, quality of steel material was essential and thus quality of each material had to be confirmed by mill certificate and tensile test. There were cases where the test result of the testing of material conducted at a laboratory did not match with the mill certificate issued. This signifies presence of sub-standard materials at the market. Hence it is recommended that all materials incorporated to the project must undergo material testing to counter check the issued mill certificate prior to the approval for quality control and assurance.

Other cases of QIPs were where concrete aggregates needed for foundation work was not the approved kind of material that had passed laboratory testing. In these cases, JICA Study Team Inspector instructed the contractor for the replacement of the aggregates from qualified suppliers in Tacloban as the quarry sites of Samar are not suitable and not approved by the Department of Public Works and Highways. Hence it is recommended for contractors to strictly follow the compliance of procuring quality materials from approved suppliers before it can be incorporated to the project.

(9) Alternative for important works

There was a case where initially, the concrete placing method of second floor slab was planned with use of concrete pump and concrete plant due to big volume requirement. But, as a bridge on the way to site suffered damage by a typhoon, access became unavailable for heavy equipment/vehicle. Therefore, the contractor needed to change the concrete mixing method from the plant to site mixing. Concreting was done with scaffolding, slope, three portable concrete mixers, and 75 labors for 13 hours. In case of recovery projects after disasters, surrounding facilities could be damaged and it may affect the project's compliance to planned out schedules. Consequently, it is recommended that alternative procedures should be examined for important works to avoid delays in the process.

(10) Fixing of column formwork

In QIPs, there were several cases that the Inspector found misalignment of concrete columns. In worst cases, some were found leaning after removal of formworks which resulted to removal and replacement of such columns. Generally, local contractors carry out the placement or pouring of concrete using portable concrete mixers. In such cases, the rising speed of concrete is slow, and the concrete pressure is not so strong against formwork, so that the contractor tends to install the column formworks easily. But, formwork can be moved by concrete weight or pouring impact during concreting if support is not strong enough/stable. This default may cause a work interruption, through the

repairing of formwork by removal or replacement. In order to avoid such cases, it is necessary to teach the contractor appropriate reinforcing methods using horizontal tie bar or brace to fix the top of formwork.

(11) Site Inspection

In one of the QIPs, it was noted that after excavation for foundation of stockyard area, the contractor intended to lay aggregates and prepared for re-bar fabrication where noted and observed that the gravel did not undergo the required material testing for bearing capacity. Therefore, the contractor was instructed stoppage of work and to comply with the required material testing for approval.

In another incident, the JICA Study Team Inspector identified insufficient quantity of roof material ordered by the contractor. This resulted in delays due to reordering. The incidence shows that the contractor did not have sufficient knowledge to carry out work proper construction management. This is because they have no experience in proper rigorous construction supervision. Therefore it is recommended for constant supervision and inspection of work at site is important in order to let the contractor to comply the standard technical requirement of the project.

(12) Safety Management

In QIPs, there were cases where contractors worked for welding/painting operation in high places without concern for safety. JICA Study Team instructed the contractors repeatedly to take safety measure by installation of temporary fences, using of safety ropes and preventing any third person to entering without the required Personal Protective Equipment (PPE) such as safety helmet. Despite of the constant reminder for the compliance of the safety measures, contractors and labors just ignored the instructions. Hence it is important to prepare working plan for weld/paint on ground as much as possible, and then install the fabricated one to high places. In case there are no other alternatives but to really work at high places, working platform is very helpful to get safety environment like on ground avoiding any accident. Safety management can prevent any unintentional damage to the construction workers and local people.

Therefore, it is recommended for the continued educational enhancement of LGU Engineer and the local contractors for safety control and measures for a healthy working environment and appropriate steps avoiding any dangerous conditions. Lastly, it is a must that safety officers will be deployed in every construction sites for safety management.