

## **Chapter 17 Disaster Risk Reduction and Management and Land Use Planning**

### **17.1 Introduction: Disaster Risk Reduction and Management and Land Use Planning**

Land use planning is an effective tool for disaster risk reduction and management (DRRM) in order to build safer physical environment and spatial structure. Regulating and guiding land use and development is considered one of non-structural measures against disaster to mitigate disaster risks and vulnerability to disaster. The Philippine Disaster Risk Reduction and Management Act of 2010 (RA No. 10121) clearly states utilization of land use planning for disaster prevention and mitigation and stipulates promotion of mainstreaming DRRM in Comprehensive Land Use Plans (CLUPs). Pursuant to RA No. 10121, the LGUs in the Study Area conducted assessment of hazard risk and vulnerability of communities in the planning process of CLUPs. After the Yolanda disaster, the Government devoted much effort to mainstream DRRM in CLUPs and the Housing and Land Use Regulatory Board (HLURB) proposed a new task of Climate and Disaster Risk Assessment (CDRA) to be entailed in the CLUP preparation, with the guidelines for that.

In order to build safer cities and disaster resilient spatial structure, this chapter firstly reviews the institutional framework for DRRM and an approach to mainstream DRRM in CLUPs and other local plans, including how recovery and reconstruction plans and policies can be integrated into local plans while improving disaster resilience of community. Land use policies in the Study Area will be proposed with a methodology to develop land use policies and DRRM measures, and discussion on the evaluation of hazard risk of coastal areas. In conclusion, policy recommendations will be made to address issues and problems in DRRM institutions and land use planning.

#### **17.1.1 The Philippine Disaster Risk Reduction and Management Act of 2010 (Republic Act No. 10121)**

Republic Act No. 10121, which is known as the “Philippine Disaster Risk Reduction and Management Act of 2010,” was enacted on May 27, 2010, in line with the international principles on disaster reduction, such as the Hyogo Framework for Action (HFA) 2005, and the country’s road map, “Strengthening Disaster Risk Reduction in the Philippines: Strategic National Action Plan (SNAP) 2009-2019.” To strengthen the disaster risk reduction and management system, the act stipulated the need for national disaster risk reduction and management, of which the approach is “holistic, comprehensive, integrated, and proactive in lessening the socio-economic and environmental impacts of disasters including climate change,” with “the involvement and participation of all sectors and all stakeholders concerned, at all levels” (RA 10121, Section 2 (d)).

The focal point of this act is disaster risk reduction and management by improving the capacities of individuals, communities, and institutions in order to prepare for, cope with, and recover from disasters, and by mainstreaming disaster risk reduction and climate change in sustainable

development processes and plans. The disaster risk reduction and management should be institutionalized in policies, programs, and organizations to build disaster resilient communities. The policy fields to be integrated with DRRM go beyond the conventional disaster related areas, such as development planning, governance, poverty, land use and urban planning, housing, etc. The act underlines the importance of the perspectives of gender, the vulnerable, the poor, the minority and indigenous groups. The act also provides for the National Disaster Risk Reduction and Management Framework (NDRRMF) and stipulates preparation and institutionalization of a comprehensive National Disaster Risk Reduction and Management Plan (NDRRMP) (RA 10121, Section 2 (a), (e), and (g)). It should be noted that disasters defined under the act include man-made disaster such as conflict, in addition to natural disasters.

In addition, the act provides for the establishment of the National Disaster Risk Reduction and Management Council (NDRRMC). The NDRRMC is chaired by the Secretary of the Department of National Defense (DND), with the vice chairpersons from the Department of the Interior and Local Government (DILG) (for disaster preparedness), the Department of Social Welfare and Development (DSWD) (for disaster response), the Department of Science and Technology (DOST) (for disaster prevention and mitigation), and the National Economic Development Authority (NEDA) (for disaster rehabilitation and recovery) (RA 10121, Section 3 (z) and Section 8).

At the regional and local levels, the Regional DRRMCs, and Local DRRMCs, i.e., Provincial, City, and Municipal DRRMCs are also established (RA 10121, Section 5, Section 10, and Section 11). The Barangay Development Councils (BDCs) take over the roles of the existing Barangay Disaster Coordinating Councils and partake in the LDRRMCs. The local chief executives act as chairpersons of LDRRMCs (Section 11). Local Disaster Risk Reduction and Management Offices (LDRRMO) are founded in provinces, cities, and municipalities, and a Barangay Disaster Risk Reduction and Management Committee (BDRRMC) is established at the barangay level. The tasks of LDRRMO and BDRRMC include development and implementation of an LDRRMP and disaster risk reduction and management activities, monitoring, training, and operation of a multi-hazard early warning system.

### **17.1.2 Disaster Risk Reduction and Management at the National Level**

#### **(1) The National Disaster Risk Reduction and Management Framework**

Pursuant to RA No. 10121, the National Disaster Risk Reduction and Management Framework (NDRRMF) was approved by the NDRRMC in June 2011. An objective of NDRRMF is to provide a DRRM guideline to stakeholders at various levels, by providing overall directions, priorities, and components of disaster risk reduction and management. The framework sets the vision of the community as “**safer, adaptive and disaster-resilient Filipino communities toward sustainable development.**” In the framework, DRRM is defined as:

- lessening the vulnerability and increasing capacities in communities and governments
- mainstreaming efforts in national and local development plans

- achieved through multi-stakeholder partnership, and
- linked to climate change adaptation in post-disaster recovery process.

This framework initiated a paradigm shift from reactive to proactive disaster reduction and management to address multi-hazards by an all-society approach. It emphasizes non-structural and non-engineering measures, such as a bottom-up and participation, application of indigenous knowledge, and land use planning in resolving the root causes of the vulnerabilities, building disaster resilient communities, and promoting sustainable development.

The expected outcomes and key result areas are defined according to the four DRRM aspects, prevention and mitigation, preparedness, response, and rehabilitation and recovery. These items can be applied for benchmarking as well as evaluation and monitoring of the progress of DRRM. The framework identifies six cross-cutting concerns and nine strategies as follows:

**Table 17.1-1 Six Cross-Cutting Concerns and Nine Strategies in DRRM**

Six Cross-Cutting Concerns	Nine Strategies
(1) Health, (2) Human-induced disasters, (3) Gender mainstreaming, (4) Environmental protection, (5) Cultural sensitivity/ indigenous practice, and (6) Rights-based	<ul style="list-style-type: none"> <li>• Advocacy and Information, Education and Communication (IEC),</li> <li>• Competency-based capability building,</li> <li>• Contingency Planning,</li> <li>• Education on DRRM and CCA for ALL,</li> <li>• Institutionalization of DRRMCs and LDRRMOs,</li> <li>• Mainstreaming of DRR in ALL plans,</li> <li>• Research, Technology Development and Knowledge Management,</li> <li>• Monitoring, evaluation and learning, and</li> <li>• Networking and partnership building between and among stakeholders, media and tiers of government.</li> </ul>

Source: The National Disaster Risk Reduction and Management Framework 2011.

## **(2) The National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028**

In accordance with RA 10121 and the NDRRMF, the National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028 was formulated “to strengthen the capacity of the National Government and the local government units (LGUs), together with partner stakeholders, to build the disaster resilience of the communities, and to institutionalize arrangements and measures for reducing disaster risks” (RA 10121, Section 2 (e)).

The NDRRMP portrays a blueprint to achieve the stated vision through interventions in four mutually reinforcing and interoperable priority areas: (1) disaster prevention and mitigation, (2) disaster preparedness, (3) disaster response, and (4) disaster rehabilitation and recovery. The NDRRMP clarifies four long-term goals, 14 objectives, 24 outcomes, 56 outputs, and 93 activities by the four priority areas (see Table 17.1-2). It also specifies priority projects and implementation mechanisms from the national to local level, resource allocation for DRRM activities, and procedures for monitoring and evaluation.

**Table 17.1-2 Long-Term Goals and Objectives in Four Priority Areas**

Priority Area	Long-Term Goals	Objectives
Prevention and Mitigation	Avoid hazards and mitigate their potential impacts by reducing vulnerabilities and exposure and enhancing capacities of communities	<ul style="list-style-type: none"> <li>• Reduce vulnerability and exposure of communities to all hazards</li> <li>• Enhance capacities of communities to reduce their own risks and cope with the impacts of all hazards</li> </ul>
Disaster Preparedness	Establish and strengthen capacities of communities to anticipate, cope and recover from the negative impacts of emergency occurrences and disasters	<ul style="list-style-type: none"> <li>• Increase the level of awareness of the community to the threats and impacts of all hazards, risks and vulnerabilities</li> <li>• Equip the community with the necessary skills to cope with the negative impacts of a disaster</li> <li>• Increase the capacity of institutions</li> <li>• Develop and implement comprehensive national and local disaster preparedness policies, plans and systems</li> </ul>
Disaster Response	Provide life preservation and meet the basic subsistence needs of affected population based on acceptable standards during or immediately after a disaster	<ul style="list-style-type: none"> <li>• Decrease the number of preventable deaths and injuries</li> <li>• Provide basic subsistence needs of affected population</li> <li>• Immediately restore basic social services</li> </ul>
Rehabilitation and Recovery	Restore and improve facilities, livelihood and living conditions and organizational capacities of affected communities, and reduce disaster risks in accordance with the "building back better"	<ul style="list-style-type: none"> <li>• Restore people's means of livelihood and continuity of economic activities and businesses</li> <li>• Restore shelter and other buildings/installations</li> <li>• Reconstruct infrastructure and other public utilities;</li> <li>• Assist in the physical and psychological rehabilitation of persons who suffered from the effects of disaster</li> </ul>

Source: The National Disaster Risk Reduction and Management Plan 2011-2028, Final Version. December 2011, p. 6

### 17.1.3 Funding for Disaster Risk Reduction and Management

Under RA No. 10121, the budget for disaster risk reduction and management activities is appropriated as the National Disaster Risk Reduction and Management Fund (NDRRMF). The NDRRMF shall be used for disaster risk reduction, prevention and preparedness as well as relief, recovery, and reconstruction activities. Thirty percent (30%) of the NDRRMF shall be designated to the Quick Response Fund (RA 10121, Section 22). The NDRRMF identified funds for DRRM activities including:

- General Appropriations Act (GAA) from the budgets of the national line and government agencies,
- National Disaster Risk Reduction and Management Fund (NDRRMF),
- Local Disaster Risk Reduction and Management Fund (LDRRMF),
- Priority Development Assistance Fund (PDAF),
- Donor Funds,
- Adaptation and Risk Financing, and
- Disaster Management Assistance Fund (DMAF) (NDRRMF, p. 37-38).

At the local level, the Local Disaster Risk Reduction and Management Fund (LDRRMF) shall be established for the sake of DRRM. Pursuant to Republic Act No. 10121 Section 21, LGUs are obliged to allocate no less than five percent (5%) of the estimated revenue from regular sources to a Local Disaster Risk Reduction and Management Fund (LDRRMF). Then, thirty percent (30%)

of the LDRRMF is set aside for a Quick Response Fund (QRF) for relief and recovery, while the remaining seventy percent (70%) is used for DRRM activities, programs and procurement of equipment for prevention and mitigation, preparedness, response, rehabilitation and recovery. Any unused LDRRMF shall become a special trust fund within 5 years, and be returned to the general fund after the 5 years.

The Joint Memorandum Circular No. 2013-1 dated March 26 2013 issued by the Department of Budget and Management (DBM), DILG, and NDRRMC clarifies projects and programs funded by the LDRRMF as below. The policies and procedures for the utilization of the LDRRMF under the Joint Memorandum Circular also specify incorporation of projects and activities by the LDRRMF in the LDRRMP and the approved Annual Investment Program (AIP) of LGUs, and for the release and use of the 30% QRF, the requirement of a resolution of the local Council declaring the LGU under the state of calamity or a Presidential declaration of the state of calamity, among others. LGUs are mandated to submit monthly and annual reports on the utilization of the LDRRMF, and approved/ revised AIP indicating DRRM projects and activities, to the RDRRMC through the Regional Office of Civil Defense, and copies to the regional offices of DILG, and DBM.

**Table 17.1-3 Utilization of LDRRMF**

Areas	Projects and Activities
Disaster Prevention and Mitigation	<ul style="list-style-type: none"> <li>a) Risk assessment, vulnerability analysis, and other science-based technology and methodologies to enhance the LGU ecological profile, sectoral studies, and mainstream DRRM activities and CCA in CLUP and CDP</li> <li>b) Community-based monitoring system with DRRM/ CCA indicators</li> <li>c) Capability building on mainstreaming DRRM/ CCA in development planning, investment programming/ financing, and project evaluation and development</li> <li>d) Activities for review and integration of DRRM/CCA in various environmental policies, plans, programs, and projects</li> <li>e) Vulnerability analysis and risk assessment for critical facilities and infrastructure,</li> <li>f) Development of tools for risk assessment,</li> <li>g) Construction of dams or embankments for flood risk reduction and mitigation,</li> <li>h) Other similar projects</li> </ul>
Disaster Preparedness	<ul style="list-style-type: none"> <li>a) Training on disaster preparedness and response, search, rescue and retrieval operations,</li> <li>b) Simulation exercises at various levels to test plans and skills</li> <li>c) Development of information, education and communication (IEC) campaign and information sharing between LGUs/ communities and the national government</li> <li>d) Development of standard operation manuals for disaster operation centers</li> <li>e) Development and implementation of standard operation procedures (SOPs) for deployment, evacuation and coordination with rapid assessment teams, etc.,</li> <li>f) Development and institutionalization of early warning system (EWS), information sharing among LGUs/ communities and the national government,</li> <li>g) DRRM research</li> <li>h) Multi-stakeholder dialogue</li> <li>i) Development and conducting of regular reviews of contingency plans,</li> <li>j) Development of information and database generation</li> <li>k) Stockpiling of basic emergency supplies,</li> <li>l) Other similar programs/ projects</li> </ul>
Disaster Response	<ul style="list-style-type: none"> <li>a) Provision of alternative livelihood relief or assistance to victims of disasters</li> <li>b) Provision of tents and other temporary shelter facilities,</li> <li>c) Provision of food subsistence or relief goods to disaster victims,</li> <li>d) Other similar programs/ projects</li> </ul>
Disaster Rehabilitation and Recovery	<ul style="list-style-type: none"> <li>a) Formulation of designs for the reconstruction of disaster-resilient houses,</li> <li>b) Construction/ rehabilitation of damaged infrastructure facilities and evacuation centers,</li> <li>c) Training for social preparation of host communities and those that will be relocated,</li> <li>d) Implementation of building code and promotion of green technology</li> <li>e) Conducting post-conflict analysis,</li> <li>f) Other similar programs/ projects</li> </ul>

Source: DBM, DILG, and NDRRMC. Joint Memorandum Circular No. 2013-1, March 26 2013.

### 17.1.4 Recovery and Reconstruction Framework

The framework for emergency response to rehabilitation, recovery, and reconstruction is provided by RA No. 10121 and the NDRRMP. RA No. 10121 Sections 11 and 12 provide for the organizations responsible in recovery and reconstruction, while Sections from 15 to 17 specify mostly emergency response including coordination during emergencies (Section 15), Declaration of a State of Calamity (Section 16), and Remedial Measures (Section 17). The NDRRMP identifies the long-term goals, objectives, outcomes, and priority projects in recovery and reconstruction.

#### (1) Responsible Agencies for Reconstruction and Recovery

At the national level, NEDA is assigned to be the overall responsible agency for rehabilitation and reconstruction, while DSWD is responsible for emergency response. At the local level, the primary agency responsible for disaster response, and recovery and reconstruction is the LGUs. As the chief executives, municipal and city mayors and provincial governors are mandated to undertake emergency mitigation measures and submit a report regarding disasters and calamity to the provincial governor (from cities and municipalities) or the Office of the President (from the provinces) (the Local Government Code of 1991, Section 444(vii), 455(vii), and 465 (vii)). In a LGU, the LDRRMO placed under the Office of Mayor or Governor is responsible for provision of emergency support, including food, shelter, medical supplies, and a special place for displaced mothers and babies (RA No. 10121 Section 12 (6)).

Meanwhile, mayors and governors act as chairpersons in the LDRRMCs. Under RA No. 10121 Section 15, Local Disaster Risk Reduction and Management Councils (LDRRMCs) are mandated to play a leading role in preparation, disaster response, and recovery activities. The composition of major LDRRMC members is shown in Table 17.1-4.

**Table 17.1-4 Composition of LDRRMC**

<b>LDRRMC</b> <b>Chairperson: The Local Chief Executives</b>	
(1) The Local Planning and Development Officer, member;	(10) The Division Head / Superintendent of Schools of the DepEd, member,
(2) The Head of the LDRRMO, member;	(11) The highest-ranking officer of the Armed Forces of the Philippines assigned in the area, member;
(3) The Head of the Local Social Welfare and Development Office, member;	(12) The Provincial Director/City/Municipal Chief of the Philippine National Police (PNP), member;
(4) The Head of the Local Health Office, member;	(13) The Provincial Director/City/ Municipal Fire Marshall of the Bureau of Fire Protection (BFP), member;
(5) The Head of the Local Agriculture Office, member;	(14) The President of the Association of Barangay Captains (ABC), member;
(6) The Head of the Gender and Development Office, member;	(15) The Philippine National Red Cross (PNRC), member;
(7) The Head of the Local Engineering Office, member;	(16) Four (4) accredited CSOs, members; and
(8) The Head of the Local Veterinary Office, member;	(17) One (1) private sector representative, member.
(9) The Head of the Local Budget Office, member;	

Source: Republic Act No. 10121 Section 11.

Among the LDRRMCs, a specific LDRRMC is given tasks depending on the impact of the disaster as below:

- The BDC, if a barangay is affected;

- The City/Municipal DRRMCs, if two or more barangays are affected;
- The Provincial DRRMC, if two or more cities/municipalities are affected;
- The Regional DRRMC, if two or more provinces are affected; and
- The NDRRMC, if two or more regions are affected (RA No. 10121 Section 15).

The NDRRMC and LDRRMCs with the private sector and civil society organizations will support the LGUs during recovery and reconstruction.

## **(2) Emergency Response**

### 1) Declaration of a State of Calamity (RA No. 10121 Section 16)

The declaration and lifting of the state of calamity of a certain area hit by disaster are issued by the President by the recommendation of the NDRRMC, based on the criteria of the Council. The declaration is a call for international humanitarian assistance at the same time. The local council may issue the declaration of a state of calamity based upon the recommendation of the LDRRMC.

### 2) Remedial Measures (RA No. 10121 Section 17)

By issuing the declaration of a state of calamity, relevant agencies are immediately obligated to conduct the following measures:

- Imposition of price ceiling on basic necessities and prime commodities by the President upon the recommendation of the implementing agency (RA No. 7581),
- Monitoring, prevention and control by the Local Price Coordination Council of overpricing/profitteering and hoarding of prime commodities, medicines and petroleum products;
- Programming/reprogramming of funds for the repair and safety upgrading of public infrastructures and facilities; and
- Granting of no-interest loans by government financing or lending institutions to the most affected section of the population through their cooperatives or people's organizations.

### 3) National Disaster Response Plan (NDRP)

Form the lessons leant from the disaster of Typhoon Yolanda, the Office of Civil Defense (OCD) has drafted the National Disaster Response Plan (NDRP) for the case of hydro-meteorological hazards in 2014, with the Department of Social Welfare and Development (DSWD), vice chairperson for disaster response, under the JICA's technical assistance. The NDRP is a strategic action plan to conduct the timely, effective and coordinated response to address multi hazards. The NDRP was prepared on the two planning premise of the worst case scenario and tiered response.

In the preparation of NDRP, after the disaster response activities during the Yolanda disaster were assessed, the course of actions in response to disaster are clarified a scenario-based approach, and

the roles and responsibilities of relevant agencies were clarified through the consultation and coordination among the agencies, in accordance with modified disaster response clusters specifically for response different from the UN clusters. The activities is organized by response clusters to deal with the worst possible disaster of each hazard by three periods of pre-disaster, during disaster, and post disaster, and cross-cutting areas. Tiered response is adopted to determine the timing of the initiation and scope of response activities, taking account of the situations whether or not affected LGUs, the main response actor, would be able to respond to the disaster, depending on the impacts of disaster, capacity, and resource available. The response cluster consist of eight clusters including 1) Food and Non-food Items, 2) WASH, Health, Nutrition and Psychological Services, 3) Camp Coordination, Management and Protection, 4) Logistics, 5) Emergency Telecommunications, 6) Education, 7) Search, Rescue and Retrieval, and 8) Management of the Dead and Missing.

The issues in the disaster response during Yolanda that were addressed in NDRP include management of the dead and missing (MDM), one-stop shops and handing of relief goods from abroad, and rapid damage and needs assessment (RDANA) among others. In order to improve obtaining disaster damage information, NDRP proposes automatic deployment of the Rapid Deployment Team/s for RDANA and Aerial surveys and establishment of the National Operation Center(s), as such Yolanda's case if no damage report is sent from the affected LGU from 6 to 12 hours from the landfall.

### **(3) Rehabilitation and Recovery**

In RA No. 10121 Section 3, rehabilitation and recovery are defined as:

- 1) Rehabilitation: measures that ensure the ability of affected communities/areas to restore their normal level of functioning by rebuilding livelihood and damaged infrastructures and increasing the communities' organizational capacity. (Section 3 (ee))
- 2) Post-Disaster Recovery: the restoration and improvement where appropriate, of facilities, livelihood and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors, in accordance with the principles of "build back better." (Section 3 (aa))

The NDRRMP sets the long term goals in rehabilitation and reconstruction as: to restore and improve facilities, livelihood and living conditions and organizational capacities of affected communities, and reduce disaster risks in accordance with the "building back better." The operational timeline for response, rehabilitation and recovery is defined as: 1) immediate term: up to 1 year from the disaster, 2) short-term: within 1 to 3 years from the disaster, 3) medium term: within 3 to 6 years from the disaster, and 4) long term: beyond 6 years after the disaster (NDRRMP, p. 34). Table 17.1-5 summarizes objectives, outcomes, activities and operation timelines for each activity in rehabilitation and reconstruction. Unlike disaster response and disaster preparedness, there is no plan or guidelines prepared for rehabilitation and recovery from disaster.



**Table 17.1-5 Objectives, Outcomes, Outputs and Activities in Rehabilitation and Reconstruction**

Objectives	Outcomes	Outputs	Activities	Lead Agency & Implementing Partners*	Operational Timelines			
					Within 1 year	1-3 years	3-6 years	Beyond 6 years
-	Damages, Losses and Needs Assessed	Post Disaster Needs Assessment Strategic Action Plan	Conduct Post-Disaster Needs Assessment (PDNA) Coordinate the formulation of the Strategic Action Plan for disaster-affected areas	<u>OCD</u> & National government agencies, regional line agencies and local offices				
To restore the people's means of livelihood and continuity of economic activities and business	Economic activities restored and, if possible, strengthened or expanded	Livelihood programs and projects Credit facilities for affected sectors	Identify the needed assistance and formulate/ implement appropriate programs Identify/ mobilize funding sources	AFP, CSO, DA, DBM, DILG, DSWD, DTI, LGU, MINDA, OP, Congressional Development Authorities				
To restore shelter and other buildings/ installations	DRRM/CCA elements mainstreamed in human settlement	Safe relocation sites Disaster-resilient housing designed and reconstructed Self-sufficient communities with access to basic social services	Identify and provide suitable relocation sites for affected population Design/construction of disaster resilient housing Conduct trainings for social preparation of host communities and those that will be relocated to reduce conflict.	<u>NHA</u> & AFP, DAR, DENR, DILG, DOST, DPWH, DSWD, HLURB, LGU, NEDA, PAGIBIG				
To reconstruct infrastructure and other public utilities	Disaster and climate change-resilient infrastructure reconstructed	Infrastructure facilities restored / rehabilitated according to safety and resiliency standards development permits approved within prescribed timeline	Undertake the necessary rehabilitation or repair of damaged infrastructures Implement building code and promotion of green technology Close monitoring and/ or tracking of approval of infrastructure projects and permits	<u>DPWH</u> & AFP, ASEP, CSC, DENR, DepEd, DILG, DOJ, LGUs, PICE				
To assist in the physical and psychological rehabilitation of persons who suffered from the effects of disaster.	A psychologically sound, safe and secure citizenry that is protected from the effects of disasters and are able to restore to normal functioning after each disaster	Vulnerable population provided with adequate and appropriate risk protection measures	Develop systems for appropriate risk protection measures Conducting of post-disaster/conflict needs analyses with affected communities Develop systems of support and communication among key stakeholders Build capacities of psychosocial care providers	<u>DOH and DSWD</u> , & AFP, CSOs, DILG, NBI, PNP, PRC, OPAPP				

Note: The underlined agencies in the column are the lead agencies of each objective. If no agency is underlined in the cell, a lead agency responsible for the objective is specified after the assessment of damage.

Source: The National Disaster Risk Reduction and Management Plan 2011-2028, Final Version. December 2011, p. 56-59.

### 17.1.5 Reflection on the Institutional Framework for DRRM

In nutshell, the institutional framework for DRRM in the Philippines has been still under the development, though RA No. 10121 and subsequent plans related to DRRM initiated a paradigm shift from disaster response to preparedness with non-structural measures to reduce vulnerability and increase the capacity of community. When Typhoon Yolanda struck the country three years after the enactment of RA No. 10121, DRRM institutions such as LDRRMCs and LDRRMOs have not been in place yet; demarcation of tasks and responsibilities were clearly refined among relevant agencies; and vertical and horizontal coordination mechanisms have not been installed. Thus, the DRRM measures indicated in the Act have not been enforced and the preparedness of the governments at all levels was not sufficient to deal with a large scale disaster like Yolanda. As a result, disaster response and recovery and reconstruction activities have proceeded in an ad-hoc

manner.

The devastating disaster of Yolanda urged the key national agencies for DRRM to develop the DRRM institutions envisioned in RA No. 10121. Based on the experience of Yolanda, OCD and DSWD prepared the NDRP for improvement of disaster response, while, DILG updated the Disaster Preparedness Manual in 2015, which provides LGUs with guidelines on the actions to be taken. Although there has been no initiative observed to improve the process of rehabilitation and reconstruction, as of February 2015, efforts for disaster prevention and mitigation has been started in updating the required components of the CLUPs by the HLURB and international donors, such as UNDP and UN Habitat.

The revision of the CLUP planning process is essential for DRRM from the perspectives of not only disaster prevention and mitigation but also recovery and reconstruction. It is LGUs that are primarily in charge of implementation of projects and programs for DRRM as stated in the Act which is situated in the decentralized political institution of the Philippines. The CLUP as a master plan of LGU proposes the future vision of a LGU, especially of spatial structure and physical development, which is supposed to guide the recovery and reconstruction after disaster. Thus, the next section will discuss how DRRM components are integrated into planning of the CLUP and other local plans in order to make cities more disaster resilient.

## **17.2 Mainstreaming Disaster Risk Reduction and Management in the Comprehensive Land Use Plan and Local Plans**

### **17.2.1 Mainstreaming DRRM in Local Plans**

Mainstreaming disaster risk reduction and management in the CLUP and other local development plans was brought up as a key policy for proactive DRRM. Mainstreaming DRR in the local plans is to refocus development goals, objectives, and targets in the way that leads to disaster risk reduction, and to develop and implement appropriate measures for DRRM, according to the NDRRMF. The NDRRMF describes that DRRM and Climate Change Adaption (CCA) should be mainstreamed into Provincial Development and Physical Framework Plans (PDPFPs), Comprehensive Development Plans (CDPs), and CLUPs for reduction of vulnerabilities to disasters and increase of DRRM capacities of communities. LGUs need to allocate budgets for DRRM programs and projects by integrating their LDRRMP in Local Development Investment Plan and Annual Budget.

Preparation of LDRRMP is a first step toward comprehensive disaster risk reduction and management. LDRRMOs are responsible for formulation of their comprehensive and integrated LDRRMPs consistent with the national, regional, and provincial frameworks and policies on DRRM, in coordination with the local development councils (LDCs) (Republic Act No. 10121 Section 12 (6)). LDRRMCs approve submitted LDRRMPs and monitor and evaluate the implementation of the plans. OCD and LDRRMCs review and evaluate the LDRRMPs to facilitate the integration of disaster risk reduction measures into CDP and CLUP (Republic Act

No. 10121 Section 9 (e) and 11 (1)). Figure 17.2-1 illustrates the integration of DRRM in CLUP, CDP, and other plans at the national, regional, and LGU levels.

The next step is mainstreaming LDRRMP in the local plans, namely CLUP and CDP, in order to build a disaster resilient physical environment and community. The Local Government Code of 1991 (Republic Act 7169) mandates LGUs<sup>1</sup> to prepare two types of plans, a CLUP and a CDP (Section 20 (c), Section 106 and Section 109). The CLUP is a long-term development plan for the entire territory of the LGU, enacted through a zoning ordinance, of which the planning framework is 10 years at the minimum (HLURB 2010) up to 30 years (Department of the Interior and Local Government 2008). A local legislative body, a Sanggunian or local council, approves the CLUP and enacts a zoning ordinance. In the case of component LGUs, the Provincial Land Use Committee (PLUC) reviews the contents of their LGUs.

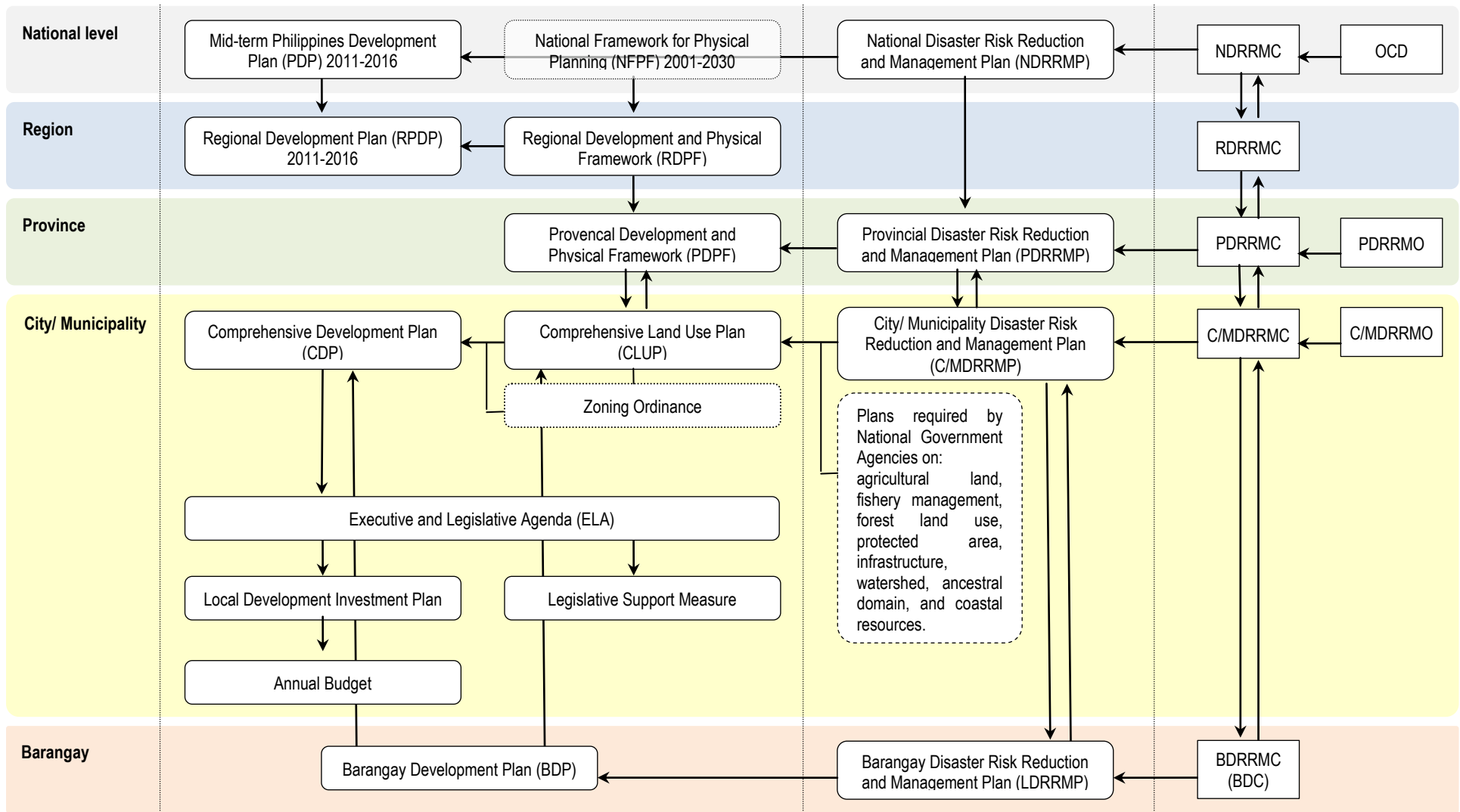
The CDP is a comprehensive multi-sectoral development plan including social development, the economy, infrastructure, environmental management, and administration and financial development. The CDP is an action plan of the CLUP to develop and implement priority sectoral and cross-sectoral programs and projects. A medium-term planning period of six years is recommended, though it varies depending on the LGUs. It needs to correspond to the elected officials' terms. The CDP provides a base to develop an Executive and Legislative Agenda (ELA) and local development investment program (LDIP)<sup>2</sup>. These plans should reflect and be consistent with the plans and policies of the national government, line agencies, barangays, etc. Provinces prepare their PDPFPs, instead of CLUPs.

A LDRRMP entails policies and an action plan for implementation of programs and projects in accordance with four thematic areas, i.e., prevention and mitigation, preparedness, response, and rehabilitation and recovery. The plan proposes structural and non-structural measures for DRRM, including land use policy, development of infrastructure such as embankments, dikes, elevated roads, evacuation centers, etc., and soft programs such as evacuation drills, training, and education. The basic land use policies for protection and development of human settlements in the LDRRMP should be reflected in CLUP, along with the hard measures related to infrastructure. The public facilities and infrastructure susceptible to disasters, e.g., schools, health centers, markets, churches, roads, bridges, etc., which should be relocated or improved, are identified along with countermeasures in CLUP and CDP. In particular, the CDP needs to incorporate the components of LDRRMP in it, which are related to social policies on disaster education and evacuation training, and programs to respond to the needs and interests of the vulnerable, such as women, children, or senior citizens. The policies, programs and projects in the three plans should be consistent in order to accelerate and transform the physical and social environments to become more disaster resilient. The contents of each plan are summarized in Table 17.2-1.

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<sup>1</sup> Local government units (LGUs) in the Philippines include provinces, cities, municipalities, and barangays.

<sup>2</sup> DILG. Bureau of Local Government Development. 2008. *A Rationalized Local Planning System in the Philippines*. 1st Edition  
DILG. 2009. *The Enhanced Guide to Comprehensive Development Plan (CDP) for the Local Government Units*.



**Figure 17.2-1 Integration of DRRMPs in Land Use Plans and Development Plans**

**Table 17.2-1 Characteristics of LDRRMP, CLUP, and CDP**

	LDRRMP	CLUP	CDP
Characteristics	<ul style="list-style-type: none"> <li>▪ To provide analysis of hazards and vulnerability and to design and implement programs for disaster prevention/mitigation, preparedness, response, and rehabilitation and recovery.</li> <li>▪ Prepared by LDRRMO and approved, monitored and evaluated by LDRRMC (RA 10121 Section 11)</li> </ul>	<ul style="list-style-type: none"> <li>▪ A long-term plan for physical development and management of a local territory with a zoning ordinance</li> <li>▪ Planning period: minimum 10 years (reviewed every 3 years)</li> <li>▪ Approved CLUP and enacted a zoning ordinance by Sanggunian</li> <li>▪ Reviewed by the Provincial Land Use Committee (PLUC) (component LGUs only)</li> </ul>	<ul style="list-style-type: none"> <li>▪ A multi-year and multi-sectoral comprehensive plan (covering all development sectors)</li> <li>▪ Action plan of CLUP to develop and implement priority sectoral and cross-sectoral programs and projects</li> <li>▪ Planning period: mid-term 6 years</li> <li>▪ Initiated by a Local Development Council (LDC) and approved by Sanggunian</li> </ul>
Contents:	<ol style="list-style-type: none"> <li>1. LGU Profile</li> <li>2. Risk Profile: Assessments of Hazard, Risk, Vulnerability, and Capacity</li> <li>3. Situational analysis: SWOT of 4 themes.</li> <li>4. Vision and Mission/ Goals/Objectives/ Strategies</li> <li>5. Disaster Prevention &amp; Mitigation</li> <li>6. Disaster Preparedness</li> <li>7. Disaster Response</li> <li>8. Rehabilitation &amp; Recovery</li> <li>9. LDRRM Action Plan</li> <li>10. Monitoring and Evaluation</li> </ol>	<p>Components:</p> <ol style="list-style-type: none"> <li>1. Vision, goals, and objectives</li> <li>2. Spatial strategies</li> <li>3. Land use plan (Land use policies )</li> <li>4. Zoning ordinance</li> <li>5. Situational/ Sectoral analysis</li> </ol> <p>Land Use Policy Areas:</p> <ol style="list-style-type: none"> <li>1. Settlement Policies <ul style="list-style-type: none"> <li>▪ Urban (town centers/ urban form)</li> <li>▪ Rural (upland, coastal , lowland)</li> <li>▪ Indigenous people's settlement</li> </ul> </li> <li>2. Protected Land Policies <ul style="list-style-type: none"> <li>▪ National Integrated Protected Areas System (NIPAS)/ Non-NIPAS</li> <li>▪ Protected Agricultural</li> <li>▪ Environmentally constrained</li> <li>▪ Heritage sites</li> </ul> </li> <li>3. Production Land Policies <ul style="list-style-type: none"> <li>▪ Agricultural</li> <li>▪ Industrial</li> <li>▪ Commercial</li> <li>▪ Tourism</li> <li>▪ Mining</li> </ul> </li> <li>4. Infrastructure Policies <ul style="list-style-type: none"> <li>▪ Transport network</li> <li>▪ Social infrastructure</li> <li>▪ Economic infrastructure</li> <li>▪ Administrative support</li> </ul> </li> </ol>	<p>Components:</p> <ol style="list-style-type: none"> <li>1. Vision</li> <li>2. Analysis of Vision – Reality Gap</li> <li>3. Cross-Sectoral / Special Issues and Concerns</li> <li>4. Sectoral Development Plans <ol style="list-style-type: none"> <li>1) Sectoral Policies</li> <li>2) Programs and projects</li> <li>3) Local legislations</li> </ol> </li> </ol> <p>Sectors:</p> <ol style="list-style-type: none"> <li>1. Social development <ul style="list-style-type: none"> <li>▪ Education/ Health and Nutrition/ Social Welfare and Development/ Shelter/ Public Order and Safety/ Sports, Recreation, Arts and Culture</li> </ul> </li> <li>2. Economic development <ul style="list-style-type: none"> <li>▪ Primary/ Secondary/ Tertiary</li> </ul> </li> <li>3. Physical &amp; Infrastructure <ul style="list-style-type: none"> <li>▪ Economic support/ Social support/ Public administrative support</li> </ul> </li> <li>4. Environmental management <ul style="list-style-type: none"> <li>▪ Lands/ Forest Lands/ Protection forests/Production forests/ Mineral Lands/ Parks, wildlife and other reservations/ Water resources/ Air Quality/ Waste Management</li> </ul> </li> <li>5. Admin. &amp; financial development <ul style="list-style-type: none"> <li>▪ Organization and Management/ Fiscal Management/ Legislative Output/ LGU-Civil Society Organizations – Private Sector Linkages</li> </ul> </li> </ol>

Source:

NDRRMC. Office of Civil Defense. 2013. Local Disaster Risk Reduction and Management Plan Formulation Training Manual.

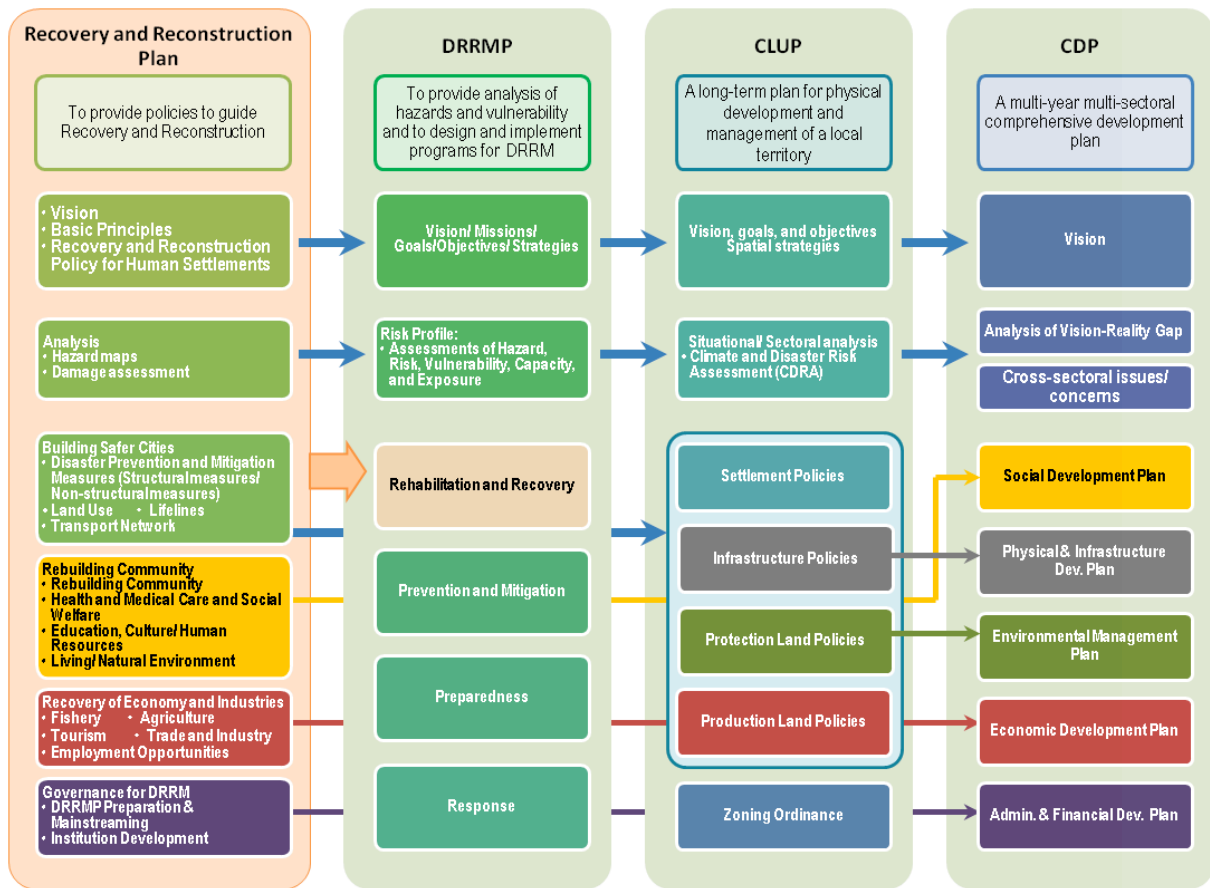
DILG. Bureau of Local Government Development. 2008. A Rationalized Local Planning System in the Philippines. 1st Edition

DILG. 2009. The Enhanced Guide to Comprehensive Development Plan (CDP) for the Local Government Units.

### **17.2.2 Integrating the Recovery and Reconstruction Plan into the LDRRM and the CLUP**

The recovery and reconstruction plan (RRP) prepared after a disaster shall be comprehensive in order to build disaster resilient cities through recovery and reconstruction under the slogan of Build Back Better and Safer. The RRP, therefore, aims at the three objectives of building safer cities, recovering people's daily lives, and restoring the regional economy and promoting industries. It contains not only rehabilitation and reconstruction of damaged infrastructure and facilities, but also development of structural and non-structural measures such as tide embankment, dikes, land use, and evacuation plan for mitigation of disaster risk and vulnerability, health care, education, livelihood, shelter, community development, and actions for the vulnerable for improvement of the social sector and people's life, and recovery of agriculture, fishery, and promotion of new new industry for rebuilding regional economy.

Recovery and reconstruction are guided by the future vision of a LGU envisioned in the CLUP and CDP. The policies, programs and projects in the RRP shall be integrated into the LDRRM, CLUP, and CDP. The existing land use plan and development plan of infrastructure and public facilities in the CLUP and CDP should be revised based on the recovery and reconstruction policies on land use, and projects of development of infrastructure, public facilities, and relocation sites proposed in the RRP. At the same time, the LDRRM will be updated, reflecting newly proposed structural and non-structural DRRM measures of tide embankments, seawalls, community evacuation plan, evacuation centers, early warning, education on raising awareness, etc. All projects and programs are incorporated into the LDIP for disbursement of the LDRRMF and 20% Local Development Fund. The relationships among RRP, LDRRM, CLUP, and CDP are described in Figure 17.2-2 and Table 17.2-2.



Source: JICA Study Team

Figure 17.2-2 Mainstreaming of LDRRM into CLUP and CDP

**Table 17.2-2 Translating the Recovery and Construction Plan to DRIP, CLUP, and CDP**

Recovery and Reconstruction Plan		LDRRMP				CLUP				CDP					
Items		Rehabilitation & Recovery	Disaster Prevention & Mitigation	Disaster Preparedness	Disaster Response	Settlement Policy	Protection Land Policy	Production Land Policy	Infrastructure Policy	Social Development	Economic Development	Physical & Infrastructure	Environmental Mangament	Admin. & financial development	Cross-sectoral Issues/ Concerns
1.	Basic Principles for Recovery and Reconstruction														
	1.1. The Objectives of Recovery and Reconstruction Policy	•				•	•	•	•	•	•	•	•	•	•
	1.2. 3 Basic Principles for Recovery and Reconstruction	•				•	•	•	•	•	•	•	•		•
	1.3. Recovery and Reconstruction Policy of Human Settlement	•				•	•	•	•	•	•	•			•
2.	Building Safer Cities														
	2.1. Comprehensive Disaster Prevention and Mitigation Measures	•	•	•		•									
	2.1.1. Structural Measures	•	•	•		•			•			•			
	(1) Construction of Embankments, Dikes, etc.	•	•	•		•	•		•			•			
	(2) Evacuation Centers and Evacuation Routes	•	•	•	•	•	•		•						•
	2.1.2. Non-Structural Measures	•	•	•		•									
	(1) Evacuation Plan	•	•	•	•	•				•		•			•
	(2) Building Code	•	•	•		•			•			•			•
	2.2. Land Use	•	•	•		•						•			•
	2.3. Lifelines	•	•	•	•			•	•			•			
	2.4. Transport Network	•	•	•	•			•	•			•			
3.	Recovery of People's Daily Life														
	3.1. Community Development	•	•	•						•					
	(1) Rebuilding Community	•	•	•		•				•					
	(2) Community-based Disaster Mitigation	•	•	•	•	•				•					
	3.2. Health and Medical Care and Social Welfare	•	•	•	•					•		•			
	(1) Health and Medical Care	•	•	•	•	•			•			•			
	(2) Social Welfare and Gender	•	•	•	•	•			•						
	3.3. Education, Culture and Human Resources	•	•	•						•					
	(1) Recovery of Education	•	•	•					•			•			
	(2) Disaster Education	•	•	•	•					•					
	Improvement of Living Environment and Protection of Natural Environment														
	3.4. Improvement of Living Environment	•	•	•		•						•			
	(1) Improvement of Living Environment	•	•	•		•						•			
	(2) Protection of Natural Environment	•	•	•			•						•		
4.	Restoration of Regional Economy and Promotion of Industries														
	4.1. Fishery	•		•				•	•			•	•		
	4.2. Agriculture	•		•				•	•			•	•		
	4.3. Tourism	•		•				•	•			•	•		
	4.4. Trade and Innovative Industry	•		•				•	•			•	•		
	4.5. Employment Opportunities	•		•				•				•	•		
5.	Improving Governance for Recovery and Reconstruction and toward DRRM														
	5.1. Mainstreaming DRRM in Local Plans	•	•	•		•	•	•	•	•	•	•	•	•	•
	5.2. Institutional Development	•	•	•	•									•	•

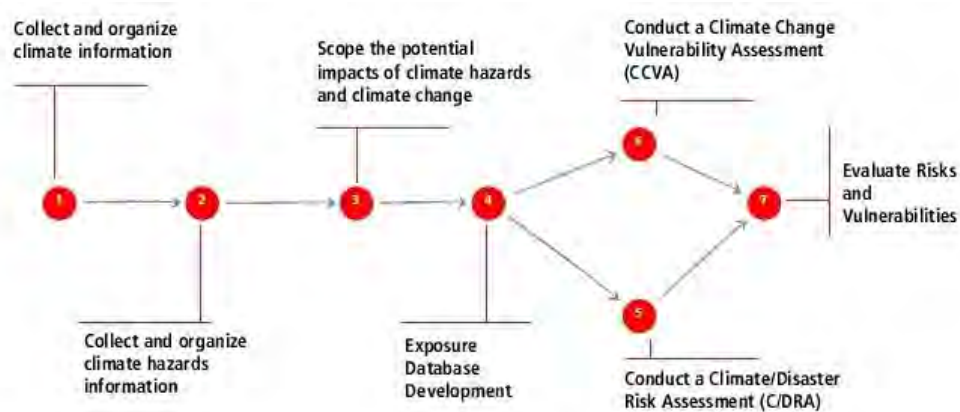
Source: JICA Study Team



### 17.2.3 Integration of DRRM into Comprehensive Land Use Plans

Among the local plans, CLUP is the main target of mainstreaming CCA and DRRM because of its long-term planning period and comprehensive nature. Mainstreaming CCA and DRRM in CLUP means the formulation of a Climate and Disaster Risk Sensitive CLUP (CDRS-CLUP). In an effort to integrate CCA and DRRM in CLUP, the Housing and Land Use Regulatory Board (HLURB) and national line agencies have prepared various manuals and guidelines in cooperation with international agencies. After preparation of the enhanced guidelines for preparation of CLUP and Zoning Ordinances in 2013, HLURB formulated the Supplemental Guidelines on Mainstreaming Climate and Disaster Risks in the Comprehensive Land Use in 2014, which is accompanied by the Reference Manual on Mainstreaming Disaster Risk Reduction and Climate Change Adaptation in the Comprehensive Land Use Plan<sup>3</sup> prepared by NEDA.

The Supplemental Guidelines underline the importance of the formulation of a CDRS-CLUP for sustainable development and harmonizing the CDRS-CLUP with other local plans. It is also crucial to achieve vertical integration with higher level plans, specifically between PDPFP and CLUP, and to promote horizontal inter-municipality/city cooperation by taking the ecosystem-based approach in land use planning. The formulation of CDRS-CLUP consists of two steps: 1) conducting a Climate and Disaster Risk Assessment (CDRA) and 2) integrating the results of the CDRA in the CLUP formulation. The CDRA aims to determine the level of risks and vulnerabilities regarding climate change impact and disasters by analyzing the hazard, exposure, sensitivity and adaptive capacities. The CDRA involves 7 steps as shown in Figure 17.2-3. The results of the analysis shall be reflected in the mainstreaming processes such as the formulation of the vision and goals, identification of priority areas and strategies for mitigation and preventive measures for disaster risk and climate change adaption, and development of a land use policy. The expected outputs of each step are summarized in Table 17.2-3.



Source: HLURB, Climate Change Commission, UNDP, Australian Government, 2014. Supplemental Guidelines on Mainstreaming Climate and Disaster Risks in the Comprehensive Land Use Plan.

**Figure 17.2-3 Climate and Disaster Risk Assessment Process**

<sup>3</sup> n.d.

**Table 17.2-3 Expected Outputs of the CDRA**

Step	Expected Outputs
Climate Information	<ul style="list-style-type: none"> <li>• Analysis and discussion of the historical/observed climate trends of the locality;</li> <li>• Analysis and discussion of projected climate change variables of the locality;</li> </ul>
Understanding Hazards	<ul style="list-style-type: none"> <li>• Description of the various natural hazards that would likely affect the locality (i.e. spatial extent, magnitude, recurrence interval);</li> <li>• Describing the historical damage statistics of past disaster events (amount of damages, affected population and property);</li> <li>• Descriptive observations of impacts from past disaster events</li> </ul>
Scoping potential impacts of climate change and natural hazards	<ul style="list-style-type: none"> <li>• Illustration and description of potential sectoral impacts of climate change</li> <li>• Supplemental analysis of potential impacts based on historical experiences.</li> </ul>
Exposure Database Development	<ul style="list-style-type: none"> <li>• Georeferenced Spatial location of areas and/or elements (Maps)</li> <li>• Attribute information on the intrinsic characteristics related to exposure, sensitivity/vulnerability and adaptive capacity</li> </ul>
Climate Change Vulnerability Assessment	<ul style="list-style-type: none"> <li>• Quantitative analysis on the extent of exposure of population, built and production related properties, critical point and lifeline facilities;</li> <li>• Qualitative analysis of sensitivity of exposed elements, understanding of indicators contributing to sensitivity;</li> <li>• Qualitative analysis of the degree of impact based on exposure and sensitivity;</li> <li>• Qualitative analysis of adaptive capacity, understanding factors contributing to adaptive capacity;</li> <li>• Qualitative assessment on the level of vulnerability, based on the potential degree of impact and existing level of adaptive capacities;</li> <li>• Vulnerability maps indicating the spatial variation of the level of vulnerabilities of exposed elements.</li> </ul>
Climate and Disaster Risk Assessment	<ul style="list-style-type: none"> <li>• Analysis of recurrence interval (likelihood of occurrence) of hazards;</li> <li>• Quantitative analysis on the extent of the exposed population, built and production related properties, critical point and lifeline facilities;</li> <li>• Qualitative analysis of vulnerability (social and inherent) of exposed elements, understanding of indicators contributing to vulnerability;</li> <li>• Qualitative analysis of the degree of damage based on exposure and vulnerability;</li> <li>• Qualitative analysis of adaptive capacity, understanding factors contributing to adaptive capacity;</li> <li>• Qualitative analysis on the severity, based on the potential degree of impact and existing level of adaptive capacities;</li> <li>• Risk maps indicating the spatial variation on the level of risks of exposed elements.</li> </ul>
Evaluating Risks and Vulnerabilities	<ul style="list-style-type: none"> <li>• Priority decision areas;</li> <li>• Summary of area based technical findings based on the assessment of risks and vulnerabilities;</li> <li>• Area prioritization based on the acceptable level of risk/vulnerability;</li> <li>• Identification of planning implications (emphasis on the implication of risks and vulnerabilities to local sectoral development);</li> <li>• Identification of policy interventions (legislation, land management policies, programs/projects)</li> </ul>

Source: HLURB. Climate Change Commission. UNDP. Australian Government. 2014. Supplemental Guidelines: Mainstreaming Framework: An overview of Climate and Disaster Risk Assessment Process. Module 3.1

The second step is to mainstream the results of the CDRA in the CLUP formulation. The outputs of the CDRA conducted as a part of activities in Step 4 are incorporated into twelve steps in the CLUP formulation process (see Figure 17.2-4). Table 17.2-4 presents key considerations and components of some steps among the twelve steps.



Source: HLURB. Climate Change Commission. UNDP. Australian Government. 2014. Supplemental Guidelines on Mainstreaming Climate and Disaster Risks in the Comprehensive Land Use Plan.

Figure 17.2-4 Twelve Steps in Formulation of CLUP

Table 17.2-4 Mainstreaming Climate and Disaster Risks in CLUP Formulation Steps

Steps	Key Considerations/ Components
<b>Step 4. Situation Analysis</b>	<ul style="list-style-type: none"> <li>To identify <b>priority risk and vulnerability decision areas</b> that need to be addressed, which will be used to identify <b>current and future sectoral development issues and concerns</b> related to disasters and climate change.</li> <li>To <b>prioritize a menu of possible interventions</b> (policies and strategies) to address current risks and ensure future risks are prevented by taking a <b>holistic and integrated approach</b>;</li> <li>To <b>make necessary adjustments to the projected land demand</b> given current risks and vulnerabilities on people and property – to identify future land requirements and backlogs in the provision of needed basic social services (health, education, governance), housing, commercial and industrial spaces.</li> <li>To make informed decisions when analyzing land suitability to systematically prioritize future areas for urban expansion in lieu of climate change and its impacts on the severity and frequency of hazards.</li> </ul>
<b>Step 5. Goals and Objectives Setting</b>	<p><u>Key Considerations for Goal and Objective Setting:</u></p> <ul style="list-style-type: none"> <li><b>Rational settlement development/growth</b> that addresses current risks and preventing future risks from occurring towards ensuring human security;</li> <li><b>Enhance the quality and stability of the natural environment</b> as a means to reduce risks, contribute to climate change adaptation and mitigation;</li> <li><b>Ensure optimum economic productivity</b> through resilient and well adapted production systems;</li> <li><b>Ensuring the uninterrupted access and delivery</b> of basic social support services;</li> <li><b>Efficient linkage/access, and distribution systems</b> through the establishment of climate proofed and resilient infrastructure and utilities;</li> <li><b>More efficient utilization</b> of public and private investments;</li> <li><b>Should seek to reduce vulnerabilities/sensitivities and enhance adaptive capacities</b> of the population</li> </ul>
<b>Step 6. Selection of Development Thrust</b>	<p><u>Key considerations for evaluation of the future scenario and the various development options:</u></p> <ul style="list-style-type: none"> <li><b>Feasibility</b> of pursuing the thrust option/s given the magnitude and spatial extent of the natural environment;</li> <li>Can the option <b>sustain local economic development</b> given the future Potential impacts of climate change;</li> <li>Ability of the option to <b>generate social and economic benefits</b> to reduce current and future vulnerabilities/sensitivities and enhance the adaptive capacities of the local residents;</li> <li><b>Estimated amount of mitigation and adaptation measures</b> to support and sustain economic productivity;</li> </ul>
<b>Step 7. Detailing the land use plan: Risk Reduction Policy Recommendations</b>	<p><u>Risk Reduction Policy:</u></p> <ul style="list-style-type: none"> <li><b>Risk avoidance or elimination</b> – removing a risk trigger by not locating in an area of potential hazard impact.</li> <li><b>Risk mitigation</b>– reducing the frequency of occurrence or the severity of the consequence by changing physical characteristics or operations of a system or the element at risk. It can take on the following subcategories: <ul style="list-style-type: none"> <li>risk or loss reduction through <b>mitigation</b></li> <li>risk or loss reduction through <b>preparedness</b></li> <li>segregation of exposure through <b>duplication</b> (back-up systems)</li> <li>segregation of exposure through <b>separation</b></li> </ul> </li> <li><b>Risk sharing or risk transfer</b> – shifting the risk-bearing responsibility to another party (crop and property Insurance), or leasing high/moderate risk areas to proponents with capacities to mitigate risks.</li> <li><b>Risk retention or acceptance</b> – this is the “do-nothing” scenario where risks are fully accepted and arrangements made to pay for financial losses are shouldered by the property owner/s.</li> </ul> <p><u>Risk Reduction Policy for Urban Areas</u></p> <ul style="list-style-type: none"> <li>Minimizing urban exposure to hazards</li> <li>Densification of identified safe areas</li> <li>Prioritizing residential areas to be situated in relatively safe areas</li> <li>Prioritizing safety over accessibility when it comes to location standards</li> <li>Reduce vulnerabilities through mitigation measures</li> <li>Cost for mitigation should be shared by both the LGU and the community</li> </ul>

Steps	Key Considerations/ Components
	<ul style="list-style-type: none"> <li>• Situating settlement areas away from environmentally critical and sensitive areas</li> <li>• Reduce vulnerabilities through mitigation measures</li> <li>• Incentive instruments</li> </ul> <hr/> <p><u>Risk Reduction Policy for Production Areas</u></p> <ul style="list-style-type: none"> <li>• Changing production practices to anticipate/adapt to potential changes in climate</li> <li>• Strategic location and climate proofing production support facilities</li> <li>• Encourage agro-forestry production in upland or sloping areas</li> <li>• Resource use within sustainable levels</li> <li>• Managing water resources</li> <li>• Encouraging post disaster economic protection measures (i.e. Crop Insurance)</li> </ul> <hr/> <p><u>Risk Reduction Policy for Protection Areas</u></p> <ul style="list-style-type: none"> <li>• Encourage expanded easements as an effective strategy in reducing exposure;</li> <li>• Field Demarcation/Delineation of hazard prone areas;</li> <li>• Protection of forests/watersheds;</li> <li>• Protection of ecologically sensitive and critical habitats;</li> <li>• Existing urban uses that will revert back to protection areas (i.e. expanded coastal and river easements, wetland restoration areas, newly established floodways)</li> <li>• Synergy and convergence of protection policies across municipalities and cities.</li> </ul> <hr/> <p><u>Risk Reduction Policy for Infrastructure and utilities</u></p> <ul style="list-style-type: none"> <li>• Strategic establishment of transportation access/routes as a means of redirecting settlement growth;</li> <li>• Strategic establishment/upgrading of utility distribution systems;</li> <li>• Mitigation measures should be adjusted to account for the impacts of climate change on the magnitude and severity of the existing hazards;</li> <li>• Climate proofing/mitigation of key distribution and access systems;</li> </ul>
<p><b>Step 8. Climate and Disaster Risk Sensitive Zoning Ordinances</b></p>	<ul style="list-style-type: none"> <li>• Establishment of <b>hazard overlay zones</b> assigning additional <b>development and building regulations</b> aimed at reducing risks to people and property; and minimizing disruptions to critical socio-economic and institutional services;</li> <li>• <b>Zoning regulations</b> within hazard prone areas such as: <ul style="list-style-type: none"> <li>- Allowable uses</li> <li>- Bulk and density control</li> <li>- Site/land development and building design regulations</li> <li>- Other regulations</li> </ul> </li> <li>• Establishment/Assigning of <b>Priority Risk Management Zones</b>; <ul style="list-style-type: none"> <li>- Additional regulations for existing settlement areas where immediate actions/interventions are needed (i.e. mandatory retrofitting, redevelopment/renewal through private-public partnerships, incremental or immediate relocation)</li> </ul> </li> <li>• Cross-cutting regulations to support the climate change adaptation agenda such as: <ul style="list-style-type: none"> <li>- Water efficiency</li> <li>- Sustainable energy</li> <li>- Increased green space allocation</li> </ul> </li> </ul>

Source: HLURB. Climate Change Commission. UNDP. Australian Government. 2014. Supplemental Guidelines: Mainstreaming Framework: An overview of the Framework on Mainstreaming Climate and Disaster Risks in the Comprehensive Land Use Plan. Module 3.2.

## 17.2.4 Tools for Land Use Regulations and Zoning for Disaster Risk Reduction and Management

### (1) Assessment of Hazard Risk

The Housing and Land Use Regulatory Board (HUB) published the draft of the *CLUP Guidebook: A Guide to Comprehensive Land Use Plan Preparation* in 2013. This five-volume comprehensive manual provides detailed instructions on how to integrate DRRM and CCA in CLUP from data collection to development of zoning policies. For DRRM, analysis of seven hazards are suggested: 1) to assess the needs of housing relocation/upgrading, evacuation, relief and response, 2) to identify the areas which require land use control, 3) to identify the areas for redevelopment/priority action, 4) to propose protection and mitigation measures, and 5) to specify the areas requiring further study (HLURB 2013b, p. 28). GIS is applied to overlay thematic maps of population, land use, and facilities and infrastructure over hazard maps for the analysis. The

impacts of the disasters are evaluated by examining the vulnerabilities and capacities of the community. The acceptable level of risk<sup>4</sup> should be defined for planning of structural and nonstructural actions (HLURB 2013b, p. 27-37).

To assess climate change vulnerabilities, climate change effects on hazards at the local level are examined from climate change projections of temperature, rainfall, and extreme events along with three emission scenarios by 2020 and by 2050 conducted by PAGASA and that of sea level rise done by the NOAA Laboratory for Satellite Altimetry. The areas and sectors vulnerable to the impact of the climate change are identified from the assessments of the impact and the adaptive capacity of the community (HLURB 2013b, p. 37-41).

**Table 17.2-5 Hazard Susceptibility Level and Information Source for Disaster Risk Analysis**

Hazards	Hazard Description/ Susceptibility or Proneness Level	Information Source
Flooding	High/ moderate/ low susceptibility	READY Project Multi-hazard Maps* Landslide Susceptibility Maps (MGB-DENR)
Storm Surge	Inundation of 4m to 12m/ 1 to 4m / less than 1m	READY Project Multi-hazard Maps
Tsunami	Inundation area	Tsunami-Prone Areas (PHILVOLCS) READY Project Multi-hazard Maps
Ground Rupture	Active fault. Solid line- trace certain/ Active fault. Dashed line – trace approximate.	Philippine Fault Zone Maps, Active Faults and Trenches, (PHILVOLCS) READY Project Multi-hazard Maps
Rain/ Earthquake induced landslides	High/ moderate/ low susceptibility/ Possible areas prone to landslide	Earthquake-Induced Landslide Susceptibility Map (PHILVOLCS) READY Project Multi-hazard Maps Landslide Susceptibility Maps (MGB-DENR)
Liquefaction	High/ moderate/ low susceptibility	Liquefaction Susceptibility Map (PHILVOLCS) READY Project Multi-hazard Maps
Ground shaking	PEIS intensity VIII/ VII/ VI/ Lower than PEIS intensity VI	READY Project Multi-hazard Maps

Note: READY Project Multi-hazard Maps are available in selected provinces only.

Source: HLURB. 2013b. CLUP Guidebook 2013: Volume 2.

## (2) Development of Land Use Policies and Zoning for DRRM

In land use planning, the zoning ordinance is a primary tool to guide land use and mitigate the impacts of various hazards. Before development of the zoning ordinance, the CLUP Guidebook (2013) suggests deciding land use policy areas under the general categories of protection, buffer, production or settlement, after assessment of the level of hazards and the current land use and plan. Strategies and objectives for risk reduction and development can be prepared for policy areas (see an example in Table 17.2-6).

**Table 17.2-6 Policy Development Strategy and Risk Reduction/ Development Objectives**

Policy Area		Development Strategy/ Risk Reduction/ Development Objectives
Protection	River Floodway – Agricultural	Open Space/ Recreation: <ul style="list-style-type: none"> <li>Prevent future development/ turn into open space/ recreational area</li> </ul>
	River Floodway – Urban	Disaster Risk Mitigation <ul style="list-style-type: none"> <li>Ensure safety of existing settlements by mitigation, warning and evacuation systems and relocation programs. No future development to be allowed.</li> </ul>

<sup>4</sup> HLURB 2013b, p. 36. “This is the level of potential losses that a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions. In engineering terms, acceptable risk is also used to assess and define the structural and non-structural measures that are needed in order to reduce possible harm to people, property, services and systems to a chosen tolerated level, according to codes or —accepted practice which are based on known probabilities of hazards and other factors (UNISDR).”

Policy Area		Development Strategy/ Risk Reduction/ Development Objectives
Buffer	Upland – Agri-Forest	Limited Agricultural Development <ul style="list-style-type: none"> <li>• Ensure safety of existing and future settlements as well as protection of adjacent forests through limiting density and use.</li> </ul>
Production/ Settlement (Limited Use)	River Floodplain	Low-Density Urban Development and Disaster Risk Adaptation <ul style="list-style-type: none"> <li>• Ensure safety of existing and future settlements through limiting density and use and establishing site and building construction requirements.</li> </ul>
Production/ Settlement (Multiple Use)	Inland – Agricultural	Agricultural Optimization and Planned Urban Expansion <ul style="list-style-type: none"> <li>• Optimize agriculture by preserving prime agricultural land; controlled settlement expansion may be allowed under certain conditions</li> </ul>
	Inland – Urban	Infill development <ul style="list-style-type: none"> <li>• Increase density through infill development</li> </ul>

Source: HLURB. 2013b. CLUP Guidebook 2013: Volume 2. Reproduced from Table CL-17. p. 46-47.

The zoning ordinance is prepared once land use change policies and development strategies are ready. The basic principles for DRRM in zoning regulations are stated in Table 17.2-7. Four approaches are suggested to regulate areas with hazard risks that include:

- No-Build Zones (NBZ) and expanded easements,
- Areas for Priority Actions (APA) or Urban Renewal/ Redevelopment Areas (URA),
- Hazard Overlay Zones, and
- Special Management Districts.

Among them, two approaches, No-Build Zones (NBZ) and expanded easements and hazard overlay zones, will be discussed in detail below.

**Table 17.2-7 Basic Principles for Zoning Regulations for DRRM**

Areas	Regulation Policy	Measures	Approaches
Areas highly susceptible to hazards	Prevent development and maintain as open space where possible	<ul style="list-style-type: none"> <li>• Limiting use to conservation, recreation (parks), or agriculture</li> <li>• Prohibiting reclassification to residential, commercial, institutional, or industrial use</li> </ul>	<ul style="list-style-type: none"> <li>• No-Build Zones and expanded easements</li> <li>• Special Management Districts</li> </ul>
	Where development has already occurred, protect life and existing development from losses	<ul style="list-style-type: none"> <li>• Protective infrastructure (where feasible)</li> <li>• Setting up early warning and evacuation systems</li> <li>• Redevelopment and retrofitting</li> </ul>	<ul style="list-style-type: none"> <li>• Areas for Priority Action (APA) or Urban Renewal/ Redevelopment Area (URA)</li> <li>• Special Management Districts</li> </ul>
Areas moderately susceptible to hazards	Keep land use intensity, value of buildings, and occupancy to a minimum	<ul style="list-style-type: none"> <li>• Density restrictions</li> <li>• Minimum lot size</li> <li>• Clustering of development to where risks are lowest</li> </ul>	<ul style="list-style-type: none"> <li>• Hazard Overlay Zones</li> <li>• Special Management Districts</li> </ul>
	Where the above strategies are not feasible	<ul style="list-style-type: none"> <li>• Urban design standards</li> <li>• Site planning standards</li> <li>• Building construction techniques</li> </ul>	

Source: HLURB. 2013c. CLUP Guidebook 2013: Volume 5. P. 75-78.

#### 1) No-Build Zones and Expanded Easements

An area that is highly susceptible to hazards and where the risk is unmanageable or unacceptable is considered as a “**No-Build Zone**” which is applied to an “area where building is not allowed” (HLURB 2013c, p. 110). The areas which can be classified as no-build zones include: easements, floodways, areas highly susceptible to flooding, storm surge, landslides, and lahar, potential permanent inundation areas due to sea level rise and coastal erosion, danger zones around volcanoes, and earthquake fault easements.

Easements are areas preserved from development, which are determined by law and can be expanded by LGUs. An easement for coastal areas is the distance from the highest tide line, while one for rivers and streams is from the edge of normal high water line/ banks (HLURB 2013c. p. 111). Presidential Decree No. 1067 or the Water Code of the Philippines defines easements as follows:

The banks or rivers and streams and the shores of the seas and lakes throughout their entire length and within a zone of three (3) meters in urban areas, twenty (20) meters in agricultural areas and forty (40) meters in forest areas, along their margins, are subject to the easement of public use in the interest of recreation, navigation, flotage, fishing and salvage. No person shall be allowed to stay in this zone longer than what is necessary for recreation, navigation, flotage, fishing or salvage or to build structures of any kind (Article 51).

In addition, the revised Forestry Code (Presidential Decree 705) provides for the areas along shorelines to be preserved for forest purpose as follows:

Strips of mangrove or swampland at least twenty (20) meters wide, along shorelines facing oceans, lakes, and other bodies of water and strips of land at least twenty (20) meters wide facing lakes (Section 16 (8)).

Local governments can determine expanded easements, when serious risks to life and properties are identified in the area or when it is necessary, for example, from ecological perspectives or development consideration.



Source: HLURB. 2013c. CLUP Guidebook: Volume 5. Pp 114

**Figure 17.2-5 Recommended Expanded Easement for Coastal Areas**

## 2) Hazard Overlay Zones

Hazard overlay zones can be applied for areas with moderate and manageable risks, over the general land use zones such as forest, agriculture, residential or commercial zones. These overlay zones can be applied to address issues in DRRM identified from the analysis.

**Table 17.2-8 Overlay Zones for DRRM**

Overlay Zones	Criteria	Allowable Land Use	Potential Regulations
Flood Overlay Zone	<ul style="list-style-type: none"> <li>Moderate Susceptibility</li> <li>Floodplain Area</li> </ul>	<ol style="list-style-type: none"> <li>Agriculture</li> <li>Recreational</li> <li>Residential</li> <li>Commercial</li> <li>Industrial</li> </ol>	<ul style="list-style-type: none"> <li>Density</li> <li>Building Design Standards</li> <li>Environmental Conservation and Protection Standards</li> </ul>
Landslide Overlay Zone	<ul style="list-style-type: none"> <li>Low-Moderate Susceptibility</li> <li>Manageable landslide risk</li> </ul>	<ol style="list-style-type: none"> <li>Low-density residential (R-1)</li> <li>Neighborhood commercial (C-1)</li> </ol>	<ul style="list-style-type: none"> <li>Density</li> <li>Site Development Requirements</li> </ul>
Liquefaction Susceptibility Overlay Zone	<ul style="list-style-type: none"> <li>Susceptible to liquefaction</li> </ul>	<ol style="list-style-type: none"> <li>Agricultural</li> <li>Recreational</li> <li>Low Density Residential (R-1)</li> <li>Low Density Commercial (C-1)</li> <li>Industrial</li> </ol>	<ul style="list-style-type: none"> <li>Density</li> <li>Building Design Standards</li> </ul>
Storm Surge Overlay Zone	<ul style="list-style-type: none"> <li>Moderate susceptibility</li> <li>Manageable storm surge risk</li> </ul>	<ol style="list-style-type: none"> <li>Forest</li> <li>Agricultural</li> <li>Recreational</li> <li>Residential</li> <li>Commercial</li> <li>Industrial</li> </ol>	<ul style="list-style-type: none"> <li>Density</li> <li>Building Design Standards</li> <li>Environmental Conservation and Protection Standards</li> </ul>
Tsunami Inundation Overlay Zone	<ul style="list-style-type: none"> <li>Inundation area</li> </ul>	<ol style="list-style-type: none"> <li>Agricultural</li> <li>Recreational</li> <li>Residential</li> <li>Commercial</li> <li>Industrial</li> </ol>	<ul style="list-style-type: none"> <li>Density</li> <li>Restrictions of government centers and civil emergency structures</li> <li>If unavoidable, building/ structure design standards</li> </ul>
Ground Subsidence Overlay Zone	<ul style="list-style-type: none"> <li>Susceptible to ground shaking</li> </ul>	<ol style="list-style-type: none"> <li>Agricultural</li> <li>Recreational</li> <li>Low Density Residential (R-1)</li> <li>Low Density Commercial (C-1)</li> <li>Industrial</li> </ol>	<ul style="list-style-type: none"> <li>Density</li> <li>Building/ structure design standards</li> </ul>

Source: HLURB, 2013c. CLUP Guidebook 2013: Volume 5. P. 118-121.

### 17.2.5 Toward Implementation of the Local Planning System for DRRM

After the disaster of Yolanda, the local planning system in the Philippines was modified to enhance disaster resilience of community by mainstreaming DRRM in development planning process. As discussed in this section, the focal point of such effort has been the revision of the CLUP to incorporate CDRA into the CLUP planning steps. The guidelines and manuals were prepared; workshops and seminars have been organized targeting planning officers of LGUs; and technical assistance projects for updating the CLUPs have been initiated by the international donors. There are sufficient tools and guidelines prepared for mainstreaming DRRM in CLUPs and other local plans.

Hence, a question to be asked is whether or not the revised CLUP actually works on the ground to make community safer and disaster resilient while accelerating the recovery and reconstruction process. The next section tackles the question and examines the future prospect by analyzing the application of the revised planning system for DRRM to the Yolanda affected region, though it may be too early to conduct throughout evaluation.



### **17.3 Disaster Resilient Land Use Planning in the Study Area**

An objective of this section is to develop a disaster resilient land use plan for the Study Area, in particular the five model LGUs. The proposed land use plan is also to guide recovery and reconstruction for building disaster resilient spatial structure, by examining hazard risks of the storm surge and flood. At first, the existing local plan and the status of the revision of the CLUPs will be presented. After a methodology for planning of a disaster resilient land use plan will be discussed, the hazard risks of storm surge and flood are examined and land use policies for the five LGUs will be proposed. The last section will discuss the issues and unsolved problems in disaster resilient land use planning in the Study Area and propose recommendations to address them.

#### **17.3.1 The Existing Local Plans and Revision of the CLUPs**

The legal framework for DRRM has been developed since the enactment of Republic Act No. 10121 in 2010. Meanwhile, HLURB provides guidelines to integrate DRRM and CCA in the CLUP Guidebook 2013 as discussed. This section discusses the current status of local plan preparation and the effort for revision of the CLUPs after Yolanda in line with the guidance from the HLURB.

The status of local plan preparation related to DRRM in the Study Area is summarized in Table 17.3-1. Among 18 municipalities and the city, 14 LGUs already had their CLUPs at the time of Yolanda. Out of the rest, two LGUs are currently working on preparation of their CLUPs. However, a half of the 14 CLUPs are about to reach the end of the planning periods and new CLUPs needed to be prepared shortly. Because the project of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Sustainable Integrated Management and Planning for Local Government Ecosystems (SIMPLE), supported formulation and update of the CLUPs of several LGUs in Leyte Province, about half of the LGUs in the province updated the CLUP before the Yolanda, compared with the LGUs in Eastern Samar. On the other hand, only four LGUs have their CDPs and some of them are already outdated. Six LGUs have prepared their DRRMPs. At the provincial level, all three provinces, Leyte, Samar, and Eastern Samar, completed preparation of their DRRM and CCA enhanced provincial development and physical framework plans.

After Yolanda, under the leadership of HLURB, the LGUs in the affected area have started the preparation work for the revision of their CLUPs. Two important tasks in the revision are to include the newly added task of CDRA and to modify the existing land use plan such as setting of no-build zones and relocation sites, based on the hazard maps provided by JICA Study Team and other organizations. The HLURB is conducting training for planning officers of LGUs for update of the CLUPs and many of the LGUs in the affected areas have attended the training. On the other hand, OPARR launched a new master program on DRRM, also targeting planning officers.

**Table 17.3-1 Preparation of CLUP, CDP, and DRRMP in the Study Area**

City/ Municipality Level (as of April 2014)					
No.	Province	City/ Municipality	CLUP	CDP	DRRMP
1	Leyte	Tacloban	2013-2022	NA	2013-?
2		Palo	2001-2010	NA	2013-2017
3		Tanauan	2010-2019	2010-2015	NA
4		Tolosa	2010-2019	NA (Under Preparation)	2013-2015
5		Dulag	2005-2014	NA	2014-2016 (draft)
6		Mayorga	NA	NA	NA
7		Macarthur	NA (Under Preparation)	NA	NA
8		Javier	2014-2043	NA	NA
9		Abuyog	2014-2033	NA	2012-2016
10	Samar	Basey	Lost (Under Preparation)	NA	Lost (Under Preparation)
11		Marabut	Lost (Under Preparation)	NA	NA
12	Eastern Samar	Lawaan	2006-2015	NA	NA
13		Balangiga	NA (Under Preparation)	2000-2009	NA
14		Giporlos	NA	2013-2016	NA
15		Quinapondan	2003-2012	NA	NA
16		Salcedo	2004-2013	NA	NA
17		Mercedes	2004-2013	?-2013	NA
18		Guiuan	2003-2012	NA	Annual Plan 2013
Provincial Level					
Province	DRRM and CCA enhanced Provincial Development and Physical Framework Plan (PDPFP)				
Leyte	2011-2016				
Samar	2010-2015				
Eastern Samar	2010-2015				

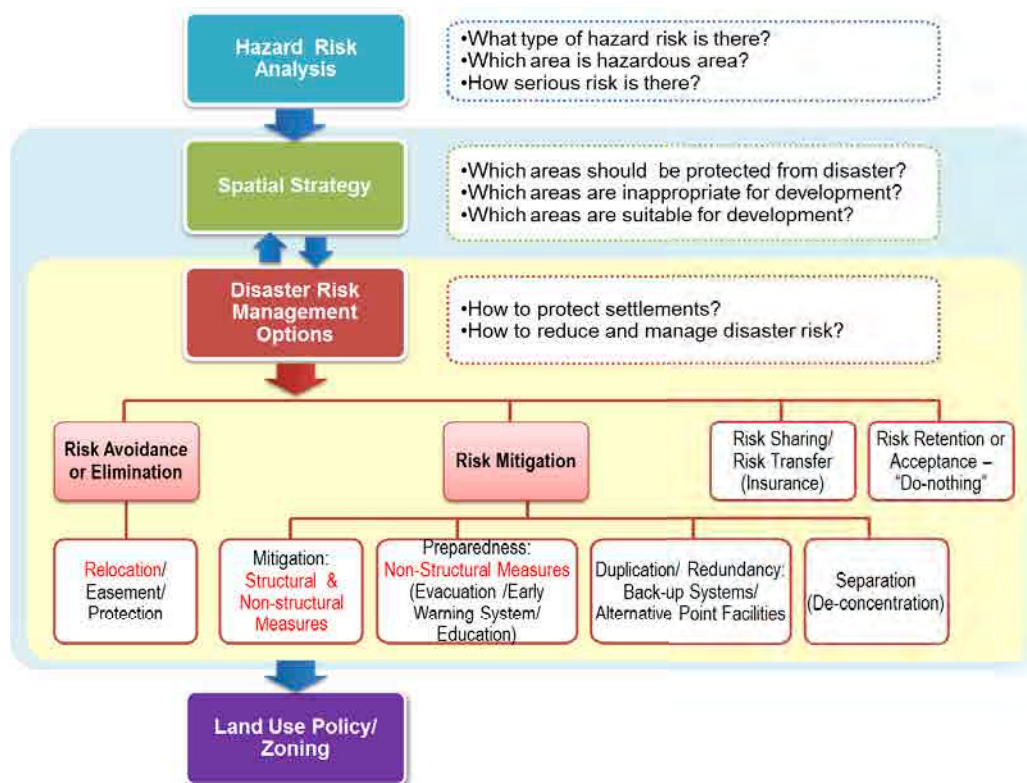
Source: JICA Study Team

Among the five model LGUs, Tacloban, Palo, Tanauan, Basey and Guiuan, Tacloban is supported by the UN Habitat in conducting CDRA and updating the CLUP. As of February 2015, the City is waiting for the result of the CDRA to revise the land use. The other four LGUs started the survey for CBMS or the preparation for it to gather necessary data for revision of the CLUPs while attending the training of HLURB and the master program of OPARR. However, LGUs still await the decision of the national government on the delineation of no-build zones, i.e., unsafe, safe, and controlled zones, which is essential to update the land use and zoning.

### 17.3.2 Planning for Disaster Risk Sensitive CLUPs of the Model LGUs

#### (1) Methodology for Development of Disaster Risk Sensitive Land Use Policies

Disaster risk sensitive land use is essential for recovery and reconstruction of the affected LGUs in building safer and disaster free living environment. Land use policies for recovery and reconstruction should be developed taking account of disaster hazard risk, and prevention and mitigation measures. Figure 17.3-1 describes the disaster risk sensitive land use policy development process.



Source: JICA Study Team

**Figure 17.3-1 Land Use Policy Development Process**

Hazard maps are a powerful tool to develop spatial strategies and land use policies. Based on examination of hazard risks, the existing land use and development pressure, spatial strategies need to be clarified for the areas to be protected from disaster, the areas inappropriate for development, or the areas to be reserved for development in future, etc. At the same time, appropriate disaster risk management measures and strategies, such as relocation, tide embankment, or evacuation centers and plans, should be selected for each of land use zones/ areas. In order to determine land use policies and disaster risk reduction and mitigation measures corresponding to each area, the inundation levels and anticipated damage caused by storm surge, flood, and tsunami (or the level of intensity and implication for damage on of other types of hazards) shall be evaluated, as shown in hazard maps (see Table 17.3-2). Formulated land use policies integrate disaster mitigation measures in land use regulations specified in a zoning ordinance, which would include use of lands, density, structure and engineering design, distribution and location of infrastructure/ public facilities, evacuation centers, and so on.

**Table 17.3-2 Inundation Depth and Damage Implications of Tsunami**

Inundation Depth (meter)	Implications
10 meter and over	A 3-story building is completely submerged
5 meter to 10 meter	A 2-story building is submerged
2 meter to 5 meter	Most wooden houses are completely damaged
1 meter to 2 meter	If involved, most people die.
0.3 meter to 1 meter	People cannot move. Evacuation becomes impossible.

Source: Ministry of Land, Infrastructure, and Transport, Japan. 2012. Manual for Setting Tsunami Inundation Assumption, Ver. 2.

By coordinated effort among the national agencies, the guidelines for classification of hazard zones of hydro-meteorological hazard such as typhoons, floods, landslides and storm surges, and land use activities in the zones were prepared in November 2014. According to the Joint DENR-DILG-DND-DPWH-DOST Memorandum Circular No. 2014-01<sup>5</sup>, hazard zones are classified into three categories of “High”, “Moderate” and “Low” susceptibilities with recommended restriction on land use activities accordingly, including suitability of construction of evacuation centers, and a need for disaster risk mitigation measures, etc. The construction of evacuation centers are not recommended in any of the three categories if their structural resilience and height are not proven. The classifications of storm surge and flood hazards are presented in Table 17.3-3. The high hazard areas of storm surge in the Study Area where inundation depth exceeds over 1.5 meters and that are not recommended for dwelling and other land use activities, i.e., no-build zones are illustrated in Figure 17.3-2 and 17.3-3. This information of the hazard provides valuable inputs for preparation of land use policies and evacuation plans.

**Table 17.3-3 Classification of Hazard Zones and Land Use Activities**

		High	Moderate	Low
Storm Surge	Classification	Storm surge flood height of greater than 1.5 meter	Storm surge flood height of greater than 0.5 up to 1 meter	Storm surge flood height of 0.5 meter or less
	Land Use Activities	<ul style="list-style-type: none"> <li>• Evacuate during storm surge</li> <li>• Do not establish evacuation centers.</li> <li>• Establish natural and man-made coastal defenses, such as mangrove, break water, etc.</li> <li>• Not suitable for commercial, industrial, residential, and institutional development.</li> <li>• Install storm surge warning signage</li> </ul>	<ul style="list-style-type: none"> <li>• Dwelling may be allowed, but evacuate during storm surge</li> <li>• Do not establish evacuation centers.</li> </ul>	<ul style="list-style-type: none"> <li>• Dwelling may be allowed and people may stay in their homes during storm surge, provided that their houses have a second floor, and are structurally sound</li> <li>• Do not establish evacuation centers unless they have vertical evacuation capabilities.</li> </ul>
Flood	Classification	Flood height of greater than 1 meter and/ or flood duration of more than 3 days	Flood height of greater than 0.5 up to 1 meter and/ or flood duration of more than 1 to 3 days	Flood height of 0.5 meter or less and/ or flood duration of less than 1 day
	Land Use Activities	<ul style="list-style-type: none"> <li>• During flood, evacuate except disaster response personnel</li> <li>• Do not establish evacuation centers.</li> <li>• Use floodplains as retention basins. These places maybe transformed into recreational areas, provided possible flood heights in the design.</li> <li>• Recommend appropriate flood control mitigation structure to be approved by DPWH,</li> <li>• Not suitable for commercial, industrial, residential, and institutional development.</li> <li>• Install flood warning signages</li> </ul>	<ul style="list-style-type: none"> <li>• During flood, evacuate except disaster response personnel</li> <li>• Do not establish evacuation centers.</li> <li>• May allow dwelling and development with provision of possible flood heights and structural integrity in the design.</li> </ul>	<ul style="list-style-type: none"> <li>• During flood, people may stay in their dwellings and workplace provided that these are structurally sound and early warning system and preparedness plans are in place.</li> <li>• Do not establish evacuation centers unless these are structurally sound and have vertical evacuation capabilities.</li> <li>• May allow dwelling and development with provision of possible flood heights and structural integrity in the design.</li> </ul>

Source: Joint DENR-DILG-DND-DPWH-DOST Memorandum Circular No. 2014-01. “Adoption of hazard zone classification in areas affected by Typhoon Yolanda (Haiyan) and providing the guidelines for activities therein,” November 5, 2014.

<sup>5</sup> Joint DENR-DILG-DND-DPWH-DOST Memorandum Circular No. 2014-01. “Adoption of hazard zone classification in areas affected by Typhoon Yolanda (Haiyan) and providing the guidelines for activities therein,” signed on November 5, 2014.

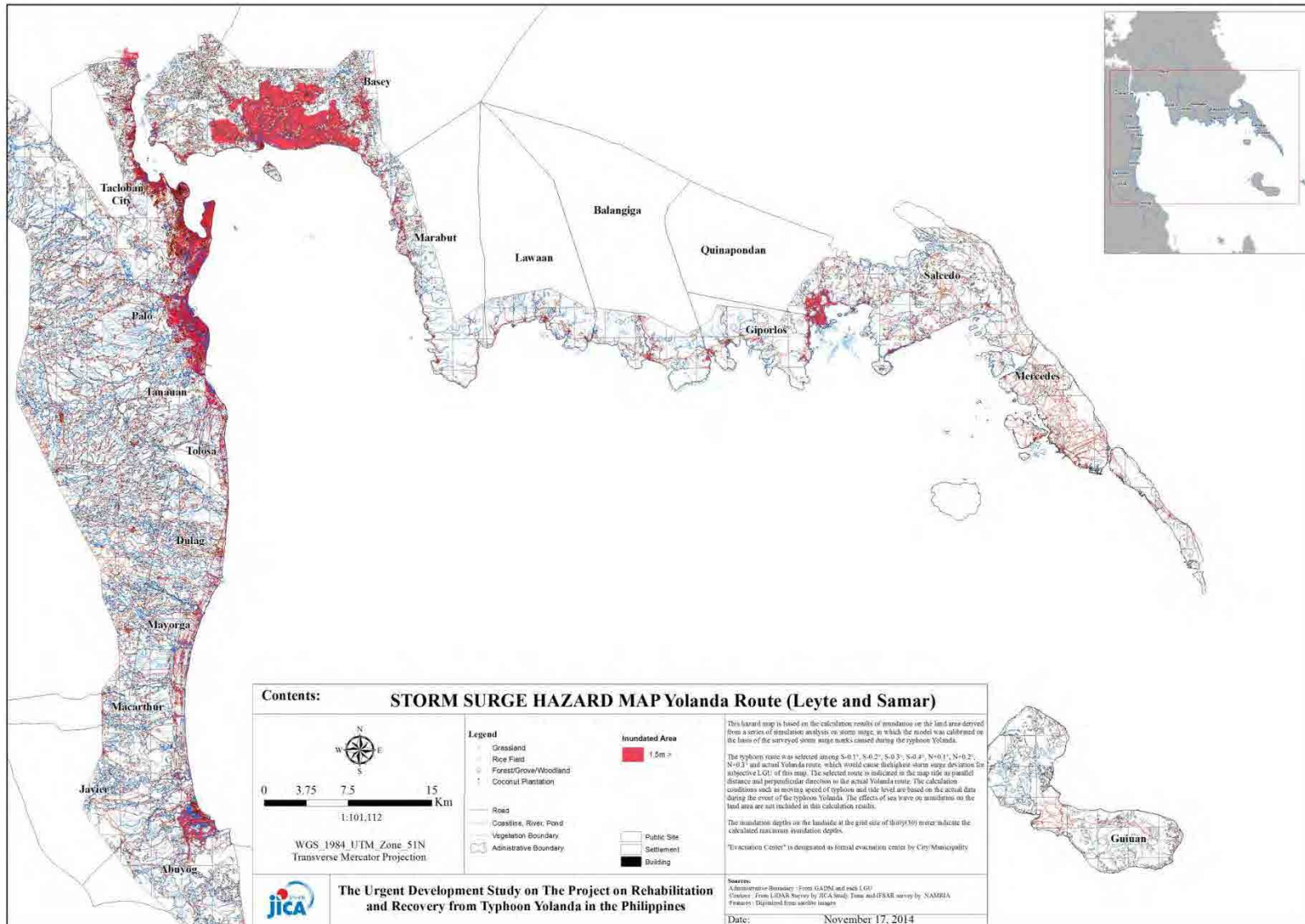
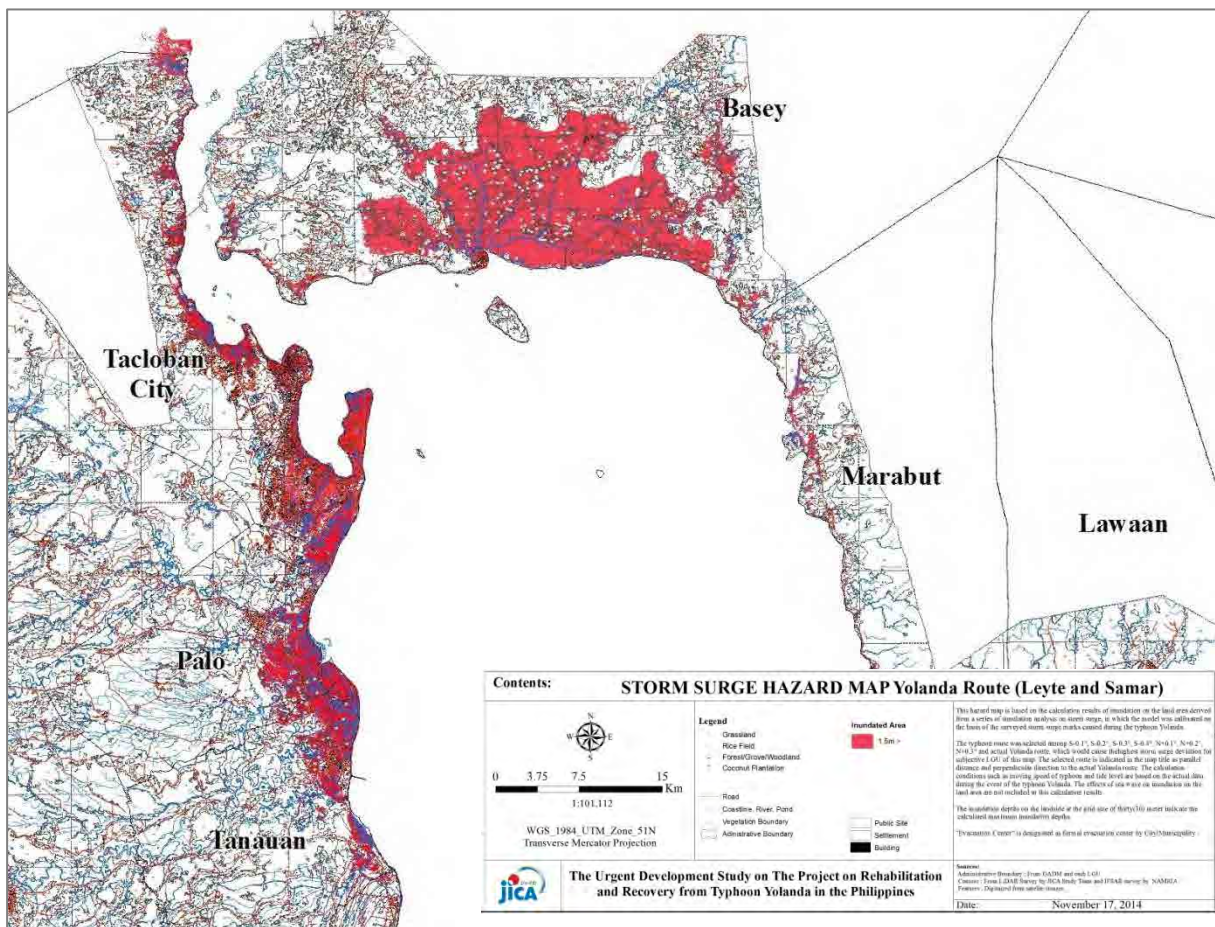


Figure 17.3-2 High Hazard Zone of Storm Surge in the Study Area



Source: JICA Study Team

**Figure 17.3-3 High Hazard Zone of Storm Surge in the Study Area 2**

A decision of relocation is one of the most important issues in land use policy development. A newly proposed no-build zone policy to specify unsafe, safe and controlled zones after the Yolanda calls for a careful study of its effectiveness and impact on the community. For the delineation of safe, unsafe and controlled zones, the LGUs should develop own criteria acceptable to their citizens, examining hazard maps and anticipated damages as shown in Table 17.3-2. A need for relocation and selection of relocation sites should be scrutinized based on consultation with the community, because relocation significantly affects people’s lives such as livelihoods and access to public services. A city/ municipal ordinance on safe, unsafe, and controlled zones may need to be enacted, to specify the criteria for each zone and requirements for relocation, compensation, eligible residents, a procedure for relocation, etc.

**(2) Land Use Policies**

Land use policies are suggested in Table 17.3-4 below, including those for residential, commercial, industrial, and institutional areas, infrastructure and utilities, production, and protection uses. These policies would be a reference to develop the land use policies during the revision of CLUPs.

**Table 17.3-4 Suggested Land Use Policies**

Land Use	Land Use Policies
Residential area	<ul style="list-style-type: none"> <li>• Develop residential areas in safe areas or less hazard risk areas – Residential area first in protection</li> <li>• Promote compact development by increasing density to maximize use of land</li> <li>• Allocate critical facilities and important infrastructure in safe areas</li> <li>• Minimize exposures to disaster and hazard risk               <ul style="list-style-type: none"> <li>- Control development of danger areas</li> <li>- Relocate the existing settlements from high risk areas</li> </ul> </li> <li>• Reduce vulnerabilities               <ul style="list-style-type: none"> <li>- Enforce appropriate building and structural design standards</li> <li>- Develop risk mitigation structures: tide embankments, seawalls, river dikes, flood control, etc.</li> <li>- Introduce non-structural measures: evacuation places and routes, education, evacuation drills, increase of preparedness, etc.</li> <li>- Promote community-based evacuation/ disaster mitigation</li> </ul> </li> </ul>
Commercial/ Business area	<ul style="list-style-type: none"> <li>• Can be developed in safe areas, less hazard risk areas, and hazard-prone areas (no-dwelling zones)</li> <li>• Protect critical facilities and infrastructures in hazard-prone areas by protection measures</li> <li>• Promote mid-rise/ high-rise building development</li> <li>• Reduce vulnerabilities               <ul style="list-style-type: none"> <li>- Enforce appropriate building and structural design standards and monitor the compliance to the regulations</li> <li>- Provide evacuation places and routes for visitors and workers, educate business owners, employers, and workers, and prepare an evacuation plan</li> <li>- Designate high-rise buildings as evacuation places</li> <li>- Apply additional special disaster mitigation measures, such as a tsunami tower and evacuation procedure in hazard-prone areas</li> </ul> </li> </ul>
Industrial area	<ul style="list-style-type: none"> <li>• Can be developed in safe areas, less hazard risk areas, and hazard-prone areas (no-dwelling zones)</li> <li>• Protect critical facilities and infrastructures by protection measures in hazard-prone areas</li> <li>• Reduce vulnerabilities               <ul style="list-style-type: none"> <li>- Enforce appropriate building and structural design standards and monitor the compliance to the regulations</li> <li>- Provide evacuation places and routes for visitors and workers, educate business owners, employers, and workers, and prepare an evacuation plan</li> <li>- Designate a high-rise building as evacuation place</li> <li>- Apply additional special disaster mitigation measures, such as a tsunami tower and evacuation procedure in hazard-prone areas</li> </ul> </li> </ul>
Institution	<ul style="list-style-type: none"> <li>• Develop in safe areas or less hazard risk areas</li> <li>• Develop back-up offices or redundancy of the systems, for maintaining their functions and provision of public services</li> <li>• Improve preparedness to function as a center of emergency response operations and to accommodate evacuees at the time of crisis</li> <li>• Minimize exposures to disaster risk               <ul style="list-style-type: none"> <li>- Relocate the critical facilities from high risk areas</li> </ul> </li> <li>• Reduce vulnerabilities               <ul style="list-style-type: none"> <li>- Enforce special building and structural design standards for institutional buildings, and monitor the compliance to the regulations</li> <li>- Introduce non-structural measures: evacuation places and routes, education, evacuation drills, increase of preparedness (such as stock of foods and materials, first aid and medical kits, battery and generators, and contingency plans), etc.</li> </ul> </li> </ul>
Infrastructure and utilities	<ul style="list-style-type: none"> <li>• Strategically develop transport networks to guide settlement development in safe zones, to prevent development of hazard-prone areas (including cutting access to hazard prone areas), and to develop a compact city</li> <li>• Allocate and improve distribution systems to guide settlement development in safe zones</li> <li>• Provide protection and mitigation measures for the systems</li> <li>• Develop back-up or redundancy of the systems for continuity of service provision</li> </ul>
Production (Agriculture)	<ul style="list-style-type: none"> <li>• Minimize environmental impacts by promoting sustainable production</li> <li>• Promote agro-forest in upland/ slop areas, and select appropriate cultivation methods and varieties, in accordance with the susceptibility to disaster.</li> <li>• Introduce risk-sharing scheme (crop/ property insurance)</li> </ul>
Protection (Forests/ Water Bodies)/ Open space/ Parks	<ul style="list-style-type: none"> <li>• Protect/ preserve/ conserve/ rehabilitate forests, water bodies, shores, watershed, and coastal environment, especially in environmentally sensitive areas</li> <li>• Enforce easement and monitor the compliance</li> <li>• Convert hazard-prone areas to protection areas as buffer zones</li> <li>• Promote reforestation of hazardous and watershed areas</li> <li>• Develop open space/ parks in hazard prone areas after relocation</li> <li>• Protect bio-diversity</li> <li>• Implement inter-governmental watershed management/ environmental management</li> </ul>

Source: JICA Study Team, developed based on Supplement

## **17.4 Conclusion and Recommendation on Land Use Planning for Disaster Resilience**

In conclusion, policy recommendations will be made in order to build safer and disaster resilient cities, taking land use planning as a DRRM approach. There are five critical issues and obstacles identified in the current institutional framework and the practices of DRRM system on the ground, including:

- Improvement of LDRRM Institutions
- Mainstreaming DRRM in the Local Planning System
- Capacity Building of the Local Government
- Role of Province and Regional Coordination
- Implementation of the DRRM activities and Budget Allocation

Each of the issues will be examined and policy recommendations will be made to address the issues in the way that contribute to enhancement of the entire DRRM institutions as well as the recovery and reconstruction of the affected region.

### **17.4.1 Needs for Improvement of DRRM Institutions**

The Philippine DRRM institutional framework is still under development, as discussed. Though the rudimentary forms of the DRRM institutions, including DRRM Councils and LDRRMOs have been installed at the various levels of the government, a number of ambiguous areas are awaiting to be clarified. The major issues identified in relation with the DRRM institutions include: vertical and horizontal coordination mechanisms, and preparation of LDRRMPs, especially the contents and planning approach.

Firstly, the issues involved in vertical and horizontal coordination mechanisms are caused by unclear demarcation of functions and responsibilities among the different government organizations, lack of coordination and cooperation initiatives, weak information sharing and communication systems, among others, in carrying out the tasks in prevention and mitigation, preparedness, response, and rehabilitation and reconstruction. As a result, effectiveness and functionality of the institutions for DRRM are still questionable. Therefore, the responsibilities and functions should be clearly defined among relevant agencies with development of streamlined mechanisms of information sharing and communication. To do so, assistance from the central government agencies such as OCD may be required. At the local level, provinces can play a certain role for improvement of vertical and horizontal coordination mechanisms, which will be discussed in the following section.

At the LGU level, cities and municipalities are mandated to lead DRRM activities through the LDRRMOs in accordance with the strategies stated in LDRRMPs. An LDRRMP are designed to be a six year plan to indicate basic principles, goals and objectives for DRRM and guide programs and projects of structural and non-structural measures for enhancement of disaster resilience of an LGU. OCD has been devoted their effort on improvement of LDRRMPs by developing the “Local Disaster Risk Reduction and Management Plan Formulation Training Manual 2013” and



conducting seminars and workshops on that. A focus of this manual is to train LGU officials on planning methodology of LDRRMPs, namely how to prepare LDRRMPs, rather than to improve the contents of the plan. In reality, the contents of the current LDRRMPs vary across LGUs. It is often the case that only an annual LDRRMP is prepared for disbursement of the LDRRMF to purchase equipment and materials, and that the contents of many of LDRRMPs are biased to disaster response. Thus, development of a manual or guidelines specifically for the LDRRMP is awaited, which is to comprehend the four thematic fields of DRRM, by reflecting the recent efforts of OCD and DILGs on disaster response and preparedness, and expanding the components of prevention and mitigation and rehabilitation and recovery. The development of a holistic LDRRMP is indispensable in the next step of mainstreaming DRRM in local plans.

Meanwhile, a bottom-up planning approach for LDRRMP preparation needs to be refined and enhanced in line with community based DRRM promoted by the OCD project. Community-based DRRM is particularly effective in developing adaptive capacity of the community to respond to disaster and lowering vulnerability to disaster, through non-structural measures, such as evacuation, early warning and education for awareness rising. Currently not many barangays are equipped with the BDRRMPs and conduct DRRM activities. The bottom-up planning and community DRRM activities should be enhanced by improving the capacities of barangay officials, civil society organizations, and citizens. The policy recommendation is summarized in Table 17.4-1.

**Table 17.4-1 Policy Recommendations**

DRRM Institutional Issues	Policy Recommendations
Weak vertical and horizontal coordination mechanisms	<ul style="list-style-type: none"> <li>• Clarify responsibilities and functions among relevant agencies</li> <li>• Develop streamlined system for information sharing and communication</li> <li>• Enhance roles of provinces in enhancing vertical and horizontal coordination mechanisms by promoting regional and inter-municipal cooperation and coordination in DRRM and land use planning</li> </ul>
Needs to improve preparation of LDRRMPs	<ul style="list-style-type: none"> <li>• Develop a manual or guidelines to indicate both the contents and planning approach of LDRRMPs.</li> <li>• Contents: Develop a comprehensive plan to cover the four thematic fields of DRRM <ul style="list-style-type: none"> <li>- Strengthen the components of prevention and mitigation <ul style="list-style-type: none"> <li>✓ Provide a menu of various combination of structural and non-structural measures</li> <li>✓ Assist identification and planning of structural measures</li> <li>✓ Prepare a manual or guidelines for evacuation planning</li> </ul> </li> <li>- Improve the components of rehabilitation and recovery <ul style="list-style-type: none"> <li>✓ Prepare a manual or guidelines for RRP</li> <li>✓ Examine the concept of a prior recovery and rehabilitation plan and develop methodology of planning of RRP.</li> </ul> </li> </ul> </li> <li>• Planning approach: Improve bottom-up planning and DRRM <ul style="list-style-type: none"> <li>- Strengthen the community based DRRM and planning for that.</li> <li>- Provide capacity building training to barangay officials, community leaders, and youth and women's group.</li> <li>- Enhance the communication and information sharing between barangays and between barangays and city/ municipality</li> </ul> </li> </ul>

### **17.4.2 Mainstreaming DRRM in the Local Planning System**

The component of an LDRRPM shall be incorporated into a CLUP and CDP in order to mainstream DRRM in local plans. The plans of structural measures, such as tide embankments or seawalls, and improvement on infrastructure and public facilities, and certain component of non-structural measures, such as land use and zoning changes, relocation of households in hazardous areas, should be integrated into a CLUP. On the other hand, development policies of disaster resilient economy and industries, and social programs are to be reflected in a CDP. This must be done in the way that improves the entire local planning system itself, because a sufficient number of plans are required to be prepared and not many LGUs are capable of conducting two tasks of preparation of all the required tasks and integrating them. It is crucial to streamline all the local plans to be prepared and to address inconsistency and redundancy sometimes found between the plans required by different agencies.

CDRA, a newly added content to CLUP in order to mainstream DRRM, is indeed a challenging task. In fact, even UN Habitat has been taking more time than expected, to complete CDRA for Tacloban City. It is not an easy task for a LGU that has limited capacity and resources for that purpose. However, hazard assessment is an indispensable component for preparation of both LDRRMP and CLUP. Thus, simplified or alternative methods for the assessment may need to be introduced for the LGUs with difficulties in conducting the mandated task of the vulnerability assessment. Furthermore, ambiguity in the no-build zone policy must be resolved by delineating unsafe, safe and uncontrolled zones, which strengthens the legal base for land use control of hazardous zones, e.g., setting up no-build zones in and implementing relocation programs. The policy recommendations are summarized in Table 17.4-2.

**Table 17.4-2 Policy Recommendations**

Issues	Policy Recommendations
Mainstream DRRM in CLUP and local plans	<ul style="list-style-type: none"> <li>• Improve the local planning system as whole by streamlining and simplifying the components and procedures of planning</li> <li>• Improve capacity to conduct CDRA or develop simplified or alternative methods for assessment of hazard and vulnerability</li> <li>• Conduct capacity building on disaster-sensitive land use planning, and combination of DRRM measures and land use.</li> <li>• Clarify the no-build zone policy and the definition to delineate unsafe, safe and controlled zones.</li> <li>• Enhance capacity of land use planning and enforcement of zoning ordinances through training</li> </ul>

### **17.4.3 Capacity Building of Local Governments**

Capacity building of local governments in DRRM and planning shall be conducted targeting officers of DRRMOs and planning offices of provinces, cities, municipalities, and barangays. Taking the cascade system, the current capacity building program of the OCD intends to develop the trainers for DRRM who are supposed to educate and disseminate knowledge and skills on DRRM to the lower levels of the government. This system should be strengthened by adding mutual learning opportunities at the horizontal level.

In addition to that, a need for capacity building is identified in improvement of planning capacity of the LGUs for DRRM mainstreaming, particularly for assessment of hazard and vulnerability, development of hazard maps, selection of DRRM measures, regulations and enforcement of zoning, among others. Though detailed guidelines and manuals are prepared for mainstreaming DRRM in local plans, required tasks are prepared without considering capacity and resources of local governments. While providing training for capacity building, it may be desirable to simplify the tasks or explore alternative methods, which could be used as the first step and improved later. Capacity building needs for each level of LGUs in DRRM and planning are summarized in Table 17.4-3.

**Table 17.4-3 Capacity Building Needs of LGU**

	DRRM	Planning
Province	<ul style="list-style-type: none"> <li>• Preparation of LDRRMP</li> <li>• Planning of structural measures</li> <li>• Relocation</li> <li>• Data collection</li> <li>• Information dissemination and communication</li> <li>• Emergency response</li> </ul>	<ul style="list-style-type: none"> <li>• Hazard and vulnerability assessment</li> <li>• Hazard map preparation</li> <li>• Mainstreaming DRRM in local plans</li> <li>• Regulations and enforcement of zoning</li> <li>• Coordination of CLUPs, DRRMPs and other local plans</li> <li>•</li> </ul>
City/ Municipality	<ul style="list-style-type: none"> <li>• Preparation of LDRRMP</li> <li>• Evacuation plan</li> <li>• Relocation</li> <li>• Planning of structural measures</li> <li>• Evacuation drill, early warning, awareness raising, etc.</li> <li>• Data collection and analysis</li> <li>• Information sharing and communication</li> <li>• Emergency response</li> </ul>	<ul style="list-style-type: none"> <li>• Hazard and vulnerability assessment (CDRA)</li> <li>• Hazard map preparation</li> <li>• Mainstreaming DRRM in local plans</li> <li>• Regulations and enforcement of zoning</li> </ul>
Barangay	<ul style="list-style-type: none"> <li>• Preparation of BDRRMP</li> <li>• Evacuation plan</li> <li>• Relocation</li> <li>• Evacuation drill, early warning and awareness raising</li> <li>• Data collection and analysis</li> <li>• Information sharing and communication</li> </ul>	<ul style="list-style-type: none"> <li>• Hazard and vulnerability assessment (qualitative)</li> </ul>

#### **17.4.4 Role of Province and Regional Coordination**

Under the Local Government Code of 1991, cities and municipalities are granted the most power and functions, while, provinces are given supervising roles of component cities and municipalities under their jurisdictions. The DRRM institutions and planning system are developed and embedded in this institutional setting so that these LGUs independently prepare their CLUP and LDRRMP without coordination with adjacent LGUs. As a result, a land use plan of an LGU is often inconsistent with those of neighboring LGUs, and it is less likely for LGUs to propose DRRM measures which could also benefit the other LGUs. Therefore, there is a great need in facilitation inter-LGU cooperation and regional integration of DRRM strategies and land use planning by enhancing the roles of provinces in DRRM and mainstreaming it in planning of cities and municipalities.

The roles of provinces to be expected in DRRM are primarily to enhance coordination and cooperation among the LGUs, to provide technical support to the lower government bodies, and to assist the LGUs at the time of disaster. Coordination of CLUPs of neighboring LGUs is essential for mitigation of disaster risk, especially when the LGUs are located in a watershed area, in order to prevent development of hazardous areas. Development of disaster prevention infrastructure and facilities such as tide embankment and evacuation centers can bring about implication on the DRRM strategies of adjacent LGUs. Not many LGUs have sufficient budgets and equipment as well as technical capacity for DRRM so that they could prepare a Memorandum of Agreement on sharing the assets, equipment, and technical resources. Provinces can encourage cooperation and coordination among LGUs by organizing workshops and seminars on joint-DRRM measures and land use planning, or setting up a venue or programs on sharing resources.

Meanwhile, provinces can also play an intermediary role between the national line agencies and city and municipalities, in addition to provision of support for inter-municipal coordination. During the aftermath of Yolanda, provinces actually took such roles assigned by OPARR. For instance, the provinces complied the RRP of municipalities and cities, and conduct monitoring and evaluation of the implementation of projects for recovery and reconstruction. Thus, the provinces in the affected region conveys information from the LGUs to Manila, while provide the LGUs with technical assistance. This functions of information sharing and communication between the center and the local was made possible by the effort of the province. The policy recommendations are summarized in Table 17.4-4.

**Table 17.4-4 Policy Recommendations**

Issues	Policy Recommendations
Strengthen the roles of provinces in DRRM and land use planning	<ul style="list-style-type: none"> <li>• Promote inter-LGU partnerships and regional integration of DRRMs and land use planning</li> <li>• Clarify the responsibilities and functions of provinces in DRRM and land use planning as an intermediary to facilitate cooperation, coordination, information sharing, and communication between inter-LGUs and with the different level of governments</li> <li>• Improve the capacity of provinces on coordination with the various levels of governments.</li> </ul>

#### **17.4.5 Implementation of the DRRM Projects and Budget Allocation**

Construction of infrastructure and improvement of facilities for DRRM may require a multi-year capital investment. In order to develop well planned investment plan, the projects and programs in LDRRMP shall be harmonized with the CDP, which is an action plan of CLUP. Because the desirable planning periods of the two plans are six years, implementation of DRRM can be adjusted to the term of office of the executives and legislatives. ELA and LDIP shall be developed in order to implement proposed programs and projects in the LDRRMP and CDP, following the envisioned future vision in CLUP.

Intervention from the national government is required for capital investment projects exceeding the financial capacity of an LGU. In the Study Area, tide embankment and road heightening

projects are proposed to protect coastal built-up areas from Tacloban to Tanauan. Although the national government agency such as DPWH will be an executor of this level of projects, coordination and consensus on an infrastructure project among the concerned LGUs shall be indispensable in advance and the plan should be integrated into the CLUP, CDP and LDRRMP with necessary modification of the land use plan, or DRRM strategies for example. It is recommended to develop project implementation schemes or programs for construction of major preventive infrastructure. The programs aim to encourage capital investment in DRRM infrastructure by preparing fund and project identification and development methods. The policy recommendations are summarized in Table 17.4-5.

**Table 17.4-5 Policy Recommendations**

Issues	Policy Recommendations
Encourage the DRRM project implementation	<ul style="list-style-type: none"> <li>• Integrate DRRM projects into CDP and ELA, and then incorporate them into LDIP</li> <li>• Prepare implementation schemes or programs to encourage construction of DRRM infrastructure</li> </ul>

## Chapter 18 Japanese Examples of Technology for Recovery, Rehabilitation, and DRRM

In this chapter, the Japanese experiences for recovery and rehabilitation, which are mainly from those of the Great East Japan Earthquake in 2011, are explained for reference of recovery and rehabilitation from the damages caused by the typhoon Yolanda, since there are some similarities between the two catastrophic disasters. Both disasters were unprecedented and caused by the enormous amount of seawater rushing onto coastal areas.

### 18.1 Profile of Damages from the Great East Japan Earthquake<sup>1</sup>

The Great East Japan Earthquake on March 11 2011 has brought enormous damages in the Tohoku and Kanto areas and was the fourth biggest earthquake since the beginning of the 20<sup>th</sup> century. In addition to the damages caused by ground motion, the earthquake has led to enormous tsunami disasters, especially along the coastal areas of the three prefectures of Iwate, Miyagi and Fukushima. The profile of the damage is shown in Table 18.1-1.

**Table 18.1-1 Profile of damage from the Great East Japan Earthquake**

<b>Date and Time</b>	PM 2:46 March 11, 2011	
<b>Epicenter and Magnitude</b>	Epicenter: Pacific Ocean off the coast of Sanriku region (38.1 degrees North Latitude, 142.9 degrees East Longitude) and the depth of 24km Moment Magnitude: Mw 9.0	
<b>Human damage</b>	15,884 deaths 2,640 people missing 6,150 injured 2,916 people earthquake-related deaths	<b>Remarks</b> <ul style="list-style-type: none"> <li>• The information sources are mainly the National Police Agency and the Reconstruction Agency as of Jan. 10 2014</li> <li>• Unconfirmed information included</li> <li>• The data includes the damage from the earthquake disaster on Apr. 7 2011.</li> </ul>
<b>Damage to buildings</b>	Fully destroyed 126,631 Partially destroyed 272,653 Partial damage: 743,49210	
<b>Damage to sea embankments</b>	Sea embankments (Total length about 190km out of 300km) were destroyed completely or partially in the prefectures of Iwate, Miyagi and Fukushima.	
<b>Tsunami inundation area</b>	561km <sup>2</sup> (based on interpretation from Satellite images and aerial photographs)	

Source: Reconstruction Agency (2014) and Ministry of Land, Infrastructure, Transport and Tourism (MLIT) (2013)

<sup>1</sup> Reconstruction Agency (2014)

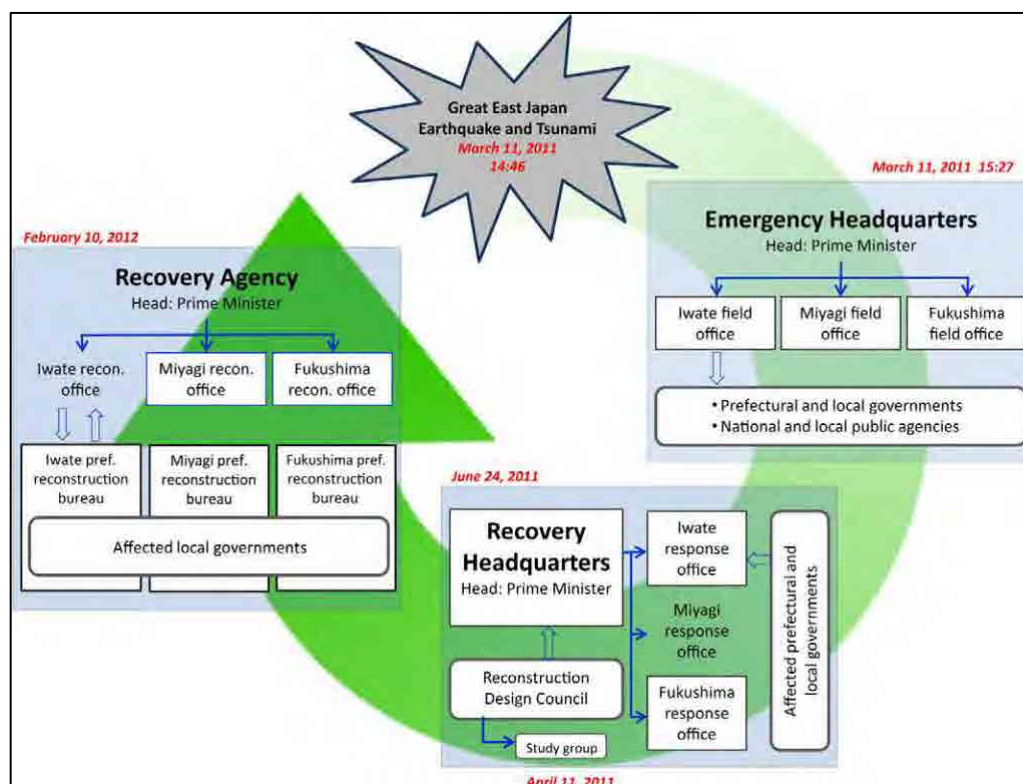
## 18.2 Policy for Recovery and Rehabilitation from the Great East Japan Earthquake

### 18.2.1 Process for Recovery and Rehabilitation until the Establishment of the National Reconstruction Agency<sup>2</sup>

Following the 11 March 2011 catastrophe, Japan's governance, planning, and disaster management systems are facing yet another round of challenges, and new laws and policies are being enacted to address the unique conditions and challenges. Hereunder the process until the establishment of the National Reconstruction Agency on 10 February 2012 – 11 months after the disaster is briefly explained.

#### (1) National and Prefectural Reconstruction Planning

While the official designation of a "disaster of extreme severity" was not issued until 13 March 2011, national government responses to the earthquake and tsunami were immediate and have since resulted in a number of organizational changes (See the figure below).



Source: Iuchi et al., 2013

**Figure 18.2-1 Evolution of Japan's Recovery Governance Structure since 11 March 2011**

As is typical under Japan's disaster law, a national emergency headquarters was quickly established in the Cabinet Office in Tokyo, with staff coming from various ministries with responsibilities for relief and recovery. But for the first time ever, national-level field offices were also established in Iwate, Miyagi, and Fukushima Prefectures and staffed with representatives

<sup>2</sup> Iuchi et al., "Securing Tohoku's Future: Planning for Rebuilding in the First Year Following the Tohoku-Oki Earthquake and Tsunami," *Earthquake Spectra*, Volume 29, No. S1, pages S479 – S499, March 2013

from prefectural and national agencies; these offices have served a coordination and information-reporting role between the national, prefectural, and local governments. Also, shortly after the disaster, a small taskforce was established to help prepare a suite of new legislation to facilitate recovery and support national planning efforts. Its initial staff of about ten people came from the Cabinet Office, national disaster management agency, and Cabinet ministries, but it grew quickly over the next weeks and months to become the nation's unofficial reconstruction agency. Japan's Central Disaster Prevention Council, which resides in the Cabinet Office and is led by the Prime Minister, also established a technical investigation committee that has led the investigations of the disaster impacts, lessons learned, and recommendations on future risk management strategies.

## **(2) National Reconstruction Design Council**

One month after the 11 March 2011 catastrophe, Japan's Prime Minister established the national Reconstruction Design Council and charged it with developing general concepts and strategies for recovery and rebuilding. Its 16 members came from academia, business, and religious groups, along with the governors of Iwate, Miyagi, and Fukushima Prefectures. This is the first such national-level planning committee established following a natural disaster since the Great Kanto earthquake of 1923. In addition to the main council, a 19-member study group was also established to provide technical support to the Council.

## **(3) National Reconstruction Agency**

On 24 June 2011, just a day before the Council released its recovery vision, Japan's Diet approved special legislation calling for the immediate establishment of a Cabinet Office headquarters for recovery. It recommended that this headquarters be responsible for developing recovery strategies and policies, along with the national Reconstruction Design Council, until a national recovery agency could be created. Shortly thereafter, the Prime Minister appointed a minister for the provisional agency, but Japan's Diet did not approve the formal establishment of a national reconstruction agency until December 2011. The Reconstruction Agency finally made its official debut on 10 February 2012 - 11 months after the disaster.

The national Reconstruction Agency encompasses many of the previous organizations and taskforces established in the first year. There is a national headquarters, as well three offices - one each in Iwate, Miyagi, and Fukushima Prefectures - and six branches. The agency is charged with helping to speed up the process of rebuilding by working across the various national ministries that oversee different reconstruction programs. With about 250 staff, the agency is already authorized to run until at least March 2021, ten years after the disaster.

## **(4) Prefectural Reconstruction Organizations**

The Iwate, Miyagi, and Fukushima prefectural governments also established their own reconstruction bureaus to lead prefectural-level planning and implementation and to support the work of reconstruction committees also established in each prefecture. These committees have



been comprised of local government, industry, and community leaders, as well as academics, similar to the national Reconstruction Design Council; they advise on the recovery processes. Neither the reconstruction bureaus nor the committees are required by Japan’s disaster laws, but there is historical precedence for both being formed at the prefectural and city levels, dating back to the 1995 Kobe earthquake and quite possibly before.

### 18.2.2 Basic Guidelines for Reconstruction by the Reconstruction Headquarters<sup>3</sup>

In July 2011 (revised in August 2011), “Basic Guidelines for Reconstruction in response to the Great East Japan Earthquake” was published by the Reconstruction Headquarters. The Guidelines constitute a blueprint for the Government to tackle numerous challenges in the reconstruction process in response to the Great East Japan Earthquake. Also, the Guidelines clarify an overall picture of the actions of the Government for the reconstruction in order to facilitate the effort of the disaster-afflicted municipalities in formulating their own reconstruction planning etc., including full mobilization of soft and hard measures based on the concept of “disaster reduction”.

**Table 18.2-1 Items of Policies and Measures for Reconstruction**

<b>Building disaster resistant and resilient regions</b>	<ul style="list-style-type: none"> <li>- A new concept of building the regions responding to challenges of aging society and population decline</li> <li>- Full mobilization of soft and hard measures based on the concept of “disaster reduction”</li> <li>- A framework to realize swift reorganization of land use and other matters</li> <li>- Secure stable residence for affected people</li> <li>- Human resources assistance to support planning of municipalities and actors for reconstruction projects</li> </ul>	
<b>Restoration of life in communities</b>	<ul style="list-style-type: none"> <li>- Mutual support in communities</li> <li>- Employment measures</li> <li>- Promoting Education</li> <li>- Development of human resources supporting the reconstruction process</li> <li>- Promotion of culture and sports</li> </ul>	
<b>Revival of Local Economic Activities</b>	<ul style="list-style-type: none"> <li>- Private Companies, industries and technologies</li> <li>- Small and medium-sized enterprises</li> <li>- Agriculture</li> <li>- Forestry</li> <li>- Fisheries</li> <li>- Tourism</li> <li>- Assistance to livelihood which support communities</li> </ul>	<ul style="list-style-type: none"> <li>- Overlapping debt problems, etc.</li> <li>- Transport, logistics and information-communication</li> <li>- Promotion of use of renewable energy and improvement of energy efficiency</li> <li>- Realization of environmentally advanced regions</li> <li>- Promotion of disposal of large quantities of disaster-related waste</li> </ul>
<b>Nation-building which incorporates lessons learned from the Great Earthquake</b>	<ul style="list-style-type: none"> <li>- Ensuring a stable supply of electricity and reviewing the energy strategy</li> <li>- Promotion of introducing renewable energy and energy conservation measures</li> <li>- Reconstruction open to the world</li> <li>- Realization of social inclusion and promotion of “New Public Commons”</li> <li>- Preparing for future disasters</li> <li>- Academic research and study on disasters, recording the disasters and handing lessons learned on to the next generation</li> </ul>	

Source: Basic Guidelines for Reconstruction in response to the Great East Japan Earthquake (2011)

<sup>3</sup> Basic Guidelines for Reconstruction in response to the Great East Japan Earthquake, Reconstruction Headquarters (2011)

### 18.2.3 Future Tsunami Hazard Assumptions<sup>4,5</sup>

The Central Disaster Management Council of the Cabinet Office established the Committee for Technical Investigation on Countermeasures for Earthquakes and Tsunamis Based on the Lessons Learned from the 2011 off the Pacific coast of Tohoku Earthquake in April 2011 and the committee published the report in September 2011. In the report, it is stated that “We must gravely accept the fact that the results of the pre-disaster assumptions of earthquakes and tsunamis were far removed from the earthquake and tsunami that actually occurred, and must undertake a fundamental review of the principles regarding selection of earthquakes and tsunamis for future hazard assumptions.”

The report refers to future tsunami hazard assumptions: *Development of future tsunami countermeasures will basically require the assumption of two levels of tsunamis. On the first level are the largest-possible tsunamis envisaged on the basis of developing comprehensive disaster management measures, which focus on the evacuation of local residents as the main pillar. Such tsunamis would be set on the basis of ultra-long-term tsunami deposit research and crustal movement observations etc., and while the frequency of their occurrence is extremely low, when they do occur the damage is enormous. The tsunami triggered by the “2011 off the Pacific coast of Tohoku Earthquake” can be considered to belong to this group. On the second level are tsunamis envisaged on the basis of constructing coastal protection facilities such as structures including breakwaters to prevent tsunamis from penetrating inland. These tsunamis occur more frequently than the above mentioned largest-possible tsunamis and cause major damage despite their relatively lower tsunami heights.*

**Table 18.2-2 Future Tsunami Hazard Assumptions**

Classification	Frequency	Principle for countermeasures
Level 1	Tsunami event which occurs approximately once in a period lasting between a few decades and a hundred years	From the point of view of protecting human life and the assets of residents, stabilizing the regional economy and securing efficient industrial bases, coastal protection facilities, etc. must be constructed.
Level 2	Once in a period lasting between a few hundred and a thousand years, when they do occur the damage is enormous.	While placing protection of people’s lives as the first priority, comprehensive tsunami countermeasures must be established embracing every possible instrument, which place evacuation as the core.

Note: The tsunami triggered by the Great East Japan Earthquake can be considered to belong to “Level 2”.

Source: White Paper on Land, Infrastructure, Transport and Tourism, MLIT, 2011 (based on the committee report)

<sup>4</sup> Report of the Committee for Technical Investigation on Countermeasures for Earthquakes and Tsunamis Based on the Lessons Learned from the “2011 off the Pacific coast of Tohoku Earthquake”, Central Disaster Management Council, September 2011

<sup>5</sup> White Paper on Land, Infrastructure, Transport and Tourism, 2011, MLIT

## 18.2.4 Development of Tsunami-resistant Communities<sup>6,7</sup>

It is still an urgent task for reformation of existing tsunami countermeasures in order to achieve a tsunami-resistant society in view of how to prepare against “low-frequency large-scale disasters”, which is one of the severe experiences and lessons learned from the Great East Japan Earthquake.

In December 2011, based on these policies, the Act concerning the Development of Tsunami-resistant Communities (Law No. 123 of 2011) was established to promote development of tsunami-resistant communities based on the concept of multiple defenses, targeting tsunami of the largest class, combining infrastructure development and other forms of measures from the perspective of disaster reduction. The main focuses of the Act are the following: 1) Minimization of potential tsunami disaster damages by structural countermeasures as much as possible (e.g. shore protection facilities, sea embankments, tsunami protection facilities, etc.) and 2) Intensive application of non-structural countermeasures (e.g. evacuation routes, tsunami evacuation buildings, hazard maps, evacuation drills, etc.) against tsunami disasters beyond the structural measures. The figure below shows an image of Tsunami-resistant communities.



Source: Brochure published by MLIT regarding the Act concerning the Development of Tsunami-resistant Communities (Law No. 123 of 2011)

**Figure 18.2-2 Development of Tsunami-resistant Communities (Image)**

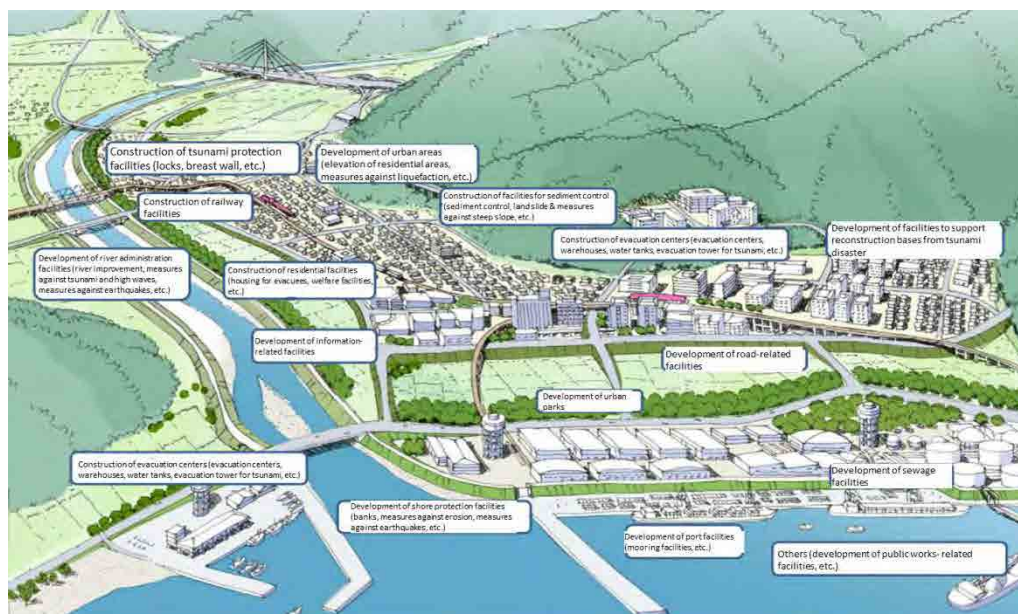
<sup>6</sup> White Paper on Land, Infrastructure, Transport and Tourism, 2011, MLIT

<sup>7</sup> Website of MLIT regarding development of tsunami-resistant communities (URL: <https://www.mlit.go.jp/sogoseisaku/point/tsunamibousai.html>)

### 18.2.5 The Law for Establishing Special Zones for Reconstruction from the Great East Japan Earthquake<sup>8</sup>

In order to facilitate smooth and prompt reconstruction from the Disaster, “the Law for Establishing Special Zones for Reconstruction after the Great East Japan Earthquake” was enacted on December 7, 2011. Under the system of establishing special reconstruction zones based on this law, municipalities that were damaged by the Disaster in all or a part of the regions (227 municipalities as of the end of April 2012) can develop plans independently or jointly to take advantage of special provisions which allow them to select the special provisions that are suited to deal with their damage situations, are in line with their directions of reconstruction and are available for utilization. The special measures available include 1) simplification of procedures for permission and authorization as well as for zoning, 2) utilization of new project models for integrated exchange and development of building lots and farmlands, 3) moderation of occupancy qualifications for public housings, *etc.*, and 4) distribution of reconstruction grants that may be used for a package of wide-ranging supporting projects necessary to rebuild communities undertaken by municipalities in severely damaged areas, *etc.*

The main contents of the reconstruction plans include 1) improvement of urban areas, 2) relocation to uplands from coastal areas and improvement of communities, 3) improvement of emergency transportation roads and evacuation roads, 4) improvement of rainwater drainage and water and sewage facilities, 5) development of parks for disaster prevention and those for symbolizing reconstruction from the Disaster, 6) elevation of trunk roads, 7) development of river and sea levees, and 8) development of tide-protection forests.



Source: White Paper on Land, Infrastructure, Transport and Tourism, 2011, MLIT


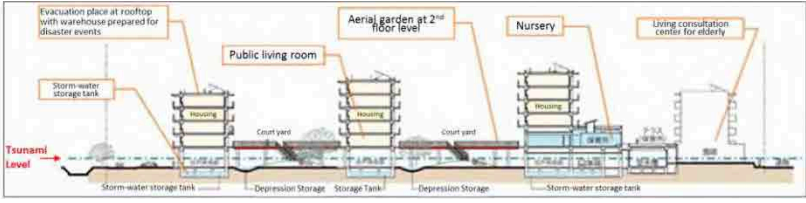
**Figure 18.2-3 List of Project Models for Town Reconstruction (Image)**

<sup>8</sup> White Paper on Land, Infrastructure, Transport and Tourism, 2011, MLIT

## 18.2.6 Towards the Creation of a “New Tohoku”<sup>9,10</sup>

From the point of view for quick recovery from the Great East Japan Earthquake, the Government of Japan, in July last year, designated the five years through fiscal 2015 as a “Concentrated Reconstruction Period” and have accelerated the implementation for disposal of disaster wastes (clearing of rubble, etc.), recovery of infrastructure, reconstruction of housing, town/community re-development, recovery of hospitals and schools, various business supports, *etc.* On the other side, the reconstruction promotion committee have discussed or studied the problems aiming at the creation of a “New Tohoku”. Refer to the table below for details.

**Table 18.2-3 Towards the Creation of a “New Tohoku” (Profile)**

<p>It is expected to develop as a model for Japan and the world “a Future Society with Creativity and Potential,” not by simply restoring those areas but by solving those issues, through taking advantage of the reconstruction from the disaster.</p> <p>In addition, the following activities are to be carried out: 1) Initiation of “model projects”, accelerating the leading examples and 2) Development of reconstruction platforms for the public-private partnerships, which supplement the shortages and link places within and outside the disaster-afflicted areas as well as the public and private sectors. The outcomes will be applied over the disaster-stricken area.</p>	
<p>① <b>Reliable Society to Promote the Fit and Healthy Growth of Children</b></p> <ul style="list-style-type: none"> <li>One of the targets is to establish a local community capable of bringing up children who excel most in Japan in terms of physical strength, learning and survival capability, mutual support, creativity, challenging spirits and mental maturity.</li> </ul>	
<p>② <b>Vibrant Super-Aged Society with "the Elderly People as Standards"</b></p> <ul style="list-style-type: none"> <li>“A Society of never-retire (aging in-community)” should be realized, ahead of other parts of Japan, where elderly people can participate actively in the local community and live active and self-reliant lives as long as possible., <i>etc.</i></li> </ul>	
<p>③ <b>Society with Sustainable Energy (a Society with Autonomous and Decentralized Energy)</b></p> <ul style="list-style-type: none"> <li>The Tohoku region will be expected to be a land of potential and creativity, through conducting in the Tohoku region leading research and development regarding clean technology and establishing an environment in which a chain of economic effects.</li> </ul> <p><b>【Examples】</b></p> <ul style="list-style-type: none"> <li>Initialization of new industry utilizing hot spring heat</li> <li>Integral operation of electric power plants in farming areas</li> <li>Disaster public housing with renewable energy</li> <li>Floating offshore wind farm demonstration project, <i>etc.</i></li> </ul> <p><b>【Activity image for “Integral operation of electric power plants in farming areas”】</b></p> <p>Demonstration projects for integral operation of solar power plants in farming areas have been implemented in order to strengthen livelihood in agricultural villages.</p>	
<p>④ <b>Leading Society to Introduce Robust and Highly Resilient Social Infrastructure (System)</b></p> <ul style="list-style-type: none"> <li>The target is to realize, by utilizing in the course of the reconstruction process, wisdom and lessons learned from the disaster, a local community which introduces comprehensive safety measures in a pioneering manner to avoid fatal damage in the event of various crises including earthquakes and to undertake swift recovery.</li> </ul> <p><b>【Examples】</b></p> <ul style="list-style-type: none"> <li>Establishing patterns for disaster drills by the community considering the situation</li> <li>Designation of residential areas in view of the community situation</li> <li>Community development with a safe and secure environment</li> </ul>	<p><b>【Image for “Community development with a safe and secure environment”】</b></p> 
<p>⑤ <b>Society with the Ability to create Wide Appeal in Utilizing Regional Resources</b></p> <ul style="list-style-type: none"> <li>The concept of “the business to create values together”, which is a business model in which the producers create values of new goods through mutual interactions with the consumers, will be carried out. , <i>etc.</i></li> </ul>	

Note: The contents were revised from the original sources in view of comprehensibility as well as versatility for reference.

Source: Reconstruction Agency of Japan, 2013. *Towards the Creation of “New Tohoku” (The Interim Compilation of Discussions)*, available at [http://www.reconstruction.go.jp/english/topics/2013/08/20130823\\_Towards\\_the\\_Creation\\_of\\_New\\_Tohoku.pdf](http://www.reconstruction.go.jp/english/topics/2013/08/20130823_Towards_the_Creation_of_New_Tohoku.pdf).

<sup>9</sup> Website of Reconstruction Agency of Japan., available at <http://www.reconstruction.go.jp>. (in Japanese and English)

<sup>10</sup> Reconstruction Agency of Japan, 2013. *Towards the Creation of a “New Tohoku” (The Interim Compilation of Discussions)*., available at [http://www.reconstruction.go.jp/english/topics/2013/08/20130823\\_Towards\\_the\\_Creation\\_of\\_New\\_Tohoku.pdf](http://www.reconstruction.go.jp/english/topics/2013/08/20130823_Towards_the_Creation_of_New_Tohoku.pdf).

### 18.3 The Lessons Learned from the Great East Japan Earthquake<sup>11</sup>

After the Great East Japan Earthquake, quite a few governmental agencies, committees and documents have published a large number of the lessons learned respectively and thus they have not been comprehended in a systematic manner. An incorporated foundation, which is the “Japan Institute of Country-ology and Engineering (JICE)”, has tried to organize such lessons carefully and published them on the website of JICE since October 2011. Table 18.3-1 shows examples of lessons learned from the Great East Japan Earthquake, which were selected or extracted in view of reference to the recovery and rehabilitation from the damages caused by the typhoon Yolanda.

**Table 18.3-1 Lessons Learned from the Great East Japan Earthquake (examples)**

<b>External force of earthquake or tsunami</b>	<p><b>New way of thinking for disaster countermeasures</b> We must gravely accept the fact that the results of the pre-disaster assumptions of earthquakes and tsunamis were far removed from the earthquake and tsunami that actually occurred, and must undertake a fundamental review of the principles regarding selection of earthquakes and tsunamis for future hazard assumptions.</p>
<b>Countermeasures against natural disasters</b>	<p><b>Comprehensive multiplex system for securing of safety</b> A comprehensive multiplex system must function certainly for securing of safety. For instance, inland properties are to be protected by coastal embankments against tsunami which occur a few times in a hundred years. Against tsunami events which occur once in a thousand years, the countermeasures, in which protection of human life is the top priority, need to be established. In view of the above matters, evacuation facilities (<i>i.e.</i> evacuation routes, evacuation buildings, relocation to higher ground, <i>etc.</i>) must be established.</p>
	<p><b>Various applications of the lessons learned without allowing the disaster in the past to fade away</b> While people acquire knowledge and skill and make efforts for raising awareness as well as development of systems for disaster preparedness after each disaster, they grow less and less concerned about the past disasters as time goes on. Such history repeats itself. The countermeasures need to be established taking human forgetfulness characteristics into consideration.</p>
<b>Disaster resilient facilities/infrastructure</b>	<p><b>More endurable breakwater or sea embankment against exceeding tsunami height</b> Breakwaters or sea embankments should have a resilient effectiveness even in the event of tsunamis exceeding the tsunami height they were designed for.</p>
	<p><b>Disaster-resistant transportation networks</b> Regarding transport in daily life, a model for disaster resilient local transport, including the addition of disaster prevention functions to transport facilities, should be constructed in combination with the reconstruction policies for the region. Furthermore, going forward, the disaster prevention functions of the trunk transport network must be strengthened further by strengthening earthquake resistance, enhancing resilience, and ensuring “substitutability through multiplexing” (redundancy).</p>
<b>Strengthening of non-structural countermeasures</b>	<p><b>Strengthening of disaster education for encouraging people’s spontaneous action for evacuation</b> Disaster education/learning should be conducted with emphasis on the preciousness of life and the importance of living, and should provide each person with an ability to obtain information, make judgments and decisions, and take actions so as to be able to survive major disasters. Also, deeper understanding must be gained regarding the possibility of major disasters of unexpectedly large scale.  To pass on the lessons learned from past disasters to the next generation and utilize the experience gained to implement future disaster countermeasures, disaster case studies and lessons learned from disasters should be recorded and accumulated/organized/shared as archives so that they may be widely utilized in disaster education, etc.</p>

<sup>11</sup> Japan Institute of Country-ology and Engineering (JICE), 2012. *What are the “Lessons Learned from the Great East Japan Earthquake” specifically (“Higashi nihon daishinsai no kyokun” towa gutaiteki ni nanika)*, available at [http://www.jice.or.jp/sinsai/sinsai\\_kyoukun.html](http://www.jice.or.jp/sinsai/sinsai_kyoukun.html) (in Japanese).

	<p><b>More resilient disaster information system</b> Improve safety and reliability of the information and communication system for the time of a large-scale disaster, including the establishment of disaster resilient information systems.</p> <p>A disaster information platform should be developed for sharing real-time disaster information regarding risk and safety, evacuation, etc. so that effective emergency activities can be realized for the society as a whole.</p>
	<p><b>Improvement of disaster warning systems</b> Tsunami early warning information or evacuation orders represent the primary information for the government or residents for immediate evacuation action. Thus, the contents of the warning and communication means are very important. It is necessary to improve the disaster warning systems such as improvement of the contents of the early warnings as well as the information and communication technology.</p>
<p><b>Philosophy for reconstruction</b></p>	<p><b>Creation of a “New Tohoku”</b> Full recovery and rehabilitation cannot be realized by simple reconstruction of the same infrastructure or living environment. It is necessary to create a new shape of Tohoku by maximizing the diversity and potential of the region in an integrated manner.</p>

Note: The above contents were extracted and edited into the table above from the source.

Source: Japan Institute of Country-ology and Engineering (JICE), 2012. What is “Lessons Learned from the Great East Japan Earthquake” specifically (“Higashi nihon daishinsai no kyokun” towa gutaiteki ni nanika), available at [http://www.jice.or.jp/sinsai/sinsai\\_kyokun.html](http://www.jice.or.jp/sinsai/sinsai_kyokun.html) (in Japanese).

## 18.4 Examples of Technology for Recovery and Rehabilitation

This section explains the examples of technology for recovery and rehabilitation (*e.g.* Road network, breakwaters and coastal dykes, evacuation facilities, tsunami warning, disaster education, *etc.*) mainly from the experiences from the Great East Japan Earthquake for the reference regarding recovery and rehabilitation from the damages caused by the typhoon Yolanda.

### 18.4.1 Road Network<sup>12,13,14</sup>

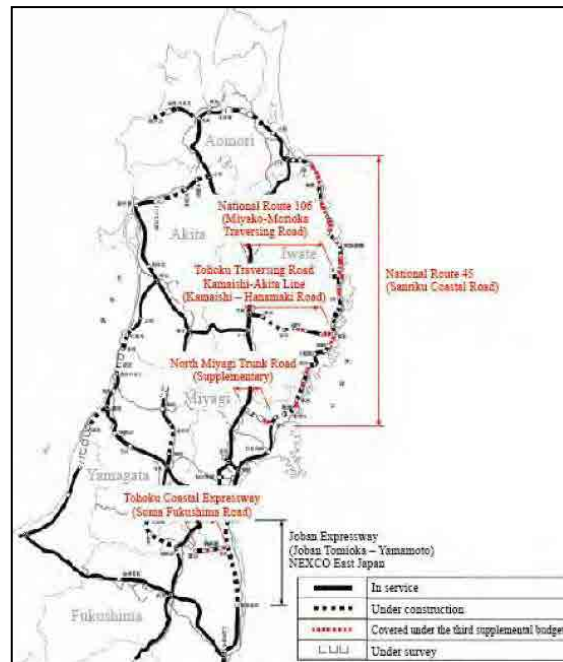
#### (1) Road Networks, Contributing to Wide-area Disaster Prevention

In the aftermath of the Earthquake, as alternatives to expressways on the Pacific side, whose use was limited after the earthquake, the network of trunk roads on the Sea of Japan side served as supplies transport routes. Then, expressway networks are recognized anew as having important roles for alternative transportation routes.

<sup>12</sup> White paper on Land, Infrastructure, Transport and Tourism, MLIT

<sup>13</sup> Council for Social Infrastructure. 2012. Handout document of 14th Road subcommittee

<sup>14</sup> Website on road for recovery and rehabilitation (URL: <http://www.thr.mlit.go.jp/road/fukkou/>)



Source: White paper on Land, Infrastructure, Transport and Tourism, MLIT

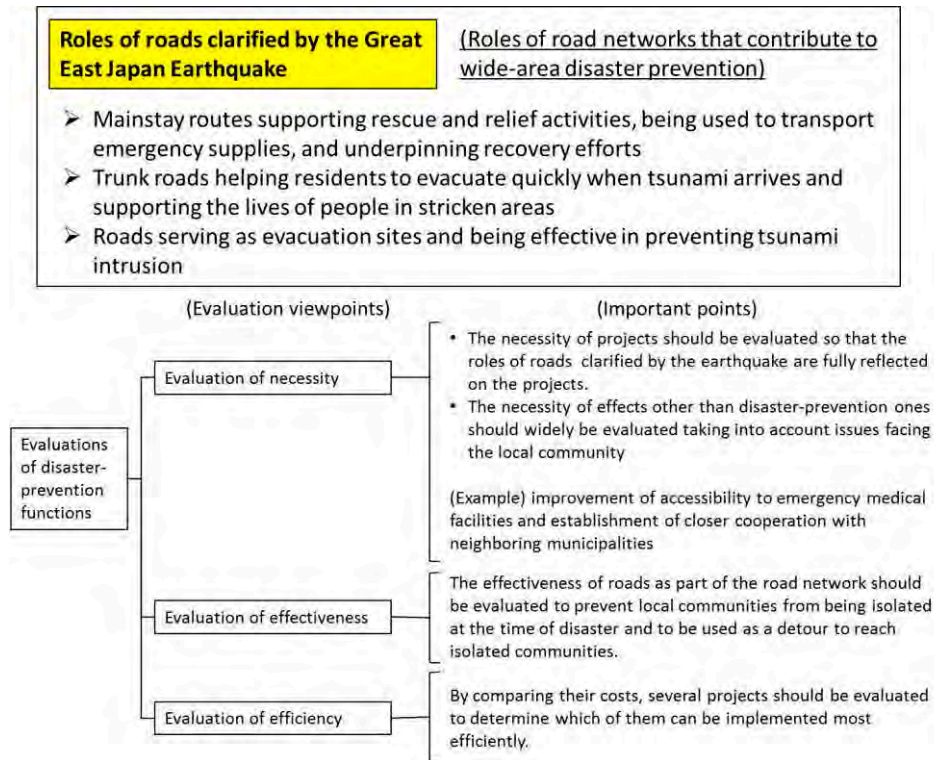
**Figure 18.4-1 Development of Road Network Contributing to Recovery and Rehabilitation**

However, it was pointed out that only approximately 40% of Sanriku Coastal Road is in service and its function as a part of the transportation network has room for improvement, and that with such networks in the Japan Sea side and those connecting the Japan Sea and the Pacific Ocean being weak, prompt delivery of cargoes needed for relief was not fully carried out. And a recommendation was made at a session of the Reconstruction Design Council that “a priority should be given to emergency upgrading of roads along the Pacific Coast and those connecting the Pacific Coast and the Tohoku Expressway”.

In terms of disaster prevention, however, national roads have problems as exemplified by the fact that the only national road in a community is still liable to be hit by tsunami, easily making the community isolated, and some sectors of the national roads actually remain vulnerable to disaster. It is recognized again that a road network functions only if all its roads are interconnected and is working to strengthen the road networks mainly by increasing the ability of vulnerable communities to cope with disasters, viewing early establishment of road network functions to protect national land as a top priority task, and striving to eliminate missing links in the expressway network.

In addition to the traditional concept of road networks mainly to resolve traffic congestion, another method of evaluating wide-area disaster-prevention networks and other effects is adapted from the viewpoint of road networks to prevent the isolation of local communities and other problems at the time of disaster when including new projects such as Sanriku Coast roads. Through these examples of project evaluations applied, it is intended to improve its evaluation methods so that they further reflect road development effects, including disaster-prevention issues.



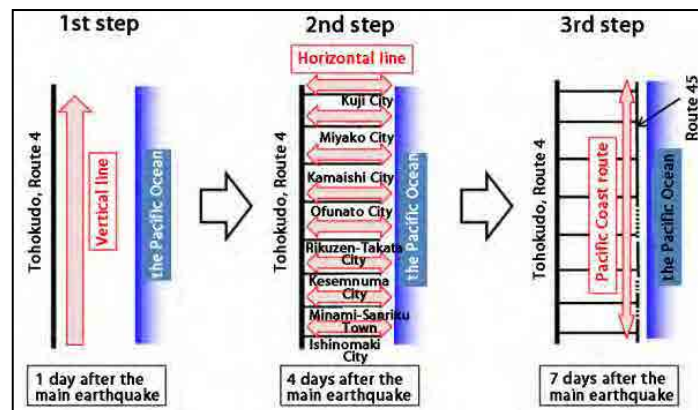


Source: White Paper on Land, Infrastructure, Transport and Tourism, MLIT, 2011

**Figure 18.4-2 Profile of Evaluation Criteria for Disaster-prevention Functions of Roads**

**(2) Quick Restoration of Road Network by “Comb Teeth” Operation**

Securing road access to the affected areas was urgently needed in order to ensure emergency routes for transportation and logistics as soon as possible. In order to strategically promote early restoration of road and highway networks, MLIT developed the "Comb Teeth" operation to get access to Sanriku coastal areas where the tsunami-damaged towns were scattered. MLIT secured vertical lines, the Tohoku Expressway, and National Route 45 the day after the earthquake, and 15 horizontal routes to coastal areas including Sanriku on March 15. The development then progressed to temporary restoration of National Routes 6 and 45 in the coastal area. Consequently, 97 percent of roads were reopened by March 18, a week after the earthquake.



Source: White paper on Land, Infrastructure, Transport and Tourism, MLIT

**Figure 18.4-3 Profile of “Comb Teeth” Operation**

**[Reference] Examples of functions of highways after the Great East Japan Earthquake**

• **Elevated highways functioned as emergency transportation routes**

The Great East Japan Earthquake hit National Road 45 and made it impassable, but the road along the Sanriku Coast, which was partially in service, and other expressways were practically not damaged because they were elevated taking into consideration the tsunami that had stricken the coast before, and even after the earthquake, they played a major role as bypasses for the national road and emergency transport routes.



Source: Council for Social Infrastructure. 2012. Handout document of 14<sup>th</sup> Road subcommittee

**Picture: Sanriku Engan Highway, which was constructed with the consideration of tsunami disaster**

• **Highway road embankment secondary function – preventing tsunami and debris intrusion and higher ground for evacuation**

Sendai Tobu Highway goes through the coastal areas of Sendai City, Miyagi from south to north. Its structure consists of an embankment of 7 to 10m higher than the area around it and there is no higher ground than the road. Many residents quickly ran up the side slopes of the road to escape from the tsunami descending upon them. A total of 230 people evacuated to the road. Moreover, there were obvious differences in the damage to both areas on either side of it. Sendai Tobu Road fulfilled two functions: higher ground for evacuation and coastal levee.



Source: Council for Social Infrastructure. 2012. Handout document of 14<sup>th</sup> Road subcommittee

**Picture: Sendai Tobu Highway secondary function – preventing tsunami and debris intrusion and higher ground for evacuation**

## 18.4.2 Breakwaters and Coastal Dykes (tide-walls)<sup>15,1617</sup>

The Great East Japan Earthquake damaged many breakwaters in ports and harbors. The major causes are presumed to be the powerful horizontal force of the tsunami acting on them, and their destabilization by the scouring of foundation mounds behind the breakwaters by the tsunami as it overflowed them. That has caused a complete rethinking of the existing tsunami-resistant design of breakwaters.

The responsible agencies such as MLIT, etc. have broadly discussed and examined the problems regarding the contents of tsunami-resistant design for breakwaters, coastal dykes, etc. since the Great East Japan Earthquake. The Ports and Harbors Bureau of MLIT published the “Guideline for tsunami-resistant design of breakwaters” and the “Guideline for tsunami-resistant design of coastal dykes (tide-walls) in port areas” in 2013.

In the guidelines, the classification of tsunami levels (Refer to Table 18.4-1) is introduced depending on the frequency and scale of the tsunami event.

**Table 18.4-1 Classification of Tsunami Levels in the Guidelines**

Classification	Design tsunami	Required performance
Frequent Tsunami (Level 1)	Largest tsunami in modern times (return period: around 100 years)	<b>Disaster Prevention</b> <ul style="list-style-type: none"> <li>• Protection of human lives, property and economic activities</li> </ul>
Maximum Tsunami (Level 2)	One of the largest tsunamis in history (return period: around 1,000 years)	<b>Disaster Mitigation</b> <ul style="list-style-type: none"> <li>• Protection of human lives</li> <li>• Reduction of economic loss, especially by preventing the occurrence of severe secondary disasters and by enabling prompt recovery</li> </ul>

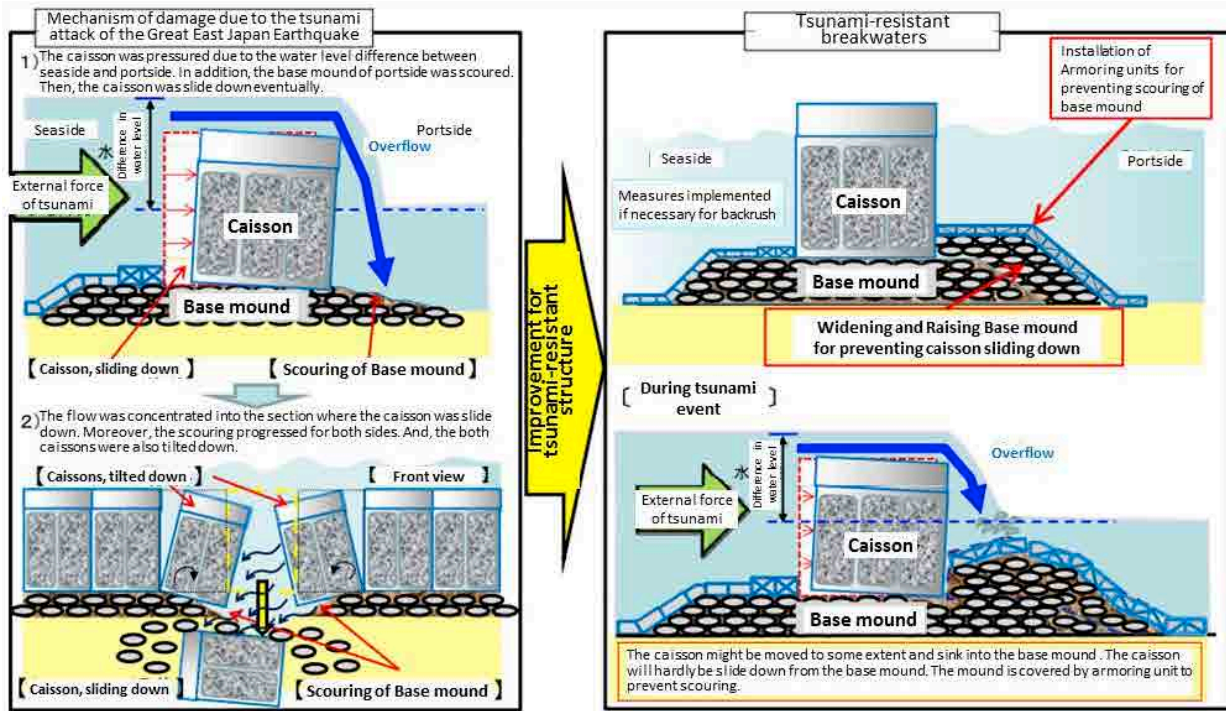
Source: Takahashi, Shigeo, 2013. Mitigation of Tsunami Disaster in Japan, available at <http://www.pari.go.jp/files/items/3459/File/Lebanonunisdrtakhl.pdf>.

The figures below show the measures for tsunami-resistant design of breakwaters and coastal dykes.

<sup>15</sup> Ports and Harbors Bureau of MLIT, 2013. Guideline for tsunami-resistant design of breakwaters

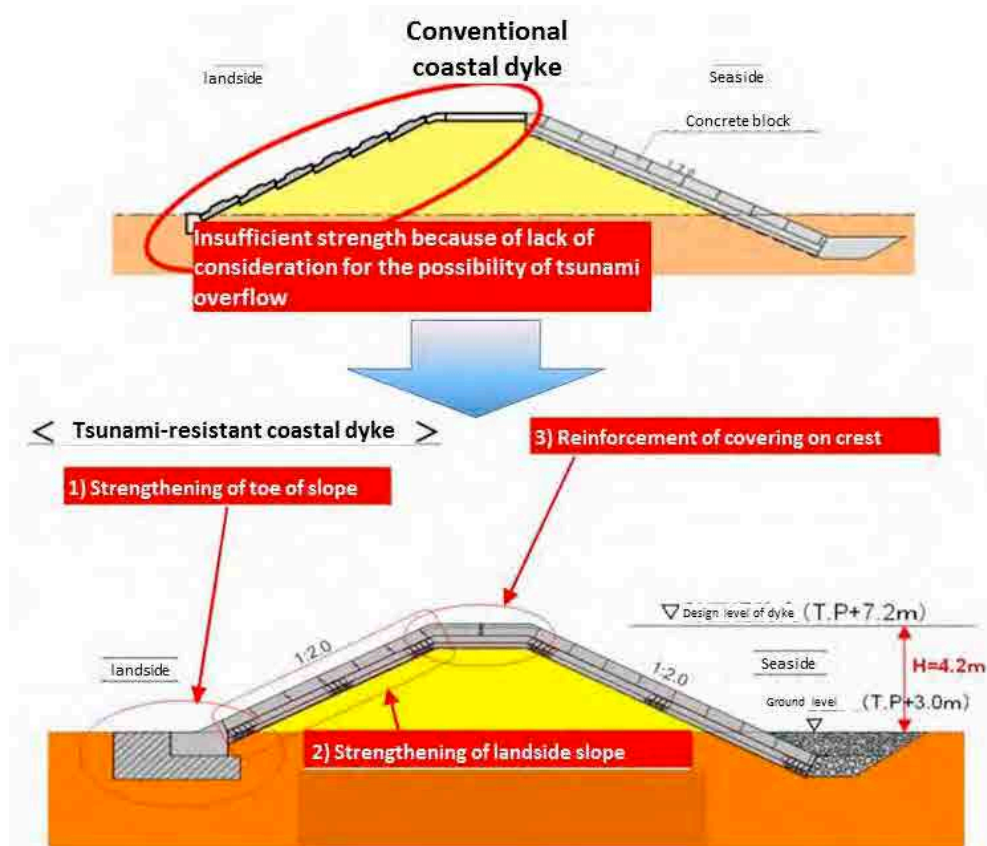
<sup>16</sup> Ports and Harbors Bureau of MLIT, 2013. Guideline for tsunami-resistant design of coastal dykes (tide-walls) in port areas

<sup>17</sup> Japan Institution of Country-ology and Engineering., 2013, Reference document of 1<sup>st</sup> coast committee (“Latest topics of coast administration” by MLIT), available at [http://www.jice.or.jp/jishu/t1/201310020\\_1.html](http://www.jice.or.jp/jishu/t1/201310020_1.html) (in Japanese)



Source: MLIT, 2012, Principle of countermeasures against earthquake and tsunami disasters in port area (Referential Figure)

Figure 18.4-4 Tsunami-resistant Breakwaters



Source: Japan Institution of Country-ology and Engineering, 2013, Reference document of 1st coast committee (“Latest topics of coast administration” by MLIT), available at [http://www.jice.or.jp/jishu/t1/201310020\\_1.html](http://www.jice.or.jp/jishu/t1/201310020_1.html) (in Japanese)

Figure 18.4-5 Tsunami-resistant Coastal Dyke

In view of more reliable tsunami-resistant functions of coastal dykes and landscape, forestation on the landside of the coastal dykes is expected to be significant. In coastal areas of south of Sendai bay, experimental construction of this type of coastal dyke was carried out with a total length of about 5km and width of about 4m of additional soiling on the landside beside the dykes.



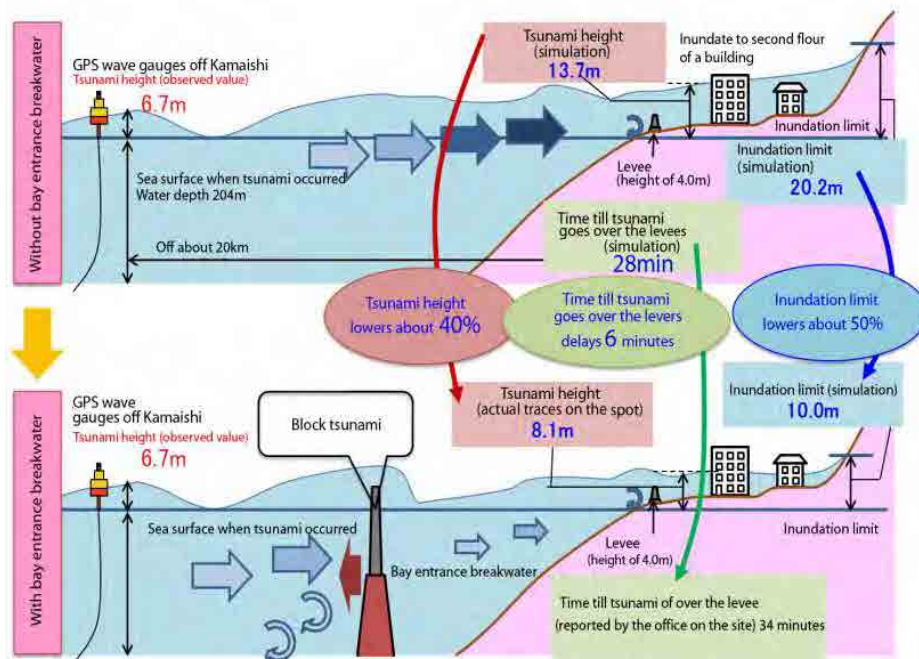
Source: Japan Institution of Country-ology and Engineering, 2013, Reference document of 1st coast committee (“Latest topics of coast administration” by MLIT), available at [http://www.jice.or.jp/jishu/t1/201310020\\_1.html](http://www.jice.or.jp/jishu/t1/201310020_1.html) (in Japanese)

**Figure 18.4-6 Image Illustration of Coastal Dyke with Forestation in Coastal Area**

**[Reference] Examples for functionality of breakwater or coastal dyke against tsunami**

**• Effects of Bay Entrance Breakwater at Kamaishi Port**

It was found that the breakwaters at Kamaishi Port, in comparison to cases where there were no tsunami breakwaters, did actually help mitigate the damage.



Source: MLIT., 2011

**Figure: Effects of Bay Entrance Breakwater at Kamaishi Port (Results of simulation analysis)**

**• Coastal dyke in Ootanabe area prevented the intrusion of tsunami**

It was a rare case but the Coastal dyke in Ootanabe area, Fudai village, Iwate prefecture with the height of 15.5m did not collapse and it prevented the intrusion of the tsunami.



### 18.4.3 Evacuation Facilities

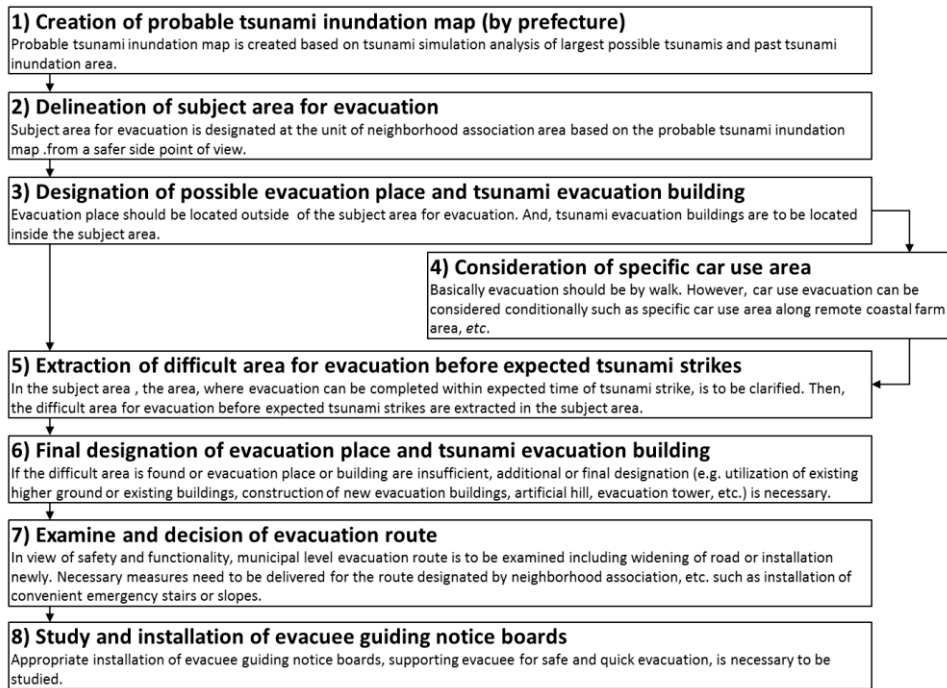
In this section, the “Guideline for development of facilities for evacuation from tsunami disaster”, which was published by Miyagi prefecture in March 2012, is introduced. The guideline describes principles and methodologies for the development of evacuation facilities (i.e. evacuation place, tsunami evacuation buildings, evacuation routes, evacuee guiding notice boards, etc.) in combination with non-structural measures such as dissemination of early warning information, disaster education, etc. in view of protection of human life at any cost against largest-possible tsunamis.

A series of considerations are necessary for the development of the facilities as shown in the table below. The flow chart for the methodology is briefly indicated in the figure below.

**Table 18.4-2 Important Items for Development of Evacuation Facilities**

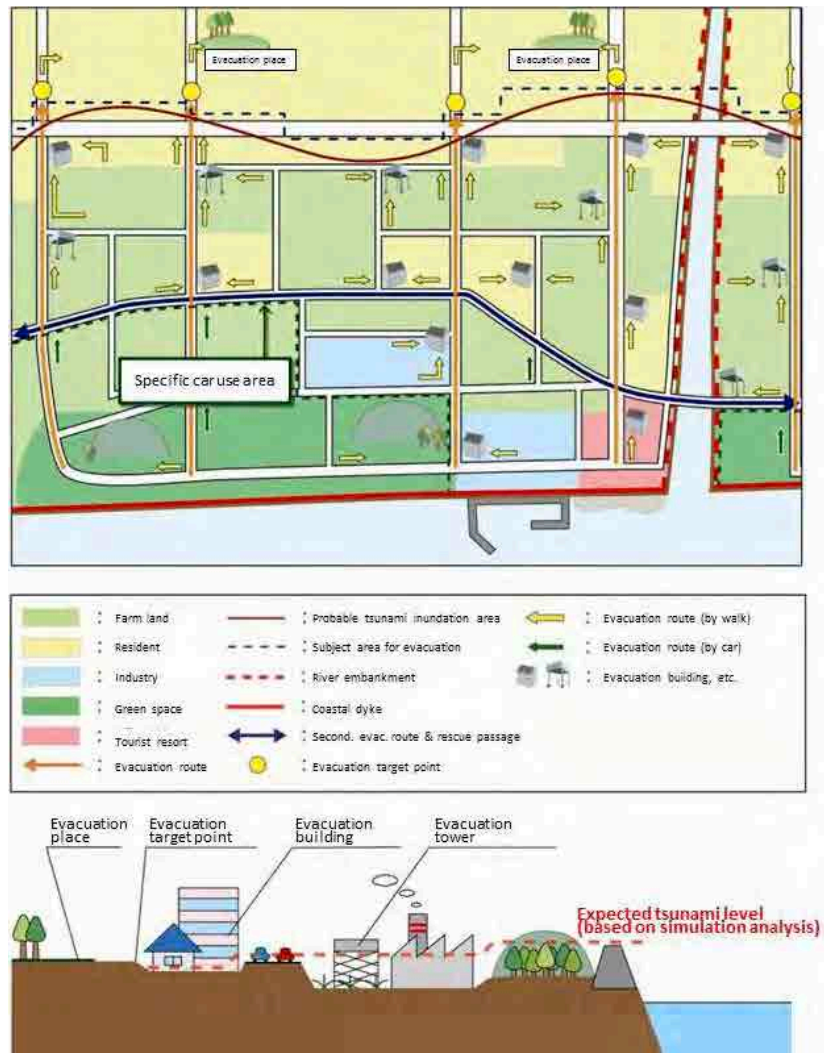
<p><b>&lt;Promotion of urban area in which it is easy to evacuate quickly&gt;</b></p> <ul style="list-style-type: none"> <li>- Avoid incomprehensible locations of evacuation facility (ex. Evacuation road straight to higher ground)</li> <li>- Avoid construction of facility which is used only emergency (ex. Evacuation place used as observation platform at ordinary times)</li> <li>- Avoid evacuation route without blockade (ex. Widening of road to avoid heavy traffic in emergency)</li> <li>- Do not forget to take into account unfavorable conditions (ex. Emergency power supply)</li> <li>- Do not forget to consider stepwise evacuation (ex. Evacuation shelter, connected to higher safe place)</li> </ul> <p><b>&lt;Promotion of culture of disaster prevention&gt;</b></p> <ul style="list-style-type: none"> <li>- Avoid implementation of structural measures only (ex. Festival, raising awareness for disaster)</li> </ul>
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Source: Miyagi prefecture, 2012, Guideline for development of facilities for evacuation from tsunami disaster (Original source: MLIT)



Source: Miyagi prefecture, 2012, Guideline for development of facilities for evacuation from tsunami disaster

**Figure 18.4-7 Flow Chart for the Methodology of Evacuation Facilities Development**



Source: Miyagi prefecture, 2012, Guideline for development of facilities for evacuation from tsunami disaster

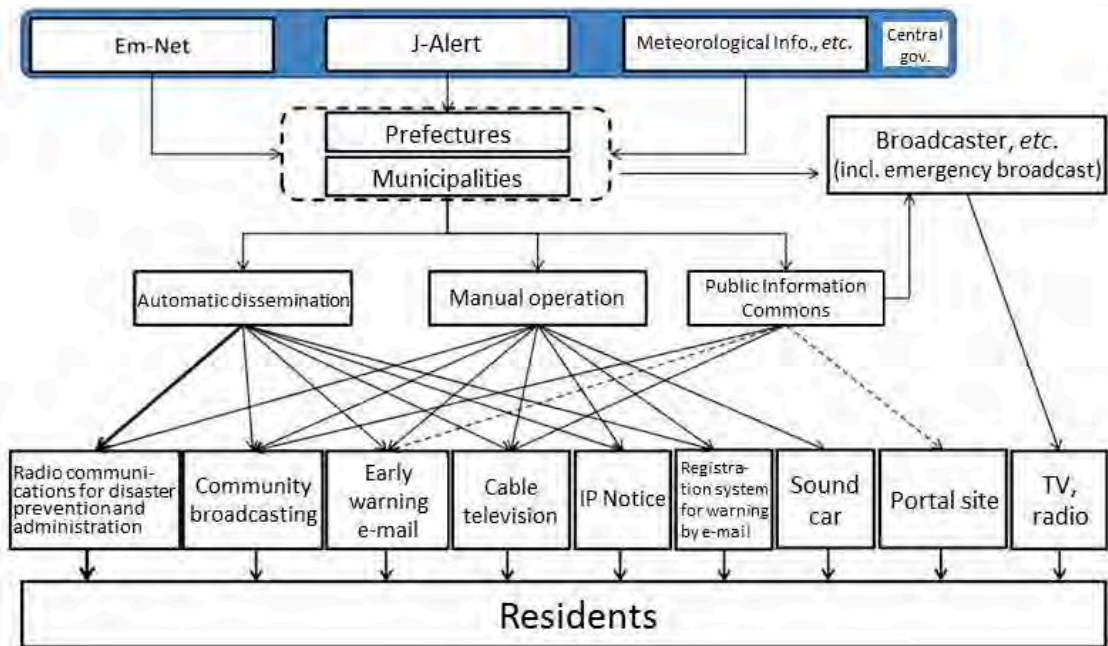
**Figure 18.4-8 Illustrative Image of Evacuation Facilities Development**

#### 18.4.4 Improvement of Information Transfer System for Tsunami Warning

##### (1) Improvement of Information Transfer System

It was understood that the information transfer system, disseminating early warning or disaster information to the people during the disaster events of the Great East Japan Earthquake, had functioned properly to some extent. It was, however, recognized that there had been some problems such as ensuring prompt information transfer, strengthening of disaster-resistant functionality, *etc.* In view of the matters above, each municipality needs to improve or develop disaster-resistant information dissemination systems. The profiles of the systems are described in the figure below.





Source: Committee report on improvement of disaster information transfer at local governments (2012)

**Figure 18.4-9 Improvement of Information Transfer System**

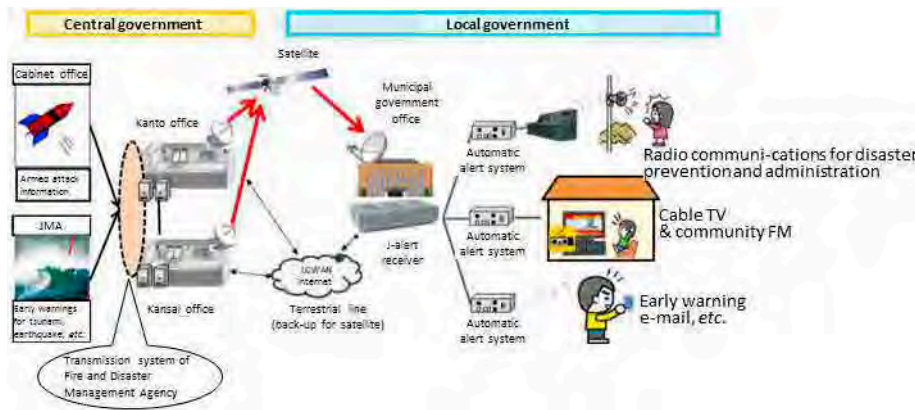
1) Em-Net



Source: Cabinet office (2006)

**Figure 18.4-10 Em-Net**

“Em-Net” is an emergency information network system for disseminating necessary information from the cabinet secretariat to prefectures and municipalities. Messages are to be forcefully delivered through Em-Net to the recipients for transferring the information swiftly and definitely.



Source: Fire and Disaster Management Agency

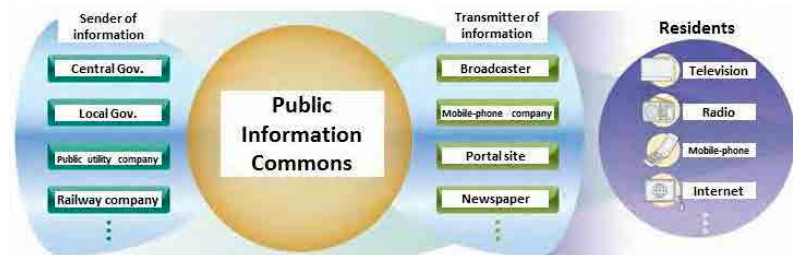
**Figure 18.4-11 J-ALERT**

2) J-ALERT

J-alert is an alert system by which warning information can be delivered instantly nationwide.

3) Public information Commons

“Public information commons” is an information platform, aiming at dissemination of necessary information, especially public information regarding safety and security, to people promptly and appropriately.









Source: Foundation for multimedia communications

**Figure 18.4-12 Public Information Commons**

**(2) Improvement of Contents of Tsunami Warning**

After the Earthquake, appropriate improvement measures for the contents of tsunami early warning have been examined as well as the method for announcement by the responsible governmental agencies (*e.g.* Japan Meteorological Agency (JMA), *etc.*). The operation of refined tsunami early warning started in March 2013. Refer to the figure below showing the refined contents of tsunami warning.

	Estimated maximum tsunami height		Action to be taken	Expected damage
	Quantitative expression	For huge earthquakes		
Major Tsunami Warning	over 10 m (10m < height)	Huge	<p>Evacuate from coastal or river areas immediately to safer places such as high ground or a tsunami evacuation building.</p> <p>Tsunami waves are expected to hit repeatedly. Do not leave the evacuation location until Tsunami Warnings are cleared.</p> <p>Keep evacuating to higher and higher ground wherever possible!</p>  <p>Educational video "Escape the Tsunami" (JMA)</p>	<p>Wooden structures are expected to be completely destroyed and/or washed away; anybody exposed will be caught in tsunami currents.</p>  <p>(Most wooden structures washed away due to the tsunami in 2011)</p>
	10m (5m < height ≤ 10m)			
	5m (3m < height ≤ 5m)			
Tsunami Warning	3m (1m < height ≤ 3m)	High	<p>Get out of the water and leave coastal areas immediately. Do not engage in fishing or swimming activities until Advisories are cleared.</p> 	<p>Tsunami waves will hit, causing damage to low-lying areas. Buildings will be flooded and anybody exposed will be caught in tsunami currents.</p>  <p>Toyokoro-cho (2003)</p>
Tsunami Advisory	1m (0.0m < height ≤ 1m)	(N/A)	<p>Get out of the water and leave coastal areas immediately. Do not engage in fishing or swimming activities until Advisories are cleared.</p> 	<p>Anybody exposed will be caught in a strong tsunami currents in the sea. Fish farming facilities will be washed away and small vessels may capsize.</p> 

Source: JMA, 2012. Start of New Tsunami Warning System Operation.

Figure 18.4-13 Improvement of Contents of Tsunami Warning

#### 18.4.5 Disaster Education<sup>18,19,20</sup>

A large number of discussions for reviewing the disaster education at schools (*e.g.* elementary school, junior high school, *etc.*) including management, have been held among the relevant agencies after the Great East Japan Earthquake.

The most indispensable in disaster education against tsunami is to make sure that people undertake immediate evacuation on their own initiative to an evacuation shelter or higher safe ground in the event of earthquake. In other words, it is also important that people seriously associate strong earthquake with tsunami occurrence afterwards and then undertake immediate evacuation to a safer place without waiting for a moment for confirmation of major tsunami warning from the point of view that one should protect oneself.

The remarkable example of disaster education in Kamaishi City, Iwate Prefecture in the event of the Great East Japan Earthquake should be noted. The survival rate of elementary and junior high school students in Kamaishi City in the event of the Great East Japan Earthquake was 99.8% (Note: The rate was 10% under the responsibility of the schools.), which was distinctively higher than the surrounding municipalities. It is recognized that the higher survival rate was attributed to

<sup>18</sup> MEXT., 2012, Final report of expert committee on disaster education and disaster management in view of the Great East Japan Earthquake

<sup>19</sup> Fire and disaster management agency., 2013, Committee report on manual for implementation of evacuation measures against tsunami disaster

<sup>20</sup> Miyagi prefecture., 2014, Guideline for tsunami countermeasures

the disaster education, which had been delivered cumulatively before the disaster. It was pointed out that the most important is children’s acquisition of independent and voluntary attitudes for self and mutual support during a disaster event without excessive dependence on others or the government.

The three principles for evacuation, which are placed in the core of the disaster education, are briefly indicated in the table below.

**Table 18.4-3 Three Principles for Evacuation**

<b>Do not stick to assumptions.</b>	In short, “Do not believe a hazard map.” A hazard map shows an assumed area of the hazard. You should take into account the possibility that the next disaster may not be the same as the hazard map.
<b>Do your own best, literally.</b>	We don’t know how serious the next tsunami will be. However, all you can do is “do your own best literally”.
<b>Be the first to evacuate.</b>	If you don’t take action after an evacuation order because everybody is saying “We’ll be safe this time, because we’re safe last time without evacuation.”, all of you may well be dead.  You should be the first evacuee. If you seriously try hard to evacuate after the order, surrounding people will be influenced for taking action following after your evacuation because of “population synchrony”, the behavior of human psychology. In other words, your prompt evacuation action will lead to saving everybody’s life.

Source: Katada, Toshitaka, 2012. *Disaster measures without casualty (Hito ga shinanai bosai)*, Shueisha-bunko, Tokyo, Japan, pp.60-75. (Note: The above contents were extracted and edited into the table above from the source.)


Besides the above-mentioned, 1) implementation of training for teachers or faculty and 2) coordination with communities or parents, etc. are also regarded as important issues in terms of strengthening regional capacity.

## Chapter 19 Summary of Workshop with Model Area

### 19.1 Summary of Discussion in Workshop

#### 19.1.1 Tacloban

##### (1) Orientation / 1st Workshop

Orientation	
Date	10 July 2014
Participants	LGU: Ex-Vice Mayor, Planning Officer, Housing Officer, DRRM Officer, Reconstruction Planning Team including UNHABITAT JICA: Hirabayashi, Inoue, Otake, Chida, Todo
Outline of Discussed Contents	<ul style="list-style-type: none"> <li>Explanation by the Consultants on the outline of supporting activities for the preparation of the Recovery and Reconstruction Plan</li> <li>Updating of the Recovery and Reconstruction Plan through the use of the CLUP and DRRM</li> </ul>
1st Workshop	
Date	25 July 2014
Participants	LGU: 15 participants including UNHABITAT staff JICA: Ogata, Kuga, Inoue, Todo, Chida, Araki, H. Kobayashi, Takashi, Osakagem Iwai, Minami, Sako
Outline of Discussed Contents	<ul style="list-style-type: none"> <li>Held overall meeting and branch meetings in accordance to the contents discussed at the orientation</li> <li>The LGU is proceeding with the updating of its CLUP. Discussions were started on the output of the works</li> </ul> 
Building Safer Cities	<ul style="list-style-type: none"> <li>Plans including that for evacuation are being examined by the LGU. However, evacuation facilities were located in high risk areas when verified based on the hazard map prepared by JICA</li> <li>The capacities of evacuation facilities are not carefully examined to accommodate all evacuees. Use of coastal areas, where construction should basically be restricted, are being emphasized</li> <li>A new bypass road is being planned in the mountain areas. However, there are opinions that the number of connecting roads to the city center is insufficient</li> <li>An area in the northern part of the City is planned to be developed and relocation of resident in some of the high risk areas are planned</li> </ul>
Recovery of People's Daily Life	<ul style="list-style-type: none"> <li>Delay in securing land and housings in relocation areas</li> <li>Insufficient environment for livelihood activities in relocation areas</li> <li>Concentration of medical and educational facilities in high risk areas</li> <li>Insufficient consideration for the disabled and senior citizens in DRRM plans</li> <li>Lack of disaster resilient building standards for the reconstruction of medical facilities and schools</li> <li>Insufficient capacity of communities for DRRM and disaster response</li> </ul>
Restoration of Regional Economy and Promotion of Industries	<ul style="list-style-type: none"> <li>The city embraces the regional airport and harbor of Region 8, functions as the center of commodity distribution, as well as the center of administration, economy, society and middle / higher education.</li> <li>Develop Tacloban as Central hub for trade, commerce, service, and industry in Region 8 (safe and resilient leading comprehensive socio-economic center of Region 8 for regional advancement)</li> <li>In terms of economy, the City plays central roles for trade, commerce, service, tourism and industry in the Region. However, its potentials are not fully utilized</li> <li>In terms of commodity distribution, facilities are not sufficiently established and supply chains of primary products, production material and daily commodities are underdeveloped</li> </ul>

	<ul style="list-style-type: none"> <li>The City functions as a collection site of primary products and a center for the import of daily commodities and fresh food products. However, the City lacks cold storage</li> <li>The City is underdeveloped in terms of manufacturing industries and processing of primary products</li> <li>A Special Economic Zone (EVRGC: Eastern Visayas Regional Growth Center) is located in the City. The EVRGC benefits from economic incentives and has the potential to become a focal point for the installation of infrastructure to formulate a distribution center or for the development of primary product processing industries</li> <li>Trade and commerce in the City has severely suffered secondary damages of Typhoon Yolanda. This has led to a price inflation throughout the region which is still significantly affecting daily lives and production in the City</li> <li>For service and tourism industries, the City outstands the region with its various resources and functions as a gateway for tourism thanks to its airport, harbor and its location in the center of the regional road network. However, the amount and quality of services provided are still low and tourist routes are also not clearly established</li> <li>Through the Provincial Chamber of Commerce has its main office in Tacloban, there is not City level office. The Provincial Chamber of Commerce also requires to be further strengthened in terms of organization and function</li> </ul>
Remarks	<ul style="list-style-type: none"> <li>Preparation of plans including that for DRRM are already under way</li> <li>The City further requires concrete examinations for its evacuation plan such as traffic simulation</li> </ul>

## (2) Working Group - Building Safer City

Supporting Policy of 2nd Workshop	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>Supporting the revision of CLUP with understanding on the role of JICA team and it of UNHBITAT</li> <li>The role of JICA team is support utilizing hazard map</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Pointing out the problem of previous emergency transport and proposing the measures</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Presentation of problem and countermeasures on strong and safe buildings</li> </ul>
Record of Discussion of 2nd Workshop	
Structure, Land Use, Evacuation plan	<ol style="list-style-type: none"> <li>Though two structural countermeasure proposals to each three district were examined, one district could not determine the orientation. Coordination with UNHBITAT is necessary so that city can judge the proper idea by comparing merit and demerit with considering current regional and surrounding situation.</li> <li>Land Use: Examining the revision of CLUP proposal with hazard map and structural countermeasure. Discussion with UNHBITAT about the management of guide manual is necessary.</li> <li>Though concrete plan of preparing shelter has been proceeded with the result of 1st workshop, there is the problems in evacuate population and its route. The support for improvement is essential. In order to realize the plan, the environmental consideration such as natural environment, living environment, and effect of large development in reclamation land. However there is no environmental sector in current government. Therefore proposal about their system is also required.</li> <li>Emergency road: Embankment road is premier. Alternative road for redundancy is also one of the idea of JICA team, but coordination and discussion are necessary.</li> <li>There is a plan to establish Local building code. The way to include the idea of JICA team has to be coordinated and discussed.</li> </ol>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Explanation of necessity and outline of emergency transport plan</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Importance of proper building design in accordance with the code and standard of the Philippines, strict checking in building permit and adequate construction practice including construction supervision using construction guideline or handbook, in order to make buildings strong and safe against disasters in particular evacuation facilities</li> </ul>
Outcomes of 2nd Workshop (Output from LGU)	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Location of emergency transport route, gateway, storage/stock yard, evacuation centers and access road by LGU with priority</li> <li>Organization and section in charge, quantity and availability of vehicles/boats and fuel, emergency communication method, road clearance, coordination etc.</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Study of local building code of Tacloban</li> </ul>

Actions after 2nd Workshop	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>Coordinating about option proposal about embankment road with a deputy mayor of Tacloban city, the planning officer, the engineer and the person in charge of DPWH on September 30th..</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Making draft emergency transport plan by study team</li> <li>Finalizing of emergency transport plan by LGU</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Study of local building code of Tacloban and building permit</li> <li>Coordination with Tacloban city and relevant infrastructure service and construction organization such as DPWH, water district, electricity cooperative and telecommunication companies</li> </ul>

### (3) Working Group - Rebuilding Communities

Agenda for the orientation	<p>Joint Consultation by all sectors:</p> <ol style="list-style-type: none"> <li>Sharing rolls between UNHBITAT and JICA Team for revision of CLUP</li> <li>Schedule for workshops presided by UNHBITAT</li> <li>Method for the workshop presided by JICA Team on Sep. 19</li> </ol>
Items to be followed after the orientation	<p>Request to do until the first workshop on Friday, Sep. 18</p> <ol style="list-style-type: none"> <li>Introduction of result of workshops presided by UNHBITAT</li> </ol>
Principles for the workshop supporting	<p>Preparation of the analysis sheets on the social sector in accordance with CLUP guidelines</p> <ol style="list-style-type: none"> <li>Issues</li> <li>Negative impact of the issues</li> <li>Prioritized policies</li> <li>Prioritized programs and projects</li> <li>Organizations concerned</li> <li>Temporal axis</li> </ol>
Record of Discussion of 1st Workshop	<p>[Education]</p> <ul style="list-style-type: none"> <li>Rehabilitation of schools and classrooms</li> <li>Enforcement of building code having resistance to disaster</li> <li>Construction of schools as evacuation centers accessible for the disadvantaged</li> <li>Strengthening of disaster-prevention education</li> <li>Provision of psychological support at school</li> <li>Expansion of Education for All Handicapped Children, etc.</li> </ul> <p>[Social Welfare]</p> <ul style="list-style-type: none"> <li>Provision of a consultation service for people with disabilities</li> <li>Rehabilitation of the office of Senior Citizens' Association, the CSWD office, daycare centers, etc.</li> <li>Strengthening of disaster-prevention capabilities of the disadvantaged</li> <li>Referral Revitalization at the village level</li> <li>Enhancement of multi-sectoral structure at the city level</li> <li>Increase in personnel of CSWD</li> <li>Provision of livelihood aid to affected people, etc.</li> </ul> <p>[Health]</p> <ul style="list-style-type: none"> <li>Rehabilitation of healthcare centers</li> <li>Increase of healthcare staffs</li> <li>Improvement of medical equipment and sufficient pharmaceutical stockpile</li> <li>Provision of sanitary drinking water</li> <li>Enhancement of family planning</li> <li>Promotion of safe and deliberate conception and birth</li> <li>Development of program on mental healthcare</li> <li>Enhancement of community health</li> <li>Standardization of healthcare service at the time of disaster, etc.</li> </ul> <p>[Solid Waste Management]</p> <ul style="list-style-type: none"> <li>Early conduct of domestic waste characteristic survey, and review of 10-year program for solid waste management using the survey results</li> <li>Preparation for operation of sanitary disposal center from 2016 as urgent task</li> <li>Acceleration of recycling</li> <li>Examination of setting and collecting SWM service fee that can recover the costs</li> </ul>
Actions after	<ol style="list-style-type: none"> <li>Sharing and confirming the result of the workshop</li> </ol>

1st Workshop	(2) Following modification work of the workshop result associated with CLUP revision (3) Collecting the required data
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#### (4) Working Group - Recovery of Economy

Supporting Policy of 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Support for formulation of economic development strategy</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>In Tacloban, the existing farm land has been converted to the land used for the other purposes. Thus, dairy farming of Carabao (water buffalo) will be promoted</li> <li>Introduction of dwarf coconut palm varieties will be promoted to install tree fields prone to wind damages, considering that in Tacloban 59% of coconut palm trees are damaged by Typhoon Yolanda and have become unable to produce coconuts.</li> <li>Since women's income sources are generally limited in rural areas, coconut varieties that are suitable for food processing will be introduced; and food processing industries by utilizing the introduced coconut varieties will be promoted.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Transformation from catching fish to farming fish</li> <li>However, fish farming should not be promoted without careful consideration. Emphasis needs to be placed on "fish farming on the basis of demand for aquaculture products" in order to prevent the oversupply of fish.</li> </ul>
Detailed Contents of Proposal in 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Formulation of economic development strategy. Moreover, the list of the projects to be implemented in line with the strategy, including additional projects to be formulated, will be made at the same time or by the time of the announcement in November.</li> <li>Develop Tacloban as Central Hub for Trade, Commerce, Service, and Industry in Region 8 (Consideration by Otake afterwards : Safe and Resilient Leading Comprehensive Socio-Economic Center of Region 8 for Regional Advancement)</li> <li>As one of the key activities in the strategy, Eastern Visayas Regional Growth Center (EVRGC) will be strengthened. As a direction of EVRGC, it will be equipped with functions as a product distribution center.</li> <li>The product distribution center should be equipped with high-standard slaughter facilities, feed factories for livestock breeding and fish farming, and food processing factories.</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>Promotion of dairy product processing through formulation (or selection) of farmer's organizations for dairy farming of Carabao and implementation of the female Carabao distribution projects promoted by the Carabao center in VSU</li> <li>Plan for introduction of dwarf coconut palm varieties will be formulated with the participation of farmers</li> <li>Formulation (or selection) of women's groups for food processing of coconuts; and provision of training on food processing methods with the women's groups</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Empower the fisherfolk by providing livelihood through fisheries related projects such as full cycle aquaculture industry that is from hatchery to processing.</li> <li>Milkfish production is an attractive solution to the issue of decreasing fish catch by introducing a shift from capture fisheries to culture fisheries.</li> <li>Establishment of a hatchery.</li> <li>Equip fisherfolk with the technology already identified.</li> <li>Increase supply of fish through local production.</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Records of Prior Consultation for 2nd Workshop	
General	<ul style="list-style-type: none"> <li>A prior consultation could not be conducted, since the responsible persons were occupied with the work reflecting CDRA, which has been led by UNHABITAT, to CLUP.</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>[Mushroom cultivation site visit in Tabontagbon] On the 18th of September, Mr. Rey stated that the method of cultivating mushroom under houses of farmers would be suitable for the farmers in Tacloban that have only limited farming areas. He continued that this was an innovative idea since it could provide a mean of earning livelihoods with not only the farmers but also with the residents living in temporary housings. He assured that he would find a donor as soon as possible.</li> <li>He actually contacted UNDP and UNHABITAT on the same day. In the following week, he conducted a Mushroom cultivation site visit together with their representatives, and secured budget for introducing Mushroom cultivation in Tacloban.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>




Record of Discussion of 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Confirmation of prioritization of the subsectors based on the tentative visions of the sector of economy</li> <li>Consideration of directions of activities regarding the subsectors, based on the tentative visions</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The main features of Tacloban are 1) narrow farm land; 2) being located near consumption areas; 3) vast forest land.</li> <li>Women's economic activities need to be supported.</li> <li>Promotion of dairy farming, for enhancing women's participation in dairy product processing industries</li> <li>Promotion of food processing industries through the diversification of coconut varieties, for enhancing women's participation</li> <li>Promotion of vegetable cultivation in suburban areas</li> <li>Establishment of trading posts</li> <li>Enhancement of farmer's income through utilization of rice straw, which used to be burnt as trash, for mushroom cultivation; and application of compost as a fertilizer</li> <li>Even the residents of temporary housings, whose livelihood strategies are limited, can be engaged in mushroom cultivation</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Outcomes of 2nd Workshop (Output from LGU)	
General	<ul style="list-style-type: none"> <li>Justification of the overall visions of the sector of economy formulated during 1st Workshop: functioning as a leading actor of Region 8 on Trade, Commerce, Education and Service.</li> <li>As a direction of promotion of tourism, considering that Tacloban is the entry point of Region 8, the municipality will focus on information collection on the tourism in the region and information provision to people coming to Region 8.</li> <li>Networking for information collection will be strengthened.</li> <li>Regarding Commerce, revitalization of trade functions of the products coming into Region 8 will be promoted (Most of the business operators have already been back in business).</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The contents written in "Record of Discussion of 2nd Workshop" are the output produced cooperatively through discussions from the time of the prior consultations until the time of 2nd Workshop. The outputs on Agriculture from LGU are not unilaterally produced.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Establishment of a hatchery as part of the full cycle aquaculture industry as livelihood for Typhoon Haiyan affected people relocated from coastal areas to northern barangays of Tacloban City.</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Actions after 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Dealing with economic development systematically by having an enabling organizational framework (Request for appointment of in-charge personnel and etc.)</li> <li>Confirmation and revision of the vision of the sector of economy as well as realization policy</li> <li>Support for formulation of more systematic plans</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The progress of industrialization of mushroom cultivation will be monitored by local engineers.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Discussion with BFAR and LGU</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## 19.1.2 Palo

### (1) Orientation / 1st Workshop

Orientation	
Date	2 July 2014
Participants	LGU: Mayor, Planning Officer, DRRM Officer JICA: Kuga, Inoue, Otake, Chida, Todo
Outline of Discussed Contents	<ul style="list-style-type: none"> <li>Explanation by the Consultants on the outline of supporting activities for the preparation of the Recovery and Reconstruction Plan</li> <li>Updating of the Recovery and Reconstruction Plan through the use of the CLUP and DRRM</li> <li>The Municipality of Palo expressed their interest to request for the provision of equipment for early warning because such equipment were damaged by the disaster</li> <li>The Municipality also expressed their interest for structural measures (tide embankments)</li> </ul>

1st Workshop	
Date	23 July 2014
Participants	<p>LGU: 11 participants</p> <p>JICA: Kuga, Inoue, Todo, Chida, Araki, Takashi, Osakabe, Iwai, Minami, Sako</p>
Outline of Discussed Contents	<ul style="list-style-type: none"> <li>Held overall meeting and branch meetings in accordance to the contents discussed at the orientation</li> <li>Explained about the hazard map prepared by JICA in order to verify the safety level of the DRRM Plan prepared by the LGU. However, the interest of the LGU was mainly on flood control of rivers.</li> </ul> 
Building Safer Cities	<ul style="list-style-type: none"> <li>Importance is attached to measures against flood damage rather than storm surge</li> <li>Though measures for flood control were being taken, this was not enough to cope with the storm surge which had an unexpected magnitude</li> <li>The importance thinking on one's own to react to something unexpected as well as to prioritize evacuation among measures against disasters were advised</li> </ul>
Recovery of People's Daily Life	<ul style="list-style-type: none"> <li>Prices of commodities have risen after the disaster. Under such situation, the lack of support for the middle income group is affecting their daily lives</li> <li>Lack of evacuation facilities due to the damage to community facilities</li> <li>Increased economic burden to the evacuees because they have to travel to daycare centers distant from their temporary housings</li> <li>Insufficient resiliency of daycare centers against disasters</li> <li>Insufficient number of MSWDs who provide support for mental care</li> <li>Insufficient number of facilities for women and children exposed to violence</li> <li>There are no consulting desks for the physically disabled at the Municipal level</li> <li>There are no consulting desks for the elders and the disabled at the Barangay level</li> <li>Measures to support the livelihood of the disabled are required at relocation sites</li> </ul>
Restoration of Regional Economy and Promotion of Industries	<ul style="list-style-type: none"> <li>The Municipality is rich in irrigation water sources and concentrates its efforts on development of agricultural technology. However, the productivity of rice is still low</li> <li>Population aging is not present among the labor population engaged in agriculture</li> <li>Processing of primary products is not actively practiced</li> <li>There is a common fisheries regulation for the areas facing the San Pedro bay</li> </ul> <p>Points that were not mentioned during the workshop *****</p> <ul style="list-style-type: none"> <li>Located adjacent to Tacloban City, the Municipality is practically functioning as a sub-center of the Province</li> <li>Safe and resilient Provincial/ Regional sub-center with NGA regional office complex for trade and commerce with advanced economic activities including modernized agriculture</li> <li>The Municipality is located adjacent to Tacloban, which is the center of regional distribution and road network of Leyte Province, stands in a strategic point for regional transportation and has good access to the airport</li> <li>The Municipality is located in the direction where urbanization pressure of Tacloban City is extended towards. Some areas in the Municipality are expected to be connected to the urbanized areas of the City.</li> <li>The areas expected to connect to the urbanized areas of Tacloban City are located next to or overlaps with the areas in which regional offices of the central government departments are concentrated.</li> <li>There is an industrial park and IT park located in the Municipality (however, a call center moved out of the area because its building has been partially destroyed)</li> <li>There used to be a convention center and a high class hotel, but they were severely hit by Typhoon Yolanda and have not recovered from the damage.</li> <li>There are middle to high class residential development areas</li> </ul>

	<ul style="list-style-type: none"> <li>There are high potential tourism resources such as the landing point of General MacArthur and other historical buildings</li> </ul> <p>*****</p>
Remarks	<ul style="list-style-type: none"> <li>Insufficient concreteness in the contents of discussions. Necessity of practical guidance in September</li> <li>Participation of relevant officers to be promoted by requesting the Mayor through JICA</li> </ul>

## (2) Working Group - Building Safer City

Supporting Policy of 2nd Workshop	
Structure, Land Use, Evacuation plan	<ol style="list-style-type: none"> <li>Consensual validation of compromised plan with DPWH including Flood hazard.</li> <li>Getting the confirmation from LGU about priority area to be protected and land use as countermeasure of structures. <ul style="list-style-type: none"> <li>Support has to consider the vision of CBD, because current structural countermeasure is an object of Central Government Office Complex.</li> <li>Supporting the examination of evacuation plan by understanding the feasibility of huge evacuation facilities.</li> </ul> </li> <li>Barangay evacuation plan <ul style="list-style-type: none"> <li>How to adapt the current Tsunami evacuation plan to the countermeasure against storm surge.</li> <li>Supporting the realization of the countermeasure of Central Government Office Complex with confirming if it needs discussion with central government or not.</li> </ul> </li> <li>Getting the advice from LGU about utilizing the Integrate DRRM in redevelopment plan.</li> </ol>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Pointing out the problem of previous emergency transport and proposing the measures</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Presentation of problem and countermeasures on strong and safe buildings</li> </ul>
Record of Discussion of 2nd Workshop	
Structure, Land Use, Evacuation plan	<ol style="list-style-type: none"> <li>Obtaining the agreement about structural countermeasure by introducing the DPWH Plan. Palo also accept the canal plan as countermeasure against flood which is imaged in Tanauan.</li> <li>The concrete land use plan is proceeding as province plan. Palo and Poblacion are regarded as two big base, and many project are related with this point. The plan drawn by the architects are thoroughly proposal. The city does not make much account on satellite development plan in south east area.</li> <li>Evacuation plan : there used to be some shelter such as municipal hall, but there is only in GYM currently because of typhoon Yotanda. This only one shelter has limited space because it is also used as temporary municipal hall. There are proposal about new shelters in suburb, so LGU will send the detail data when they finish working.</li> </ol>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Explanation of necessity and outline of emergency transport plan</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Importance of proper building design in accordance with the code and standard of the Philippines, strict checking in building permit and adequate construction practice including construction supervision using construction guideline or handbook, in order to make buildings strong and safe against disasters in particular evacuation facilities</li> </ul>
Outcomes of 2nd Workshop (Output from LGU)	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Location of emergency transport route, gateway, storage/stock yard, evacuation centers and access road by LGU with priority</li> <li>Organization and section in charge, quantity and availability of vehicles/boats and fuel, emergency communication method, road clearance, coordination etc.</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Strengthening of locational propriety and zoning certificate in building permit</li> <li>Study of guideline and handbook for proper construction</li> </ul>
Actions after 2nd Workshop	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>Support and coordination for formulation of new shelter plan and evacuation plan.</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Making draft emergency transport plan by study team</li> <li>Finalizing of emergency transport plan by LGU</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Strengthening of compliance with code and standard, building permit procedure and proper construction practice</li> </ul>

	<ul style="list-style-type: none"> <li>• Coordination with Tacloban city and relevant infrastructure service and construction organization such as DPWH, water district, electricity cooperative and telecommunication companies</li> </ul>
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### (3) Working Group - Rebuilding Communities

Agenda for the orientation	<ol style="list-style-type: none"> <li>(1) Identify objectives of the orientations and the workshops</li> <li>(2) Confirm and consent conclusive results through the meetings (Analysis sheets on each social sector in accordance with CLUP guidelines)</li> <li>(3) Identify locations of major social service facilities and their conditions with hazard maps</li> <li>(4) Examine sectoral condition and issues of health, education, social welfare and solid waste management</li> <li>(5) Brainstorm policies and programs/projects based on the issues above</li> </ol>
Items to be followed after the orientation	<p>Request to do until the first workshop on Monday, Sep. 29</p> <ol style="list-style-type: none"> <li>(1) Collection of updated basic data (the number of violence against women and children, enrollment ratio, etc.)</li> <li>(2) Examination of the each item shown in the analysis sheets</li> </ol>
Principles for the workshop supporting	<p>Preparation of the analysis sheets on the social sector in accordance with CLUP guidelines</p> <ol style="list-style-type: none"> <li>(1) Issues</li> <li>(2) Negative impact of the issues</li> <li>(3) Prioritized policies</li> <li>(4) Prioritized programs and projects</li> <li>(5) Organizations concerned</li> <li>(6) Temporal axis</li> </ol>
Record of Discussion of 1st Workshop	<p>[Education]</p> <ul style="list-style-type: none"> <li>• Rehabilitation of schools and classrooms in accordance with building code, particularly concerning accessibility for people with disabilities</li> <li>• Update of school list designated an evacuation center</li> <li>• Relocation of schools and upgrade of schools located in relocation sites</li> <li>• Provision of psychological support at school</li> <li>• Increasing home visit</li> <li>• Improvement of community's disaster prevention capacity based in elementary schools built by JICA's grant aid</li> <li>• Improvement of school evacuation plans</li> <li>• Appropriation of emergency supplies budget, etc.</li> </ul> <p>[Social Welfare]</p> <ul style="list-style-type: none"> <li>• Rehabilitation and relocation of daycare centers</li> <li>• Increase of daycare centers in relocation sites</li> <li>• Building of facilities with women-friendly spaces</li> <li>• Provision of a consultation service for people with disabilities</li> <li>• Strengthening of disaster-prevention capabilities of elderly residents through association for the aging</li> <li>• Increase in personnel of MSWD</li> <li>• Provision of consultation services for the elderly and people with disabilities at the village level</li> <li>• Review of a pension program and increase of the receivable people</li> <li>• Enhancement of program against gender based violence</li> <li>• Provision of psychological support to children and youth, etc.</li> </ul> <p>[Health]</p> <ul style="list-style-type: none"> <li>• Rehabilitation of healthcare centers</li> <li>• Enhancement of coping with communicable disease</li> <li>• Development of program on mental healthcare</li> <li>• Improvement of inspection service</li> <li>• Promotion of safe and deliberate conception and birth</li> <li>• Strengthening of healthcare data management</li> <li>• Enhancement of family planning, etc.</li> </ul> <p>[Solid Waste Management]</p> <ul style="list-style-type: none"> <li>• Launching elaboration of 10-year program for solid waste management based on the guideline of RA</li> <li>• Study for development plan of new sanitary disposal center which covers the area including neighboring LGUs</li> <li>• Acceleration of recycling in all Barangays</li> </ul>
Actions after 1st Workshop	<ol style="list-style-type: none"> <li>(1) Sharing and confirming the result of the workshop</li> <li>(2) Following modification work of the workshop result associated with CLUP revision</li> <li>(3) Collecting the required data</li> </ol>

#### (4) Working Group - Recovery of Economy


Supporting policy of 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Support for formulation of economic development strategy</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>Introduction of mushroom cultivation by utilizing rice straw after harvesting, since rice is widely cultivated in paddy fields in Palo.</li> <li>Introduction of dwarf coconut palm varieties will be promoted to install tree fields prone to wind damages, considering that in Palo 86% of coconut palm trees are damaged by Typhoon Yolanda and have become unable to produce coconuts.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Transformation from catching fish to farming fish</li> <li>However, fish farming should not be promoted without careful consideration. Emphasis needs to be placed on “fish farming on the basis of demand for aquaculture products” in order to prevent the oversupply of fish.</li> </ul>
Detailed Contents of Proposal in 2nd workshop	
General	<ul style="list-style-type: none"> <li>Formulation of economic development strategy. Moreover, the list of the projects to be implemented in line with the strategy, including additional projects to be formulated, will be made at the same time or by the time of the announcement in November.</li> <li>Safe and Resilient Provincial/ Regional Sub-Center with NGA Regional Office Complex for Trade and Commerce with Advanced Economic Activities including Modernized Agriculture</li> <li>High likelihood of the strategy covering only the field of agriculture</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>Formulation (or selection) of farmer’s organizations for mushroom cultivation; gradually increasing the scale and number of the organizations through the technical assistance of DA8 that is promoting the mushroom cultivation.</li> <li>Plan for introduction of dwarf coconut palm varieties will be formulated with the participation of farmers.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Rehabilitation of livelihoods of people dependant on milkfish and tilapia farming</li> <li>Provision of fingerlings to fish pen and backyard fish pond operators (Tilapia fingerling production takes place in Babatngon and Kananga. Distribution of free fingerlings to operators was one of the highlights during the fiesta last August)</li> <li>Conduct of bio-physical assessment and Rehabilitation of fish sanctuary</li> <li>Provision of boundary markers for fish sanctuary</li> <li>Organization and training for fish sanctuary management committee</li> <li>Provision of fishing gear to fisherfolks (support of BFAR and NGOs are not sufficient)</li> <li>Provision of fish drying materials for small fish (RFTC in Catbalogan can conduct training on fish processing)</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Records of Prior Consultation for 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Conducted on the 9th of September with the participation of the Director of Finance and the Director of Agriculture</li> <li>It was decided that the overall plan of the subsectors of Agriculture and fishery would be prepared by the time of the workshop held on the 29th of September.</li> <li>It was decided that a prior consultation workshop regarding the sector of economy as a whole would be held on the 22nd of September and then the overall plan would be drafted based on the discussions.</li> <li>Even though the consultation workshop to discuss the sector of economy as a whole was held on the 22nd of September with the participation of the Director of Finance, visions of the sector could not be formulated at the time. In the end, it was decided that draft visions would be prepared and a meeting would be held again by the 24th of September.</li> <li>Eventually, the Director of Accounting was appointed to prepare visions and realization scenarios of the sector of economy in general by the time of the workshop held on the 29th of September.</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>On the 9th of September, Ms. Asteria mentioned that a concrete plan had not been formulated yet. She assured that she would get ideas into shape by the time of the next sector meeting, requesting for the information on the insufficient parts.</li> <li>*** Due to the poor health conditions of the responsible personnel, prior consultations could not be held***</li> <li>***Even though Study team was planning to conduct a site visit to see mushroom cultivation in Tabontagbon, the site visit could not be realized because the in-charge personnel was not allowed to leave Palo during the working hours***</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Record of Discussion of 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Revision of the evaluation of the current situations in the sector of economy, which was prepared during the prior consultation, with the participation of two members of the municipal assembly and the Director of</li> </ul>

	<ul style="list-style-type: none"> <li>Accounting</li> <li>Formulation of visions</li> <li>Prioritization of the subsectors except agriculture and fishery and formulation of programs</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The main features of Palo are 1) mostly low flat areas; 2) rice being widely cultivated in paddy fields; and 3) a key junction for transportation.</li> <li>Continuous improvement of traditional Carabao and milk cows through artificial insemination</li> <li>Promotion of dairy farming, for enhancing women's participation in dairy product processing industries</li> <li>Promotion of food processing industries through the diversification of coconut varieties, for enhancing women's participation</li> <li>Promotion of high-value vegetables and establishment of farm stands near intersections of national roads</li> <li>Establishment of trading posts</li> <li>Enhancement of farmer's income through utilization of rice straw, which used to be burnt as trash, for mushroom cultivation; and application of compost as a fertilizer</li> <li>Even the residents of temporary housings, whose livelihood strategies are limited, can be engaged in mushroom cultivation</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Outcomes of 2nd Workshop (Output from LGU)	
General	<ul style="list-style-type: none"> <li>Aiming at functioning as a sub-center of Region 8 by making most of the advantage that Palo is in a strategically important location of road transportation</li> <li>Modernization of the first industry and its relevant industries, which is the biggest industry of Palo, will be promoted at first, and its trade function of the products of the neighboring areas will be strengthened.</li> <li>Residential areas will be developed as a suburb of Tacloban, and ICT industry will be promoted by utilizing the existing industrial complex.</li> <li>Besides, MICE tourism will be promoted through the invitation of convention centers and hotel industry</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The same as the output of Tacloban</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Project on Livelihood Support for Milkfish Pen Operators and Village Women in Barangay San Joaquin. This project is similar to the JICA Quick Impact Project being conducted in Barangay Santa Cruz in Tanauan. Main activities will be: 1) Installation of milkfish pen, 2) Provision of fingerlings and feeds, 3) Provision of materials for milkfish processing such as pressure cooker, 4) Conduct of necessary training, and 5) Sales promotion of milkfish products.</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Actions after 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Dealing with economic development systematically by having an enabling organizational framework (Request for appointment of in-charge personnel and etc.)</li> <li>Confirmation and revision of the vision of the sector of economy as well as realization policy</li> <li>Support for formulation of more systematic plans</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The progress of industrialization of mushroom cultivation will be monitored by local engineers.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Discussion with BFAR and LGU</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>

### 19.1.3 Tanauan

#### (1) Orientation / 1st Workshop

Orientation	
Date	9 July 2014
Participants	LGU: Mayor, Planning Officer, DRRM Officer JICA: Hirabayashi, Inoue, Otake, Chida, Todo
Outline of Discussed Contents	<ul style="list-style-type: none"> <li>Explanation by the Consultants on the outline of supporting activities for the preparation of the Recovery and Reconstruction Plan</li> <li>Updating of the Recovery and Reconstruction Plan through the use of the CLUP and DRRM</li> <li>The Mayor requested JICA to examine possible measures for flood control</li> </ul>
1st Workshop	
Date	30 July 2014
Participants	LGU: 6 participants including the Municipal Mayor

<p>Outline of Discussed Contents</p>	<p>JICA: Hirabayashi, Kuga, Inoue, Todo, Chida, Osakabe</p> <ul style="list-style-type: none"> <li>Held overall meeting and branch meetings in accordance to the contents discussed at the orientation</li> <li>The Municipality expressed its interest in flood control measures. The Mayor requested JICA to examine measures for flood control</li> </ul> 
<p>Building Safer Cities</p>	<ul style="list-style-type: none"> <li>The Municipality considers measures against flood damages more important than those against storm surges</li> <li>When examined under the hazard map prepared by JICA, urban functions of the Municipality is concentrated in areas where relocation is required. Urbanized areas including residential areas are also developed in these areas</li> <li>A ring levee was introduced as an alternative for relocation</li> <li>However, issues of water drainage and inundation exceeding expected levels must be pointed out when considering ring levees</li> </ul>
<p>Recovery of People's Daily Life</p>	<ul style="list-style-type: none"> <li>Specialized social welfare facilities (for seniors abandoned by their families, juvenile delinquent, refuge for women) are required</li> <li>Financial support for medical costs for needy persons is insufficient</li> <li>There is need for support for out-of-school children</li> <li>The number of health units is insufficient</li> <li>The number of medical staff including doctors is insufficient</li> <li>Nutrition issues for infants aged from 0 to 59 months</li> <li>There is an increasing trend of pneumonia</li> <li>Two garbage trucks and one heavy equipment for the dump site has been totally destroyed by Typhoon Yolanda. There have been none of these equipment since</li> <li>(Issues for hygiene and water supply are to be discussed later because officers in charge were not present)</li> </ul>
<p>Restoration of Regional Economy and Promotion of Industries</p>	<ul style="list-style-type: none"> <li>The Municipality can be developed as a suburban residential / agricultural area for the population commuting to Tacloban City and the urban areas of Palo</li> <li>(Safe and Resilient) Suburban Residential and Production Center</li> <li>The Municipality has intentions to develop itself as a suburban commercial center with a suburban shopping mall (location already determined) as its core</li> <li>Development as a suburban high-class residential area</li> <li>Promotion of marine-beach leisure activities</li> <li>Development of agriculture and fisheries shall be promoted through mechanization of rice farming, development of fishing port (including ice production facility and cold storage), promotion of agro-processing, and establishing of milling industry for production of feed for pig and poultry farming</li> <li>There are 2,505 ha of paddy fields and 1,970ha of coconut farms</li> <li>Traditional agricultural technology is practiced. Production efficiency is low and rice production only meets the demand for the LGU</li> <li>When looking at the region, stock raising is actively practiced</li> <li>Business funds are insufficient (particularly for fisheries)</li> <li>There is not center/facility for agro-processing and marketing</li> <li>There is no cold storage / cold chain. Meat of slaughtered animals is transported by motorcycles. The meat processing center was also damaged by the Typhoon and needs to be reconstructed with higher standards than before</li> <li>There is a marine protection area and the Municipality is rich in fishing grounds</li> <li>Operation of illegal fishing activities and its control is an issue. Fishing equipment were also damaged by the Typhoon</li> <li>Since there is no locally produced feed for stock raising, the feed has to be imported from other areas with a high price</li> <li>There are many small and medium enterprises: liston, bamboo works, ceramics, cacao products, salt pickled eggs, banana chips and other local foods</li> </ul>

	<ul style="list-style-type: none"> <li>Measures to promote liston as one of the major agro-processing products is being implemented</li> <li>Pork produced in Mindanao is said to have better quality for cooking liston (for local pigs, production costs are higher because of high price feed and sales price is low because of its established reputation for quality)</li> <li>There are no shade trees necessary for the production of cacao</li> <li>Eggs are also imported from nearby areas</li> <li>The quality of processed goods and handicrafts needs to be generally improved</li> </ul>
Remarks	<ul style="list-style-type: none"> <li>Tanauan was the only Municipality where the Mayor participated in the Workshop. The Mayor strongly insisted that measures for flood control should be examined</li> <li>Despite the fact that the central area of the Municipality is located in a high-risk zone, there are not intentions for relocation. Examination of structural measures or preparation of an evacuation plan is of urgent need</li> <li>Since the officer in charge of CLUP was not present in the Workshop, related issues need to be clarified in September</li> </ul>

## (2) Working Group - Building Safer City

Supporting Policy of 2nd Workshop	
Structure, Land Use, Evacuation plan	<ol style="list-style-type: none"> <li>Consensual validation of compromised plan with DPWH.</li> <li>Flood hazard Map</li> <li>Barangay evacuation plan <ul style="list-style-type: none"> <li>How to adapt the current Tsunami evacuation plan to the countermeasure against storm surge.</li> <li>Evacuation plan inside the polder.</li> <li>Evacuation plan outside the polder.</li> </ul> </li> <li>Land use <ul style="list-style-type: none"> <li>Regulation of Land use against flood.</li> </ul> </li> </ol>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Pointing out the problem of previous emergency transport and proposing the measures</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Presentation of problem and countermeasures on strong and safe buildings</li> </ul>
Record of Discussion of 2nd Workshop	
Structure, Land Use, Evacuation plan	<ol style="list-style-type: none"> <li>Structural Countermeasure : JICA Study Team proposed the DPWH Plan. The embankment got a good valuation, because it would protect the factories along coast. The bottle-neck part of river which causes flood disaster was confirmed.</li> <li>Land Use: The situation and countermeasure of flood disaster was confirmed. As a countermeasure, a by-pass river construction from the river which flew to Palo to the ocean is considered. Also, the regulating reservoir at upper rich of the river which was one of the bottle-neck is considered. The primal river improvement contributes to natural disaster reduction. Poblacion in Tanauan was not foundered when the heavy floods happened in 2011, and the first time to be foundered was when typhoon Yoranda came. Therefore , no big change of land use is necessary as long as the DPWH Plan is constructed.</li> <li>Evaluation Plan: The interview about detail location of shelter was done, and examination sheet was passed to the attendants so that alternative issue can be corrected by next meeting.</li> </ol>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Explanation of necessity and outline of emergency transport plan</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Importance of proper building design in accordance with the code and standard of the Philippines, strict checking in building permit and adequate construction practice including construction supervision using construction guideline or handbook, in order to make buildings strong and safe against disasters in particular evacuation facilities</li> </ul>
Outcomes of 2nd Workshop (Output from LGU)	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Location of emergency transport route, gateway, storage/stock yard, evacuation centers and access road by LGU with priority</li> <li>Organization and section in charge, quantity and availability of vehicles/boats and fuel, emergency communication method, road clearance, coordination etc.</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Strengthening of building permit checking locational propriety and good and safe construction method</li> <li>Recommending to construct multi-story building in poblacion after Yolanda.</li> <li>Insufficient design load for strong wind, waves of storm surge and tsunamis, and drifting objects in NBCP (National Building Code of the Philippines)</li> </ul>



Actions after 2nd Workshop	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>The DPWH Plan was accepted on September 30th. The mayor, the planning officer, the engineers are participate in the meeting. Flood disaster prevention project such as canal construction are also confirmed.</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Making draft emergency transport plan by the study team</li> <li>Finalizing of emergency transport plan by LGU</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Strengthening of compliance with code and standard, building permit procedure and proper construction practice</li> <li>Promotion of multi-story buildings in storm surge and tsunami risk areas.</li> <li>Revision of NBCP</li> <li>Coordination with Tacloban city and relevant infrastructure service and construction organization such as DPWH, water district, electricity cooperative and telecommunication companies</li> </ul>

### (3) Working Group - Rebuilding Communities

Agenda for the orientation	<ol style="list-style-type: none"> <li>Identify objectives of the orientations and the workshops</li> <li>Confirm and consent conclusive results through the meetings (Analysis sheets on each social sector in accordance with CLUP guidelines)</li> <li>Identify locations of major social service facilities and their conditions with hazard maps</li> <li>Examine sectorial condition and issues of health, education, social welfare and solid waste management</li> <li>Brainstorm policies and programs/projects based on the issues above</li> </ol>
Items to be followed after the orientation	<p>Request to do until the first workshop on Thursday, Sep. 25</p> <ol style="list-style-type: none"> <li>Collection of updated basic data (the number of violence against women and children, enrollment ratio, and so on)</li> <li>Examination of the each item shown in the analysis sheets</li> </ol>
Principles for the workshop supporting	<p>Preparation of the analysis sheets on the social sector in accordance with CLUP guidelines</p> <ol style="list-style-type: none"> <li>Issues</li> <li>Negative impact of the issues</li> <li>Prioritized policies</li> <li>Prioritized programs and projects</li> <li>Organizations concerned</li> <li>Temporal axis</li> </ol>
Record of Discussion of 1st Workshop	<p>[Education]</p> <ul style="list-style-type: none"> <li>Improvement of community's disaster prevention capacity based in two schools built by JICA's grant aid</li> <li>Relocation of schools located in NBZ</li> <li>Support to going to school and school lunch for affected students</li> <li>Provision of psychological support at school</li> <li>Implementation of emergency drill for all disaster, etc.</li> </ul> <p>[Social Welfare]</p> <ul style="list-style-type: none"> <li>Rehabilitation and relocation of daycare centers</li> <li>Relocation of the office of Senior Citizens' Association</li> <li>Restoration of Provincial Rehabilitation Center for juvenile delinquents</li> <li>Building of facilities with women-friendly spaces in relocation sites</li> <li>Provision of a consultation service for people with disabilities</li> <li>Implementation of three relocation plans</li> <li>Increase of daycare centers in relocation sites</li> <li>Revitalization of VAWC (violence against women and children) desks at the village level</li> <li>Participation by youth in disaster prevention activities</li> <li>Provision of psychological support and livelihood aid to the elderly</li> <li>Hiring of disability-related affairs representatives at MSWD, etc.</li> </ul> <p>[Health]</p> <ul style="list-style-type: none"> <li>Rehabilitation of healthcare centers</li> <li>Enhancement of coping with communicable disease by strengthening health system</li> <li>Improvement of inspection service</li> <li>Development of program on mental healthcare</li> <li>Promotion of safe and deliberate conception and birth, etc.</li> </ul> <p>[Solid Waste Management]</p> <ul style="list-style-type: none"> <li>Launching elaboration of 10-year program for solid waste management based on the guideline of RA</li> </ul>

	<ul style="list-style-type: none"> <li>• Study for development plan of new sanitary disposal center which covers the area including neighboring Palo, Tolosa and so on</li> <li>• Rehabilitation and extension of compost factories</li> <li>• Acceleration of recycling in all Barangays</li> <li>• Estimation and evaluation of SWM service cost</li> <li>• Examination of setting and collecting SWM service fee that can recover the costs</li> </ul>
Actions after 1st Workshop	<ol style="list-style-type: none"> <li>(1) Sharing and confirming the result of the workshop</li> <li>(2) Following modification work of the workshop result associated with CLUP revision</li> <li>(3) Collecting the required data</li> </ol>

#### (4) Working Group - Recovery of Economy


Supporting Policy of 2nd Workshop	
General	<ul style="list-style-type: none"> <li>• Support for formulation of economic development strategy</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>• Introduction of mushroom cultivation by utilizing rice straw after harvesting, since rice is widely cultivated in paddy fields in Tanauan.</li> <li>• Introduction of dwarf coconut palm varieties will be promoted to install tree fields prone to wind damages, considering that in Tanauan 82 % of coconut palm trees are damaged by Typhoon Yolanda and have become unable to produce coconuts</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>• Transformation from catching fish to farming fish</li> <li>• However, fish farming should not be promoted without careful consideration. Emphasis needs to be placed on “fish farming on the basis of demand for aquaculture products” in order to prevent the oversupply of fish.</li> </ul>
Detailed Contents of Proposal in 2nd Workshop	
General	<ul style="list-style-type: none"> <li>• Formulation of economic development strategy. Moreover, the list of the projects to be implemented in line with the strategy, including additional projects to be formulated, will be made at the same time or by the time of the announcement in November.</li> <li>• (Safe and Resilient) Suburban Residential and Production Center</li> <li>• High likelihood of the strategy covering only the field of agriculture</li> <li>• Consideration of the sixth industrialization of Lechon and other food processing industries</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>• Formulation (or selection) of farmer’s organizations for mushroom cultivation; gradually increasing the scale and number of the organizations through the technical assistance of DA8 that is promoting the mushroom cultivation.</li> <li>• Plan for introduction of dwarf coconut palm varieties will be formulated with the participation of farmers</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>• Strengthen enforcement against illegal fishing.</li> <li>• Promotion of environmentally sound aquaculture practices</li> <li>• Development of alternative livelihood, like oyster culture, as introduced by JICA Quick Impact Project.</li> <li>• The use of adaptive and participatory approaches in fisheries management.</li> </ul>
Others	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Records of Prior Consultation for 2nd Workshop	
General	<ul style="list-style-type: none"> <li>• Conducted on the 9th of September with the participation of the Director of Agriculture</li> <li>• It was decided that a subsector plan of agriculture, fishery and livestock would be formulated beforehand; and the progress was checked in an intermediary stage on the 14th of September.</li> <li>• As a result of checking the progress, the project list, which is a key part of the subsector plan, was made very well including well-written justifications and outlines of the projects.</li> <li>• However, since the whole picture was not very clearly shown in the plans, it was decided that descriptions of the whole picture would be added and the relations between the subsector and the other economic subsector would be also mentioned.</li> <li>• In this account, the Director of Agriculture volunteered to describe the relations with the other sectors.</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>• <b>【Mushroom cultivation site visit in Tabontagbon】</b> On the 1st of September, Mr. Nic stated that he did not know much about the mushroom cultivation project promoted by the municipal office even though he himself was a resident of Tabontagbon. He continued that visiting the site actually made him interested in mushroom cultivation.</li> <li>• On the 9th of September, Mr. Nic stated that he would like to consider introduction of mushroom cultivation positively since it was a fascinating idea for the activity to be included in the recovery and reconstruction plan.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Record of Discussion of 2nd Workshop	

General	<ul style="list-style-type: none"> <li>Situation analysis of the sector of economy</li> <li>Development strategy of the sector of economy</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The main features of Tanauan on land use are 1) mostly low flat areas; and 2) rice being widely cultivated in paddy fields</li> <li>Agricultural mechanization will be promoted and the number of Carabao as animal power will be increased, since labor force becomes insufficient during the peak time of labor in paddy fields: the rainy seasons.</li> <li>Continuous improvement of traditional Carabao through artificial insemination</li> <li>Promotion of dairy farming, for enhancing women's participation in dairy product processing industries</li> <li>Promotion of food processing industries through the diversification of coconut varieties, for enhancing women's participation</li> <li>Promotion of organic fertilizers and high-value vegetables</li> <li>Establishment of trading posts</li> <li>Promotion of mixed cultivation of coconuts with other crops</li> <li>Enhancement of farmer's income through utilization of rice straw, which used to be burnt as trash, for mushroom cultivation; and application of compost as a fertilizer</li> <li>Even the residents of temporary housings, whose livelihood strategies are limited, can be engaged in mushroom cultivation</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Outcomes of 2nd Workshop (Output from LGU)	
General	<ul style="list-style-type: none"> <li>Tanauan's economy mainly consists of production industries of primary products and processing industries of the primary products; Tanauan has an advantage in terms of the location neighboring Tacloban and Palo.</li> <li>Making most of these features of Tanauan, the productivity will be enhanced through modernization of the first industry, and simultaneously the relevant industries will be promoted.</li> <li>Housing development will be proceed; and for supporting the housing development, facilities that enhance comfortableness and convenience of the lives of the residents will be installed.</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The same as the output of Tacloban</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Two projects which will follow-up JICA's on-going project in Barangay Santa Cruz are proposed. 1. Oyster culture in collaboration with Leyte-Leyte. 2. Group selling of shellfish collected from the wild in Leyte-Leyte.</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Actions after 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Dealing with economic development systematically by having an enabling organizational framework (Request for appointment of in-charge personnel and etc.)</li> <li>Confirmation and revision of the vision of the sector of economy as well as realization policy</li> <li>Support for formulation of more systematic plans</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The progress of industrialization of mushroom cultivation will be monitored by local engineers.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Discussion with BFAR and LGU</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>

#### 19.1.4 Basey

##### (1) Orientation / 1st Workshop

Orientation	
Date	18 July 2014
Participants	LGU: Mayor, Municipal Administrator, DRRM Officer JICA: Ogata, Inoue, Otake, Todo, Chida
Outline of Discussed Contents	<ul style="list-style-type: none"> <li>Explanation by the Consultants on the outline of supporting activities for the preparation of the Recovery and Reconstruction Plan</li> <li>Updating of the Recovery and Reconstruction Plan through the use of the CLUP and DRRM</li> </ul>
1st Workshop	
Date	24 July 2014
Participants	LGU: 20 participants JICA: Shirouzu, Kuga, Inoue, Todo, Chida, Takashi, Minami, Sako

<p>Outline of Discussed Contents</p>	<ul style="list-style-type: none"> <li>• Held overall meeting and branch meetings in accordance to the contents discussed at the orientation</li> <li>• Previous CLUP lost during Typhoon Yolanda. There are currently no prospects for the preparation of a new plan.</li> <li>• Detailed discussions will be held in September because the Hazard Map by JICA is still being examined (as of the end of August). Issues shall be examined at this time based on the experiences of Typhoon Yolanda.</li> </ul> 
<p>Building Safer Cities</p>	<ul style="list-style-type: none"> <li>• The LGU has been planning the relocation of the central area of the Municipality even before the landing of Typhoon Yolanda</li> <li>• Evacuation routes are currently limited</li> <li>• Weakness of evacuation centers form an important issue</li> <li>• Early warning systems were functioning (children and women were evacuating from the day before the typhoon)</li> <li>• It was advised that concrete evacuation plans should be prepared and implemented because relocation of the whole central area will take considerable time</li> </ul>
<p>Recovery of People's Daily Life</p>	<ul style="list-style-type: none"> <li>• 29 daycare centers totally destroyed, 33 daycare centers partially destroyed, almost all health units dysfunctional</li> <li>• 13 elementary schools and 3 high schools damaged</li> <li>• Commuting to schools have become an issue due to relocation to temporary housings</li> <li>• Insufficient number of medical equipment and capacity for emergency response (particularly for mental care)</li> <li>• Location of medical facilities in areas with high hazard risk</li> <li>• Unclear plans for the installation of infrastructure in relocation sites</li> <li>• 17 senior citizen centers totally damaged, 23 partially damaged</li> <li>• Increased risk of broken families and violence to women and children due to difficulties in livelihood</li> </ul>
<p>Restoration of Regional Economy and Promotion of Industries</p>	<ul style="list-style-type: none"> <li>• Active in production of handicrafts</li> <li>• Local industry centered on agriculture, fishery and tourism</li> <li>• Basey as a Global Major Tourist Destination with a Diversified and Competent Agro-Industry</li> <li>• Famous tourist destinations (national natural parks, caves, golden river, marine parks, etc.) located</li> <li>• Existing material that can be used for tourism promotion</li> <li>• Multi-functional and high quality products should be aimed at.</li> <li>• Products such as bags using "banig" (hand woven mats made from "tikog") are already developed and marketing / sales promotion in areas such as Manila are carried out under the support of DTI</li> <li>• There are also other handicrafts made of rattan, bamboo, drift woods, etc.</li> <li>• The Municipality is located in the doorway to Samar from Tacloban, the central city of Region 8</li> <li>• Rich in water sources that can be used for irrigation and 3,000 ha of area suitable for irrigation for which a large area is currently unused. However, irrigation facilities are scarce</li> <li>• There are cases of illegal shifting (slash and burn) agriculture being practiced</li> <li>• There are no large scale rice mills</li> <li>• There are no milling facilities for animal feed production</li> <li>• Through the area is famous for "gabi" which is merchandised in a relatively high price, it is difficult to export the product because there are no processing facilities</li> <li>• The area produces yellow corn which is used for animal feed</li> <li>• Though equipment for fish culture have been reinstalled, the cost of feed is high because it is brought from outside the area</li> <li>• Local citizens and private entities are participating in budgetary planning for the government</li> <li>• The disaster resulted in large losses in terms of finance. The storm surge caused significant damage in the coastal areas where economic activities were concentrated.</li> <li>• Sales activities scattered disorderly due to damage to the public market.</li> <li>• There are difficulties in transportation with busses because the bus center was damaged together with the public market.</li> </ul>

	<ul style="list-style-type: none"> <li>• There are no accumulations of service industries that are necessary for tourism (accommodation, dining, entertainment, transportation). One can only stay home during night time</li> <li>• Insufficient supply of electricity results in low income from commercial activities</li> <li>• There are large constraints in the field of tele-communication because of the disaster</li> <li>• Affected coconut farmers are poor and do not have financial resources</li> <li>• Considerable number of people have the notion of their lives being only hand to mouth</li> </ul>
Remarks	<ul style="list-style-type: none"> <li>• Relocation to higher grounds should be evaluated instead of protection by tidal banks. However, various issues including land acquisition are present. Support required to prepare for its realization.</li> </ul>

## (2) Working Group - Building Safer City

Supporting Policy of 2nd Workshop	
Structure, Land Use, Evacuation plan	<ol style="list-style-type: none"> <li>(1) Introduction and consensual validation of Hazard Maps</li> <li>(2) Check the subject area of investigation. Issue: Only CBD or including other areas? The Administrative division is too large to investigate all area, so research CBD as one model could be reasonable.</li> <li>(3) Confirmation of Barangay evacuation plan</li> <li>(4) Current "Relocation Plan" is established before typhoon Yolanda. It is necessary to check the point to change or improve.</li> <li>(5) Back-up of LGU Office in case of emergency.</li> <li>(6) Built-up area - Current CBD is high risk of disasters.</li> <li>(7) Other area – Check the status of development in the area which needs relocation</li> <li>(8) Future land use of current CBD.</li> <li>(9) An emergency road</li> </ol>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>• Pointing out the problem of previous emergency transport and proposing the measures</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>• Presentation of problem and countermeasures on strong and safe buildings</li> </ul>
Record of Discussion of 2nd Workshop	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>• Explanation of necessity and outline of emergency transport plan</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>• Importance of proper building design in accordance with the code and standard of the Philippines, strict checking in building permit and adequate construction practice including construction supervision using construction guideline or handbook, in order to make buildings strong and safe against disasters in particular evacuation facilities</li> </ul>
Outcomes of 2nd Workshop (Output from LGU)	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>• Location of emergency transport route, gateway, storage/stock yard, evacuation centers and access road by LGU with priority</li> <li>• Organization and section in charge, quantity and availability of vehicles/boats and fuel, emergency communication method, road clearance, coordination etc.</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>• Historical St. Michael Church is designated as evacuation center but it is vulnerable to earthquake.</li> </ul>
Actions after 2nd Workshop	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>• Making draft emergency transport plan by study team</li> <li>• Finalizing of emergency transport plan by LGU</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>• Strengthening of compliance with code and standard, building permit procedure and proper construction practice</li> <li>• Coordination with Tacloban city and relevant infrastructure service and construction organization such as DPWH, water district, electricity cooperative and telecommunication companies</li> <li>• Countermeasure for vulnerable historical buildings</li> </ul>

### (3) Working Group - Rebuilding Communities

Agenda for the orientation	<ol style="list-style-type: none"> <li>(1) Identify objectives of the orientations and the workshops</li> <li>(2) Confirm and consent conclusive results through the meetings (Analysis sheets on each social sector in accordance with CLUP guidelines)</li> <li>(3) Identify locations of major social service facilities and their conditions with hazard maps</li> <li>(4) Examine sectorial condition and issues of health, education, social welfare and solid waste management</li> <li>(5) Brainstorm policies and programs/projects based on the issues above</li> </ol>
Items to be followed after the orientation	<p>Request to do until the first workshop on Wednesday, Sep. 17</p> <ol style="list-style-type: none"> <li>(1) Collection of updated basic data (the number of violence against women and children, enrollment ratio, and so on)</li> <li>(2) Examination of the each item shown in the analysis sheets</li> </ol>
Principles for the workshop supporting	<p>Preparation of the analysis sheets on the social sector in accordance with CLUP guidelines</p> <ol style="list-style-type: none"> <li>(1) Issues</li> <li>(2) Negative impact of the issues</li> <li>(3) Prioritized policies</li> <li>(4) Prioritized programs and projects</li> <li>(5) Organizations concerned</li> <li>(6) Temporal axis</li> </ol>
Record of Discussion of 1st Workshop	<p>[Education]</p> <ul style="list-style-type: none"> <li>• Enhancement of disaster-prevention components in school development plans</li> <li>• Rehabilitation of schools and classrooms in accordance with building code having resistance to disaster</li> <li>• Relocation study for schools located in hazardous area</li> <li>• Provision of psychological support to teachers and students</li> <li>• Implementation of emergency drill for storm surge and flood</li> <li>• Improvement of educational materials on disaster prevention, etc.</li> </ul> <p>[Social Welfare]</p> <ul style="list-style-type: none"> <li>• Relocation of daycare centers located in NBZ</li> <li>• Rehabilitation of daycare centers</li> <li>• Construction of the MSWD office allowing space for women and children protection unit</li> <li>• Enhancement in VAWC referral at the village level</li> <li>• Re-creation of registration lists of disabled people and single parent</li> <li>• Strengthening of disaster-prevention capabilities of women and children through Barangay Child Protection Council</li> <li>• Strengthening of disaster-prevention capabilities of elderly residents through association for the aging, etc.</li> </ul> <p>[Health]</p> <ul style="list-style-type: none"> <li>• Rehabilitation of healthcare centers</li> <li>• Extension of birthing centers</li> <li>• Development of program on mental healthcare</li> <li>• Promotion of sanitary toilet utilization</li> <li>• Promotion of safe and deliberate conception and birth</li> <li>• Enhancement of coping with non-communicable disease, etc.</li> </ul> <p>[Solid Waste Management]</p> <ul style="list-style-type: none"> <li>• Launching elaboration of 10-year program for solid waste management based on the guideline of RA</li> <li>• Study for development plan of new sanitary disposal center</li> <li>• Acceleration of recycling and composting</li> <li>• Estimation of SWM service cost</li> <li>• Collection of a SWM service fee from households</li> </ul>
Actions after 1st Workshop	<ol style="list-style-type: none"> <li>(1) Sharing and confirming the result of the workshop</li> <li>(2) Following modification work of the workshop result associated with CLUP revision</li> <li>(3) Collecting the required data</li> </ol>

### (4) Working Group - Recovery of Economy

Supporting Policy of 2nd Workshop	
General	<ul style="list-style-type: none"> <li>• Support for formulation of economic development strategy</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>• Promotion of dairy farming in which Carabao (water buffalo) is raised in sloping land, which shares more than 50 % of the total land in Basey.</li> </ul>

	<ul style="list-style-type: none"> <li>Introduction of mushroom cultivation by utilizing rice straw after harvesting. Since a national irrigation development project has been started in Basey targeting a 3 thousand ha paddy field, the availability of the rice straw is high.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Transformation from catching fish to farming fish</li> <li>However, fish farming should not be promoted without careful consideration. Emphasis needs to be placed on “fish farming on the basis of demand for aquaculture products” in order to prevent the oversupply of fish.</li> </ul>
Detailed Contents of Proposal in 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Formulation of economic development strategy. Moreover, the list of the projects to be implemented in line with the strategy, including additional projects to be formulated, will be made at the same time or by the time of the announcement in November.</li> <li>Basey as a Global Major Tourist Destination with a Diversified and Competent Agro-Industry</li> <li>Tourism will be positioned as a main industry. In relation with tourism, the quality of handcraft items will be improved.</li> <li>Considering production of feed for fish farming, since fish farming is prosperous and maize, which is a basic material of the feed, is cultivated (Tacloban is a competitor in this industry.).</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>Promotion of dairy product processing through formulation (or selection) of farmer’s organizations for dairy farming of Carabao and implementation of the female Carabao distribution projects promoted by the Carabao center in VSU</li> <li>Formulation (or selection) of farmer’s organizations for mushroom cultivation; gradually increasing the scale and number of the organizations through the technical assistance of DA8 that is promoting the mushroom cultivation.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Diversification of aquaculture practices and species.</li> <li>Planning and implementation of value-adding activities including promotion and marketing of San Juanico brand milkfish.</li> <li>Control of fishing effort from NGO-supported banca and gill nets.</li> <li>Introduction of fish aggregating devices (small payao) in hook &amp; line fisheries.</li> <li>Provision of surveillance boat and communication equipment.</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Records of Prior Consultation for 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Conducted on the 12th of September with the participation of the Director of Agriculture and the acting in-charge person of tourism</li> <li>It was decided that the overall plan of the subsectors of Agriculture and fishery as well as tourism would be prepared by the 17th of September.</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>On the 3rd of September, Adore stated that Mushroom cultivation by utilizing rice straw was new in here; but it was interesting as a mean of livelihood enhancement. Adore requested for a model site visit with representatives of farmer’s organizations.</li> <li>【Mushroom cultivation site visit in Tabontagbon】 On the 10th of September, Ms. Ma Paz stated that introduction of mushroom cultivation would be considered positively as soon as going back to Basey. She continued that the farmers coming along with her were also positive about it. She ended that she would consult with DA RO8 thoroughly on the necessary knowledge and the procurement of tools for mushroom cultivation.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Record of Discussion of 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Hearing on the position of Agriculture and fishery in the whole industry</li> <li>Confirmation of development plans in tourism and clarification of necessary future activities based on the vision of the sector of economy</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The main features of Basey are 1) facing the ocean; 2) having coastal areas; 3) having low flat areas; 4) having sloping land; 5) having mountainous areas; and 6) existence of these different geographical features in a well-balanced manner.</li> <li>Agricultural mechanization will be promoted and the number of Carabao as animal power will be increased, since labor force becomes insufficient during the peak time of labor in paddy fields: the rainy seasons.</li> <li>Due to the low yield of rice, duck farming in paddy fields as well as mushroom cultivation by utilizing rice straw, which used to be burnt as trash, for mushroom beds will be introduced, in order to supplement incomes/livelihoods.</li> <li>Since coconut palm trees have been planted too densely, the density will be made appropriate to secure some space; by utilizing the space, mixed cultivation of other crops, livestock breeding and beekeeping will be</li> </ul>

	<p>conducted.</p> <ul style="list-style-type: none"> <li>Diversification of the variations of coconuts will be promoted as well as the introduction of coconut processing industries for women.</li> <li>In addition to upland field food crops, cultivation of upland field crops that become a basic material for feed of livestock and fish will be encouraged. Processing industries for women's participation will be also promoted.</li> <li>Establishment of wholesale markets in production areas will be promoted.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Outcomes of 2nd Workshop (Output from LGU)	
General	<ul style="list-style-type: none"> <li>Prioritization and implementation procedure of the tourism promotion policy as well as the list of the programs</li> <li>In connection with the tourism promotion policy, the activities related to information correction and arrangement on the tourist spots will be revised from the viewpoint of conveying their high attractions.</li> <li>Packaging of travel need to be done in a well-organized manner</li> <li>Besides, investors for the facilities, such as hotel accommodations and restaurants, to enhance the convenience in tourism will be invited.</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The same as the output of Tacloban</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Mangrove-based livelihood projects such as aqua-silviculture for mud crabs, prawns, milkfish and oysters.</li> <li>Developing strong brand recognition of San Juanico cultured higher quality milkfish through marketing and ad strategies.</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Actions after 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Dealing with economic development systematically by having an enabling organizational framework (Request for appointment of in-charge personnel and etc.)</li> <li>Confirmation and revision of the vision of the sector of economy as well as realization policy</li> <li>Support for formulation of more systematic plans</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>The progress of industrialization of mushroom cultivation will be monitored by local engineers.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Discussion with BFAR and LGU</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>

### 19.1.5 Guiuan

#### (1) Orientation / 1st Workshop

Orientation	
Date	8 July 2014
Participants	<p>LGU: Mayor, Municipal Administrator, Municipal Planner, DRRM Officer, UNHABITAT Staff          JICA: Hirabayashi, Otake, Todo, CHida</p>
Outline of Discussed Contents	<ul style="list-style-type: none"> <li>Explanation by the Consultants on the outline of supporting activities for the preparation of the Recovery and Reconstruction Plan</li> <li>Updating of the Recovery and Reconstruction Plan through the use of the CLUP and DRRM</li> </ul>
1st Workshop	
Date	28 July 2014
Participants	<p>LGU: 21 participants including the Municipal Mayor and UNHABITAT Staff          JICA: Kuga, Inoue, Todo, Chida, Osakabe, Minami</p>
Outline of Discussed Contents	<ul style="list-style-type: none"> <li>Held overall meeting and branch meetings in accordance to the contents discussed at the orientation</li> <li>Detailed discussions will be held in September because the Hazard Map by JICA is still being examined (as of the end of August). Issues shall be examined at this time based on the experiences of Typhoon Yolanda.</li> </ul> 



Building Safer Cities	<ul style="list-style-type: none"> <li>• Eastern part of the Municipality suffered damage by storm surge, while the western side was affected by strong wind.</li> <li>• Barangays are dispersedly located and evacuation routes are conclusive within the Barangay. However, evacuation facilities collapsed due to strong wind</li> <li>• Emergency support was provided by the US Military</li> <li>• There are only one grid for electricity and one main water pipe (plastic) in the Municipality. There are large amounts of leakage in the piped water supply system. The source of the system is a well and harvesting of water is unstable.</li> </ul>
Recovery of People's Daily Life	<ul style="list-style-type: none"> <li>• Almost all evacuation facilities were totally damaged</li> <li>• Relocation plans have not progressed due to insufficient land and fund</li> <li>• Almost all health units were totally damaged</li> <li>• Medical staff including doctors are insufficient</li> <li>• Emergency boats were totally damaged and there are no means for emergency transportation from the islands</li> <li>• Coverage of latrines is still 68%</li> <li>• Water supply facilities and distribution networks were damaged (the rate of unbilled water increased to 62% due to damaged pipes)</li> <li>• Infusion of seawater into water sources (groundwater)</li> <li>• Capacity for water quality analysis needs to be improved</li> <li>• Waste cannot be collected in all areas because there are only three garbage wagons</li> </ul>
Restoration of Regional Economy and Promotion of Industries	<ul style="list-style-type: none"> <li>• Local industry centered on agriculture, fishery and tourism</li> <li>• High potential for fisheries because the municipality is located near the migration route of tuna fish</li> <li>• The Municipality is blessed with maritime tourism resources such as famous spots for surfing / diving and white beaches</li> <li>• There is one church famous for pilgrimage. There is also one historical church, but this was damaged by a typhoon for the first time.</li> <li>• There are other tourist destinations such as the PAGASA radar and lading site of Magellan</li> <li>• Guiuan is as a progressive Municipality with a sustainably managed resource, producing and marketing quality agro-fishery products, empowering the people in the promotion of investment &amp; job opportunities, enhance and develop environmental protection to attain a safe and quality life</li> <li>• There are issues of transportation and maintenance of roads as well as distance to Tacloban</li> <li>• There is an airport but it is not operated</li> <li>• There area is also rich in other marine resources than tuna fish</li> <li>• Culturing of grouper is famous and it is exported alive as expensive commodities to Cebu, Manila and foreign countries such as Hong Kong and Singapore</li> <li>• The Marine Fisheries Development Research Center Under BFAR is located in the Municipality</li> <li>• There are commercial fishing vessels coming into the area from other regions (unloading at Mindanao)</li> <li>• Cultivation of seaweed (carrageenan) is active</li> <li>• There is large production of calamansi in Homonhon island but processing technology is insufficient (powder can be made but it is too costly. Condensed juice can be made only with low quality)</li> <li>• There is also large production of cassava in Homonhon island but it cannot be processed</li> <li>• There are large areas of Marine Protected Areas but there are also a lot of illegal fishing activities</li> <li>• A mine is being operated and is bearing economic profit but there are also problems of environmental pollution</li> <li>• Medical and educational services are well established because the municipality is the second largest in the Province</li> <li>• Legislation related to economic activities are well established but there are issues in its application</li> <li>• Pig raising is difficult due to high price of feed and pork is imported from Mindanao</li> <li>• Expensive vegetables and fruits are imported from other areas</li> <li>• There is no cold storage and extensive distribution of common fish and vegetable is difficult</li> <li>• Power supply is unstable</li> </ul>
Remarks	<ul style="list-style-type: none"> <li>• Early warning and evacuation was practiced but there were safety issues for the evacuation centers</li> <li>• There are many islands / isolated Barangays which raises issues for emergency support</li> <li>• Infrastructure are generally vulnerable to disasters</li> </ul>

## (2) Working Group - Building Safer City

Supporting Policy of 2nd Workshop	
Structure, Land Use, Evacuation	<ol style="list-style-type: none"> <li>(1) Introduction and consensual validation of Hazard Maps</li> <li>(2) Barangay evacuation plan</li> </ol>

plan	<ul style="list-style-type: none"> <li>Evacuation facilities/ routes</li> <li>Especially in the islands area</li> </ul> <p>(3) Recovery and reconstruction plan: Need to be compatible with the reconstruction plan of UN Habitat</p> <ul style="list-style-type: none"> <li>Confirmation of Residential area/ commercial &amp; business districts</li> <li>Relocation. Temporary and permanent houses</li> <li>Public buildings such as hospitals</li> <li>Land use</li> </ul> <p>(4) Reconstruction Management</p>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Pointing out the problem of previous emergency transport and proposing the measures</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Presentation of problem and countermeasures on strong and safe buildings</li> </ul>
Record of Discussion of 2nd Workshop	
Structure, Land Use, Evacuation plan	<p>(1) The evacuation plan comes to agreement by confirming the current shelter location and its size, the evacuation route, and proposal for new location with Tsunami hazard map. The situation of islands is also confirmed. ⇒UNHBITAT will discuss about this issue in Brgy and strive for realization.</p> <p>(2) Land Use Plan : The main road to four cardinal points are determined. It comes to the agreement that the future development would expand to north. ⇒UNHBITAT will use this as Master Plan for revision of CLUP.</p> <p>(3) The relocation of families living in informal shelter in high risk area to relocation site does not progress smoothly because of financial issue.</p> <p>(4) The Establishment of 40m-No Buld Zone has no legal basis. LGU has to review cautiously.</p>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Explanation of necessity and outline of emergency transport plan</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Importance of proper building design in accordance with the code and standard of the Philippines, strict checking in building permit and adequate construction practice including construction supervision using construction guideline or handbook, in order to make buildings strong and safe against disasters in particular evacuation facilities</li> </ul>
Outcomes of 2nd Workshop (Output from LGU)	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Location of emergency transport route, gateway, storage/stock yard, evacuation centers and access road by LGU with priority</li> <li>Organization and section in charge, quantity and availability of vehicles/boats and fuel, emergency communication method, road clearance, coordination etc.</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Study of guideline and handbook for proper construction</li> </ul>
Actions after 2nd Workshop	
Structure, Land Use, Evacuation plan	<ul style="list-style-type: none"> <li>Confirming that the proposal plan of shelter and evacuation will be applied to BRGY by the end of October.</li> <li>Confirming that LGU have been going on response to CLUP and modification based on the proposal of JICA project team.</li> </ul>
Emergency Transport Plan	<ul style="list-style-type: none"> <li>Making draft emergency transport plan by study team</li> <li>Finalizing of emergency transport plan by LGU</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>Strengthening of compliance with code and standard, building permit procedure and proper construction practice</li> <li>Coordination with Tacloban city and relevant infrastructure service and construction organization such as DPWH, water district, electricity cooperative and telecommunication companies</li> </ul>

### (3) Working Group - Rebuilding Communities

Agenda for the orientation	<p>(1) Identify objectives of the orientations and the workshops</p> <p>(2) Confirm and consent conclusive results through the meetings (Analysis sheets on each social sector in accordance with CLUP guidelines)</p> <p>(3) Identify locations of major social service facilities and their conditions with hazard maps</p> <p>(4) Examine sectorial condition and issues of health, education, social welfare and solid waste management</p> <p>(5) Brainstorm policies and programs/projects based on the issues above</p>
Items to be	Request to do until the first workshop on Monday, Sep. 15

followed after the orientation	(1) Collection of updated basic data (the number of violence against women and children, enrollment ratio, etc.) (2) Examination of the each item shown in the analysis sheets
Principles for the workshop supporting	Preparation of the analysis sheets on the social sector in accordance with CLUP guidelines (1) Issues (2) Negative impact of the issues (3) Prioritized policies (4) Prioritized programs and projects (5) Organizations concerned (6) Temporal axis
Record of Discussion of 1st Workshop	[Education] <ul style="list-style-type: none"> <li>Rehabilitation of schools and classrooms in accordance with building code having resistance to disaster</li> <li>Upgrade of schools located in relocation sites particularly in the islands</li> <li>Provision of psychological support to teachers and students</li> <li>Enhancement of alternative learning system particularly in the islands</li> <li>Educational activities for secondary education in a community, etc.</li> </ul> [Social Welfare] <ul style="list-style-type: none"> <li>Rehabilitation of disaster-resistant daycare centers and elderly day centers</li> <li>Improvement of community's disaster prevention capacity based in daycare centers supported by JICA (outcome 3)</li> <li>Building of facilities with women-friendly spaces in relocation sites</li> <li>Strengthening of disaster-prevention capabilities of the elderly and implementation of participation by the elderly in disaster prevention planning</li> <li>Increase in personnel of MSWD, particularly social workers</li> <li>Expansion of pension for the elderly and support on microfinance lending</li> <li>Pilot project for promotion of VAWC desks</li> <li>Hiring of disability-related affairs representatives, etc.</li> </ul> [Health] <ul style="list-style-type: none"> <li>Rehabilitation of healthcare centers</li> <li>Promotion of sanitary toilet utilization</li> <li>Promotion of safe and deliberate conception and birth</li> <li>Improvement of inspection function</li> <li>Development of program on mental healthcare</li> <li>Strengthening of healthcare data management, etc.</li> </ul> [Solid Waste Management] <ul style="list-style-type: none"> <li>Launching elaboration of 10-year program for solid waste management based on the guideline of RA</li> <li>Study for development plan of new sanitary disposal center</li> <li>Estimation of SWM service cost</li> <li>Collection of a SWM service fee from households</li> </ul>
Actions after 1st Workshop	(1) Sharing and confirming the result of the workshop (2) Following modification work of the workshop result associated with CLUP revision (3) Collecting the required data

#### (4) Working Group - Recovery of Economy

Supporting Policy of 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Support for formulation of economic development strategy</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>Promotion of charcoal production by utilizing fallen coconut palm trees, for the purpose of livelihood enhancement</li> <li>Introduction of dwarf coconut palm varieties will be promoted to install tree fields prone to wind damages, considering that in Guian 55% of coconut palm trees are damaged by Typhoon Yolanda and have become unable to produce coconuts.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Transformation from catching fish to farming fish</li> <li>However, fish farming should not be promoted without careful consideration. Emphasis needs to be placed on "fish farming on the basis of demand for aquaculture products" in order to prevent the oversupply of fish.</li> </ul>
Detailed Contents of Proposal in 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Formulation of economic development strategy. Moreover, the list of the projects to be implemented in line with the strategy, including additional projects to be formulated, will be made at the same time or by the time of</li> </ul>

	<ul style="list-style-type: none"> <li>the announcement in November.</li> <li>Guiuan as a progressive Municipality with a sustainably managed resource, Producing &amp; Marketing Quality Agro-Fishery Products, empowering the people in the promotion of investment &amp; job opportunities, enhance and develop environmental protection to attain a Safe and quality Life</li> <li>The sixth industrialization of tourism and fishery(tuna, shellfish and lobster) / agricultural (Calamondin and cassava in Homonhon Island) products</li> <li>Considering the potential of establishment of fishing bases and trading centers mainly targeting migratory fish, such as tuna</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>Formulation (or selection) of farmer's organizations for coconut charcoal production; gradually increasing the scale and number of the organizations learning from the good practice of QIP14 in Mercedes. After the activities of each organization become successful, further value addition will be taken place by introducing the equipment for production of oval charcoal briquettes.</li> <li>Plan for introduction of dwarf coconut palm varieties will be formulated with the participation of farmers.</li> <li>Promotion of dairy farming of Carabao (water buffalo)</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>Technology of artificial reproduction and fingerling production of leopard coral grouper should be developed to reduce the dependence on the natural fingerlings and to supply live fish to local and Chinese markets.</li> <li>Switch from natural feed (trash fish) to artificial feed.</li> <li>Integrated fish landing, storage and processing facilities (GRRP 2014).</li> <li>Regulate fishing activities for sustainable use of marine products and increase exports (CLUP 2002).</li> <li>To encourage the organization of cooperatives (CLUP 2002).</li> <li>To establish market linkages for marine products (CLUP 2002).</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Records of Prior Consultation for 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Conducted on the 11th of September with the participation of the Director of Agriculture, the in-charge person of tourism and the in-charge person of market management</li> <li>It was decided that the overall plan of agriculture, tourism and market management will be prepared by each responsible person.</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li><b>【QIP14 (charcoal making project in Mercedes) site visit】</b> On the 8th of September, Mr. Efren stated that this would be a brilliant idea. He continued that he would call Brg captains, requesting for the explanation of the project outline to them. → After going back to Guiuan, the outline of the project was explained to approximately 50 residents.</li> <li>According to the remarks made by Mr. Efren on the 11th of September, he was surprised again to know the goodness of charcoal making, whereas most of the time of this prior consultation with JICA study team was spent for the discussion on fishery. Since Carabao needs places to bathe in mud, Guiuan is not a good place for Carabao farming.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Record of Discussion of 2nd Workshop	
General	<ul style="list-style-type: none"> <li>Confirmation of development plan for Tourism and Commerce and setting up the targets of the subsector</li> <li>Revision and prioritization of the activities of the subsector</li> <li>Consideration of visions of the sector of economy as well as their realization measures</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>Before Typhoon Yolanda hit the region, coconut palm trees had been planted too densely to secure areas for planting other crops and trees. Now that very many coconut palm trees have been fallen, most of the farmers have experienced vegetable cultivation for the first time. Resulting from coconut palm trees being fallen, Asiatic rhinoceros beetles have significantly been increased in number. Since the supply of coconut shell has been cut off, trees are illegally cut down as a material for firewood and charcoal.</li> <li>Mixed planting of coconut palm trees and other crops and trees and livestock breeding will be promoted. Especially, mixed planting of dwarf coconut palm trees and fruit trees enables plantations to become prone to wind damages.</li> <li>Processing industries of agricultural products (coco, dairy products and fruits) with the participation of women will be promoted.</li> <li>Speeding up the process of dealing with the fallen coconut palm trees; livelihood enhancement for farmers; prevention of Asiatic rhinoceros beetles from spreading; industrialization of coconut charcoal making and production of oval charcoal briquettes in each Brg for the participation of women in industries</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Others	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Outcomes of 2nd Workshop (Output from LGU)	
General	<ul style="list-style-type: none"> <li>• Overall visions of the sector of economy</li> <li>• 1) Productivities and value addition of the fishery industry will be enhanced and 2) the tourism subsector will be revitalized, for the purpose of strengthening the interrelation of economic activities placing the both subsectors as the key subsectors (the sixth industrialization) and improving the first industry in general that supports the livelihood of very many residents.</li> <li>• Prioritization and implementation procedure of the tourism promotion policy</li> <li>• Rehabilitation of the damaged tourist sites and improvement of guide displays as well as edition of tourist information in a easily understandable manner in order for the attractions of the tourist sites to be conveyed easily and for the convenience of tourists to be enhanced.</li> <li>• Supporting the recovery of business operators of hotel accommodations and restaurants as well as finding and developing new tourist sites</li> <li>• Attracting tourists and investment of business operators related to tourist industries, by spreading information on tourism</li> <li>• Enhancement of the interest of the business operators of tourism and transportation through monitoring the implementation of road rehabilitation as well as increasing the trade volume of fishery products, aiming at reopening of the airport in the end</li> <li>• Identification of necessary items for opening wholesale markets of fishery products, which become the key for further value addition to the fishery industry and its relevant industries; clarification of the functions of the wholesale markets</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>• The same as the output of Tacloban</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>• Development of artificial reproduction and fingerling production technology of leopard coral grouper (<i>Plectropomus leopardus</i>)</li> <li>• In the context of the South-South Technical Cooperation, Research Institute for Mariculture, Gondol, Bali, Indonesia, shares its technology of artificial reproduction and fingerling production of leopard coral grouper needed by GMFDC. Leopard coral grouper is highly valued in Tacloban, Manila, Cebu, Hong Kong and mainland China and is the most important income source for the fishing families operating fish cages in Guiuan.</li> </ul>
Others	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Actions after 2nd Workshop	
General	<ul style="list-style-type: none"> <li>• Dealing with economic development systematically by having an enabling organizational framework (Request for appointment of in-charge personnel and etc.)</li> <li>• Confirmation and revision of the vision of the sector of economy as well as realization policy</li> <li>• Support for formulation of more systematic plans</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>• The progress of industrialization of coconut charcoal production will be monitored by local engineers.</li> </ul>
Fishery	<ul style="list-style-type: none"> <li>• Discussion with BFAR and LGU</li> </ul>
Others	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

## Chapter 20 Disaster Risk Reduction and Management and Land Use Planning in the Model LGUs

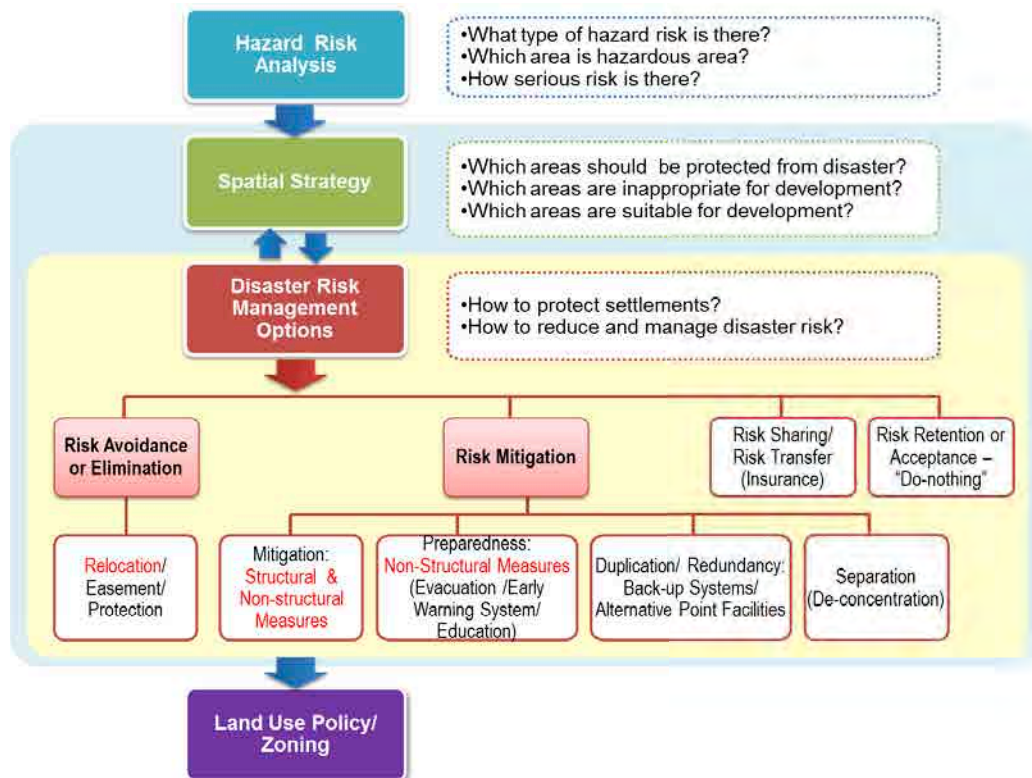
### 20.1 Disaster Resilient Land Use Planning in the Five Model LGUs

#### 20.1.1 Planning for Disaster Risk Sensitive CLUPs

\*This section is same as Section 17.3.2 of Technical Supporting Report.

#### (1) Methodology for Development of Disaster Risk Sensitive Land Use Policies

Disaster risk sensitive land use is essential for recovery and reconstruction of the affected LGUs in building safer and disaster free living environment. Land use policies for recovery and reconstruction should be developed taking account of disaster hazard risk, and prevention and mitigation measures. Figure 20.1-1 describes the disaster risk sensitive land use policy development process.



Source: JICA Study Team

**Figure 20.1-1 Land Use Policy Development Process**

Hazard maps are a powerful tool to develop spatial strategies and land use policies. Based on examination of hazard risks, the existing land use and development pressure, spatial strategies need to be clarified for the areas to be protected from disaster, the areas inappropriate for development, or the areas to be reserved for development in future, etc. At the same time, appropriate disaster risk management measures and strategies, such as relocation, tide embankment, or evacuation centers and plans, should be selected for each of land use zones/ areas.

In order to determine land use policies and disaster risk reduction and mitigation measures corresponding to each area, the inundation levels and anticipated damage caused by storm surge, flood, and tsunami (or the level of intensity and implication for damage on of other types of hazards) shall be evaluated, as shown in hazard maps (see Table 20.1-1). Formulated land use policies integrate disaster mitigation measures in land use regulations specified in a zoning ordinance, which would include use of lands, density, structure and engineering design, distribution and location of infrastructure/ public facilities, evacuation centers, and so on.

**Table 20.1-1 Inundation Depth and Damage Implications of Tsunami**

Inundation Depth (meter)	Implications
10 meter and over	A 3-story building is completely submerged
5 meter to 10 meter	A 2-story building is submerged
2 meter to 5 meter	Most wooden houses are completely damaged
1 meter to 2 meter	If involved, most people die.
0.3 meter to 1 meter	People cannot move. Evacuation becomes impossible.

Source: Ministry of Land, Infrastructure, and Transport, Japan. 2012. Manual for Setting Tsunami Inundation Assumption, Ver. 2.

By coordinated effort among the national agencies, the guidelines for classification of hazard zones of hydro-meteorological hazard such as typhoons, floods, landslides and storm surges, and land use activities in the zones were prepared in November 2014. According to the Joint DENR-DILG-DND-DPWH-DOST Memorandum Circular No. 2014-01<sup>1</sup>, hazard zones are classified into three categories of “High”, “Moderate” and “Low” susceptibilities with recommended restriction on land use activities accordingly, including suitability of construction of evacuation centers, and a need for disaster risk mitigation measures, etc. The construction of evacuation centers are not recommended in any of the three categories if their structural resilience and height are not proven. The classifications of storm surge and flood hazards are presented in Table 20.1-2. The high hazard areas of storm surge in the Study Area where inundation depth exceeds over 1.5 meters and that are not recommended for dwelling and other land use activities, i.e., no-build zones are illustrated in Figure 20.1-2 and 20.1-3. This information of the hazard provides valuable inputs for preparation of land use policies and evacuation plans.

**Table 20.1-2 Classification of Hazard Zones and Land Use Activities**

		High	Moderate	Low
Storm Surge	Classification	Storm surge flood height of greater than 1.5 meter	Storm surge flood height of greater than 0.5 up to 1 meter	Storm surge flood height of 0.5 meter or less
	Land Use Activities	<ul style="list-style-type: none"> <li>• Evacuate during storm surge</li> <li>• Do not establish evacuation centers.</li> <li>• Establish natural and man-made coastal defenses, such as mangrove, break water, etc.</li> <li>• Not suitable for commercial, industrial, residential, and institutional development.</li> <li>• Install storm surge warning</li> </ul>	<ul style="list-style-type: none"> <li>• Dwelling may be allowed, but evacuate during storm surge</li> <li>• Do not establish evacuation centers.</li> </ul>	<ul style="list-style-type: none"> <li>• Dwelling may be allowed and people may stay in their homes during storm surge, provided that their houses have a second floor, and are structurally sound</li> <li>• Do not establish evacuation centers unless they have vertical evacuation capabilities.</li> </ul>

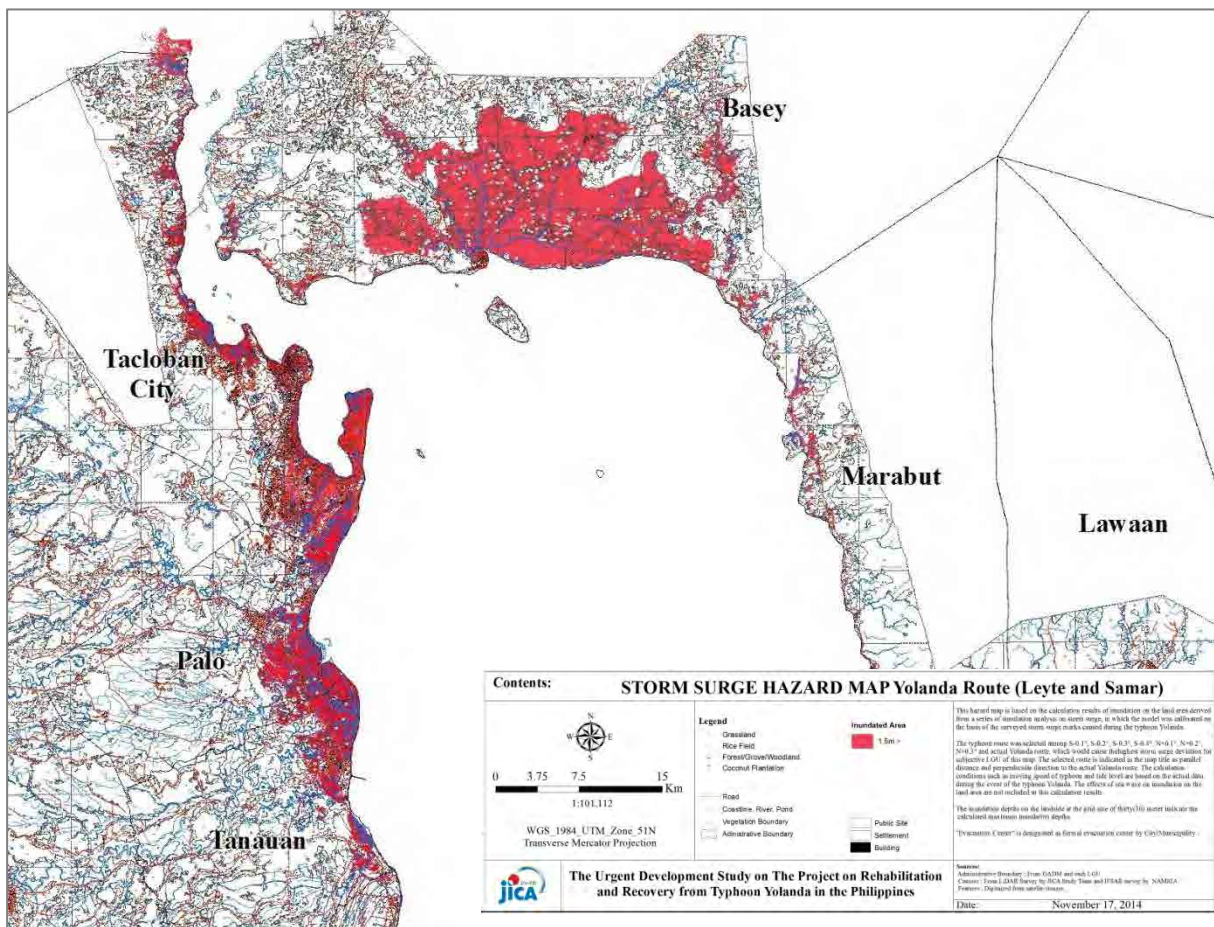
<sup>1</sup> Joint DENR-DILG-DND-DPWH-DOST Memorandum Circular No. 2014-01. “Adoption of hazard zone classification in areas affected by Typhoon Yolanda (Haiyan) and providing the guidelines for activities therein,” signed on November 5, 2014.

		signage		
Flood	Classification	Flood height of greater than 1 meter and/ or flood duration of more than 3 days	Flood height of greater than 0.5 up to 1 meter and/ or flood duration of more than 1 to 3 days	Flood height of 0.5 meter or less and/ or flood duration of less than 1 day
	Land Use Activities	<ul style="list-style-type: none"> <li>• During flood, evacuate except disaster response personnel</li> <li>• Do not establish evacuation centers.</li> <li>• Use floodplains as retention basins. These places maybe transformed into recreational areas, provided possible flood heights in the design.</li> <li>• Recommend appropriate flood control mitigation structure to be approved by DPWH,</li> <li>• Not suitable for commercial, industrial, residential, and institutional development.</li> <li>• Install flood warning signages</li> </ul>	<ul style="list-style-type: none"> <li>• During flood, evacuate except disaster response personnel</li> <li>• Do not establish evacuation centers.</li> <li>• May allow dwelling and development with provision of possible flood heights and structural integrity in the design.</li> </ul>	<ul style="list-style-type: none"> <li>• During flood, people may stay in their dwellings and workplace provided that these are structurally sound and early warning system and preparedness plans are in place.</li> <li>• Do not establish evacuation centers unless these are structurally sound and have vertical evacuation capabilities.</li> <li>• May allow dwelling and development with provision of possible flood heights and structural integrity in the design.</li> </ul>

Source: Joint DENR-DILG-DND-DPWH-DOST Memorandum Circular No. 2014-01. "Adoption of hazard zone classification in areas affected by Typhoon Yolanda (Haiyan) and providing the guidelines for activities therein," November 5, 2014.







Source: JICA Study Team

**Figure 20.1-3 High Hazard Zone of Storm Surge in the Study Area 2**

A decision of relocation is one of the most important issues in land use policy development. A newly proposed no-build zone policy to specify unsafe, safe and controlled zones after the Yolanda calls for a careful study of its effectiveness and impact on the community. For the delineation of safe, unsafe and controlled zones, the LGUs should develop own criteria acceptable to their citizens, examining hazard maps and anticipated damages as shown in Table 20.1-1. A need for relocation and selection of relocation sites should be scrutinized based on consultation with the community, because relocation significantly affects people’s lives such as livelihoods and access to public services. A city/ municipal ordinance on safe, unsafe, and controlled zones may need to be enacted, to specify the criteria for each zone and requirements for relocation, compensation, eligible residents, a procedure for relocation, etc.

**(2) Land Use Policies**

Land use policies are suggested in Table 20.1-3 below, including those for residential, commercial, industrial, and institutional areas, infrastructure and utilities, production, and protection uses. These policies would be a reference to develop the land use polices during the revision of CLUPs.

**Table 20.1-3 Suggested Land Use Policies**

Land Use	Land Use Policies
Residential area	<ul style="list-style-type: none"> <li>• Develop residential areas in safe areas or less hazard risk areas – Residential area first in protection</li> <li>• Promote compact development by increasing density to maximize use of land</li> <li>• Allocate critical facilities and important infrastructure in safe areas</li> <li>• Minimize exposures to disaster and hazard risk               <ul style="list-style-type: none"> <li>- Control development of danger areas</li> <li>- Relocate the existing settlements from high risk areas</li> </ul> </li> <li>• Reduce vulnerabilities               <ul style="list-style-type: none"> <li>- Enforce appropriate building and structural design standards</li> <li>- Develop risk mitigation structures: tide embankments, seawalls, river dikes, flood control, etc.</li> <li>- Introduce non-structural measures: evacuation places and routes, education, evacuation drills, increase of preparedness, etc.</li> <li>- Promote community-based evacuation/ disaster mitigation</li> </ul> </li> </ul>
Commercial/ Business area	<ul style="list-style-type: none"> <li>• Can be developed in safe areas, less hazard risk areas, and hazard-prone areas (no-dwelling zones)</li> <li>• Protect critical facilities and infrastructures in hazard-prone areas by protection measures</li> <li>• Promote mid-rise/ high-rise building development</li> <li>• Reduce vulnerabilities               <ul style="list-style-type: none"> <li>- Enforce appropriate building and structural design standards and monitor the compliance to the regulations</li> <li>- Provide evacuation places and routes for visitors and workers, educate business owners, employers, and workers, and prepare an evacuation plan</li> <li>- Designate high-rise buildings as evacuation places</li> <li>- Apply additional special disaster mitigation measures, such as a tsunami tower and evacuation procedure in hazard-prone areas</li> </ul> </li> </ul>
Industrial area	<ul style="list-style-type: none"> <li>• Can be developed in safe areas, less hazard risk areas, and hazard-prone areas (no-dwelling zones)</li> <li>• Protect critical facilities and infrastructures by protection measures in hazard-prone areas</li> <li>• Reduce vulnerabilities               <ul style="list-style-type: none"> <li>- Enforce appropriate building and structural design standards and monitor the compliance to the regulations</li> <li>- Provide evacuation places and routes for visitors and workers, educate business owners, employers, and workers, and prepare an evacuation plan</li> <li>- Designate a high-rise building as evacuation place</li> <li>- Apply additional special disaster mitigation measures, such as a tsunami tower and evacuation procedure in hazard-prone areas</li> </ul> </li> </ul>
Institution	<ul style="list-style-type: none"> <li>• Develop in safe areas or less hazard risk areas</li> <li>• Develop back-up offices or redundancy of the systems, for maintaining their functions and provision of public services</li> <li>• Improve preparedness to function as a center of emergency response operations and to accommodate evacuees at the time of crisis</li> <li>• Minimize exposures to disaster risk               <ul style="list-style-type: none"> <li>- Relocate the critical facilities from high risk areas</li> </ul> </li> <li>• Reduce vulnerabilities               <ul style="list-style-type: none"> <li>- Enforce special building and structural design standards for institutional buildings, and monitor the compliance to the regulations</li> <li>- Introduce non-structural measures: evacuation places and routes, education, evacuation drills, increase of preparedness (such as stock of foods and materials, first aid and medical kits, battery and generators, and contingency plans), etc.</li> </ul> </li> </ul>
Infrastructure and utilities	<ul style="list-style-type: none"> <li>• Strategically develop transport networks to guide settlement development in safe zones, to prevent development of hazard-prone areas (including cutting access to hazard prone areas), and to develop a compact city</li> <li>• Allocate and improve distribution systems to guide settlement development in safe zones</li> <li>• Provide protection and mitigation measures for the systems</li> <li>• Develop back-up or redundancy of the systems for continuity of service provision</li> </ul>
Production (Agriculture)	<ul style="list-style-type: none"> <li>• Minimize environmental impacts by promoting sustainable production</li> <li>• Promote agro-forest in upland/ slop areas, and select appropriate cultivation methods and varieties, in accordance with the susceptibility to disaster.</li> <li>• Introduce risk-sharing scheme (crop/ property insurance)</li> </ul>
Protection (Forests/ Water Bodies)/ Open space/ Parks	<ul style="list-style-type: none"> <li>• Protect/ preserve/ conserve/ rehabilitate forests, water bodies, shores, watershed, and coastal environment, especially in environmentally sensitive areas</li> <li>• Enforce easement and monitor the compliance</li> <li>• Convert hazard-prone areas to protection areas as buffer zones</li> <li>• Promote reforestation of hazardous and watershed areas</li> <li>• Develop open space/ parks in hazard prone areas after relocation</li> <li>• Protect bio-diversity</li> <li>• Implement inter-governmental watershed management/ environmental management</li> </ul>

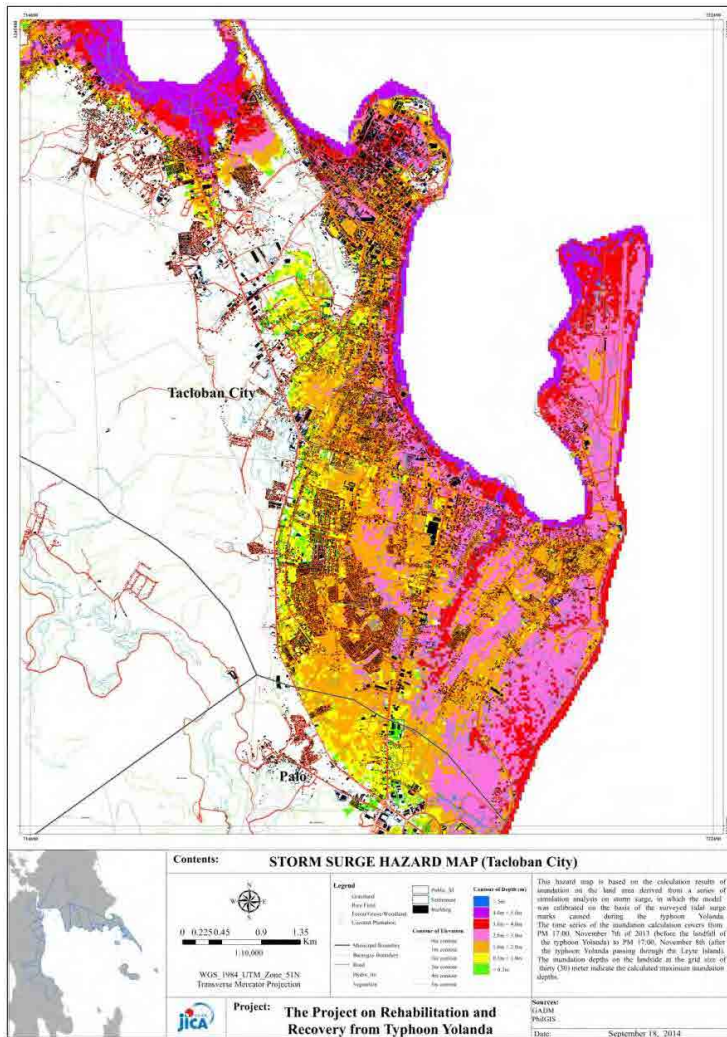
Source: JICA Study Team, developed based on Supplement

### **20.1.2 Hazard Risk Assessment of the Five Model LGUs**

Hazard risk assessment of the five model LGUs, including Tacloban, Palo, Tanauan, Basey and Guiuan are conducted in order to select DRRM measures and propose land use policy changes. This assessment is similar to CDRA, a task introduced by HLURB for the revision of CLUPs. However, CDRA is not conducted here, because the objective of the assessment is to indicate policy directions on alternation of land use in accordance with the proposed DRRM measures. It is suggested that each of the LGUs develop more detailed land use plans and zoning regulations, refining the results of the assessment in this study when they revise or prepare their CLUPs.

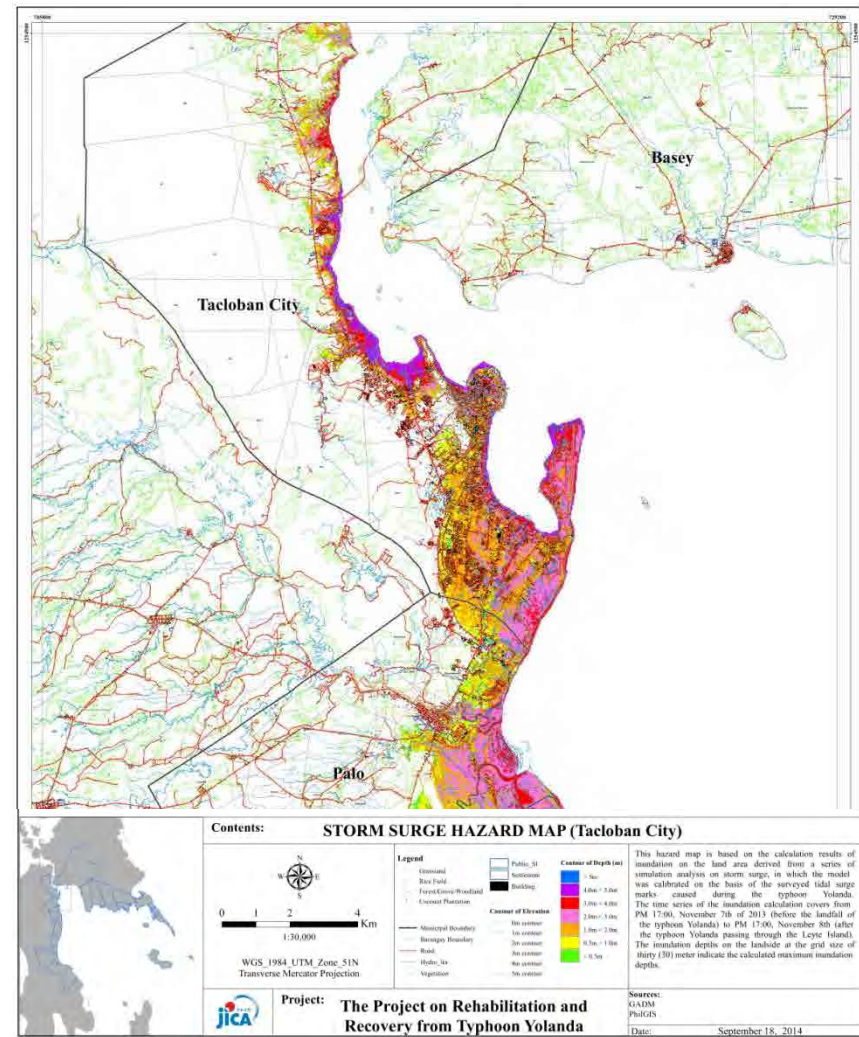
#### **(1) Hazard Maps**

Hazard maps of storm surge and flood developed in this study are used for the assessment of the hazards in the five LGUs. The flood hazard maps are prepared for 50-year return period and the case of 2011 March flood, one of a large scale floods experienced recently. The hazard maps are presented in Figure 20.1.4-20.1-19. Because there is less risk of flood, flood hazard maps were not prepared for Guiuan.



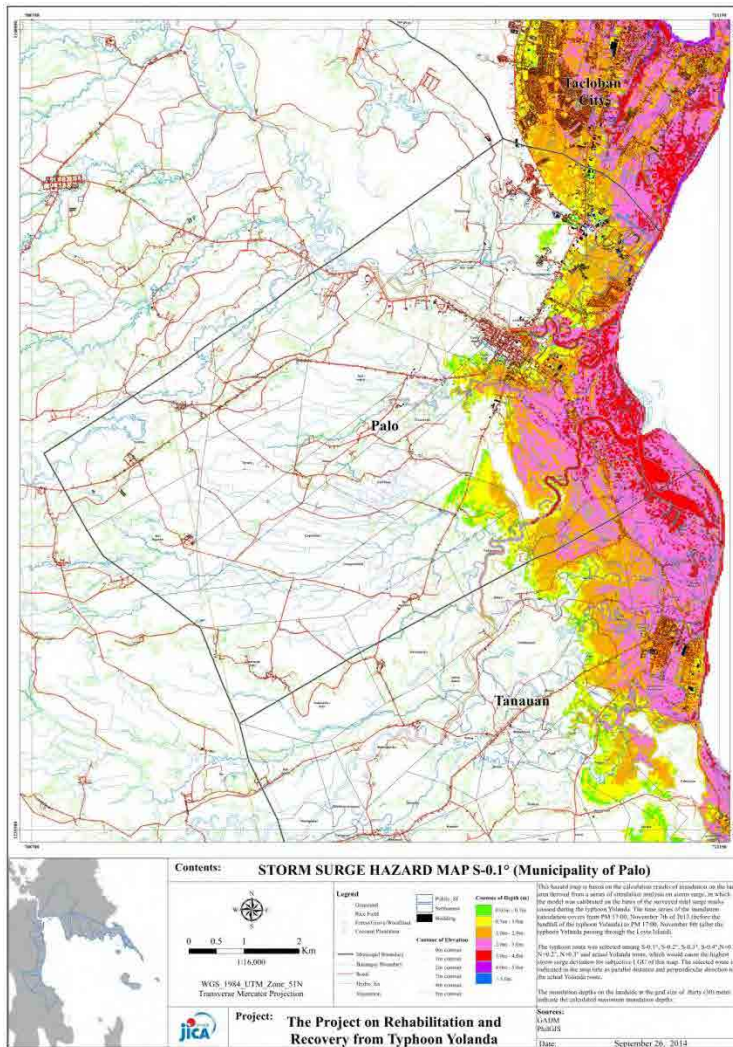
Source: JICA Study Team

Figure 20.1-4 Storm Surge Hazard Map of Tacloban



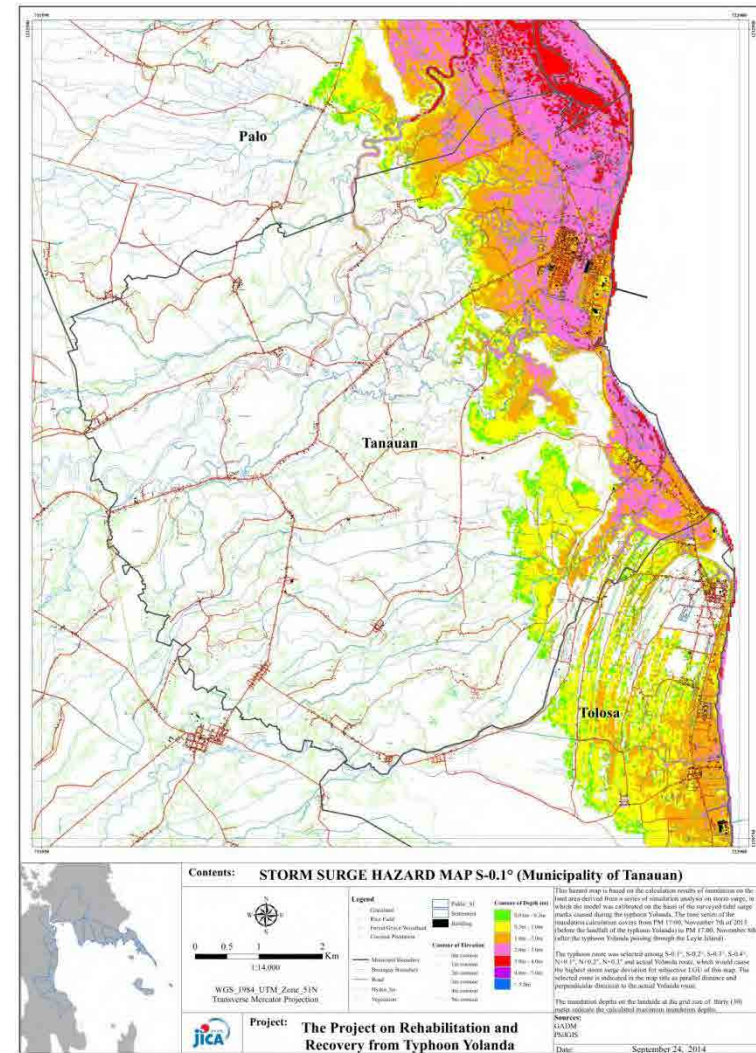
Source: JICA Study Team

Figure 20.1-5 Storm Surge Hazard Map of Tacloban 2



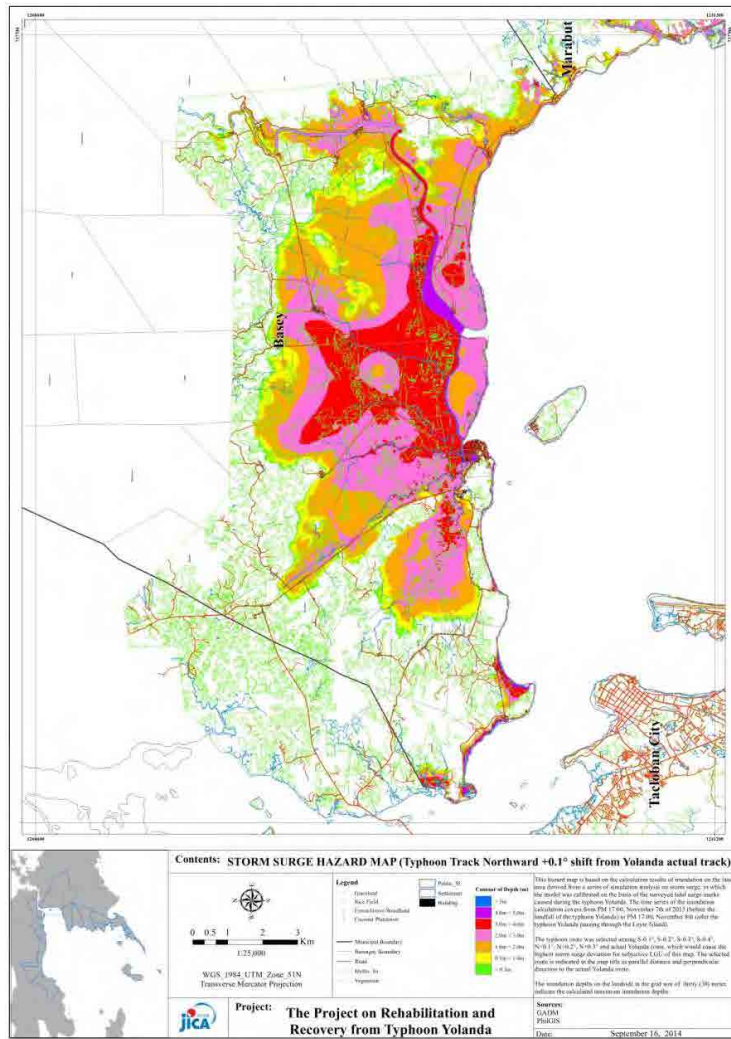
Source: JICA Study Team

Figure 20.1-6 Storm Surge Hazard Map of Palo



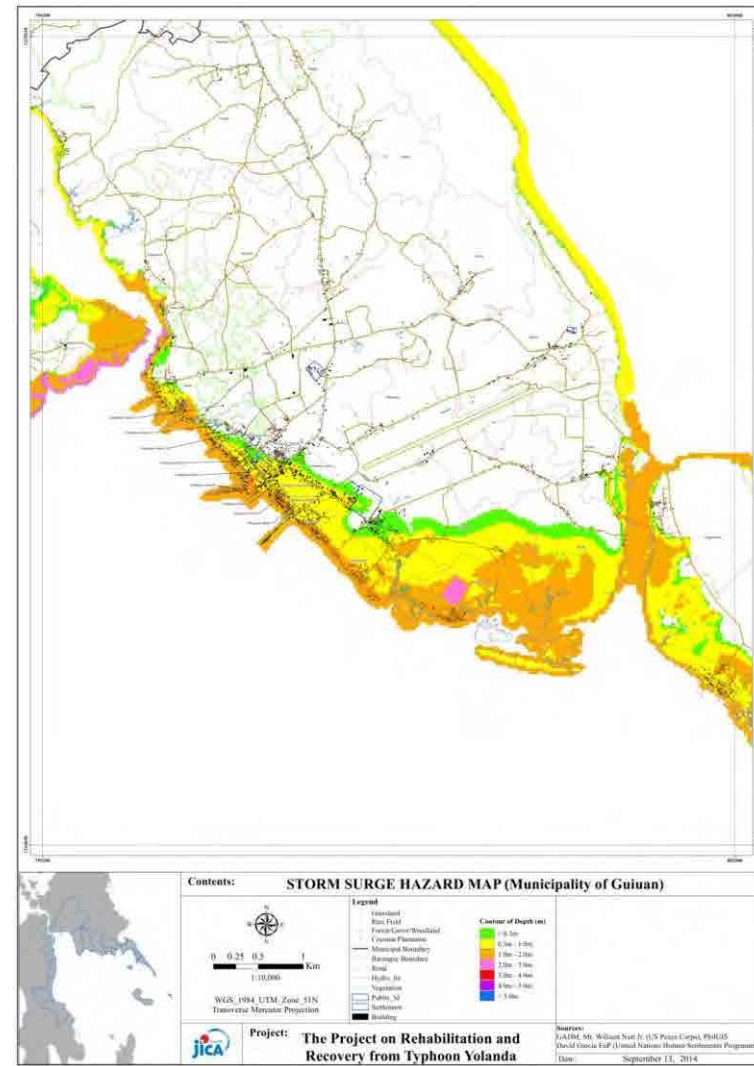
Source: JICA Study Team

Figure 20.1-7 Storm Surge Hazard Map of Tanauan



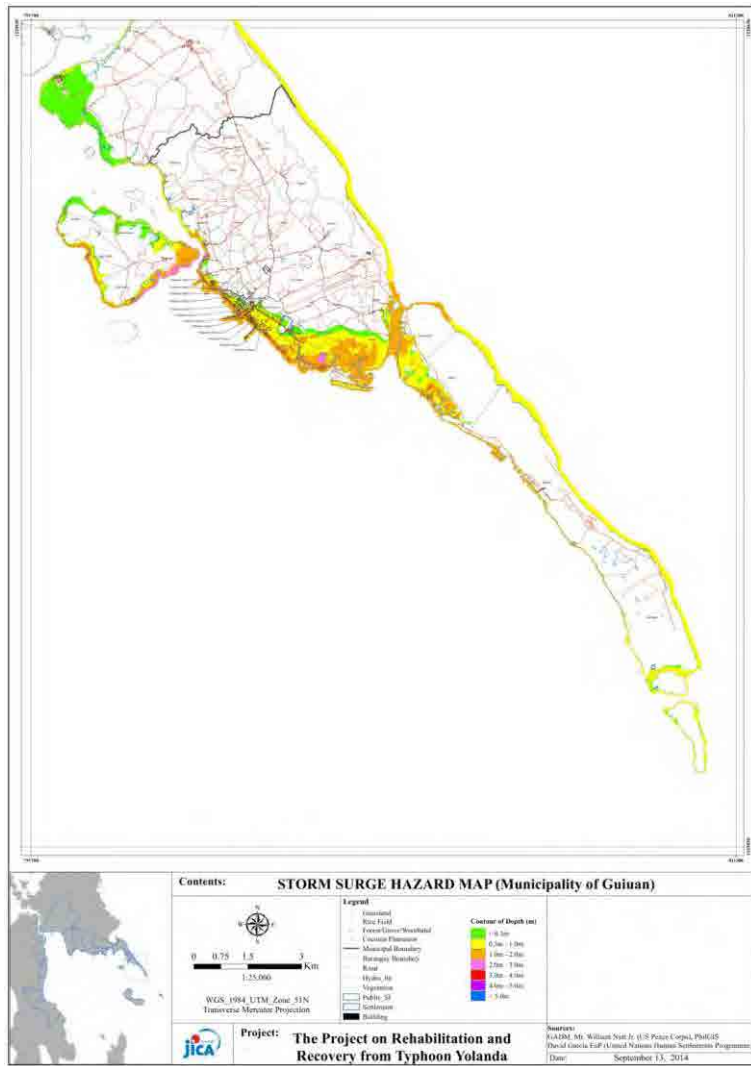
Source: JICA Study Team

Figure 20.1-8 Storm Surge Hazard Map of Basey



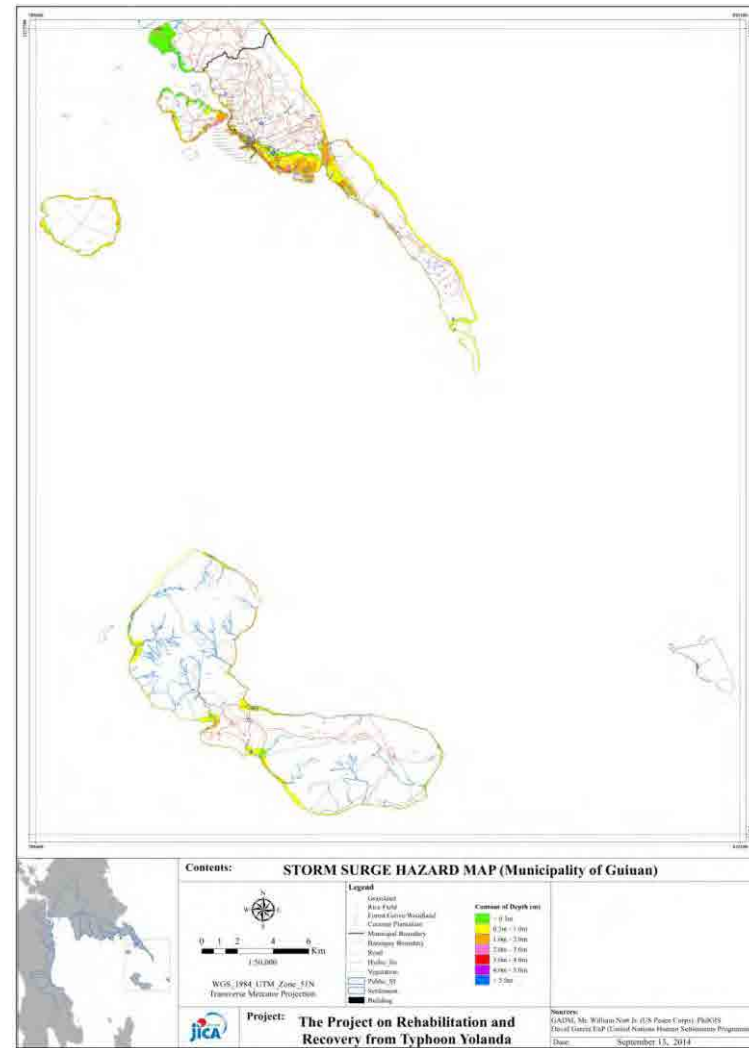
Source: JICA Study Team

Figure 20.1-9 Storm Surge Hazard Map of Guianan 1



Source: JICA Study Team

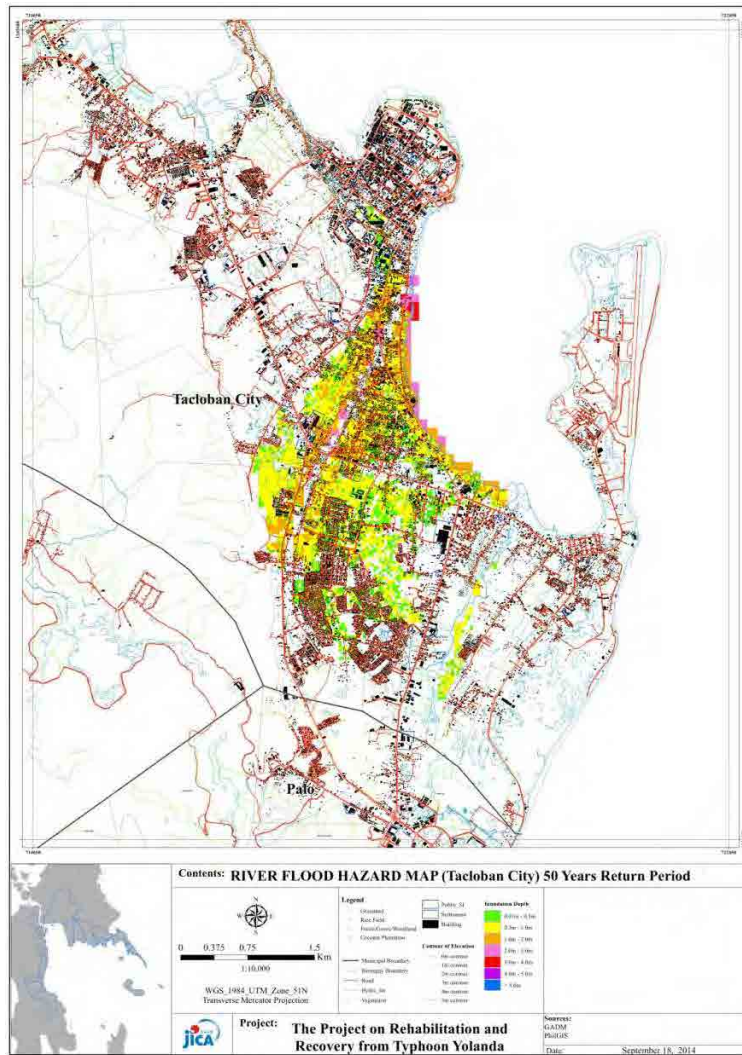
Figure 20.1-10 Storm Surge Hazard Map of Guian 2



Source: JICA Study Team

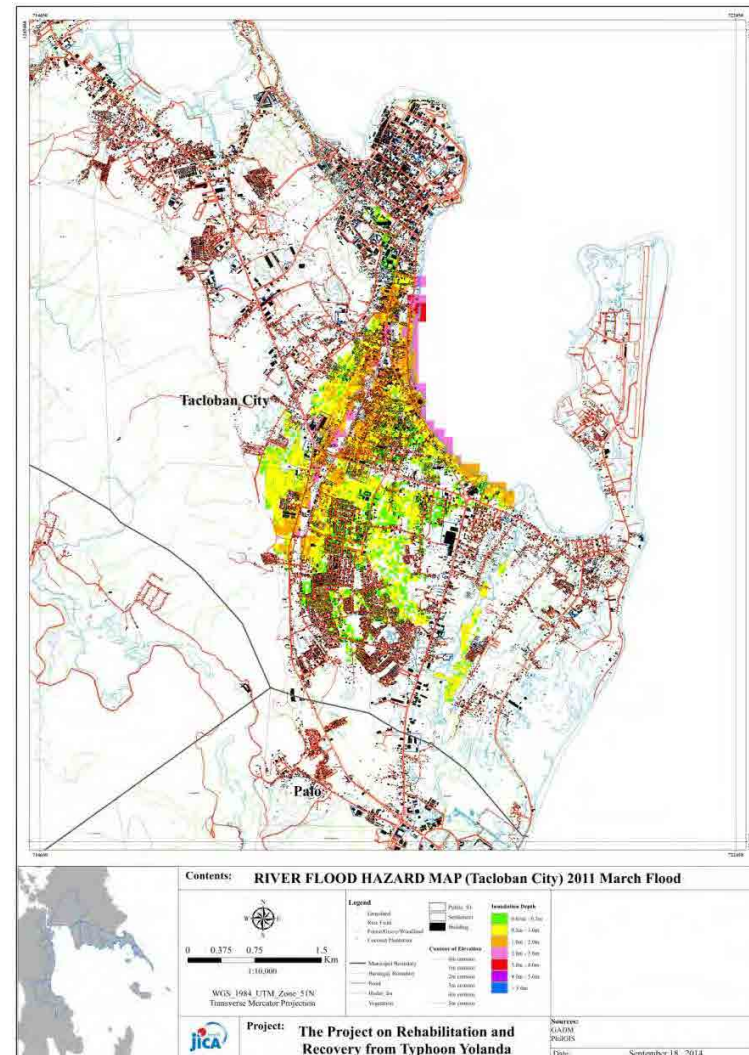
Figure 20.1-11 Storm Surge Hazard Map of Guian 3





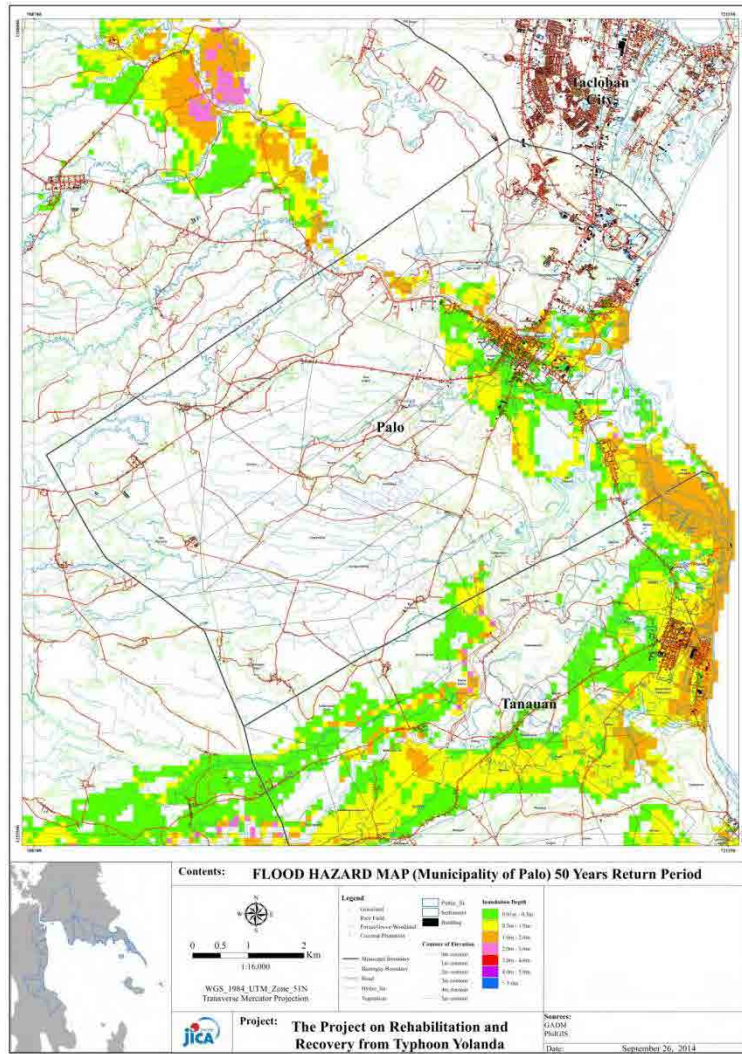
Source: JICA Study Team

**Figure 20.1-12 Flood Hazard Map of Tacloban (50 Year Return Period)**



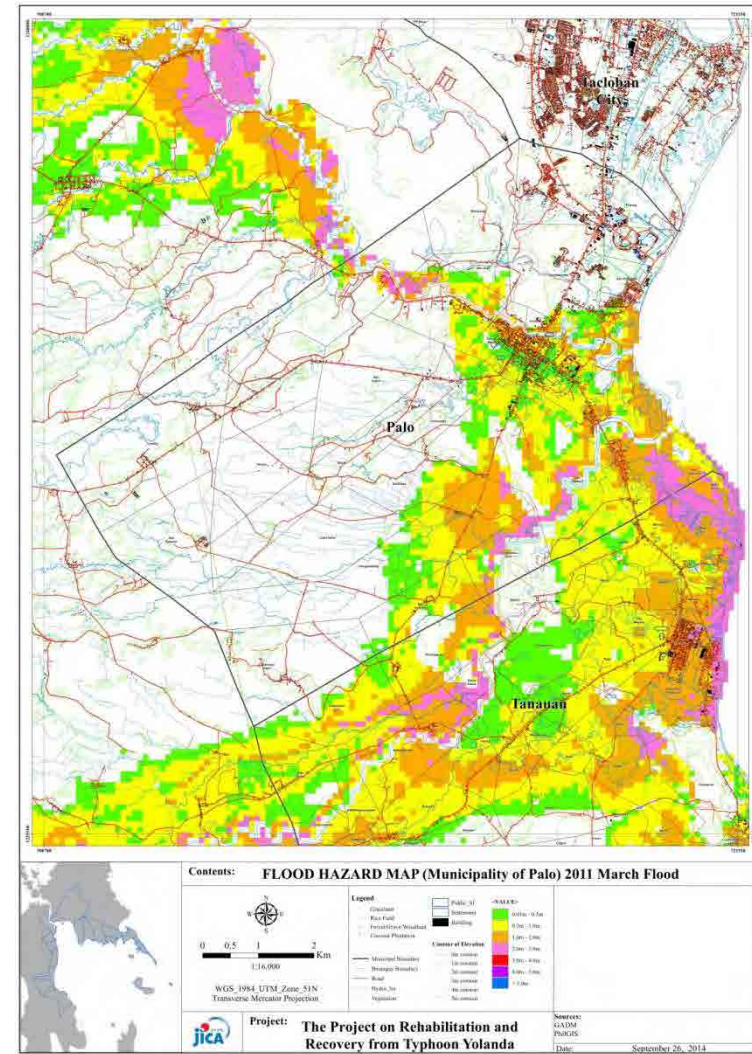
Source: JICA Study Team

**Figure 20.1-13 Flood Hazard Map of Tacloban (2011 March Flood)**



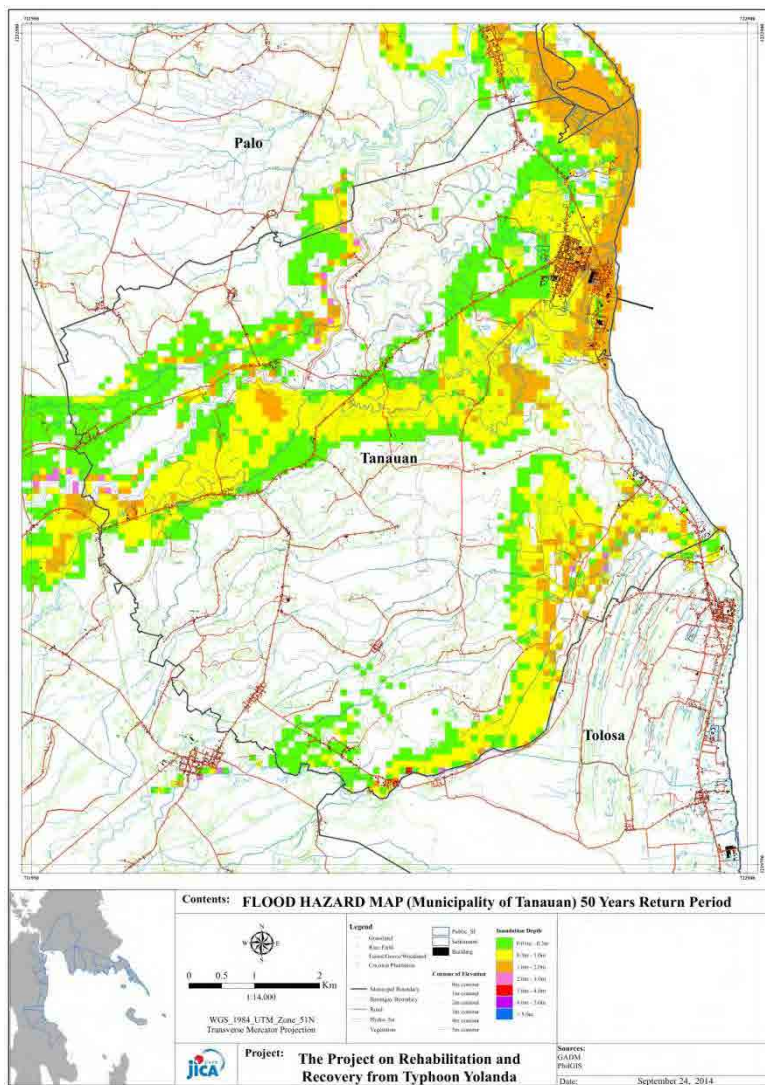
Source: JICA Study Team

**Figure 20.1-14 Flood Hazard Map of Palo (50 Year Return Period)**



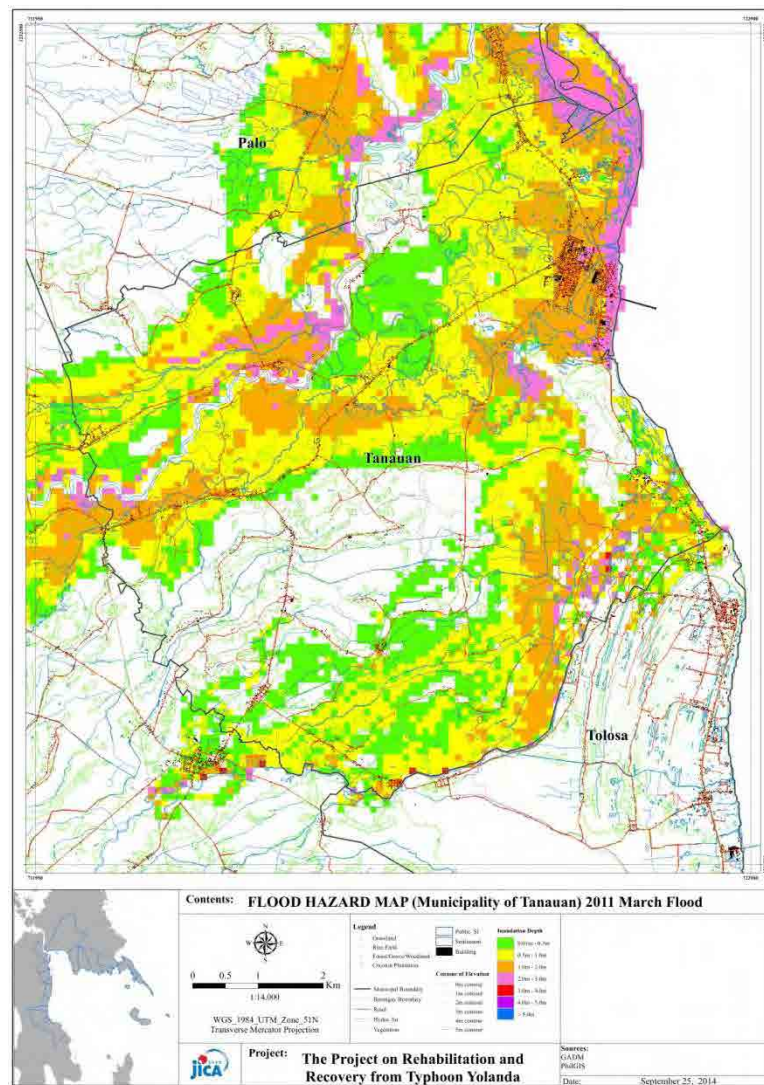
Source: JICA Study Team

**Figure 20.1-15 Flood Hazard Map of Palo (2011 March Flood)**



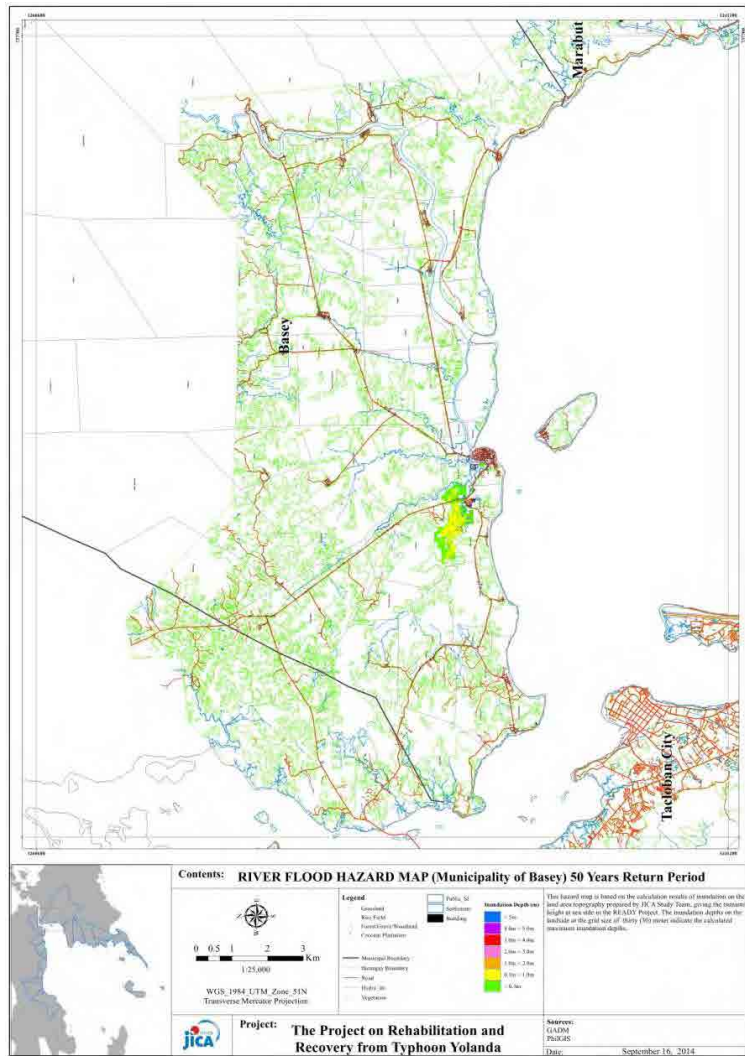
Source: JICA Study Team

Figure 20.1-16 Flood Hazard Map of Tanauan (50 Year Return Period)



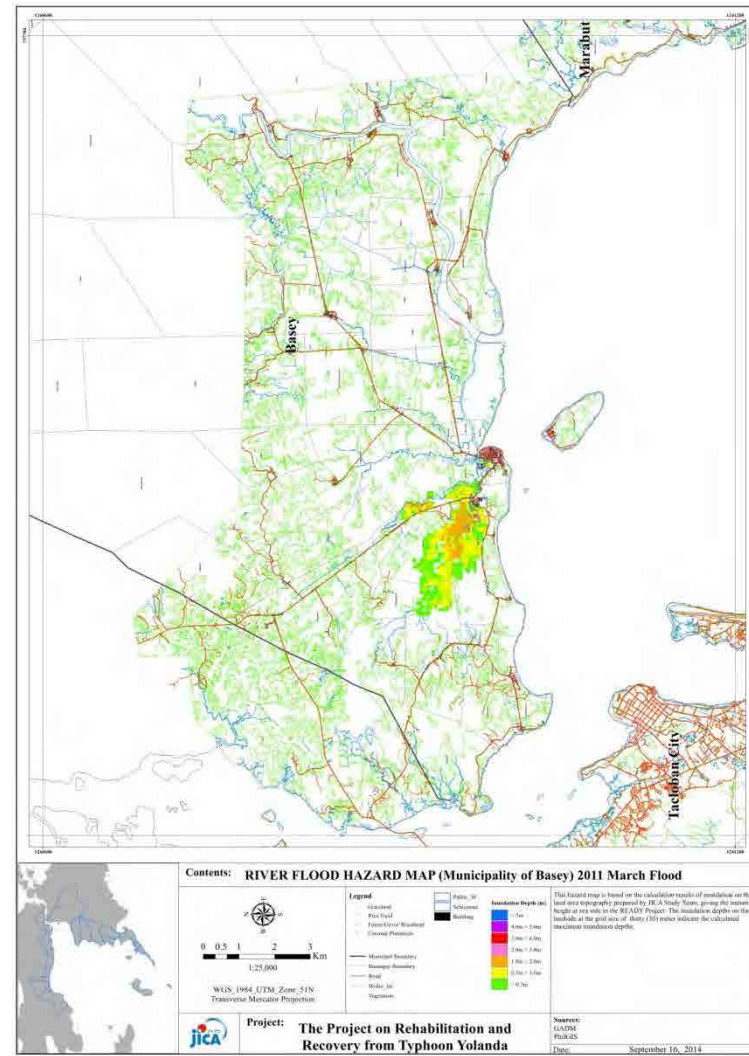
Source: JICA Study Team

Figure 20.1-17 Flood Hazard Map of Tanauan (2011 March Flood)



Source: JICA Study Team

Figure 20.1-18 Flood Hazard Map of Basey (50 Year Return Period)



Source: JICA Study Team

Figure 20.1-19 Flood Hazard Map of Basey (2011 March Flood)

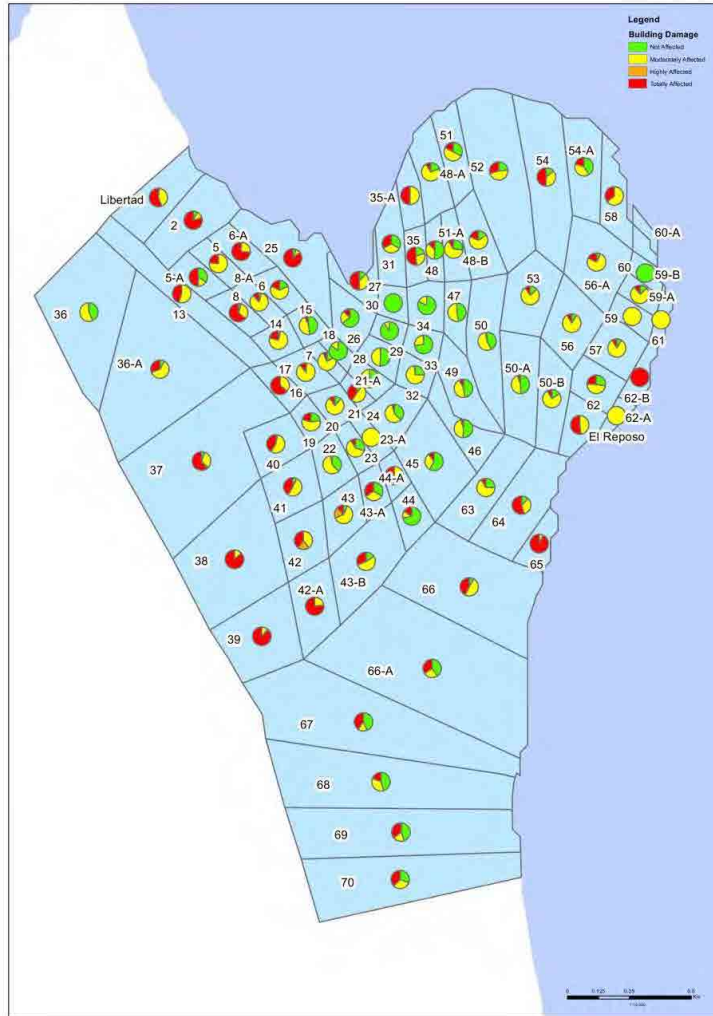
## (2) Damage Analysis

From the hazard maps of storm surge and damaged building data, the numbers of damaged buildings by inundation depth of storm surge in the five LGUs are estimated as shown in Table 20.1-4. The barangay level results are presented from Figure 20.1-20 until Figure 20.1-25.

**Table 20.1-4 Damaged Buildings by Storm Surge Inundation Depth**

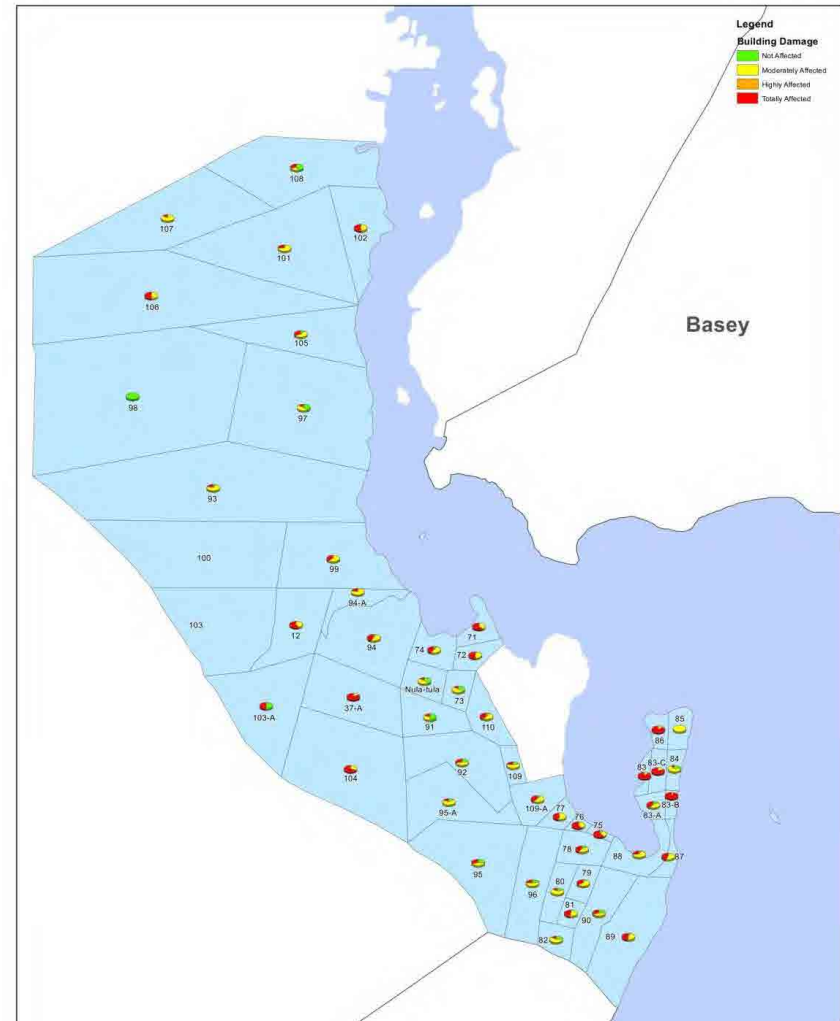
<b>TACLOBAN</b>											
No. of Buildings	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total	Ratio	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total
Total	8,366	22,824	143	15,709	47,042	Total	18%	49%	0%	33%	100%
Not Inundated	2,028	5,519	56	3,586	11,189	Not Inundated	18%	49%	1%	32%	100%
< 0.3m	176	626	2	226	1,030	< 0.3m	17%	61%	0%	22%	100%
0.3 < 1.0m	1,382	2,940	11	1,108	5,441	0.3 < 1.0m	25%	54%	0%	20%	100%
1.0 < 2.0m	3,357	8,122	59	3,633	15,171	1.0 < 2.0m	22%	54%	0%	24%	100%
2.0 < 3.0m	1,132	4,427	12	3,425	8,996	2.0 < 3.0m	13%	49%	0%	38%	100%
3.0 < 4.0m	290	1,065	3	2,685	4,043	3.0 < 4.0m	7%	26%	0%	66%	100%
> 4.0m	1	125	0	1,046	1,172	> 4.0m	0%	11%	0%	89%	100%
<b>PALO</b>											
No. of Buildings	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total	Ratio	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total
Total	481	6,033	155	7,355	14,024	Total	3%	43%	1%	52%	100%
Not Inundated	459	3,427	74	3,672	7,632	Not Inundated	6%	45%	1%	48%	100%
< 0.3m	3	299	8	219	529	< 0.3m	1%	57%	2%	41%	100%
0.3 < 1.0m	10	1,009	37	1,073	2,129	0.3 < 1.0m	0%	47%	2%	50%	100%
1.0 < 2.0m	7	1,084	20	1,363	2,474	1.0 < 2.0m	0%	44%	1%	55%	100%
2.0 < 3.0m	2	208	15	934	1,159	2.0 < 3.0m	0%	18%	1%	81%	100%
3.0 < 4.0m	-	6	1	94	101	3.0 < 4.0m	0%	6%	1%	93%	100%
> 4.0m	-	-	-	-	-	> 4.0m	-	-	-	-	-
<b>TANAUAN</b>											
No. of Buildings	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total	Ratio	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total
Total	96	3,789	157	5,514	9,556	Total	1%	40%	2%	58%	100%
Not Inundated	62	1,695	9	2,899	4,665	Not Inundated	1%	36%	0%	62%	100%
< 0.3m	3	24	3	53	83	< 0.3m	4%	29%	4%	64%	100%
0.3 < 1.0m	7	181	28	356	572	0.3 < 1.0m	1%	32%	5%	62%	100%
1.0 < 2.0m	16	1,367	80	1,485	2,948	1.0 < 2.0m	1%	46%	3%	50%	100%
2.0 < 3.0m	8	518	26	676	1,228	2.0 < 3.0m	1%	42%	2%	55%	100%
3.0 < 4.0m	-	4	11	45	60	3.0 < 4.0m	0%	7%	18%	75%	100%
> 4.0m	-	-	-	-	-	> 4.0m	-	-	-	-	-
<b>BASEY</b>											
No. of Buildings	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total	Ratio	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total
Total	2,103	4,568	6	2,925	9,602	Total	22%	48%	0%	30%	100%
Not Inundated	1,339	1,269	4	884	3,496	Not Inundated	38%	36%	0%	25%	100%
< 0.3m	38	83	-	54	175	< 0.3m	22%	47%	0%	31%	100%
0.3 < 1.0m	164	382	-	142	88	0.3 < 1.0m	24%	56%	0%	21%	100%
1.0 < 2.0m	235	984	-	606	1,825	1.0 < 2.0m	13%	54%	0%	33%	100%
2.0 < 3.0m	130	1,136	1	525	1,792	2.0 < 3.0m	7%	63%	0%	29%	100%
3.0 < 4.0m	195	646	1	567	1,409	3.0 < 4.0m	14%	46%	0%	40%	100%
> 4.0m	2	68	-	147	217	> 4.0m	1%	31%	0%	68%	100%
<b>GUIUAN</b>											
No. of Buildings	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total	Ratio	Not Damaged	Moderately Damaged	Highly Damaged	Totally Damaged	Total
Total	368	5,318	52	5,090	10,828	Total	3%	49%	0%	47%	100%
No Hazard	310	2,089	20	3,056	5,475	No Hazard	6%	38%	0%	56%	100%
< 0.3m	15	468	2	325	810	< 0.3m	2%	58%	0%	40%	100%
0.3 - 1.0m	39	1,633	24	986	2,682	0.3 - 1.0m	1%	61%	1%	37%	100%
1.0 - 2.0m	4	1,125	6	712	1,847	1.0 - 2.0m	0%	61%	0%	39%	100%
> 2.0m	-	3	-	11	14	> 2.0m	0%	21%	0%	79%	100%

Source: JICA Study Team



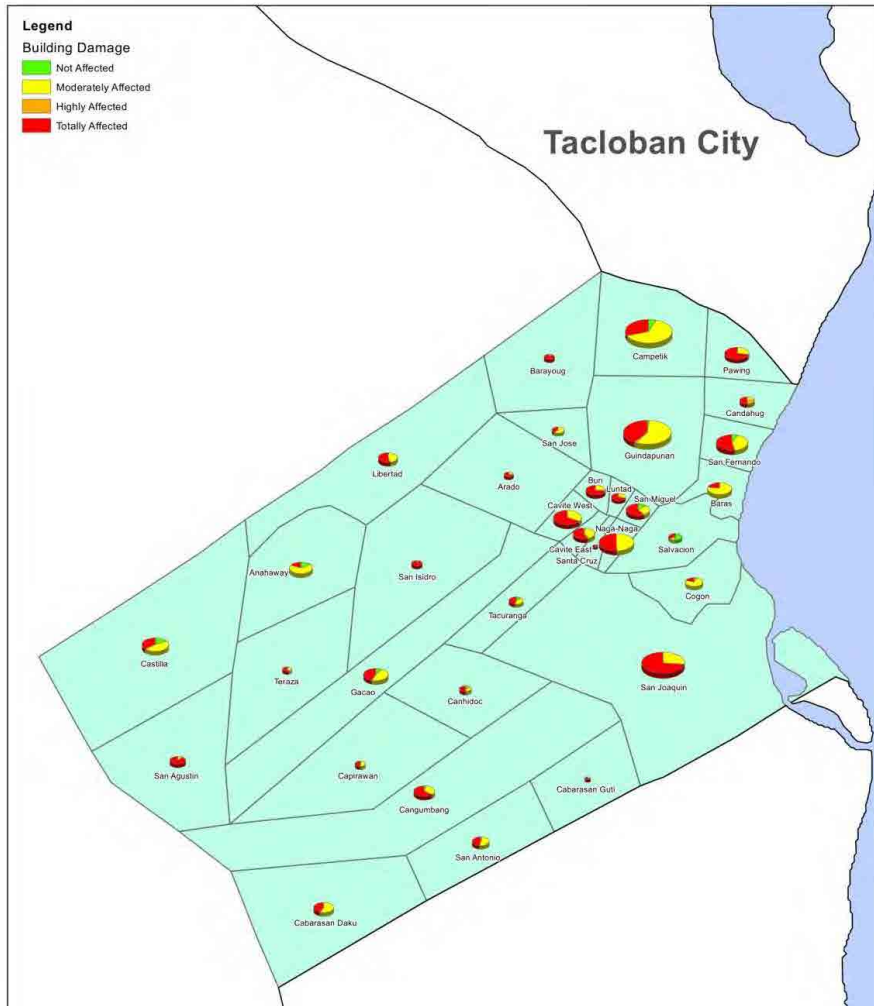
Source: JICA Study Team

**Figure 20.1-20 Damaged Buildings by Storm Surge Inundation Depth and by Barangay in Tacloban 1**



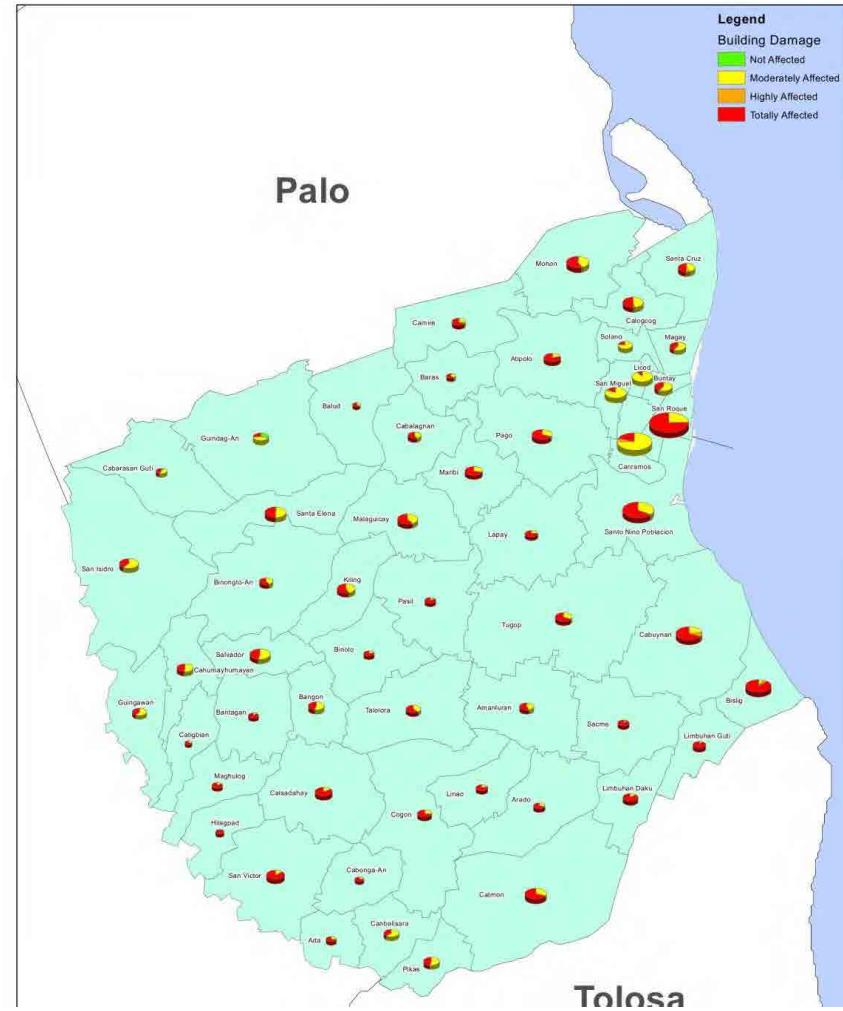
Source: JICA Study Team

**Figure 20.1-21 Damaged Buildings by Storm Surge Inundation Depth and by Barangay in Tacloban 2**



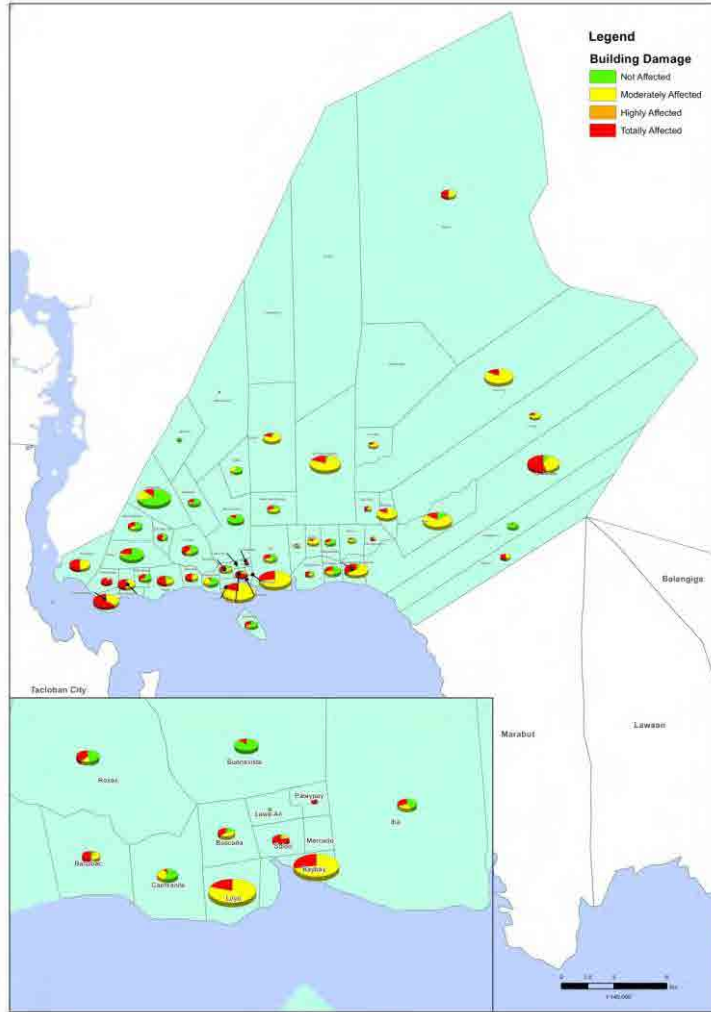
Source: JICA Study Team

**Figure 20.1-22 Damaged Buildings by Storm Surge Inundation Depth and by Barangay in Palo**



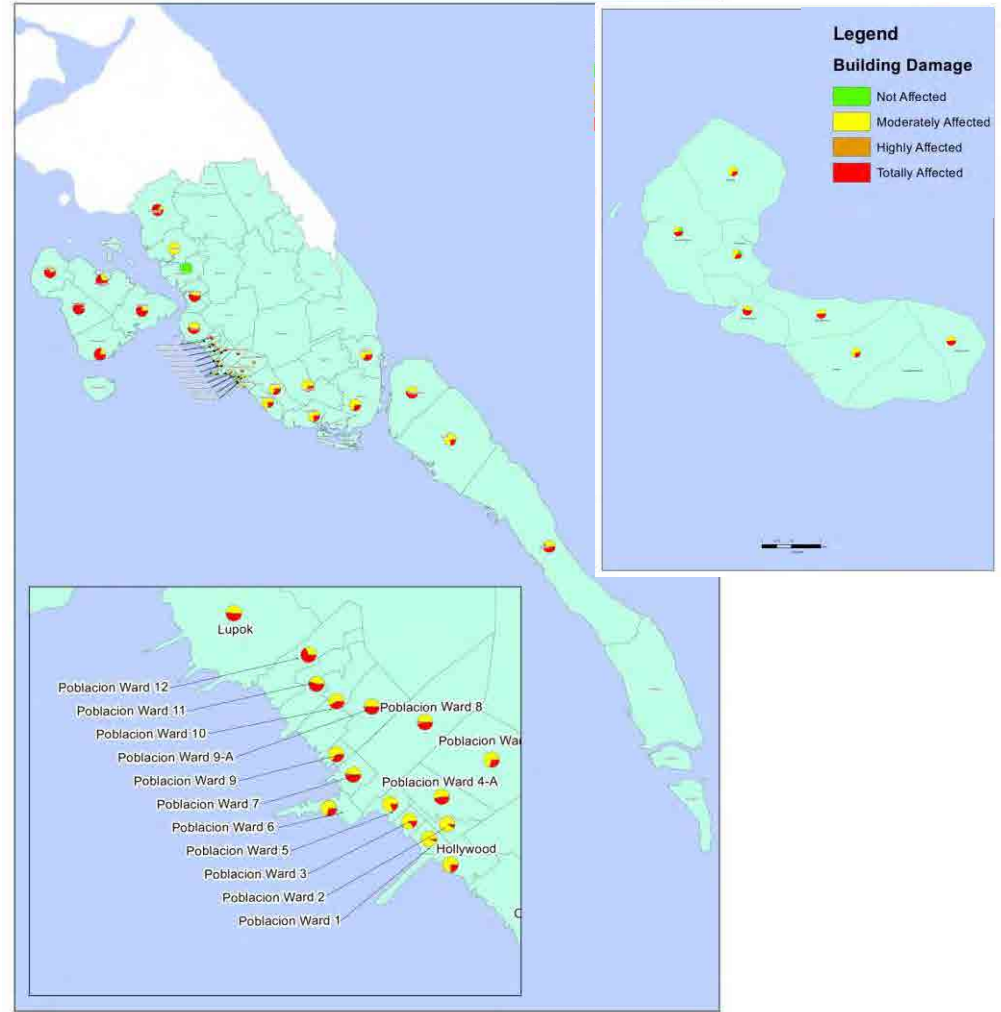
Source: JICA Study Team

**Figure 20.1-23 Damaged Buildings by Storm Surge Inundation Depth and by Barangay in Tanauan**



Source: JICA Study Team

**Figure 20.1-24 Damaged Buildings by Storm Surge Inundation Depth and by Barangay in Basey**



Source: JICA Study Team

**Figure 20.1-25 Damaged Buildings by Storm Surge Inundation Depth and by Barangay in Guiuan**



Significant damage of buildings was observed in all the five LGUs. As presented in Table 20.1-4, more than half of the buildings submerged more than 2 or 3 meters were totally damaged. Extensive destruction was observed in Palo and Tanauan particularly.

### (3) Storm Surge Inundation

The areas and numbers of the buildings to be inundated by Yolanda level storm surge are presented in Table 20.1-5 and 20.1-6. The areas (km<sup>2</sup>) by Storm Surge Inundation Depth and by Barangay are shown in Figure 20.1-26 to 20.1-31.

It is shown the Tables that though the areas to be inundated by storm surge is relatively small, the impacts on the buildings are significant. It means that the most of the existing built-up areas developed in the flat lands or low lands are susceptible to storm surge. In Tacloban, Tanauan and Basey, the areas to be inundated more than 1 meter are more or less 10 to 20% of the total areas, however, 62%, 43% and 44% of the buildings are submerged in Tacloban, Basey and Tanauan, respectively. Hence, this result of analysis indicates that certain countermeasures are necessary to protect the built-up areas.

**Table 20.1-5 Areas by Storm Surge Inundation Depth (unit: km<sup>2</sup>)**

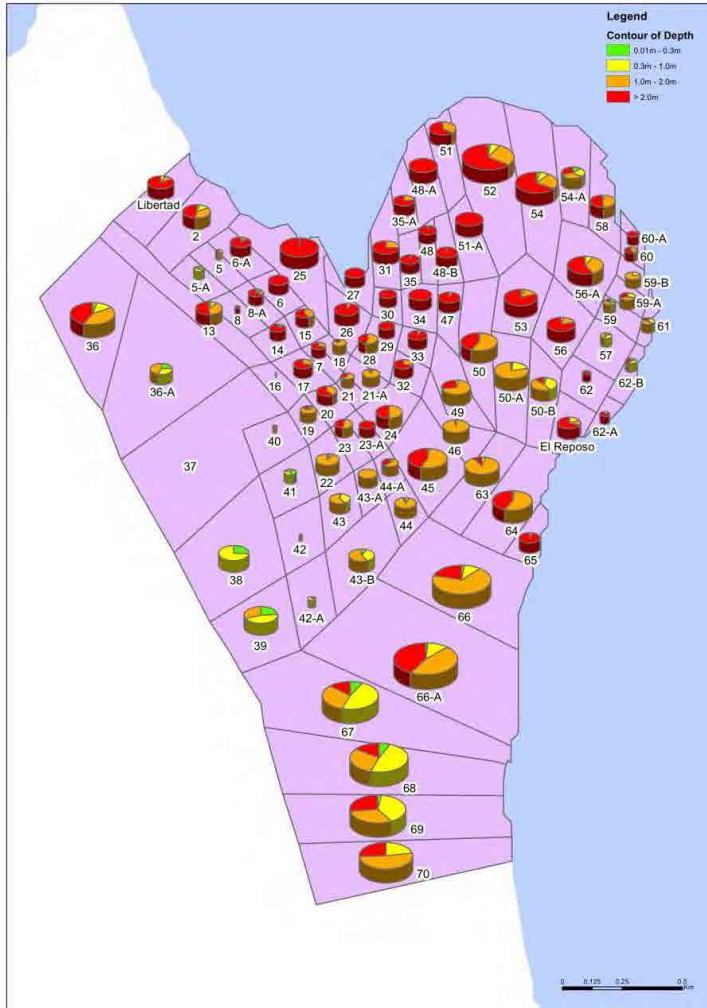
LGUs	No Hazard	< 0.3m	0.3 - 1.0m	1.0 - 2.0m	> 2.0m	Total
Tacloban	91.67	0.85	3.33	8.89	13.72	118.46
	77%	1%	3%	8%	12%	100%
Palo	50.80	0.75	2.82	4.32	6.65	65.34
	78%	1%	4%	7%	10%	100%
Tanauan	51.24	1.06	3.83	5.16	6.31	67.61
	76%	2%	6%	8%	9%	100%
Basey	550.30	2.15	7.85	23.24	44.43	627.97
	88%	0%	1%	4%	7%	100%
Guiuan	160.40	2.42	7.57	3.50	0.15	174.05
	92%	1%	4%	2%	0%	100%

Source: JICA Study Team

**Table 20.1-6 No. of Buildings by Storm Surge Inundation Depth**

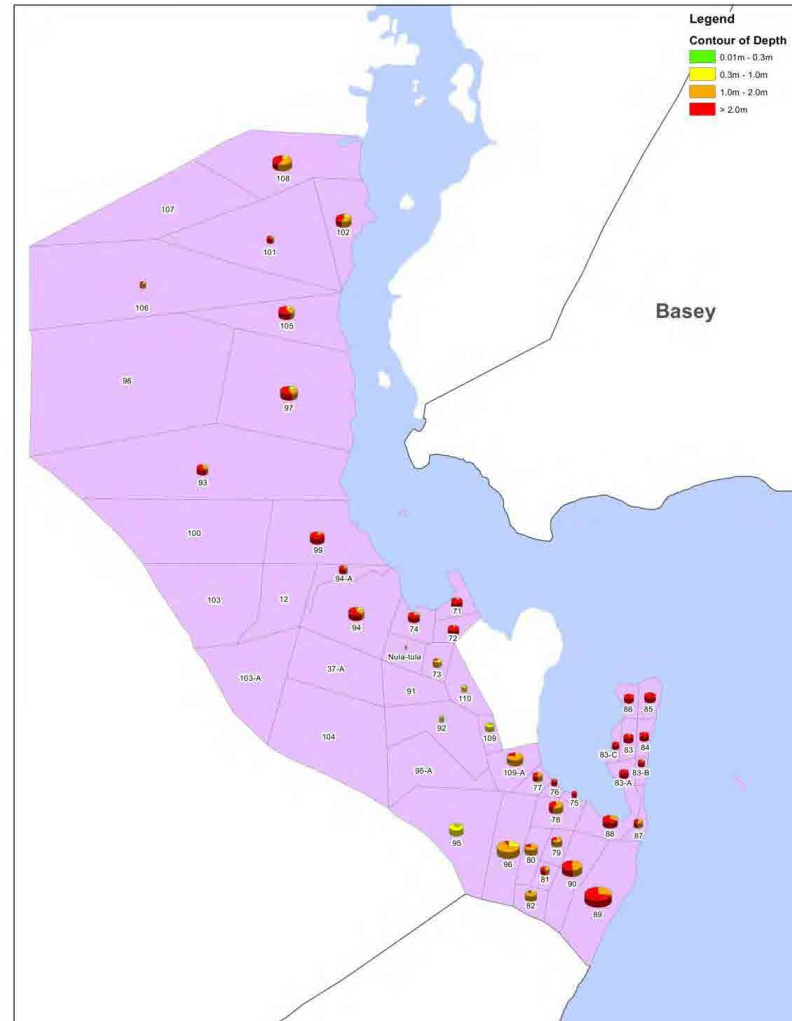
LGUs	No Hazard	< 0.3m	0.3 - 1.0m	1.0 - 2.0m	> 2.0m	Total
Tacloban	11,189	1,030	5,441	15,171	14,211	47,042
	24%	2%	12%	32%	30%	100%
Palo	7,632	529	2,129	2,474	1,260	14,024
	54%	4%	15%	18%	9%	100%
Tanauan	4,665	83	572	2,948	1,288	9,556
	49%	1%	6%	31%	13%	100%
Basey	3,614	131	808	1,858	1,642	8,053
	45%	2%	10%	23%	20%	100%
Guiuan	5,475	810	2,682	1,847	14	10,828
	51%	7%	25%	17%	0%	100%

Source: JICA Study Team



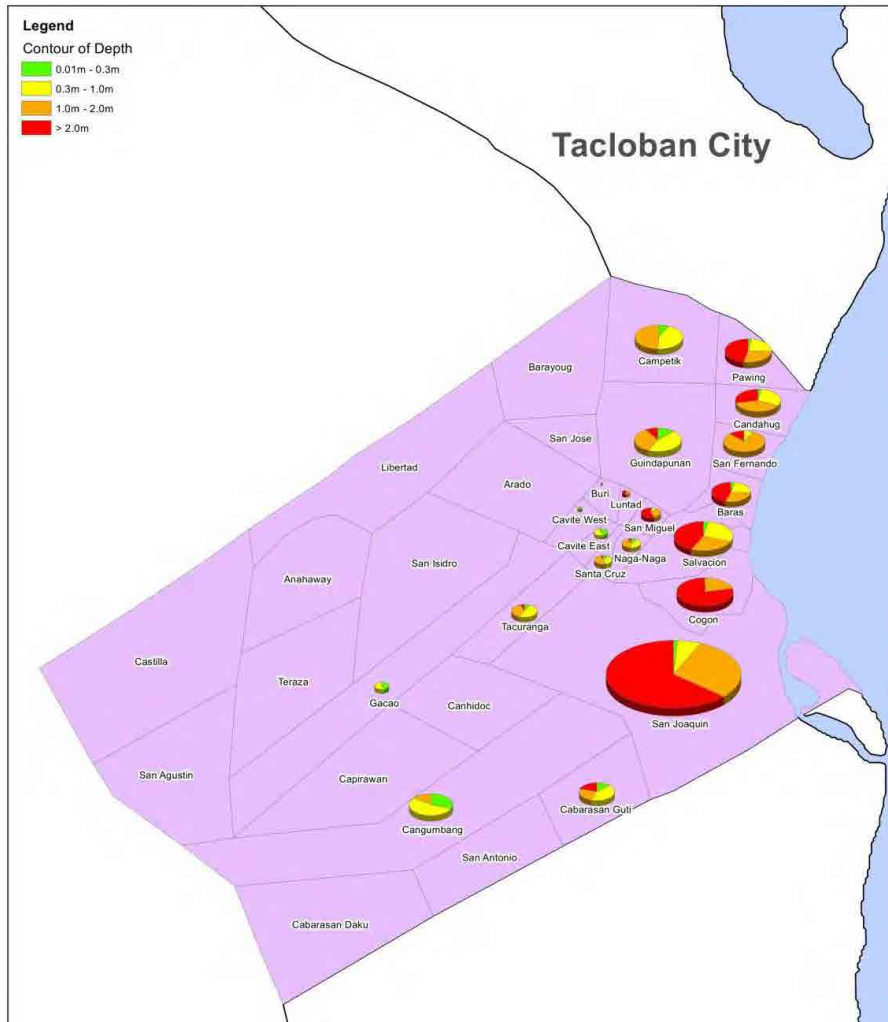
Source: JICA Study Team

**Figure 20.1-26 Areas (km<sup>2</sup>) by Storm Surge Inundation Depth and by Barangay in Tacloban 1**



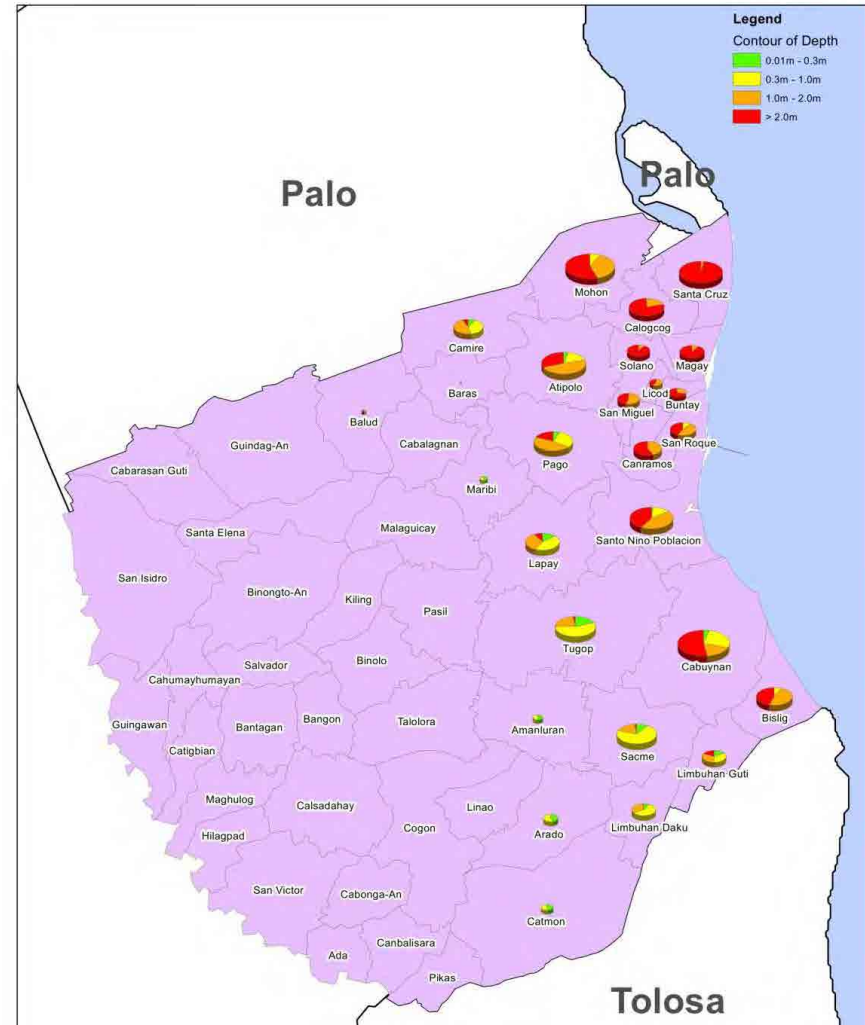
Source: JICA Study Team

**Figure 20.1-27 Areas (km<sup>2</sup>) by Storm Surge Inundation Depth and by Barangay in Tacloban 1**



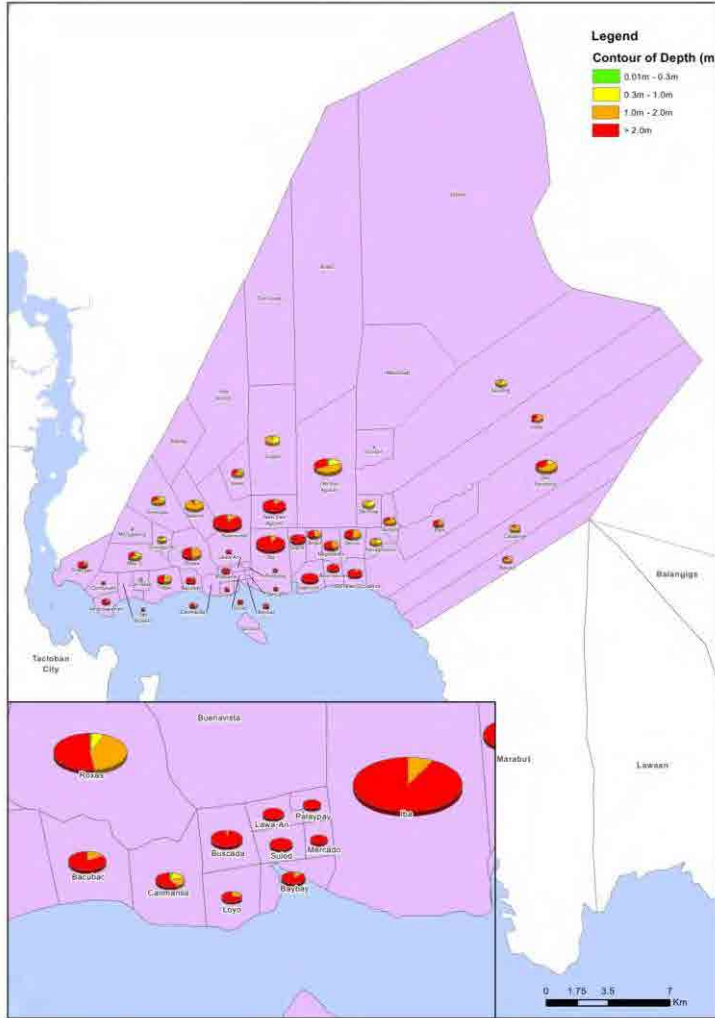
Source: JICA Study Team

**Figure 20.1-28 Areas (km<sup>2</sup>) by Storm Surge Inundation Depth and by Barangay in Palo**



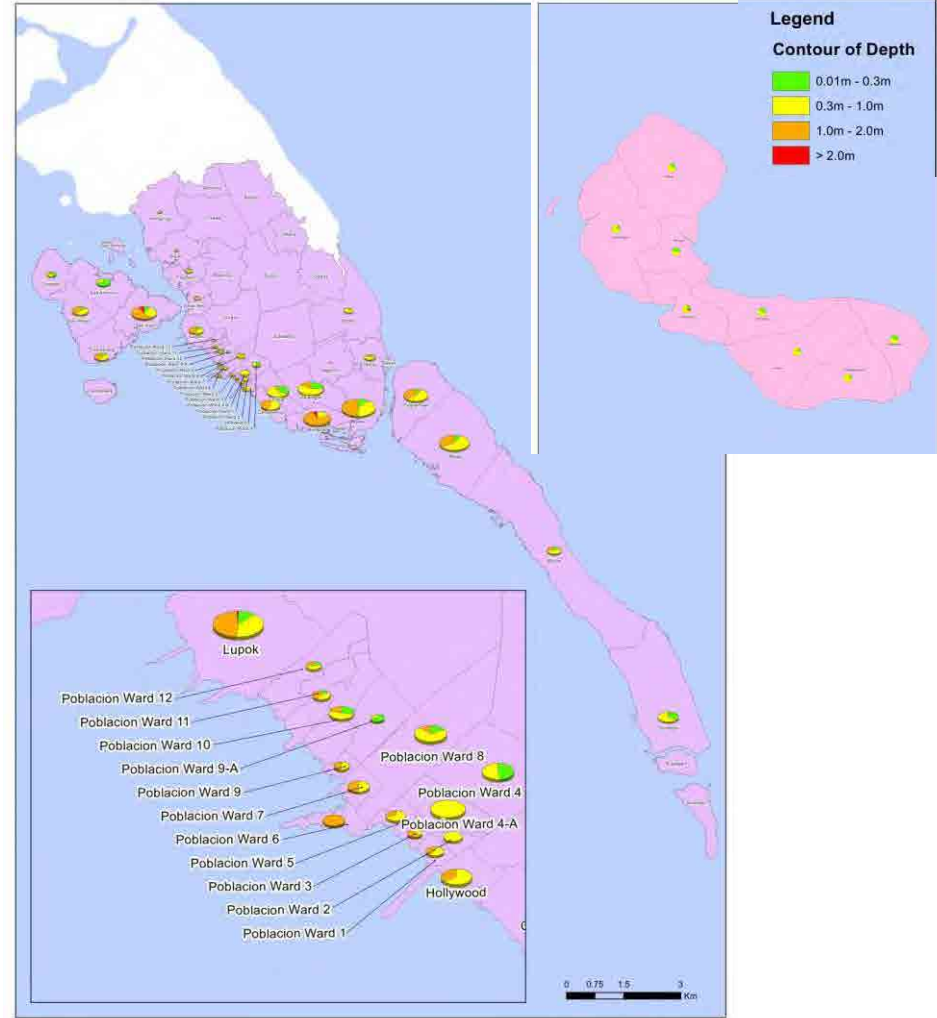
Source: JICA Study Team

**Figure 20.1-29 Areas (km<sup>2</sup>) by Storm Surge Inundation Depth and by Barangay in Tanauan**



Source: JICA Study Team

**Figure 20.1-30 Areas (km<sup>2</sup>) by Strom Surge Inundation Depth and by Barangay in Basey**



Source: JICA Study Team

**Figure 20.1-31 Areas (km<sup>2</sup>) by Strom Surge Inundation Depth and by Barangay in Guiuan**

#### (4) Flood Inundation

The areas by flood inundation depth are estimated for each LGU as shown in Table 20.1-7 and 20.1-8 from the flood hazard maps of 50 year return period and the 2011 March flood. The areas by flood inundation depth and by barangay are presented from Figure 20-1.32 to Figure 20.1-41. The flood hazard assessment was not conducted for Guiuan where only negligible risk of flood is observed.

Flood risk is significantly high in Tanauan and Palo. In Tanauan, 8.3% and 27.5% of areas would be inundated more than 1 meter in the cases of flood of 50 year return period and the 2011 March flood. On the other hand, 12.9% of the land in Palo would be at the risk of the inundation of more than 1 meter by 2011 March flood. Structural measures of river dikes and levees would be necessary to reduce the flood risk in the two municipalities, with introducing non-structural measures of preparation and evacuation.

**Table 20.1-7 Areas by Flood Inundation Depth (50 Year Return Period)**

(unit: km<sup>2</sup>)

LGUs	No Flood Risk	< 0.3m	0.3 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	> 5.0m	Total
Tacloban	114.42	1.15	2.18	0.62	0.08	0.01	-	-	118.46
	96.6%	1.0%	1.8%	0.5%	0.1%	0.0%	0.0%	0.0%	100.0%
Palo	60.59	0.81	2.13	1.67	0.11	0.04	-	-	65.34
	92.7%	1.2%	3.3%	2.6%	0.2%	0.1%	0.0%	0.0%	100.0%
Tanauan	46.58	4.18	11.21	5.26	0.32	0.05	0.02	-	67.61
	68.9%	6.2%	16.6%	7.8%	0.5%	0.1%	0.0%	0.0%	100.0%
Basey	627.02	0.35	0.56	0.04	-	-	-	-	627.97
	99.8%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

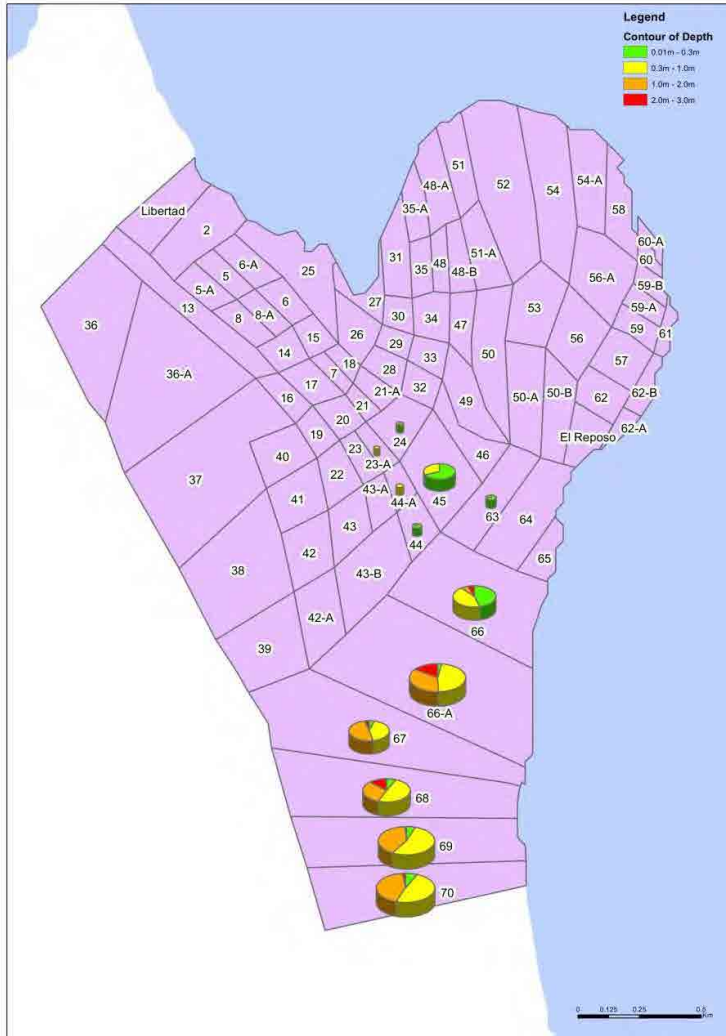
Source: JICA Study Team

**Table 20.1-8 Areas by Flood Inundation Depth (2011 March Flood)**

(unit: km<sup>2</sup>)

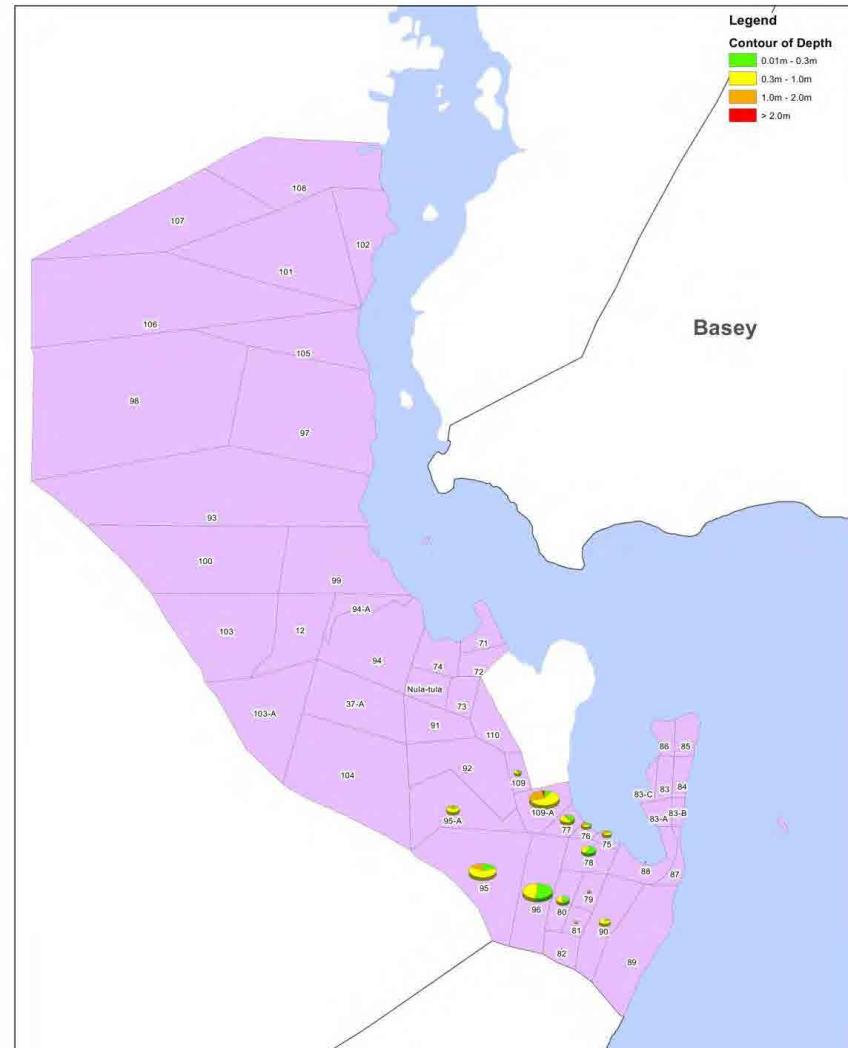
LGUs	No Flood Risk	< 0.3m	0.3 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	> 5.0m	Total
Tacloban	114.39	1.12	1.97	0.81	0.16	0.01	-	-	118.46
	96.6%	0.9%	1.7%	0.7%	0.1%	0.0%	0.0%	0.0%	100.0%
Palo	50.90	1.00	5.00	6.78	1.49	0.09	0.07	0.00	65.34
	77.9%	1.5%	7.7%	10.4%	2.3%	0.1%	0.1%	0.0%	100.0%
Tanauan	26.68	6.49	15.80	15.02	3.29	0.26	0.05	0.02	67.61
	39.5%	9.6%	23.4%	22.2%	4.9%	0.4%	0.1%	0.0%	100.0%
Basey	623.98	1.15	1.94	0.87	0.03	0.00	-	-	627.97
	99.4%	0.2%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	100.0%

Source: JICA Study Team



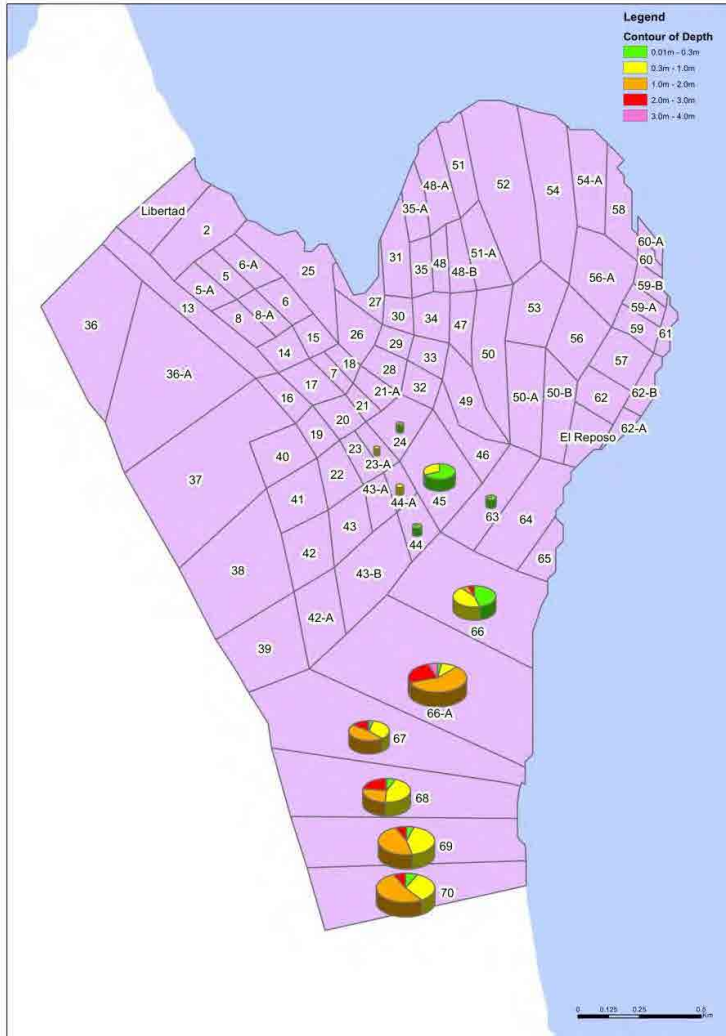
Source: JICA Study Team

**Figure 20.1-32 Areas by Flood Inundation Depth and by Barangay in Tacloban 1 (50 Year Return Period)**



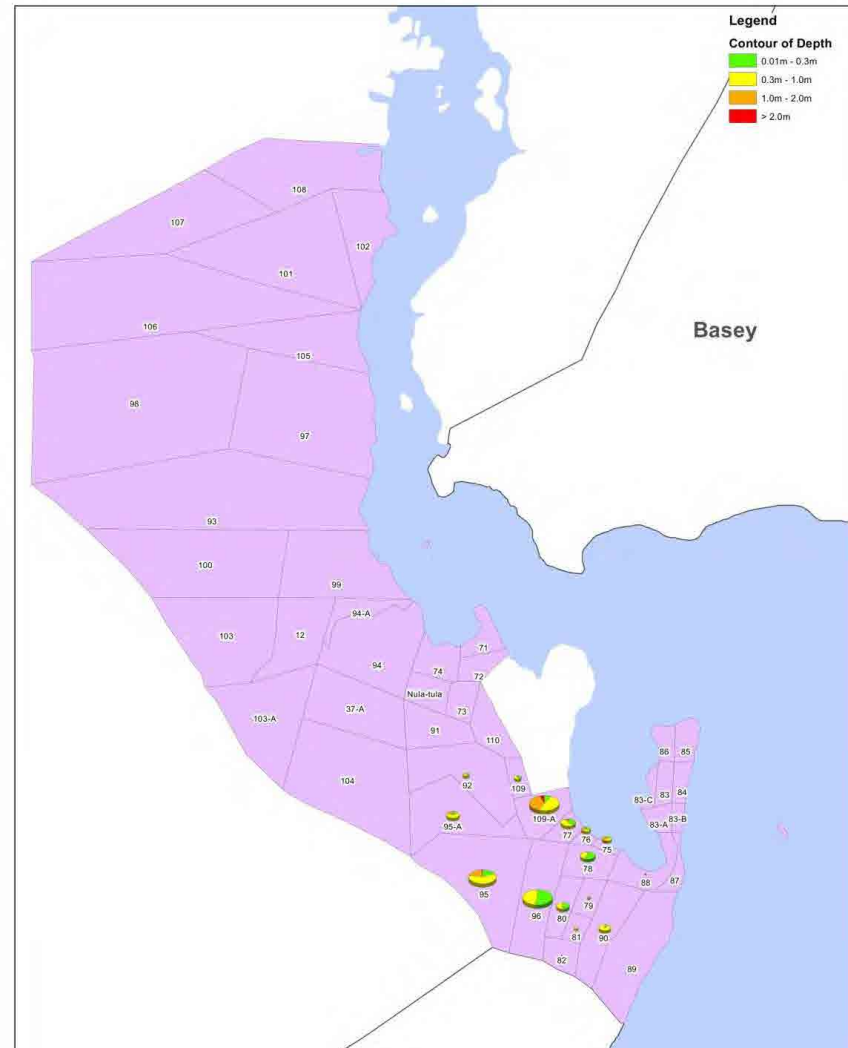
Source: JICA Study Team

**Figure 20.1-33 Areas by Flood Inundation Depth and by Barangay in Tacloban 2 (50 Year Return Period)**



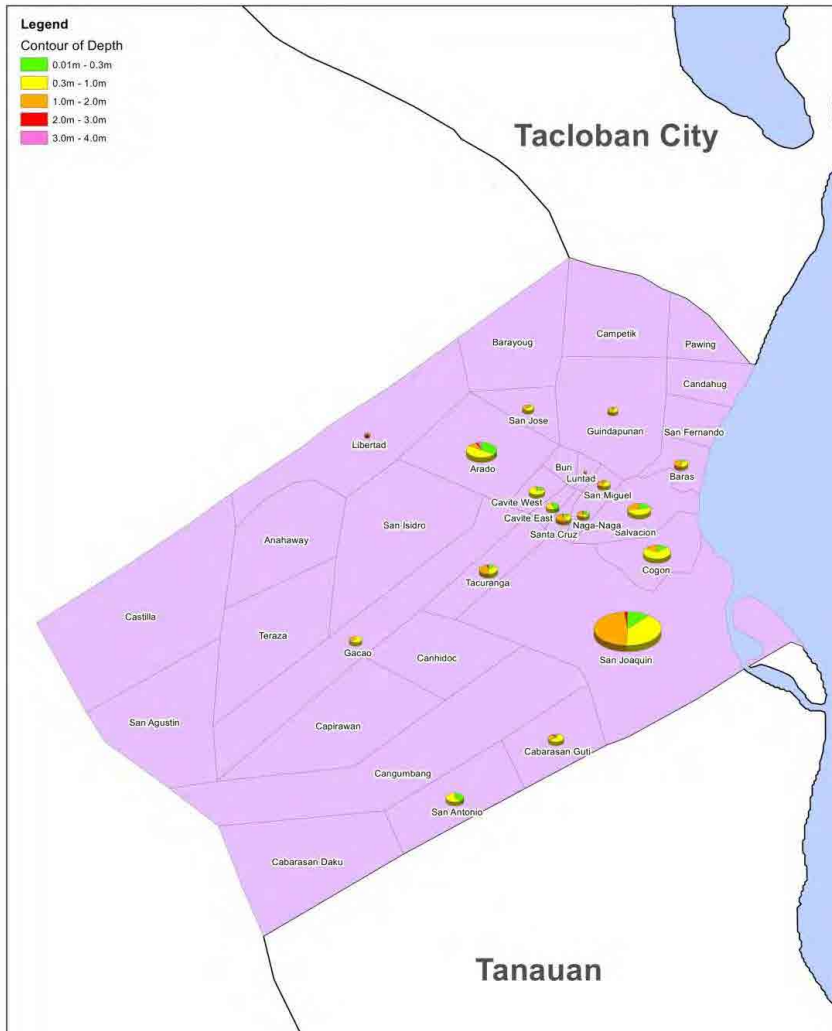
Source: JICA Study Team

**Figure 20.1-34 Areas by Flood Inundation Depth and by Barangay in Tacloban 1 (2011 March Flood)**



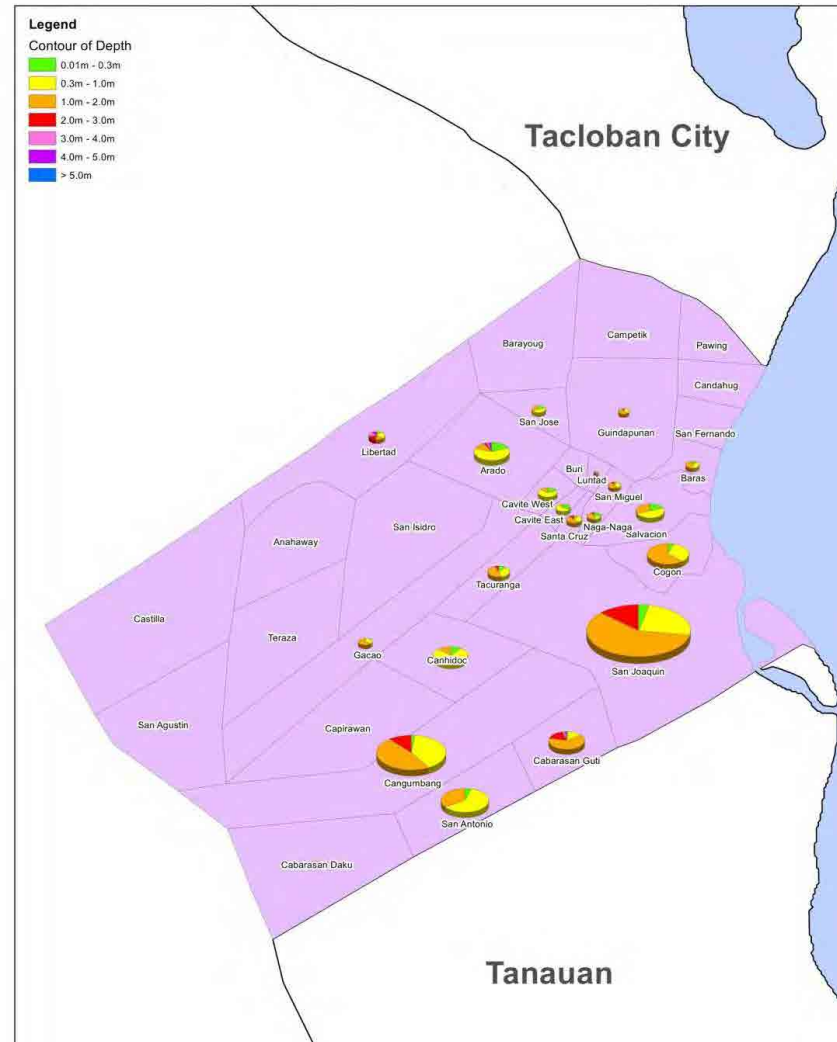
Source: JICA Study Team

**Figure 20.1-35 Areas by Flood Inundation Depth and by Barangay in Tacloban 2 (2011 March Flood)**



Source: JICA Study Team

Figure 20.1-36 Areas by Flood Inundation Depth and by Barangay in Palo

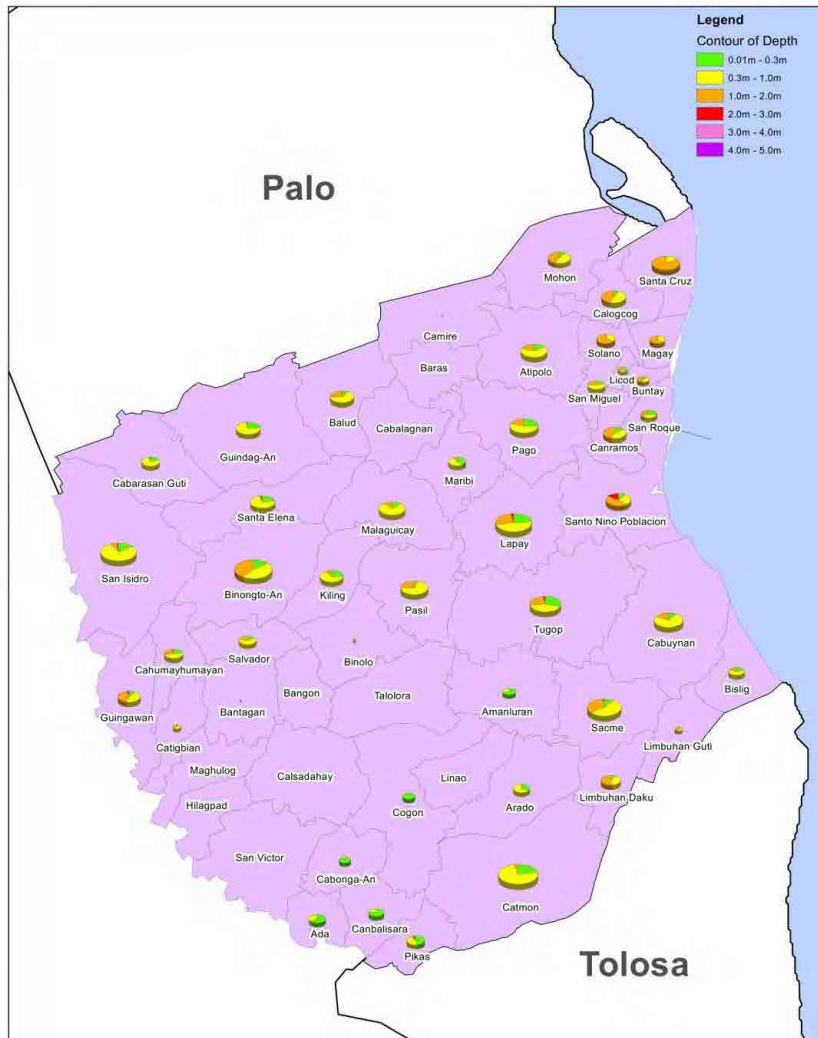


Source: JICA Study Team

Figure 20.1-37 Areas by Flood Inundation Depth and by Barangay in Palo



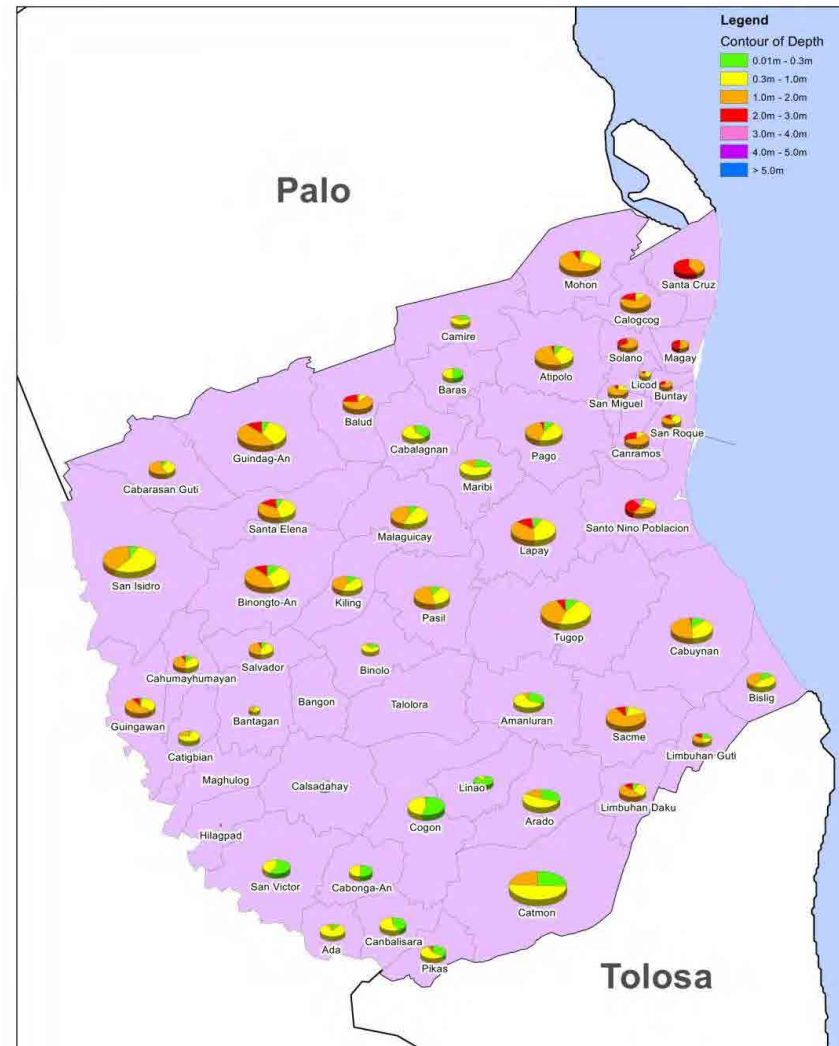
(50 Year Return Period)



Source: JICA Study Team

Figure 20.1-38 Areas by Flood Inundation Depth and by Barangay in

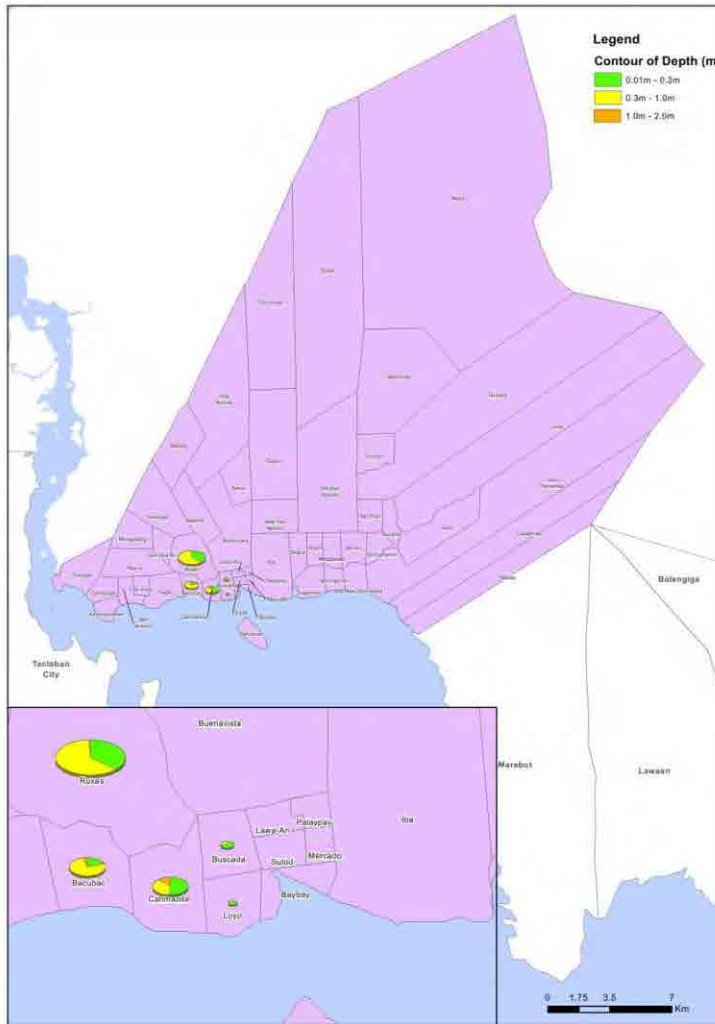
(2011 March Flood)



Source: JICA Study Team

Figure 20.1-39 Areas by Flood Inundation Depth and by Barangay in

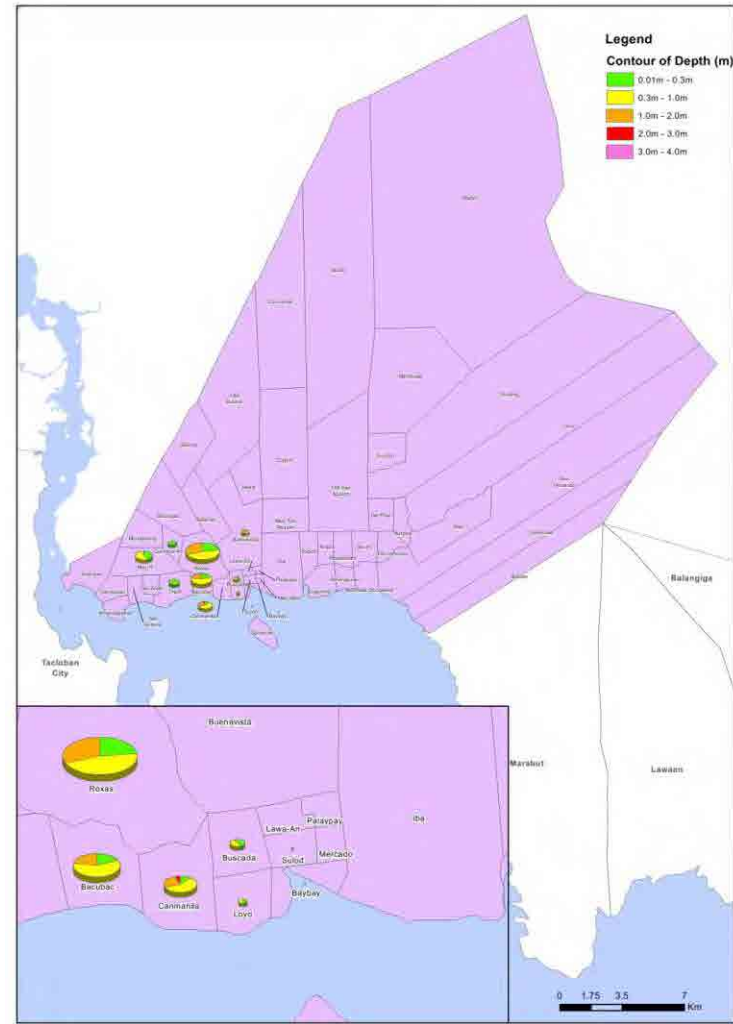
Tanauan (50 Year Return Period)



Source: JICA Study Team

Figure 20.1-40 Areas by Flood Inundation Depth and by Barangay in Basey (50 Year Return Period)

Tanauan (2011 March Flood)



Source: JICA Study Team

Figure 20.1-41 Areas by Flood Inundation Depth and by Barangay in Basey (2011 March Flood)

## (5) Road

The road conditions were assessed in relation with the hazards of storm surge and flood as presented from Table 20.1-9 to 20.1-11. The roads in Tacloban and Basey are most affected by storm surge due to the proximity of the urban areas to the coastal lines. In Tacloban, the arterial roads and secondary roads to be inundated more than 2 meters reach the lengths of 3.7 km and 8.6 km respectively. While, 16.7 km length of the arterial roads are at the risk of inundation of more than 2 meters in Basey, because the mountains are close to the coastal lines and only limited lands are available for the roads.

The roads in Tanauan would be significantly affected by flood, since significant flood risk is present there, as discussed. The arterial roads and secondary roads to be inundated more than 1 meter by the 2011 March level flood are 1.5 km and 3.3 km lengths respectively.

In line with the assessment of hazard risk on the road networks, appropriate measures shall be taken to maintain the mobility of people and goods during disaster. In the Study Area, the highway connecting Samar with Leyte from Guiuan to Tacloban has a significant risk of storm surge inundation at the section in Basey specifically. Though there was no serious damage observed with the roads in the disaster of Yolanda, it is recommended to examine and improve the resister resilience of the transport networks if necessary, by taking the countermeasures such as road heightening, protection and improvement of road structure, selection of alternative routes, etc.

**Table 20.1-9 Road Length by Storm Surge Inundation Depth**

LGU	Road Type	Length of Road (km)/Inundation Depth							Total
		< 0.3m	0.3 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	> 5.0m	
Tacloban	Arterial Road	0.61	2.31	6.17	2.15	1.48	0.11	-	12.84
	Secondary Road	0.98	4.27	13.81	7.18	1.39	0.03	-	27.66
Palo	Arterial Road	0.43	1.71	2.15	0.44	0.04	-	-	4.78
	Secondary Road	0.52	2.31	0.86	0.18	0.02	0.00	-	3.90
Tanauan	Arterial Road	0.49	3.05	2.42	1.13	0.05	-	-	7.13
	Secondary Road	0.34	0.78	1.98	0.24	0.00	-	-	3.34
Basey	Arterial Road	0.49	1.23	3.94	5.36	11.00	0.34	-	22.37
	Secondary Road	0.28	1.13	2.35	1.58	0.17	-	-	5.50
Guiuan	Arterial Road	0.06	0.64	0.22	-	-	-	-	0.92
	Secondary Road	-	-	-	-	-	-	-	-

Source: JICA Study Team

**Table 20.1-10 Road Length by Flood Inundation Depth (50 Year Return Period)**

LGU	Road Type	Road Length (km)/Inundation Depth							Total
		< 0.3m	0.3 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	> 5.0m	
Tacloban	Arterial Road	0.78	1.97	0.57	0.12	-	-	-	3.45
	Secondary Road	1.14	1.83	0.31	0.05	-	-	-	3.32
Palo	Arterial Road	0.34	0.25	0.09	-	-	-	-	0.68
	Secondary Road	0.00	-	-	-	-	-	-	0.00
Tanauan	Arterial Road	0.33	0.73	0.52	1.20	-	-	-	2.77
	Secondary Road	1.32	2.74	-	-	-	-	-	4.06
Basey	Arterial Road	-	-	-	-	-	-	-	-
	Secondary Road	0.12	0.17	-	-	-	-	-	0.29

Source: JICA Study Team

**Table 20.1-11 Areas by Flood Inundation Depth (2011 March Flood)**

LGU	Road Type	Road Length (km)/Inundation Depth							Total
		< 0.3m	0.3 - 1.0m	1.0 - 2.0m	2.0 - 3.0m	3.0 - 4.0m	4.0 - 5.0m	> 5.0m	
Tacloban	Arterial Road	0.71	1.77	0.82	0.17	-	-	-	3.47
	Secondary Road	1.14	1.51	0.63	0.05	-	-	-	3.32
Palo	Arterial Road	0.86	1.47	0.59	-	-	-	-	2.92

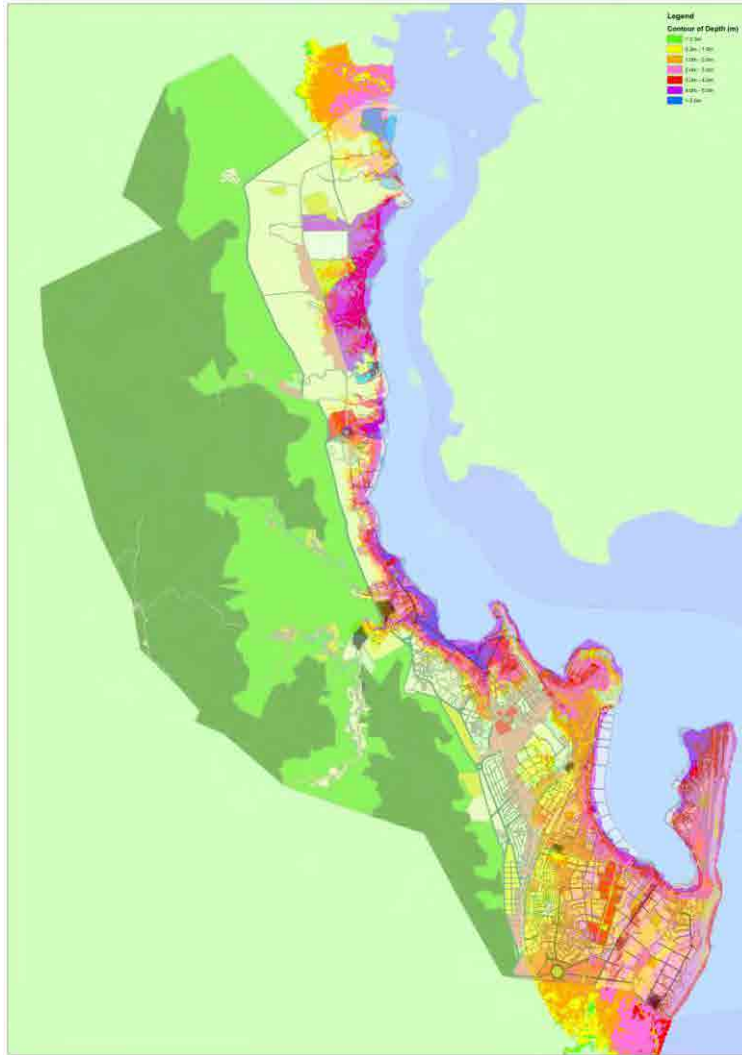
	Secondary Road	0.04	0.00	-	-	-	-	-	0.04
Tanauan	Arterial Road	0.83	1.39	1.12	0.37	-	-	-	3.71
	Secondary Road	1.06	3.79	3.14	0.16	-	-	-	8.16
Basey	Arterial Road	0.30	0.04	-	-	-	-	-	0.34
	Secondary Road	0.05	0.64	0.17	-	-	-	-	0.86

Source: JICA Study Team

## **(6) Overlay Analysis**

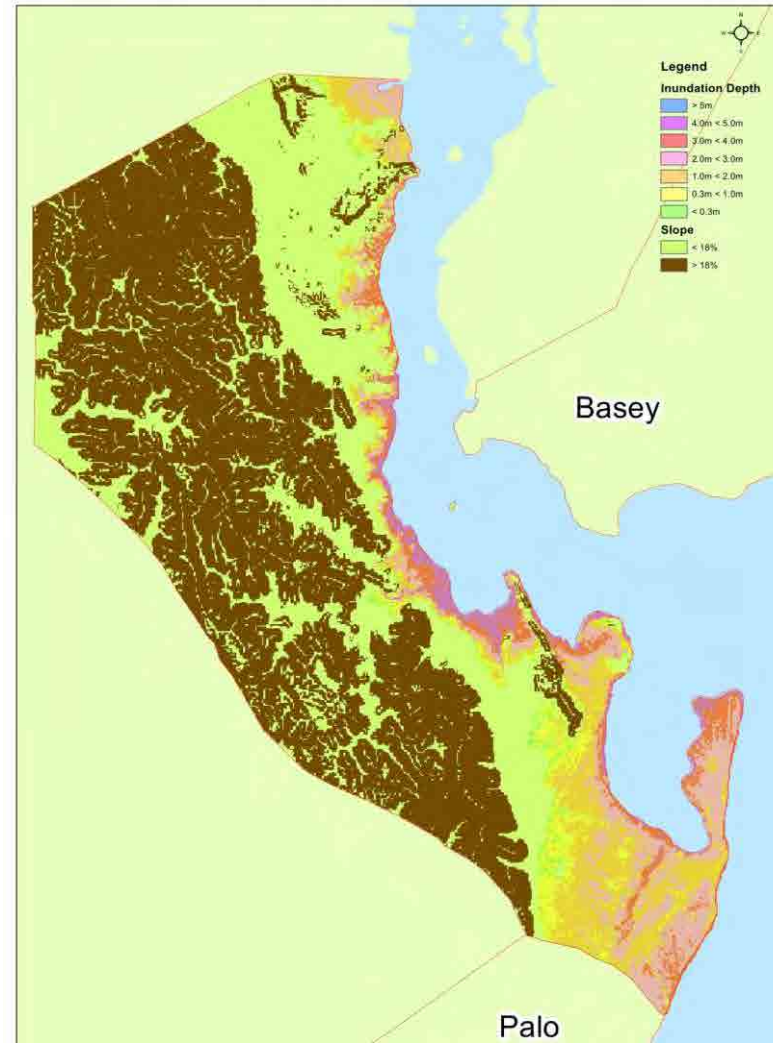
The overlay analysis is an effective tool, in simultaneously evaluating multi hazard risks and other geographic factors, such as land use, using GIS. This section examines land suitability for development from the analysis of the overlay of the storm surge hazard maps and slope maps.

The Philippine Revised Forest Code (PD 705, 1975) restricts development of the slope of 18% and over for the risk of land slide and anticipation of degradation of natural environment. The maps of slope of 18% and over and the storm surge inundation areas are overlaid as shown from Figure 20.1-43 to 20.1-46. These overlay maps of the four LGUs indicate the flat areas with the storm surge risk free, which are available and suitable for development. The maps illuminate that there are limited lands available for development in Tacloban and Basey, because of the high risk of storm surge on flat lands and hilly areas where development is prohibited. The most of the areas proposed for residential and commercial areas in the land use map of Tacloban will be indeed at the significant risk of storm surge as illustrated in Figure 20.1-42. In order to deal with the land scarcity, structural measures, such as tide embankments, seawalls and evacuation centers, as well as non-structural measures, e.g., land use regulations including building and engineering structural codes, bulk and density control, evacuation, education etc., shall be recommended. By taking those measures, it is crucial to secure sufficient lands for the future demand of development where risks against safety and security of life and properties are at minimum.



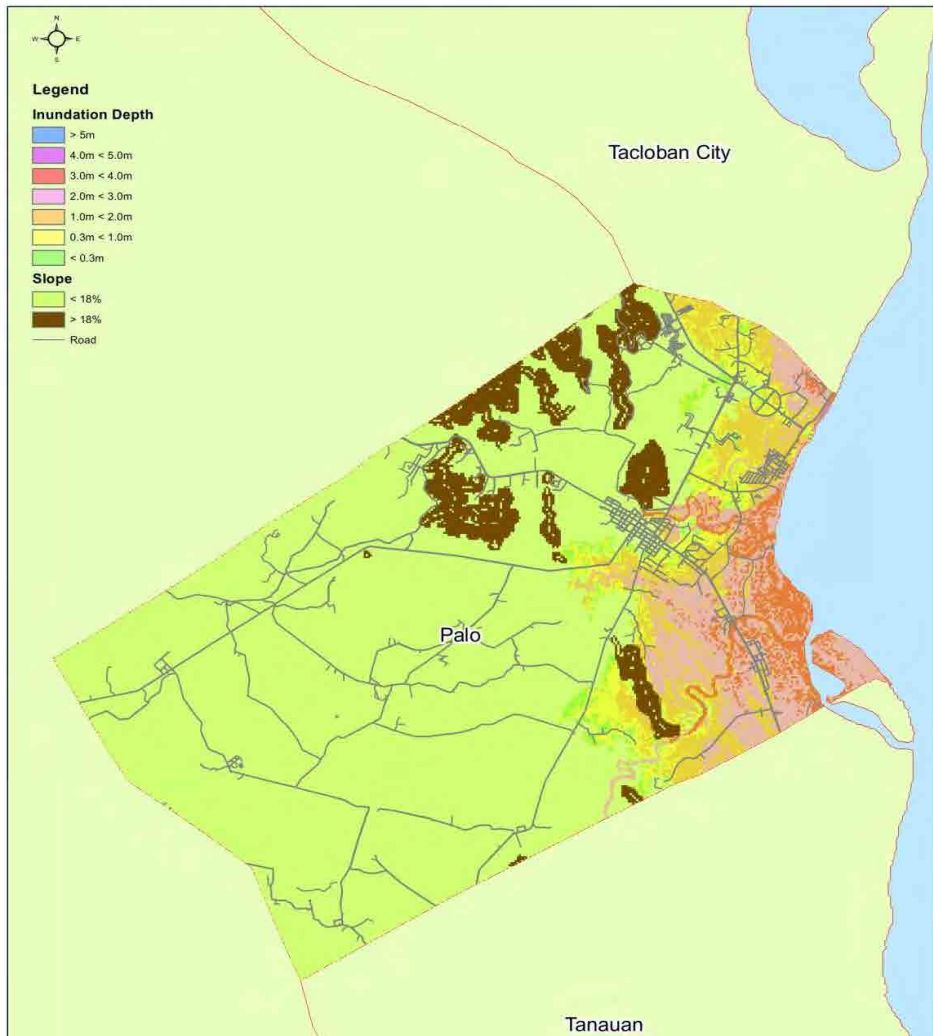
Source: JICA Study Team

**Figure 20.1-42 Overlay Analysis: Land Use Plan and Storm Surge Hazard in Tacloban**



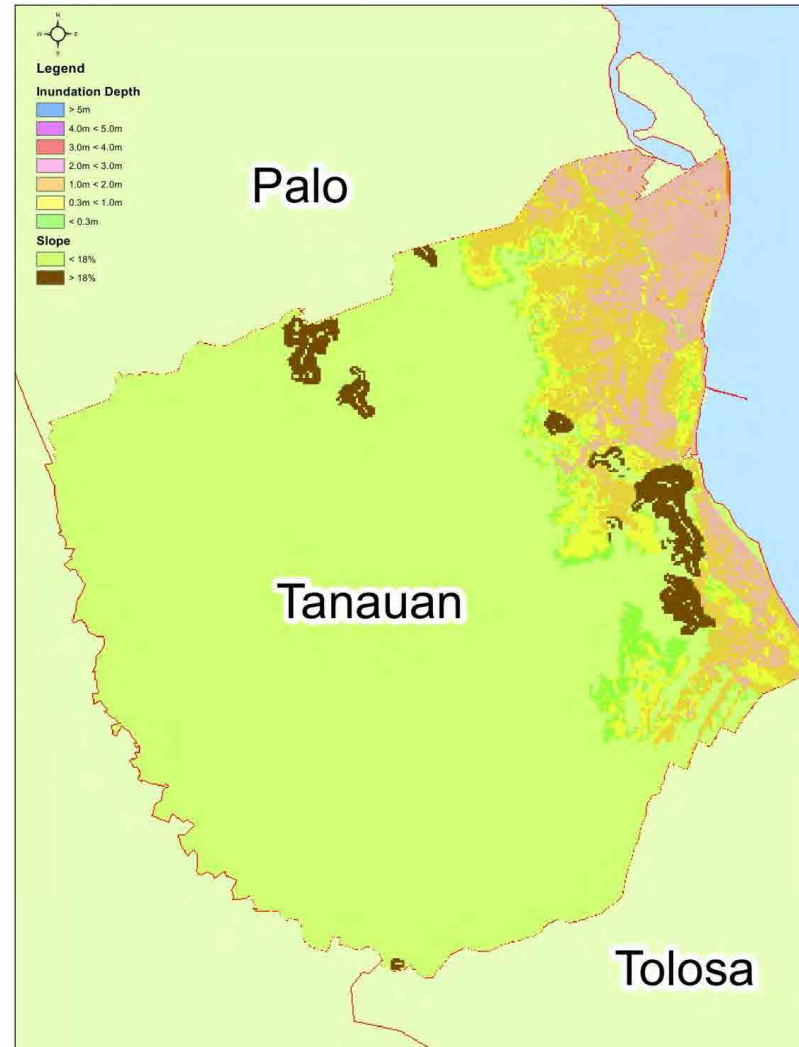
Source: JICA Study Team

**Figure 20.1-43 Overlay Analysis: Slope and Storm Surge Hazard in Tacloban**



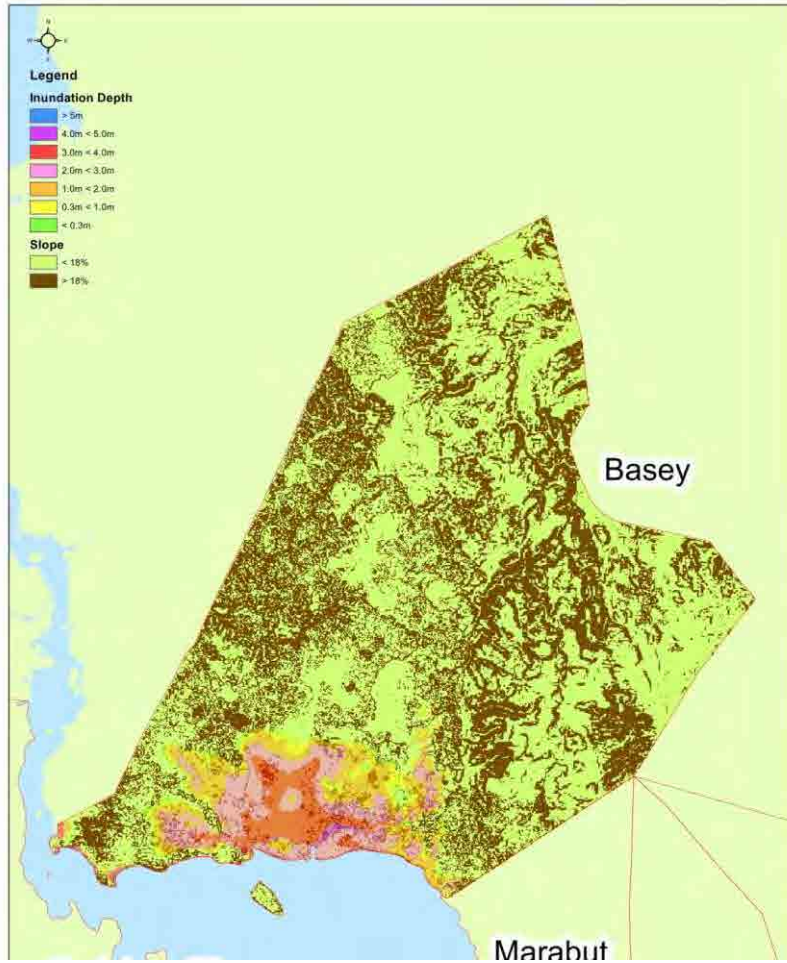
Source: JICA Study Team

**Figure 20.1-44 Overlay Analysis: Slope and Storm Surge Hazard in Palo**



Source: JICA Study Team

**Figure 20.1-45 Overlay Analysis: Slope and Storm Surge Hazard in Tanauan**



Source: JICA Study Team

**Figure 20.1-46 Overlay Analysis: Slope and Storm Surge Hazard in Basey**

### 20.1.3 Proposed DRRM Measures and Land Use Change

The DRRM measures including structural and non-structural measures were examined in the Study based on the prepared hazard maps and discussion with the Philippine side, including the central and local governments. The development of structural measures of tide embankments and road heightening are proposed to protect built-up areas from Tacloban through Tanauan. In line with the proposed DRRM measures, the existing land use plans, and recovery and reconstruction directions of the LGUs, this section suggests necessary land use changes for the five LGUs to build safer cities and enhance disaster resilience of the community.

#### (1) Tacloban

The construction of tide embankments and road heightening is proposed as the structural measures against storm surge risk for Tacloban in order to protect the existing urban areas along the coast. The urban center of Tacloban City has developed as the commercial and political hub of Region VIII. Industries and commercial and business establishments are concentrated in the built-up areas along the coastal lines. Meanwhile, land remaining for future development is limited as displayed in the overlay analysis. Thus, the construction of structural measures is indispensable to protect people's lives and properties of the City and to maintain the economic, political and administrative functions of the entire region.

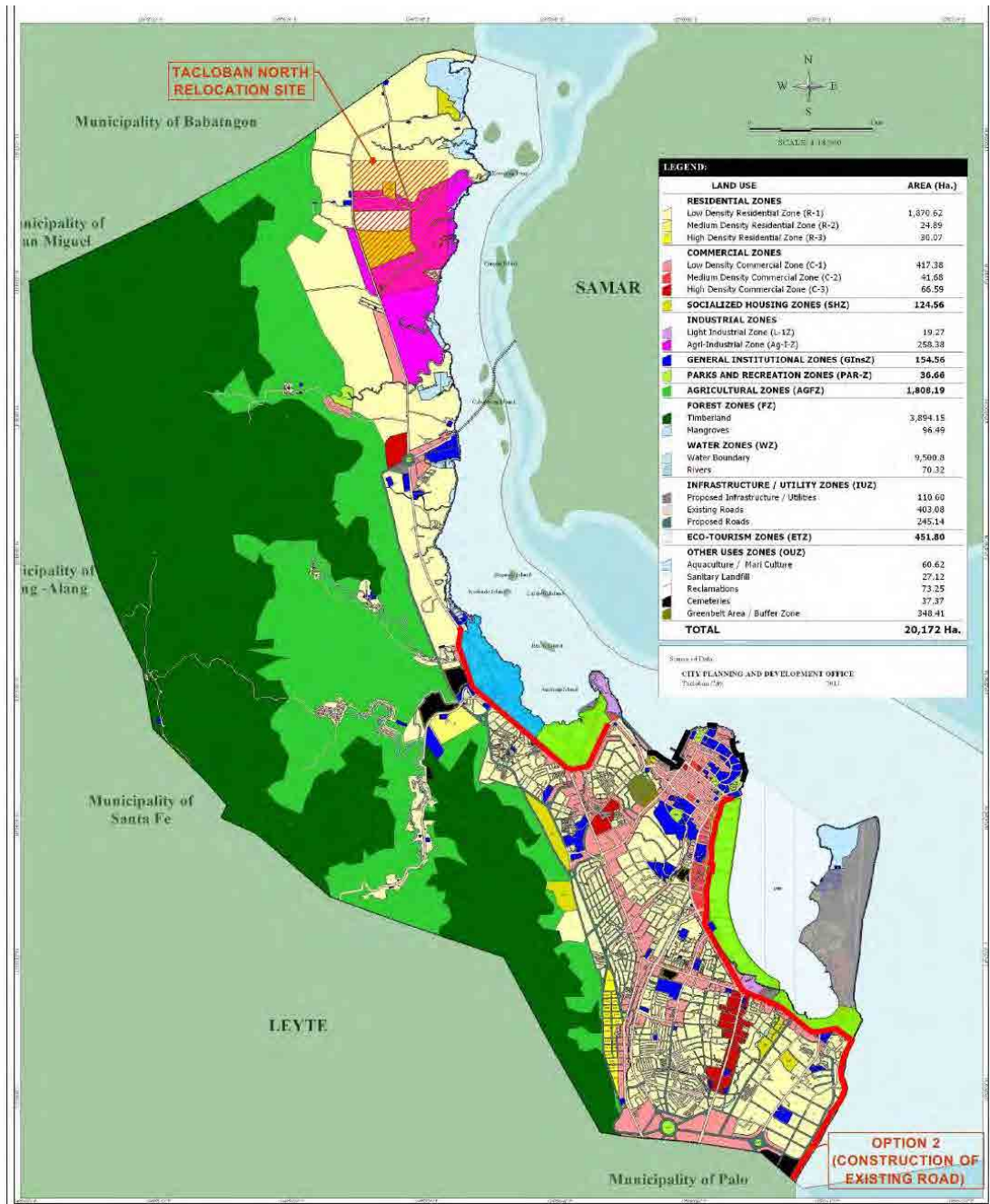
In accordance with the structural measures proposed, land use changes are suggested as Table 20.1-12 and Figure 20.1-47. It is essential to update the existing CLUP in order to incorporate the proposed DRRM measures and the land use change directions as well as the reconstruction policies expressed in the RRP.

**Table 20.1-12 Proposed DRRM Measure and Land Use Changes for Tacloban**

		Proposed Policy Changes
DRRM Measures	Structural Measures	<ul style="list-style-type: none"> <li>• Construction of tide embankments</li> <li>• Heightening of the existing roads</li> <li>• Construction of evacuation centers, tsunami towers, evacuation space, etc.</li> </ul>
	Non-Structural Measures, and Others	<ul style="list-style-type: none"> <li>• Evacuation plan</li> <li>• Early warning system</li> <li>• Education, training and awareness raising</li> <li>• Land use change and regulations (including building codes, bulk and density control, etc.)</li> <li>• Relocation, etc.</li> </ul>
Proposed Land Use Policy Changes		<ul style="list-style-type: none"> <li>• Convert areas unprotected by structural measures with significant hazard risk into open spaces, parks or production use.</li> <li>• Develop the Tacloban North as relocation sites for the residents in hazardous areas</li> <li>• Develop a government center in safe zone as backup offices of the governments</li> <li>• Develop land use regulations and update zoning ordinances to include bulk and density control, building and structural codes, etc.</li> <li>• Delineate unsafe, safe and controlled zones and incorporate it into the City Ordinance on no-build zones after the definition of the three areas is clarified.</li> <li>• Update the CLUP and zoning ordinance</li> </ul>

Source: JICA Study Team





Source: JICA Study Team

**Figure 20.1-47 Proposed DRRM Measures and Land Use Changes for Tacloban**

## (2) Palo

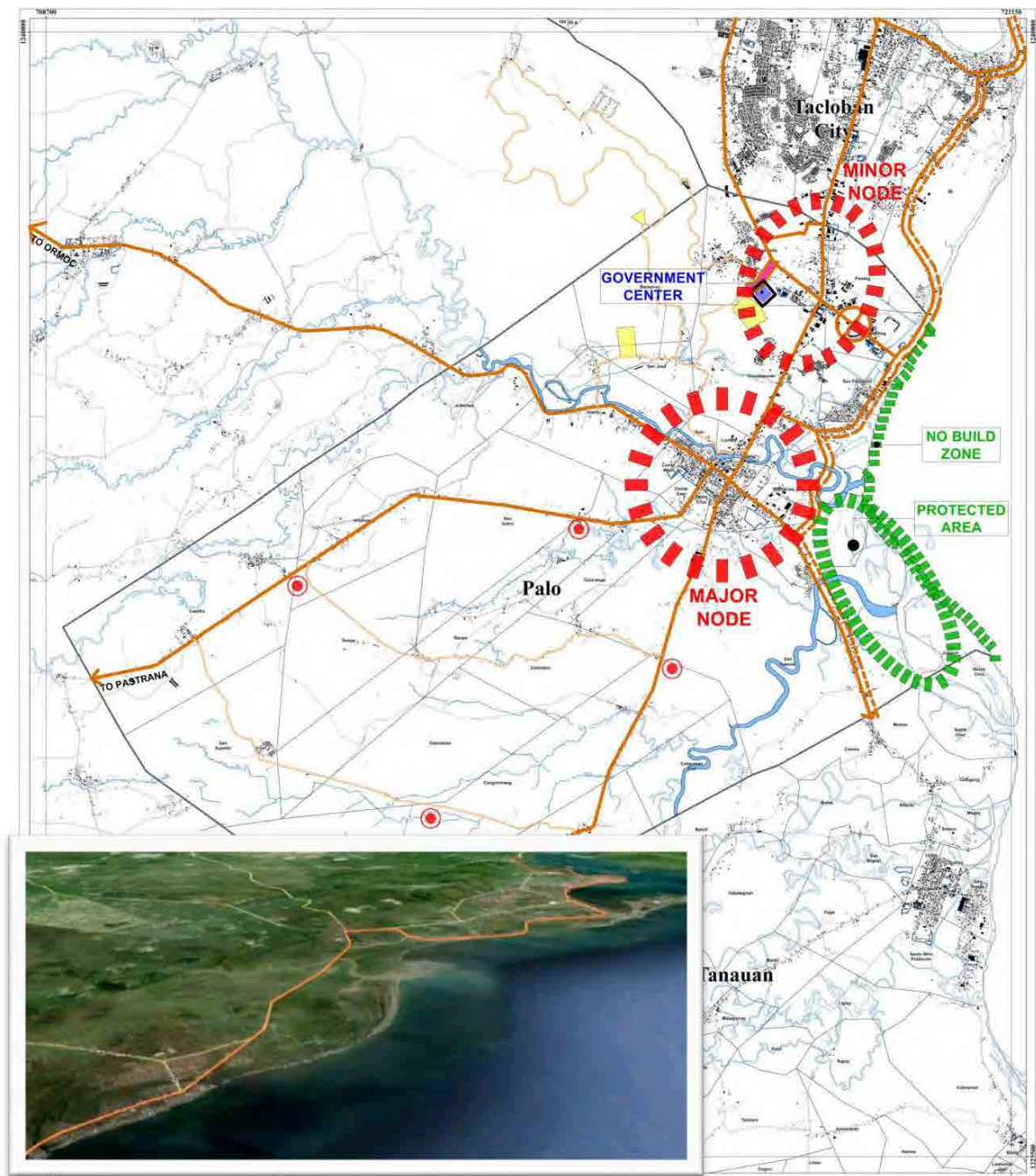
The proposed structural measures, heightening of the highway and roads will well protect the two urban cores, the center of central government agencies and the Poblacion of Palo Municipality. The suggested land use changes related to the DRRM measures are therefore minimum, namely, development of relocation sites for the residents in hazardous zones and alternation of the land use of hazardous areas into protection or production use. However, certain countermeasures need to be proposed in order to mitigate high flood risk in the municipality.

The CLUP of Palo was expired in 2010 and the Municipality does not have a valid land use plan at this moment. After Yolanda, the province proposed an idea of a new provincial government center in Barangay Campetic, which functions as an evacuation center. The Palo Post-Disaster Redevelopment Plan was drafted in the mid 2014, incorporating the idea of a new provincial government center and proposing land use change of hazardous areas to protected areas, e.g., mangrove forests as eco-tourism zones. Thus, following the development directions of the redevelopment plan, the proposed land use policy changes in this Study aim at developing two urban cores of the new provincial government center and the Poblacion as the suburban centers of the Tacloban metropolitan area, while improving the disaster resilience of the Municipality. The new CLUP shall take accounts of the plans of structural measures, the redevelopment plan, and other projects and programs of the province and central government agencies. The proposed DRRM measures and land use policy changes for Palo are described in Table 20.1-13 and Figure 20.1-48.

**Table 20.1-13 Proposed DRRM Measure and Land Use Changes for Palo**

		Proposed Policy Changes
DRRM Measures	Structural Measures	<ul style="list-style-type: none"> <li>• Construction of tide embankment</li> <li>• Heightening of the existing roads</li> <li>• Structure for flood control</li> <li>• Construction of evacuation centers, tsunami towers, evacuation sites, etc.</li> </ul>
	Non-Structural Measures, and others	<ul style="list-style-type: none"> <li>• Evacuation plan</li> <li>• Early warning system</li> <li>• Education, training and awareness raising</li> <li>• Land use regulations (including building codes, bulk and density control, etc.)</li> <li>• Relocation, etc.</li> </ul>
Proposed Land Use Policy Changes		<ul style="list-style-type: none"> <li>• Convert the areas unprotected by the structural measures and hazardous areas into open spaces and nurture mangrove forests as eco-tourism zones and buffer zones</li> <li>• Develop relocation sites for relocation of residents in hazardous areas</li> <li>• Develop a new provincial government centre as a new urban core.</li> <li>• Improve the Poblacion and reduce the flood risk</li> <li>• Develop land use regulations and zoning ordinances to include bulk and density control, building and structural codes, etc.</li> <li>• Delineate unsafe, safe and controlled zones and incorporate it into the Municipal Ordinance on no-build zones after the definition of the three areas is clarified</li> <li>• Prepare a new CLUP based on the redevelopment plan</li> </ul>

Source: JICA Study Team



Source: JICA Study Team

**Figure 20.1-48 Proposed DRRM Measures and Land Use Policy and Development Direction for Palo**

### (3) Tanauan

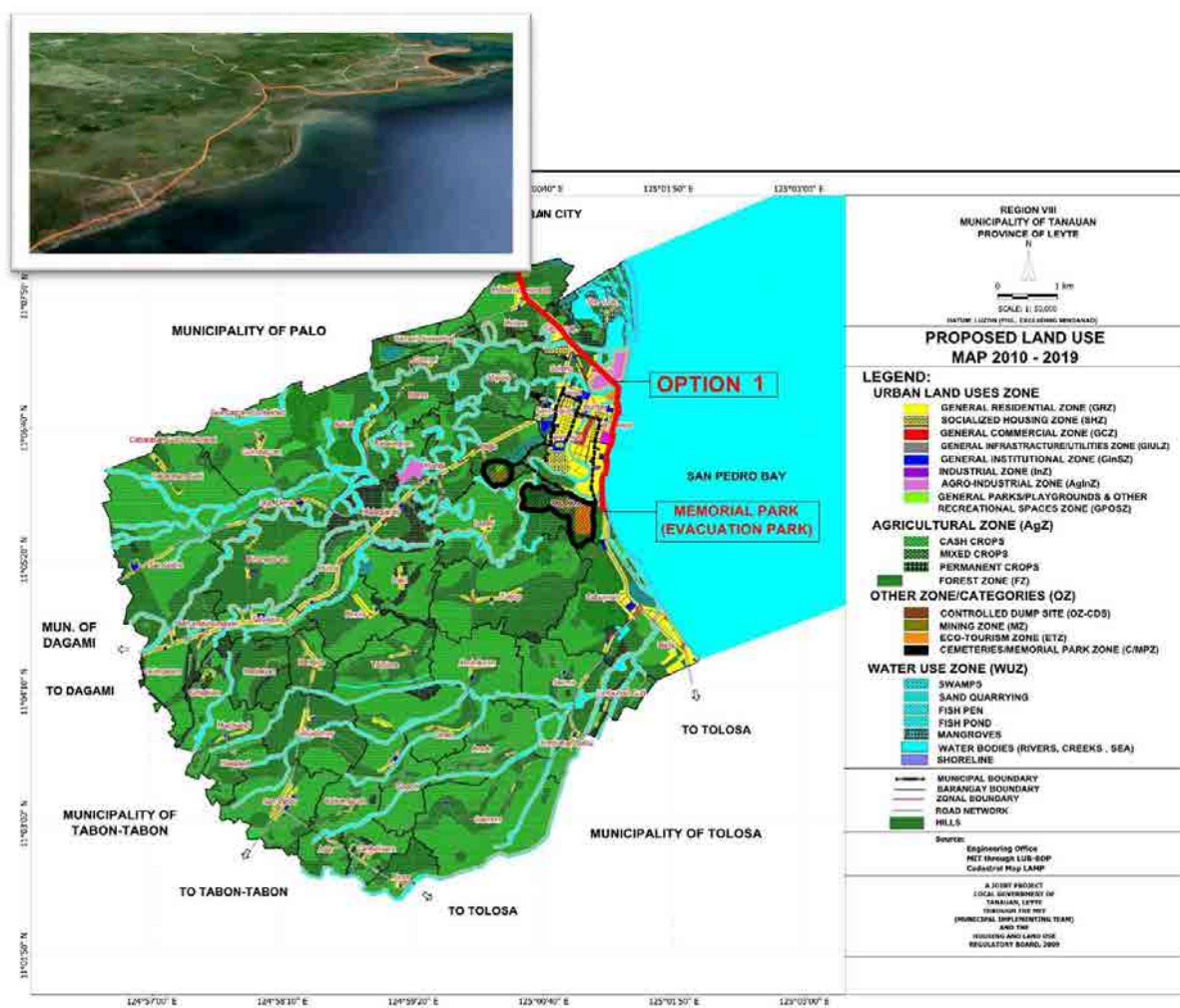
The storm surge hazard risk in Tanauan can be mitigated by the structural measures of road heightening as same as the cases of Tacloban and Palo. However, the most significant hazard for Tanauan is flood. It is crucial to introduce appropriate combination of structural and non-structural measures for reduction of flood hazard risk specifically. The construction of evacuation centers and tsunami towers as well as early warning, evacuation drill, education, and awareness raising are recommended to mitigate the risks of both storm surge and floods.

The proposed DRRM measures and land use policy changes for Tanauan are described in Table 20.1-14 and Figure 20.1-49. Tanauan has a well prepared CLUP which is valid until 2019. The suggested land use policy change is limited, though there is a significant risk of flood for the Poblacion and other built-up areas. The proposed land use policy changes entail development of relocation sites for the households in 50 meter no-build zones and hazardous zones, and further refinement of 50 meter no-build zones. The Municipality intends to revise the definition of 50 meter no-build zones to include the areas with high risk of landslide, after the casualties recorded by a landslide during Typhoon Seniang in December 2014. On the other hand, the definition of unsafe, safe and controlled zones will be delineated by the national agencies shortly. Besides, a memorial park can be developed in the hilly area as a evacuation center. It is crucial to integrate all those new policies, projects and programs emerged after Yolanda into the CLUP through revising it.

**Table 20.1-14 Proposed DRRM Measure and Land Use Changes for Tanauan**

		Proposed Policy Changes
DRRM Measures	Structural Measures	<ul style="list-style-type: none"> <li>• Heightening of the existing roads</li> <li>• Structure for flood control</li> <li>• Construction of evacuation centers, tsunami towers, evacuation sites</li> </ul>
	Non-Structural Measures, and others	<ul style="list-style-type: none"> <li>• Evacuation plan and early warning</li> <li>• Education, training and awareness raising</li> <li>• Land use change and regulations (including building codes, bulk and density control, etc.)</li> <li>• Relocation, etc.</li> </ul>
Proposed Land Use Policy Changes		<ul style="list-style-type: none"> <li>• Convert the areas unprotected by structural measures and hazardous areas into protection or production use.</li> <li>• Develop relocation sites for relocation of residents in 50 meter no-build zones and hazardous areas</li> <li>• Improve the Poblacion and reduce the flood risk</li> <li>• Develop the hilly area as a memorial park which functions as an evacuation site.</li> <li>• Develop land use regulations and update zoning ordinances to include bulk and density control, building and structural codes, etc.</li> <li>• Update the resolution of 50 meter no-build zones and delineate unsafe, safe and controlled zones after the definition of the three areas is clarified.</li> <li>• Update the CLUP to integrate the structural measures, relocation site development, and other projects and programs for recovery and reconstruction</li> </ul>

Source: JICA Study Team



Source: JICA Study Team

**Figure 20.1-49 Proposed DRRM Measure and Land Use Changes for Tanauan**

#### (4) Basey

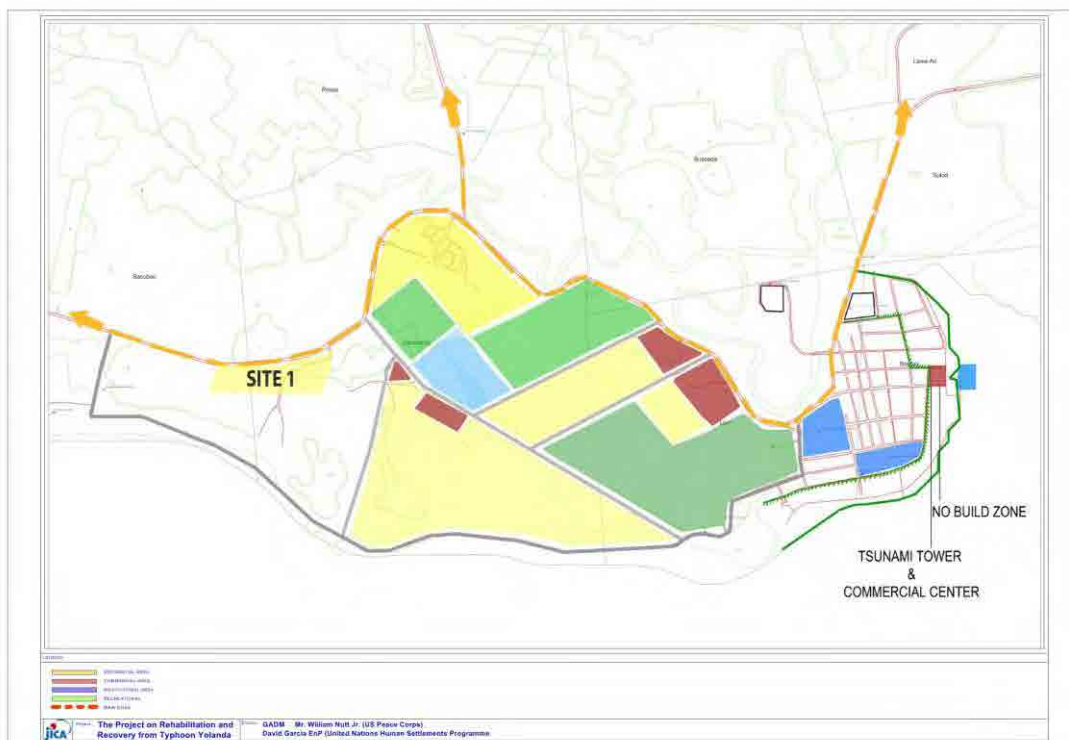
Due to its proximity to the coast, DRRM measures are required to protect the Poblacion of Basey from storm surge. Non-structural measures, such as evacuation plans including identification of evacuation centers and evacuation routes, and relocation of the families in high risk areas have been examined and developed by the Municipality. Though there has been no plan or concept developed for construction of the structural measures, feasibility of structural measures such as tide embankments and seawalls, should be explored in the long run, as shown in Figure 20.1-50.

The recommendations on the land use policy changes entail development of relocation sites and relocation of the families in hazardous areas, and redevelopment of the Poblacion. Because the Poblacion is located in the area with a high risk of storm surge, redevelopment of the Poblacion is necessary to reconstruct the devastated areas by the disaster and to recover the central business district, while installing appropriate DRRM measures for enhancement of disaster resilience. The redevelopment plan will cover but not limited to, relocation of families, relocation/ improvement of a new public bus terminal in the danger zone, development of structural measures, evacuation centers, open space and parks, identification of evacuation routes, programs for commercial revitalization and livelihood, and improvement of public facilities and infrastructure. A new CLUP of Basey shall be prepared to compile all the plans and projects for reconstruction and DRRM. The proposed DRRM measures and land use policy changes for Basey are presented in Table 20.1-15 and Figure 20.1-50 and 51.

**Table 20.1-15 Proposed DRRM Measure and Land Use Changes for Basey**

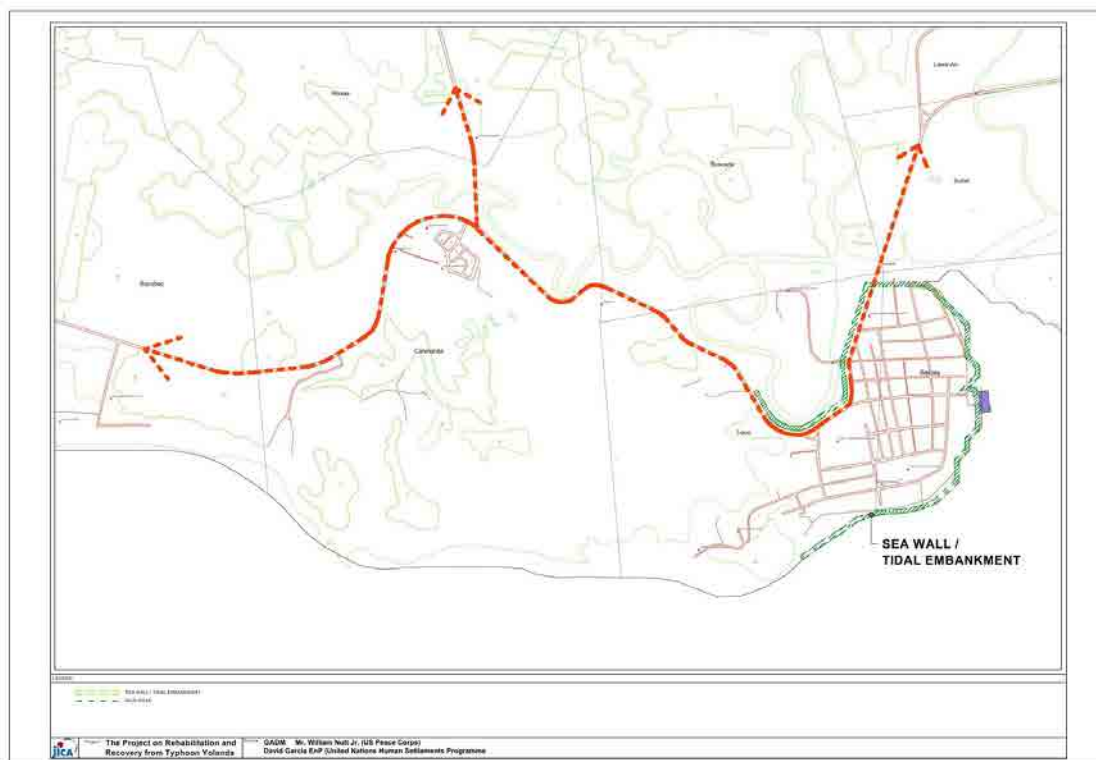
		Proposed Policy Changes
DRRM Measures	Structural Measures	<ul style="list-style-type: none"> <li>• Construction of evacuation centers, tsunami towers, evacuation sites, etc.</li> <li>• Development of tide embankments and seawalls</li> </ul>
	Non-Structural Measures, and others	<ul style="list-style-type: none"> <li>• Evacuation plan and early warning</li> <li>• Education, training and awareness raising</li> <li>• Land use change and regulations (including building codes, bulk and density control, etc.)</li> <li>• Relocation, etc</li> </ul>
Proposed Land Use Policy Changes		<ul style="list-style-type: none"> <li>• Convert the land use of hazardous areas into protection or production use.</li> <li>• Develop relocation sites for relocation of residents in hazardous areas</li> <li>• Redevelop the Poblacion and enhance the attractiveness as well as disaster resilience</li> <li>• Develop land use regulations and update zoning ordinances to include bulk and density control, building and structural codes, etc.</li> <li>• Delineate unsafe, safe and controlled zones after the definition of the three areas is clarified.</li> <li>• Prepare the CLUP to integrate relocation development, reconstruction plan of the Poblacion, and other projects and programs for recovery and reconstruction</li> </ul>

Source: JICA Study Team



Source: JICA Study Team

**Figure 20.1-50 Proposed DRRM Measure and Land Use Changes for Basey 1**



Source: JICA Study Team

**Figure 20.1-51 Proposed Structural Measures for Basey**

## (5) Guiuan

Compared with the other four LGUs, disaster risk present in Guiuan is at only moderate level of risk. Thus, the land use policy should be directed more to the recovery and reconstruction of the Municipality while reducing the disaster risk and improving the disaster resilience through construction of evacuation centers and relocation of the families in hazardous areas.

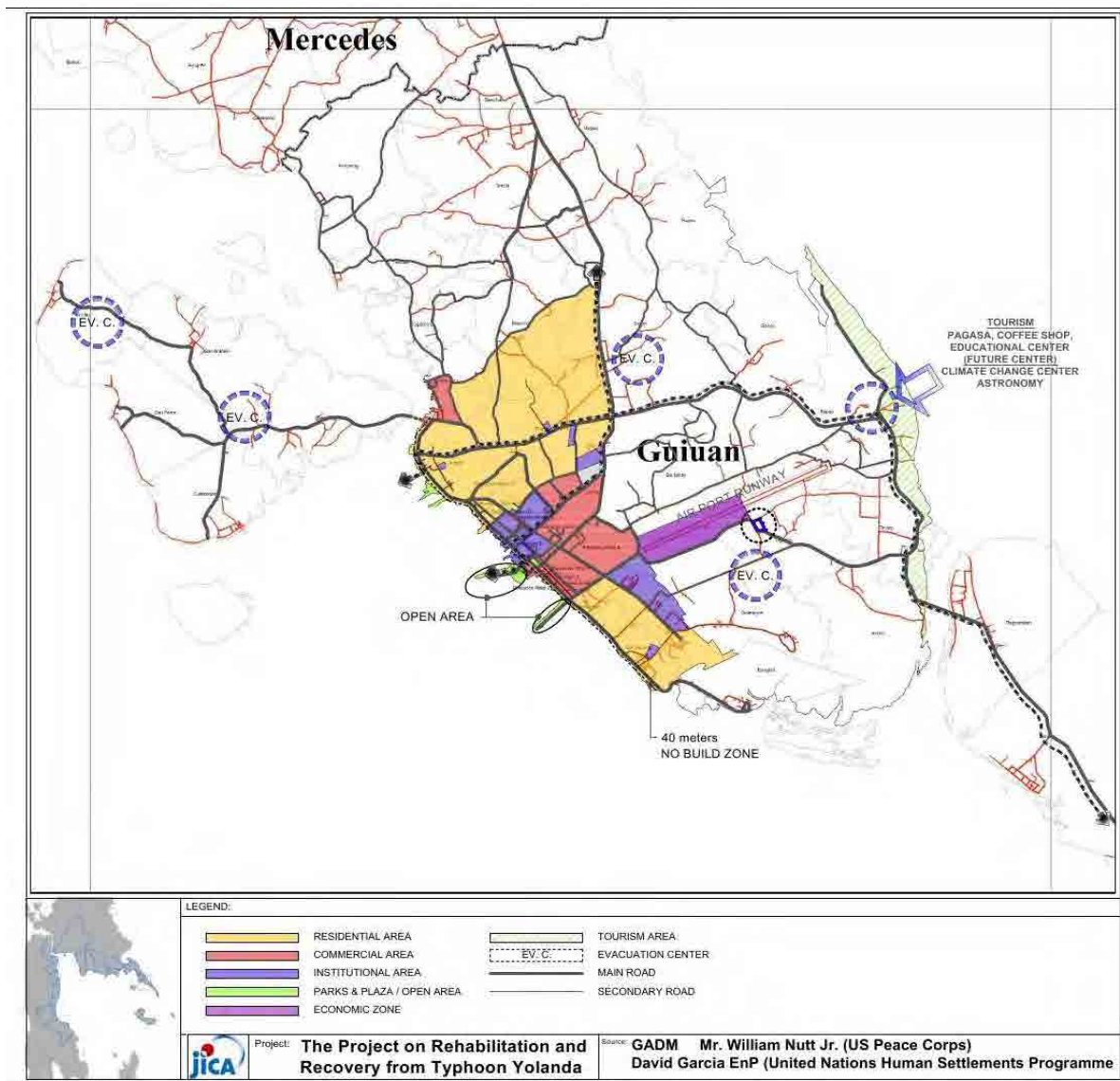
The recovery and reconstruction in Guiuan shall aims at development of economy, especially promotion of the tourism sector. Because the CLUP was expired in 2012, a new CLUP is planned to be developed shortly. The basic principles of spatial structure and land use policy to be proposed in the new CLUP should be designed in the way that encourage tourism development and improve safety for the residents and tourists. Two development axes are proposed along the north-south and east-west directions. The tourism development shall be promoted for the north-south development axis along the Pacific Ocean and running through Calicoan and Sulangan Islands. It is necessary to consider the DRRM measures for safety and security of the tourists in the tourism promotion policy. For example, an evacuation plan should take into account the number of tourists, distribution of tourist attracts, and training of employees in the hospitality industry, etc. On the other hand, development of the east-west axis aims to guide expansion of the urban areas toward the airport and the tourism zones along the Pacific Ocean. The adjacent areas of the airport shall be designated for industrial and commercial uses. The proposed DRRM measures and land use policy changes for Guiuan are presented in Table 20.1-16 and Figure 20.1-52 and 53.

**Table 20.1-16 Proposed DRRM Measure and Land Use Changes for Guiuan**

		Proposed Policy Changes
DRRM Measures	Structural Measures	<ul style="list-style-type: none"> <li>• Construction of evacuation centers, tsunami towers, evacuation sites, etc.</li> </ul>
	Non-Structural Measures, and others	<ul style="list-style-type: none"> <li>• Evacuation plan and early warning</li> <li>• Education, training and awareness raising</li> <li>• Land use change and regulations (including building codes, bulk and density control, etc.)</li> <li>• Relocation, etc</li> </ul>
Proposed Land Use Policy Changes		<ul style="list-style-type: none"> <li>• Develop relocation sites and relocate residents in hazardous areas</li> <li>• Develop tourism zones along the Pacific Ocean and in Calicoan and Sulangan Islands</li> <li>• Develop industry and commercial zones near the airport</li> <li>• Develop land use regulations and update zoning ordinances to include bulk and density control, building and structural codes, etc.</li> <li>• Delineate unsafe, safe and controlled zones after the definition of the three areas is clarified.</li> <li>• Prepare a new CLUP to integrate relocation site development, and other projects and programs for recovery and reconstruction</li> </ul>

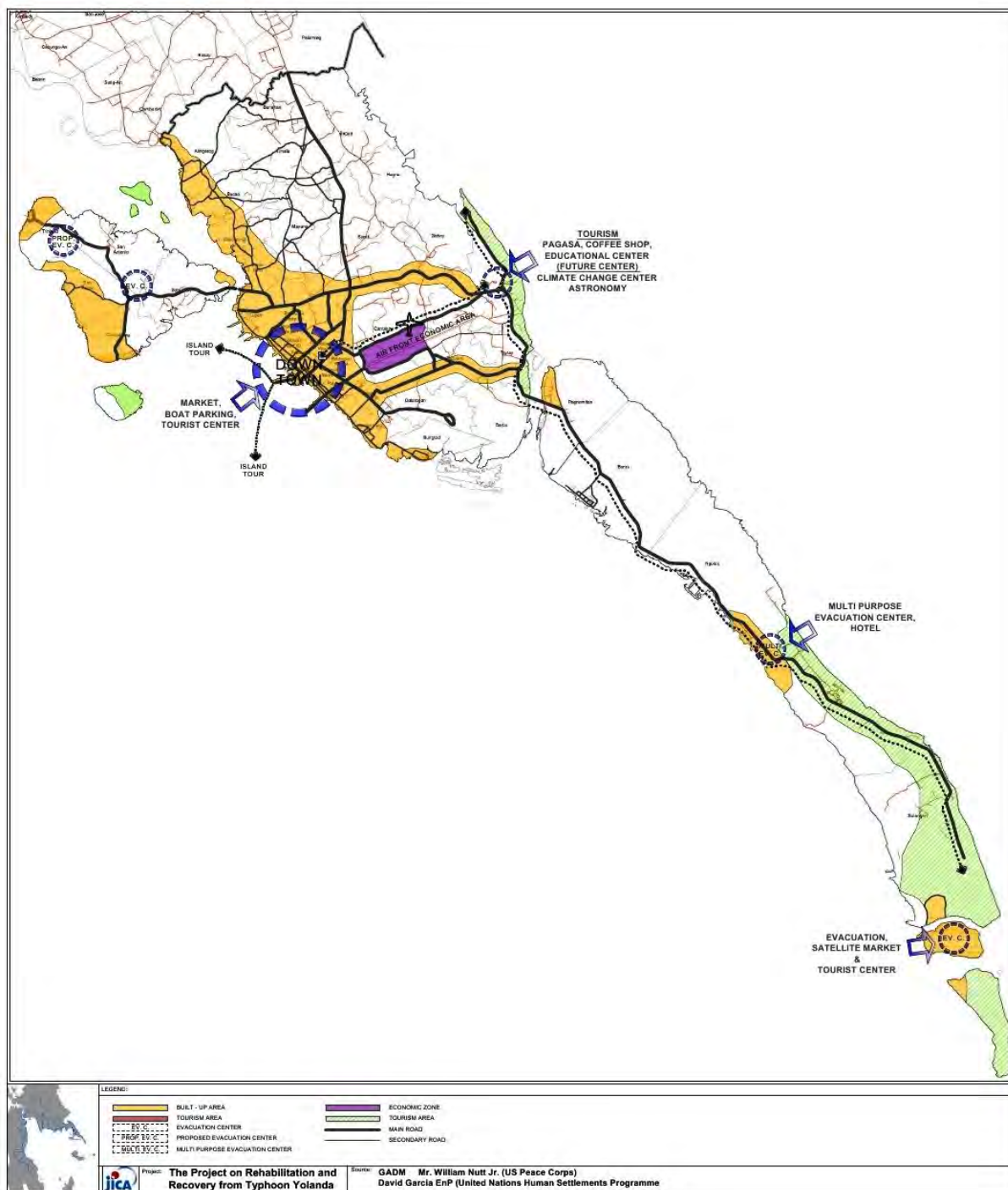
Source: JICA Study Team





Source: JICA Study Team

**Figure 20.1-52 Proposed Land Use Changes for Guiuan**



Source: JICA Study Team

**Figure 20.1-53 Proposed Land Use Changes for Guiuan 2**

## **Chapter 21 Evacuation Planning (LGU level)**

### **21.1 Introduction**

First of all, creating safer city is one of the objectives of planning component of this study. Recovery and reconstruction approach aims to protect human lives at disaster event primarily. Therefore, the policy proposing a combination of various soft and hard countermeasures as a holistic preventive approach is important.

The design of safer cities, evacuation should be a primary strategy especially for weather disasters such as typhoons which are predictable. Therefore this study focused on Evacuation Planning as one of the Non-structural measures.

In this chapter, legal framework by Republic Act No. 10121 and Disaster Risk Reduction and Management Plan (DRRMP) are reviewed from viewpoint of evacuation planning. And also the problems and issues through experience of Typhoon Yolanda were organized from the viewpoint of evacuation.

This study conducted pilot project in 5 LGUs. Therefore the inputs from JICA study team for evacuation planning to the LGUs and output by the activities were organized.

### **21.2 Evacuation Planning in the Philippines**

Evacuation planning is a series of actions or activities which should be enacted by the government and people to urgently evacuate to the safer place or to move away from the threat or from actual occurrence of hazard.

Legal and planning frameworks in the Philippines are reviewed below from viewpoint of evacuation planning.

#### **21.2.1 Description about Evacuation Planning in Relevant Regulations and Plan**

##### **(1) Republic Act No. 10121**

Republic Act No. 10121 (RA 10121, known as the Philippine Disaster Risk Reduction and Management Act of 2010; DRRM Act.) is the major act of Disaster in the Philippines. RA 10121 supersedes Presidential Decree (PD) 1566 of 1978. While the PD 1566 focused on the relief and response activity, RA 10121 focuses on reduction and management of disaster risks.

In the RA 10121, evacuation is mentioned as one measure of disaster preparedness. According to the act, “Disaster preparedness” is based on a sound analysis of disaster risk and linkage with early warning systems and activities such as contingency planning, stockpiling, development of arrangements for coordination, evacuation and public information, and associated training and field exercises. However it was not treated as “evacuation plan”.

## **(2) Disaster Risk Reduction and Management Plan (DRRMP)**

In National Disaster Risk Reduction and Management Plan (NDRRMP), disaster preparedness is mentioned that since local government units (LGUs) and communities are the frontlines of disaster preparedness, behavioral change created by the preparedness aspect is eventually measured by how well people respond to disasters. Therefore disaster preparedness aims to establish and strengthen capacities of communities to anticipate, cope and recover from the negative impacts of emergency occurrences and disasters.

According to this plan, it is mentioned that pre-emptive evacuation is one part of enhancement of community skills to cope with the negative impacts of a disaster. However at the same time, the development of the guideline for evacuation is listed as priority project in this plan. It means that the evacuation planning is not organized by the National level yet to be able to instruct well.

In Provincial DRRM Plan (PDRRMP) of Leyte, hazard profile, objectives and output are specified but the situational analysis for thematic area including preparedness is not specified. Outcome and programs and activities for Local DRRMP are not mentioned. Therefore Evacuation Plan were not mentioned on the plans

In the DRRMP of City/Municipality level, though two DRRMPs of target 5 LGUs were confirmed, Tacloban and Tanauan. The plans are not specified about details such as whom, when and how. Only contents which should be planned are listed.

## **(3) Local Disaster Risk Reduction and Management Planning Manual**

According to “Local Disaster Risk Reduction and Management (DRRM) Planning Manual, January 2013” prepared by OCD, evacuation is mentioned as one part of preparedness and response. And it is mentioned to conduct evacuation drill and simulation exercise in the part of assessment. However, concrete contents for Planning and assessment are not specified.

In this manual, though the preparation of early warning system and necessity of transportation plan for evacuation by LGU, etc. are mentioned, it is not describe the policy about importance to achieve smooth evacuation by these preparations.

Therefore sometimes “evacuation” is mentioned in these documents but it does not emphasize the importance of “evacuation”

## **(4) Contingency Plan of Region VIII**

According to planning assumption in “Contingency Plan Region VIII UNOCHA-July 2014”, it is described that “For humanitarian partners to respond as envisaged in this plan, it is assumed that they will not be adversely affected by the disaster to an extent that requires pre-disaster evacuation”. It is deemed that the importance of pre-emptive evacuation is focused on the experience from Typhoon Yolanda.

## **21.2.2 Contents of Evacuation Plan**

As mentioned above, series of actions for evacuation is not organized as evacuation plan in the Philippine. Therefore procedure and contents of evacuation plan is shown referred to the Japanese Tsunami evacuation planning for local government by Fire and Disaster Management Agency<sup>1</sup>. However, the JICA team focused on pre-emptive evacuation as first step of the evacuation plan.

Followings are items which should be included in Evacuation planning.

### 1) Preparation of hazard map or historical record map

Prepare historical disaster record maps or disaster hazard maps which are supposed to occur in the future.

### 2) Setting target hazard type and level

Set the target hazard type and level for evacuation planning.

### 3) Designation of affected area

Referring the hazard map or historical record map, designate the affected area. The people staying in this area are target of evacuation.

### 4) Designation of Evacuation Center (EC), route and method

Compare with affected area, EC's location are confirmed. Safety and capacity of persons of the buildings area also confirmed. Then based on these checkups, ECs are designated for each area. After main ECs are designated, Distribution between ECs and Barangays are considered. Then safety routes for EC are considered referred with the hazard map.

In addition, transportation plan for pre-emptive evacuation especially for the people who need assistance is considered.

### 5) Preparation of evacuation supporting system

It is needed to prepare series of action systems such as who, when and how to evacuate for the smooth evacuation.

#### 5-1) Early Warning System

- ◇ Criteria of issuing evacuation order (LGU)
- ◇ Communication/information flow (LGU, Barangay, Community)

#### 5-2) Initial response and evacuation guidance

- ◇ Establish the system for initial response and evacuation guidance of City/Municipality and Barangays (role sharing, contents of the tasks, timing of the actions etc.)

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<sup>1</sup> Tsunami evacuation planning for local government by Fire and Disaster Management Agency in Japan ([http://www.fdma.go.jp/neuter/about/shingi\\_kento/h24/tsunami\\_hinan/houkokusho/p02.pdf](http://www.fdma.go.jp/neuter/about/shingi_kento/h24/tsunami_hinan/houkokusho/p02.pdf))

✧ Organize of teams for the tasks

6) Awareness and training

All relevant people need to know the above systems and flow to act appropriately. And for taking appropriate action, people need to have knowledge for DRRM. Especially, in case some people need to have specific knowledge and skill to achieve the tasks, they need to gain required capacity.

7) Evacuation drill as practice and evaluation of the plan

People can confirm their own task and actions through the drill. And also they can confirm the whole flow and the systems. Since improvement points can be found through the drill, review should be done after the drill.

8) Improvement of the plan

Based on the review of the drill, the plan should be improved. If the additional preparations were confirmed, it also should be prepared.

## 21.3 The State of Evacuation Plan in the Philippines

### 21.3.1 Legal Framework by RA No. 10121 (DRRM Act.)

As described previously, the related plans are not organized as evacuation plan in the Philippines. However response organizations for some related items are mentioned in DRRM Act. The contents mentioned in the Act are organized in the table below through the position of “Evacuation Planning”. Basically, since Region is the branch office of National Agencies, it is categorized as National level. Province, City/ Municipality and Barangay are treated as Local Government Units (LGUs) in this Act. Therefore basically these contents can be categorized National level and LGU level. If the demarcation was specified, it is written separately. The organized items are used the item mentioned in “2.2 Contents of evacuation plan”.

**Table 21.3-1 Description of Evacuation Planning in RA No.10121**

Items	National Level		LGU Level		
	National	Region	Province	City/ Municipality	Barangay
1. Preparation of hazard map	NDRRMC develops assessment tools [Sec. 6. (j)]		LDRRMO and BDRRMC consolidate local disaster risk information and maintain the local risk map. [Sec.12. (c) (3)]		
2. Setting Target hazard type and level	OCD Identifies assesses and prioritizes hazards and risks [Sec. 9. (c)]				
3. Designation of affected area					
4. Designation of EC, route and method					
5. Preparation of supporting			LDRRMO shall be composed administration and training, research and planning and		

<b>system</b>			operation and warning [Sec. 12. (b)]		
<b>5-1 &lt;Early Warning System&gt;</b>	NDRRMC establishes national early warning and emergency alert system [Sec. 6. (e)]		LDRRMO and BDRRMC establish linkage/network with other LGUs for disaster risk reduction and emergency response purpose. [Sec.12. (c) (20)] LDRRMO and BDRRMC operate a multi-hazard early warning system and technologies for communication within rural communities [Sec.12. (c) (5)]		
	OCD formulates standard operating procedures [Sec. 9. (g)] OCD establishes standard operating procedures on communication system. [Sec. 9. (h)]				
	President of Philippine declares state of calamity, and lift the state. [Sec.16. ]		The declaration and lifting of the state of calamity may also be issued by the Local Sanggunian. [Sec.16.]		
<b>5-2 &lt;Initial response and Evacuation Guidance&gt;</b>			LDRRMCs shall take the lead in preparing for, responding to, and recovering from the effects of any disaster [Sec. 15.]		
	(e) if two or more regions are affected	(d) if two or more provinces are affected	(c) if two or more cities/municipalities are affected	(b) if two or more Barangays are affected	(a) if Barangay affected
					BDRRMCs shall organize, train and directly supervise the local emergency response team and the ACDVs* [Sec.12. (b)]
<b>6. Awareness and training</b>	OCD establishes DRRM Training Institute; the Institute is mandated to conduct periodic awareness and education programs to LDRRMCs [Sec. 9. (i)]		LDRRMO and BDRRMC organize and conduct training, orientation, and knowledge management activities on DRRM at local level. [Sec.12. (c) (4)] LDRRMO and BDRRMC disseminate information and raise public awareness about those hazards, vulnerabilities and risk, their nature, effects, early warning signs and counter measures [Sec.12. (c) (10)]		
<b>7. Evacuation drill</b>					
<b>8. Improvement of the plan</b>			LDRRMC approve, monitor and evaluate the implementation of LDRRMP and regularly review and test the plan [Sec.11. (b) (1)]		

\* ACDVs: Accredited community Disaster Volunteers

Source: Republic Act No. 10121

According to the DRRM Act ((Sec.12(b), Sec.15 and Sec.11(b)(1)), basically Local Disaster Risk Reduction and Management Council (LDRRMC) has responsibility to lead the disaster event. National government agencies establish the support system for LGUs and develop the guideline and training program to enhance the DRRM capacity of LGUs. Though Province is categorized as LGUs in DRRM Act, their role is support for City/Municipality government units. Therefore the main leader of disaster event is accurately City/Municipality.

In general, “3 Designation of affected area”, “4 Designation of EC, route and method” and “7 Evacuation drills” are not specified in this act. Therefore especially it seemed that LGUs are difficult to instruct people where to evacuate.

Followings are contents specified in the DRRM Act and current state of the preparation organized by the items mentioned 21.2.

1) Preparation of hazard map or historical record map

Basically the preparation of hazard map is responsible of LGU. NDRRMC develops assessment tools. National agencies prepared hazard maps by READY Project.

2) Setting Target hazard type and level

OCD identifies, assesses and prioritizes hazards and risks. Based on the above hazard map, barangays were designated by hazard types.

3) Designation of affected area

This part is not mentioned in this Act. In case of Typhoon, NDRRMC issues the alert signal for LGUs in estimated affected area based on forecast route by PAGASA. The affected area is designated as LGU level.

4) Designation of Evacuation Center (EC), route and method

Designation or selection of EC and route are not mentioned in this Act. There is "Guideline on Evacuation Center Coordination and Management" developed by The Department of Social Welfare and Development (DSWD). This is focused on management of EC, and it is not focused on evacuation planning.

5) Preparation of evacuation supporting system

5-1) Early warning system

The early warning system is already prepared. The information from technical agency like PAGASA flows to the Barangay. The mechanisms of issuing alerts are already prepared.

5-2) Initial response and evacuation guidance

In this act, LDRRMC shall take the lead. Response system of LGU is sometimes mentioned in DRRMP and some LGUs prepared it as Contingency Plan against designated disaster or area, but it is not for all occasion.

6) Awareness and training

According to the Act, OCD is responsible to develop public awareness program. Actually, OCD is preparing to establish Training Institute and developing some DRRM training programs. As for the rest, some community activities of DRRM are conducted by individual project.

7) Evacuation drill as practice and evaluation of the plan

Evacuation drill was not mentioned.



8) Improvement of the plan

According to this act, as to LDRRMP, it is needed to review and for improvement periodically. Presently OCD is developing the review form and the system.

### 21.3.2 Preparedness and Evacuation Situation at the Occasion of Typhoon Yolanda

Based on the interview from OCD Central, the 5 pilot LGUs and Barangays actual situation at the occasion of Typhoon Yolanda is organized in the following table from the viewpoint of “Evacuation”. (**Annex 1**; Result of interview with LGUs and Barangay, **Annex 2**; Result of Disaster Preparedness Activities in Barangays)

Organized items are the same as 21.2.

**Table 21.3-2 Preparedness and Evacuation Situation at the Occasion of Typhoon Yolanda**

Items	National Level		Local Level		
	National	Region	Province (P)	City Municipality (C/M)	Barangay (B)
<b>1. Preparation of hazard map</b>	Hazard map of Provincial level had been prepared by READY Project.			Some LGU had hazard map prepared pilot project etc. but most of LGUs had not prepared.	Mostly hazard maps had not been prepared. Only few were prepared by project base.
<b>2. Setting Target hazard type and level</b>	Hazard map was prepared based on historical record. But Yolanda was extremely huge compared with historical record.		Leyte Province describes vulnerability and risks in the province in P DRRMP. The table of the hazard list of LGUs are prepared	According to the READY Project, all coastal barangays in targeted 3 LGUs in Leyte are designated as Medium Risk Area of Storm Surge.	
<b>3. Designation of affected area</b>	Based on the PAGASA forecast, C/Ms estimated as affected area were designated.		Coastal Barangays were designated as estimated affected area.		Evacuation order was issued to Coastal Barangays
<b>4. Designation of EC, route and method</b>	/		P supported to establish EC of C/M. P prepared the vehicles for evacuation.	C/M established designated ECs. C/M prepared the transportation for evacuation.	B opened schools, Barangay hall and Gym as EC. Barangay Officer managed the EC. Some ECs had been inundated and collapsed.
<b>5-1 &lt;Early Warning System&gt;</b>	PAGASA issued Alert Signal and the information had flown to the Barangay systematically. President declared State of Calamity.			Evacuation order was issued as normal method. Most of C/M officers sent text message to B Chairman. After that, C/M called B Chairman or visit them to discuss response actions. C/M informed evacuation to the citizens by using microphone car.	Most of B chairman called B councils after receiving the information form C/M. The Councils visit community in charge and informed house to house. Though they informed Super typhoon or Storm surge, people couldn't image what will happen.
<b>5-2 &lt;Initial response and Evacuation Guidance&gt;</b>	Regional office of National Agencies supported evacuation.		P officers supported to urge evacuation and to establish ECs.	C/M prepared EC and provided vehicle for evacuation for people in Coastal B. PNP (Philippine National	Evacuation guidance was led by B Officers Military and police picked up the people to EC. Though the women, children

			Police), BFP (Bureau of Fire Protection), PCG (Philippine Coast Guard) also supported evacuation. C/M ECs were managed by C/M.	and elder people in the coastal are moved to the EC, Men and elder sons were remained to care the properties. A few Bs succeeded to move all people to hill area. But most of people living with distance from shoreline were not evacuated.
<b>6. Awareness and training</b>	Program to support LDRRMC or BDRRMC was under development.		Some training targeted to the Barangay Chairman, officers or Tanods (Barangay Police) etc. had been conducted. Mostly it was pilot project.	C/M, NGO, International Agencies had conducted some trainings. Experience of practical training was usable but lecture was not useable because Yolanda was too big to refer.
<b>7. Evacuation drill</b>			Evacuation drill was conducted by P or C/M had not been conducted.	Fire drill and earthquake drill were conducted in some Bs. But mostly they didn't have any experience of evacuation drills.
<b>8. Improvement of the plan</b>				

MGB: Mines and Geosciences Bureau

At the occasion of Typhoon Yolanda, NDRRMC received bulletin of Typhoon forecast route by PAGASA, and designated the City/Municipalities estimated and affected area. Department of Interior and Local Government (DILG) instructed preparation against the disaster to the LGUs. The LGUs informed it to the Barangays. Evacuation order was issued by LGUs two days before the typhoons landfall, and the evacuation started in most of the Barangays. However, only a few people evacuated pre-emptively.

The situation is described below by order of items shown in 21.2.

1) Preparation of hazard map or historical record map

Provincial hazard maps (1:50,000) were prepared by READY Project (Hazards Mapping for Effective Community-Based Disaster Risk Mitigation, 2006-2012). Except some City/Municipalities conducted pilot project, it seems that there is no hazard map of the City/Municipality. (Preparation status of the City/Municipality is not assessed by OCD)

2) Setting Target hazard type and level

The hazard maps prepared by READY Project were based on historical record. The affected situation of Yolanda was extremely beyond the envisaged situation.

3) Designation of affected area

Coastal Barangays in Leyte province were designated as affected area of storm surge by READY Project.

4) Designation of Evacuation Center (EC), route and method

City/Municipality established designated ECs. Primary school, Barangay hall and Gym etc. were utilized as ECs in Barangay. However since there are no instruction, evacuees went to the nearest EC or EC provided transportation.

Some ECs were inundated or collapsed.

5) Preparation of evacuation supporting system

5-1) Early warning system

PAGASA issued alert signal, and the alert was informed to the Barangay by prepared systems. The City/Municipality informed the alert to target barangays smoothly by sms, call and visit. The Barangay constituents were informed through Barangay Councils.

5-2) Initial response and evacuation guidance

Despite of the evacuation order seemed to be delivered to the constituents in Barangays, majority of the people did not evacuate. Most of them seemed to ignore the order by their own judgment. On the other hand, there are some of the Barangays were all people evacuated to elevated area before the Typhoon struck.

6) Awareness and training

Presently, since OCD is developing programs to support LDRRMC and BDRRMC, the awareness programs were not conducted yet. Some training had been conducted as pilot project, however it is not in a systematic method.

7) Evacuation drill as practice and evaluation of the plan

Some fire evacuation drills or earthquake evacuation drills were conducted by Bureau of Fire Protection (BFP). However, the City/Municipalities had not conducted evacuation drills. Barangay officers who received rescue or evacuation guidance training mentioned that they could guide smoothly.

8) Improvement of the plan

Even DRRMP, most LGUs have not prepared the plan.

## **21.4 Problems**

Compare with legal framework and actual situation on the occasion of Typhoon Yolanda, problems of evacuation planning are organized in following table.

**Table 21.4-1 Problems of Evacuation Planning**

Items	National Level		Local Level		
	National	Region	Province (P)	City/Municipality (C/M)	Barangay (B)
<b>1. Preparation of hazard map or historical record map</b>	Directly supports from National agencies are not enough in preparation of Hazard map for LGUs.		P could not support enough in C/M preparation	Many C/M and B didn't prepare hazard map. They don't have appropriate scale maps.	
<b>2. Setting Target hazard type and level</b>	Compared with Yolanda, the hazard area by READY Project was small.		Worst case or wide-area disaster was not considered.		
<b>3. Designation of affected area</b>					
<b>4. Designation of EC, route and method</b>	There is no guideline for selection of EC and evacuation route etc.		There is no plan for wide-area disaster.	C/M didn't know the Capacity of EC and no. of evacuees, therefore there was no concrete evacuation plan.	B did not understand the safety of EC. Some ECs were inundated and collapsed.
<b>5-1 &lt;Early Warning System&gt;</b>	Warning system worked well. But explanation to urge evacuation was not enough. Media informed the coming of super typhoon but it was not explained what will happen or what should be prepared etc.		Distribution of the information worked well. But most of the people didn't evacuate. LGUs couldn't explain the meaning of Storm Surge they were not able to inform the community on the preparation before the super typhoon arrived.		
<b>5-2 &lt;Initial response and Evacuation Guidance&gt;</b>			There is no plan coordinated with P C/Ms and Barangays because the wide-area disaster was not assumed.		
<b>6. Awareness and training</b>	The training program for LGU, Barangay and community is not finalized. Since conducting training should be requested coming from the Barangay, OCD or DILG don't have legal force.		LGU and people didn't have enough capacity to understand warning or image what will happen.		
<b>7. Evacuation drill</b>	There is no policy to conduct evacuation drill. There is no guideline for Evacuation drill		Evacuation drill was not conducted. Due to absence of Evacuation plan, implementation of the drill is difficult.		
<b>8. Improvement of the plan</b>	Guideline of DRRMP existing. OCD is formulating the Review form and the system but not finalized.		Most of the LGUs don't prepare DRRMP. Considering this situation, LGU preparing evacuation plan by them alone is difficult.		

Source: JICA Study Team

The problems are specified by each item shown 21.2.

1) Preparation of hazard map or historical record map

Presently, there are Hazard map scaled 1:50,000 prepared by READY Project. However most of the City/Municipalities and Barangays do not have their own hazard map with appropriate scale.

2) Setting Target hazard type and level

Since storm surge hazard map by READY Project was developed based on historical record, the hazard area was shown smaller than Yolanda case.

3) Designation of affected area

Whole coastal Barangays are considered as target area for evacuation. Since the hazard map by READY project showed less area than Yolanda case, even if LGU didn't follow the hazard map, it was effective.

4) Designation of Evacuation Center (EC), route and method

Since the City /Municipalities and Barangays had not understood the capacity and safety of ECs and Evacuee's number, they did not have concrete plan described who, when where how, etc. In addition, lack of confirmation of EC's safety, resulted death of evacuees caused by inundation and collapse of ECs. However, evacuation planning guideline was not yet prepared, the City /Municipality and Barangay were having difficulties in preparing the evacuation plan.

Furthermore, Provincial DRRMP had not included plan for wide-area disaster, therefore to support the designation of ECs for City/Municipalities was not clear.

5) Preparation of evacuation supporting system

5-1) Early warning system

Since the officers of the City/Municipalities and Barangays could not explain danger or phenomenon on what will happen, they could not urge evacuation. In addition, media did not explain the phenomenon or did not encourage evacuation strongly, the information was not assisted on urge evacuation.

5-2) Initial response and evacuation guidance

Since wide-area disaster was not assumed, role sharing and coordinated response plan among Province, City/Municipality and Barangay were not prepared.

6) Awareness and training

Since people do not have enough capacity to understand warning or phenomenon, they do not know how to act. In addition, training program for community were not finalized in national level, therefore systematic support for capacity enhancement of community has not yet been conducted .

7) Evacuation drill as practice and evaluation of the plan

Since the need of systematic evacuation was not recognized, evacuation drills of the City/Municipality or Barangay level were not conducted.

8) Improvement of the plan

Evacuation plan does not exist in current system, therefore improvement system also does not exist.

## **21.5 Issues and Recommendations**

As mentioned in 21.1, since concept of "evacuation plan" is not included in DRRM Act, the policy to organize relevant items as "Evacuation plan" is not shown in NDRRMP. If each

City/Municipality and Barangay is required to prepare “Evacuation Plan”, the policy should be shown clearly in NDRRMP.

Followings are issues to address for realizing smooth evacuation and recommendations.

**Table 21.5-1 Issues and Recommendation for Evacuation Planning**

Items	Issues	Recommendations
<b>1. Preparation of hazard map or historical record map</b>	C/M and B should have hazard map or historical record map with appropriate scale.	In somecase if LGUs are having difficulties in preparing hazard map, at least historical record map should be prepared. NAMRIA is required to provide base map with appropriate scale map with actual Barangay boundary lines to support them.
<b>2. Setting Target hazard type and level</b>	The hazard maps prepared by READY project need to update.	OCD should coordinate in updating system of hazard maps periodically.
<b>3. Designation of affected area</b>	It is needed to understand correctly how to utilize hazard map among all people.	Since hazard map has conditions, especially in a case that phenomenon is estimated more than hazard map condition, it should be carefully to be designated to the affected areas. In real case, hazard map is referred information. It is not actual affected area.
<b>4. Designation of EC, route and method</b>	C/M and B should confirm the capacity and safety of ECs. And Evacuee’s number of affected area should be grasped. Based on this information, evacuation plan should be prepared with coordination of Province.	To instruct these preparations, guideline for evacuation planning, wide-area disaster coordination and building code for ECs are expected to prepare by coordination of OCD.
<b>5-1 &lt;Early Warning System&gt;</b>	Information method, how to informto the people is needed for improvement.	The officers of C/M and B should learn how to disseminate or prepare pattern of the warning and information. Media should improve the method in preparation against the phenomenon.
<b>5-2 &lt;Initial response and Evacuation Guidance&gt;</b>	P, C/M and B need to prepare coordinated evacuation plan against wide-area disaster.	Ideally all P, C/M and B should prepare DRRMPs at first, and coordination among them should be considered in the plans. At least role sharing and concrete contents should be prepared in response plan.
<b>6. Awareness and training</b>	Barangays are needed to conduct CBDRRM training to enhance capacity of DRRM.	OCD should finalize the CBDRRM training program immediately and promote the program. Since training is conducted by request base, OCD and DILG need to promote the importance of enhancement of community DRRM capacity.
<b>7. Evacuation drill</b>	Conducting evacuation drill, C/M and B should prepare evacuation plan and drill scenario.	The evacuation drill should be simulated every year for the people’s awareness on dos and don’ts. Therefore it is expected to be included in the annual events of C/M and B.
<b>8. Improvement of the plan</b>	C/M and B prepare evacuation plan.	Rough plans are effective.To Plan for evacuation drills and evaluation for improvement into annual event of the C/M and B is important.

The issues and recommendations are specified by each item shown 21.2.

1) Preparation of hazard map or historical record map

City/Municipality and Barangay should have hazard map or historical record map with appropriate scale.

In case that LGUs is having difficulties in preparinghazard map, at least historical record map should be prepared. National Mapping and Resource Information Authority (NAMRIA) should provide base map with appropriate scale map and with actual Barangay boundary lines to support

them.

2) Setting Target hazard type and level

The hazard maps prepared by READY project need to update.

Since this project is already finished, OCD should coordinate with relevant authorities to update the map or discuss target hazard levels.

3) Designation of affected area

It is needed to understand correctly how to utilize hazard map among all people.

Since hazard map has conditions, especially in case that phenomenon is estimated more than hazard map condition, it should be carefully not to believe the hazard map's affected area. In real case, hazard map is one of referred information. It is not shown actual affected area.

4) Designation of Evacuation Center (EC), route and method

The City/Municipality and Barangay should confirm the capacity and safety of ECs. And number of Evacuee's in each affected area should be grasped. Based on this information, evacuation plan should be prepared with coordination of Province.

Instruction for these preparations, guideline for evacuation planning, building code and wide-area disaster coordination for ECs are expected to be prepared by coordination of OCD.

5) Preparation of evacuation supporting system

5-1) Early warning system

Information method, how to inform the people should be improve.

For that purpose, the officers of the City /Municipality and Barangay should learn how to disseminate or prepare patterns of warning and information. The Media should also improve on how to provide appropriate information to urge preparation against the phenomenon.

5-2) Initial response and evacuation guidance

Province, City /Municipality and Barangay should prepare coordinated evacuation plan against wide-area disaster.

Ideally all Province, City /Municipality and Barangay prepare DRRMPs at first, and coordination among them should be considered in the plans. At least role sharing and concrete contents should be prepared in their response plans.

6) Awareness and training

Barangays should conduct CBDRRM training to enhance capacity of DRRM.

Since OCD is preparing the CBDRRM training program, it should be finalized immediately. Since trainings are basing on the request of the Barangays, OCD and DILG should encourage in promoting the importance of enhancement of the CBDRRM capacity.

In addition, since OCD is preparing the Training Institute (TI), there also some training programs

being prepared. Therefore it is recommended that program for evacuation planning should be prepared for LGU offices.

7) Evacuation drill as practice and evaluation of the plan

In conducting evacuation drill, the City /Municipality and Barangay should prepare evacuation plan and drill scenario.

The evacuation drill should be simulated every year for the people's awareness on dos and don'ts before, during and after the phenomenon. Therefore it is expected to be included in the annual events of the City /Municipality and Barangay.

8) Improvement of the plan

City /Municipality and Barangay preparation of the evacuation plan.

Even rough plan is effective. Simulating evacuation drill and evaluation for improvement of evacuation plan into annual event of the City /Municipality and Barangay is important.

## **21.6 Evacuation planning of 5 LGUs through Workshops**

### **21.6.1 Focused items supported by JICA study team and the reason**

Following items were supported by this study.

- 1) Preparation of hazard map or historical record map
- 2) Setting Target hazard type and level
- 3) Designation of affected area
- 4) Designation of Evacuation Center (EC), route and method
- 6) Awareness and training (pilot)

During the occasion of Typhoon Yolanda, allot of numbers were reported died because of the inundation and collapse of ECs in most of the Barangays. However in the case of wide-area disaster, Barangay has limitation. Therefore, JICA study team at first supported evacuation planning for City/Municipality level. Furthermore, hazard maps were prepared by this study. Since hazard map is an important material for evacuation planning, the team confirmed procedure of evacuation planning utilizing this kind of material on each LGUs.

An hour workshops of awareness for Barangay were conducted in this study also. The reason why the team focused on this is because allot of people did not evacuate despite the awareness of evacuation order. Therefore the team prepared a short workshop contents for Barangay. (See Annex 2)

### **21.6.2 Approach and method for Evacuation Planning**

There were two workshops made during the month of July and September, it was held with 5 pilot LGUs, Tacloban, Palo, Tanauan, Basey and Guiuan. (Refer Main Report Volume 1 Part 2 regarding outline of the workshops)



Evacuation planning contents were explained, following contents were prepared by LGUs during the workshops and follow up meetings happened after the workshop.

1) Preparation of hazard map or historical record map

JICA Study Team prepared hazard maps of storm surge, tsunami and flood. And the team explained the contents and condition of the hazard maps.

2) Setting Target hazard type and level

Type of hazard map used for evacuation planning were discussed and selected considering worst case scenario. Whatever possible, worst case disaster or all-round disaster type which covered other hazardous affected area or overlaid area should be selected. It should not prepare many evacuation plans to avoid confusion of evacuees.

3) Designation of affected area

Based on the selected hazard map, affected areas were confirmed on the map and numbers of evacuees were calculated.

4) Designation of Evacuation Center (EC), route and method

LGUs prepared data of capacity of evacuation centers, basic structure types of the buildings and floor numbers. These data were organized in table with the team. Then the EC locations were plotted on the hazard map by JICA study team, and safety of the ECs were confirmed on the map. LGUs grasped the gaps between evacuees' number and EC capacity in the entire LGU area.

Some LGUs focused in some areas to consider the plan more concretely.

### **21.6.3 Approaches of Each LGU and the results**

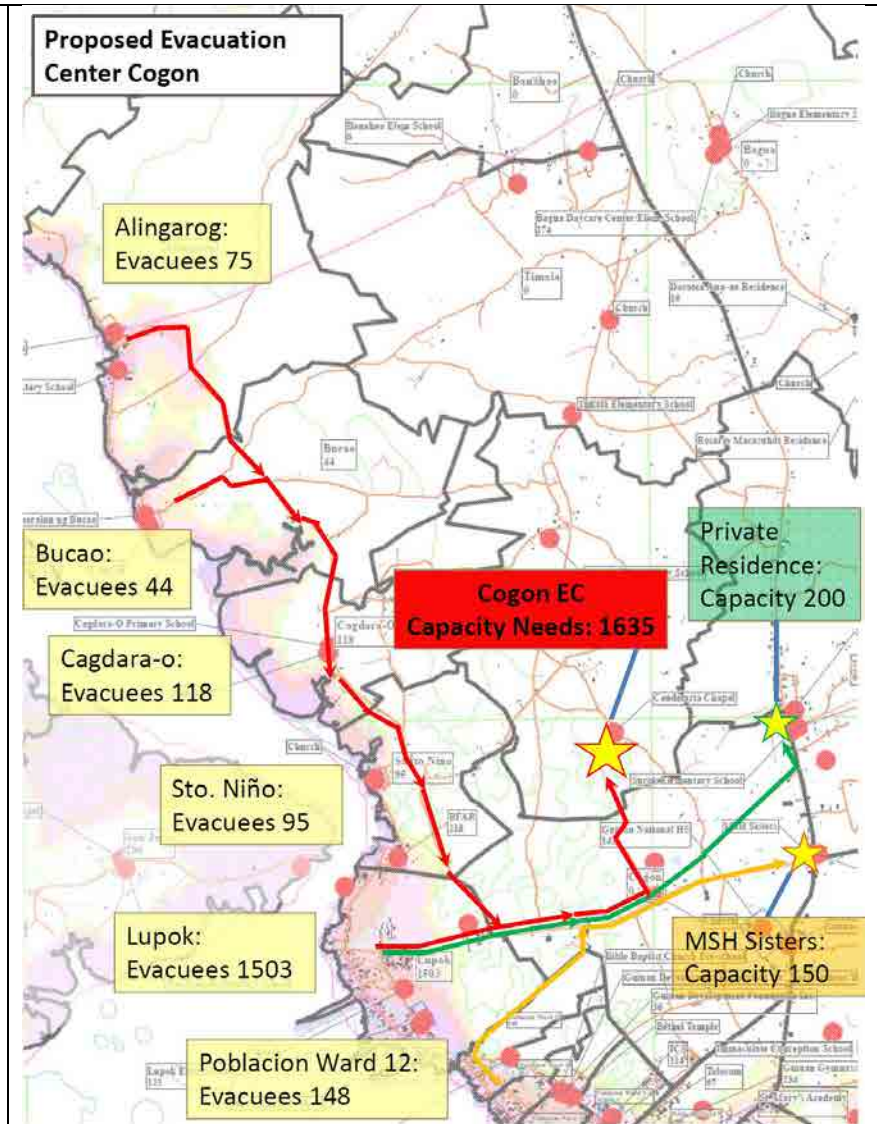
The workshops were held during the month of July and September. In these workshops and follow up meetings, evacuations planning for each LGU were developed through above steps. The results of these workshops were presented in the seminar held on 17th of November.

Followings are the contents of the approach in evacuation planning and result from each LGU. Outputs are attached as **Annex 3**.

**Table 21.6-1 Evacuation Planning Approach of Guiuan**

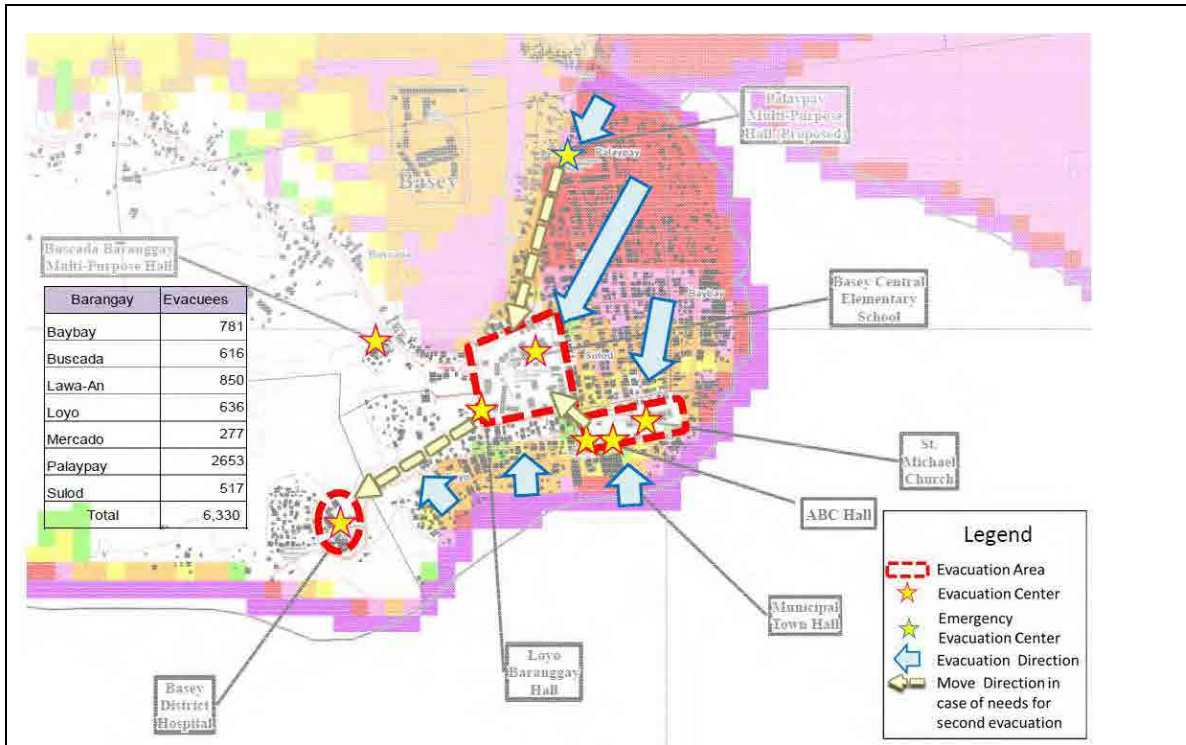
<b>Guiuan</b>	
<b>Workshop date</b>	28 <sup>th</sup> July
<b>Contents</b>	Since Guiuan consist with some islands, they considered Barangay base evacuation. However, since some evacuation center collapsed, the needs for wide-area plan were confirmed.
<b>Meeting date</b>	11 <sup>th</sup> September
<b>Contents</b>	Storm surge and Tsunami hazard maps were introduced and contents were confirmed. Since Tsunami hazard is larger and worse than storm surge, tsunami hazard map was selected as base map for evacuation planning.
<b>Workshop date</b>	15 <sup>th</sup> September
<b>Contents</b>	Location of ECs, capacity, evacuation route was confirmed. Since Guiuan has a plan to construct some new evacuation centers for 15 areas, it was confirmed that the scale of ECs will be grasped as next steps. UNHBT will discuss with Barangays to have more detailed information.
<b>Meeting date</b>	5 <sup>th</sup> November
<b>Contents</b>	Location map of ECs with tsunami hazard area was shown by JICA Study Team. The gaps of evacuees and EC capacity were confirmed on the map.
<b>Meeting date</b>	12 <sup>th</sup> November
<b>Contents</b>	Guiuan found existing Buildings to be able to use as ECs to reduce capacity of new ECs. Focusing in Cogon area, the evacuation routs were considered.
<b>Evacuation planning concept</b>	Guiuan has construction plan of 15 new ECs. Based on the calculation of gap between evacuees and capacity of existing ECs, the scale of the new buildings can be grasped. As a first step, Cogon area was selected.
<b>1) Preparation of hazard map or historical record map</b>	Storm Surge and Tsunami hazard maps were prepared by JICA Study Team.
<b>2) Setting target hazard type and level</b>	Tsunami hazard map was selected to use as base map for evacuation planning.
<b>3) Designation of affected area</b>	Based on the affected area of tsunami hazard map, numbers of evacuee's were calculated by Barangay base.
<b>4) Designation of Evacuation Center (EC), route and method</b>	Based on distribution plan of Barangay and ECs, the capacities of the new buildings were calculated. Guiuan cognized the needed capacity of the new EC in each area. LGU focused on Cogon Area and consider more details. The needed capacity of Cogon, new EC was estimated 2,000 people, at first. However since it was too big, LGU looked for existing building to be able to use as EC to reduce the capacity of new EC. They found two buildings with a capacity of 200 and 150, in total of 350. Therefore the new EC capacity is calculated 1,650 people. Then the evacuation routes were considered.
<b>Seminar</b>	17 <sup>th</sup> November
<b>Contents</b>	The evacuation plan of Cogon was explained. <ul style="list-style-type: none"> <li>- The people in affected area will be distributed in three ECs.</li> <li>- The evacuation routs from Barangay to the ECs were shown on the map.</li> <li>- Detailed plan will be finalized with the Barangay</li> </ul> Other area also will be prepared.

\*See Annex 3-6



**Table 21.6-2 Evacuation Planning Approach of Basey**

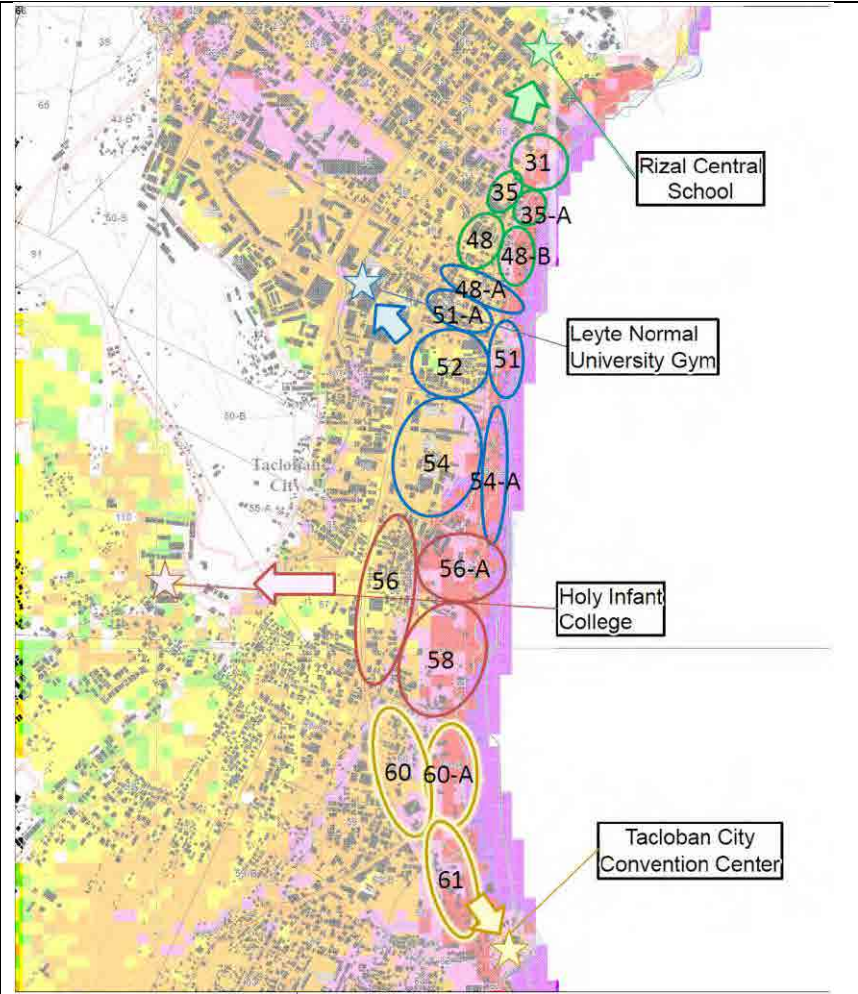
<b>Basey</b>	
<b>Workshop date</b>	24 <sup>th</sup> July
<b>Contents</b>	Relocation plan of Poblacion area (Urban area) was confirmed. The relocation site is located in western area of Poblacion and it is a high land area. At present, Municipal hall and elementary school areas are used as evacuation place. The district hospital located in high land area also being used as ECs.
<b>Meeting date</b>	8 <sup>th</sup> September
<b>Contents</b>	Storm surge, tsunami and flood hazard maps were introduced and contents were confirmed. Since affected area of storm surge hazard is the largest among these three, storm surge map were selected as base map for evacuation planning. Poblacion area was focused on, as a first step for the evacuation planning.
<b>Workshop date</b>	17 <sup>th</sup> September
<b>Contents</b>	Number of evacuees of Poblacion and the capacity of ECs were confirmed. Since Poblacion area is a small area, all people could arrive at hill area within 10 minutes by walk. Evacuation route also confirmed on the map. JICA Study Team mentioned to consider evacuation for the people who needs assistant. Also, it is mentioned that there are enough space to stay in the hill area, but building capacity is not enough to stay inside during storm. In addition, evacuation plan for rural area is also needed to consider.
<b>Meeting date</b>	4 <sup>th</sup> November
<b>Contents</b>	Location map of ECs with Storm Surge hazard area was shown by JICA Study Team. The gaps of evacuees and EC capacity was confirmed on the map. According to Basey, if the relocation will be finished the gaps will be reduced. And in addition, during the typhoon Yolanda occasion, basing on the people's experience, since Poblacion is only a small area, it is advisable that people can only stay in a short period of time. It is recommended to find another existing building to be used as another EC The 2 <sup>nd</sup> floor of Barangay Palaypay multi-purpose hall was confirmed to be used as an additional EC, but since this is located in the hazard area, this can be considered as an EC for emergency purpose only.
<b>Meeting date</b>	14 <sup>th</sup> November
<b>Contents</b>	Evacuation plan of Poblacion was confirmed on the map.
<b>Evacuation planning concept</b>	As a first step, Poblacion were focusing on relocating the area. Therefore number of evacuees will be reduced in the future. However basing on the actual status, some people who need assistance for evacuation will move to the hospital located upland , and some will evacuate to the Municipal Hall and elementary school area. Just in case the Municipal hall and the school area are not safe, they shouldl move to relocation site.
<b>1) Preparation of hazard map or historical record map</b>	Storm surge, tsunami and flood hazard maps were prepared by JICA Study Team.
<b>2) Setting target hazard type and level</b>	Since storm surge affected area is the largest, it was selected to use as hazard base map.
<b>3) Designation of affected area</b>	Based on the affected area of tsunami hazard map, numbers of evacuee's were calculated basing on the Barangay.
<b>4) Designation of Evacuation Center (EC), route and method</b>	The capacities of ECs for Poblacion were calculated. Existing EC capacity is about 2,900. Number of Evacuee's is about 6,300. Since Basey is planning in relocating, this gap is assumed to reduce. However until the completion of the relocation, it is needed to find more buildings to be used as EC. Evacuation route was confirmed on the map. Evacuation plan for the people who need assistant should be prepared.
<b>Seminar</b>	17 <sup>th</sup> November
<b>Cotents</b>	Evacuation plan for Poblacion area (Urban area) was presented. - People need assistance will move to hospital which is located in the upland People in the Poblacion area should evacuate to the elementary school and Municipal hall. - In case the elementary school and Municipal hall are not safe, people will move to western area such as relocation site or hospital. Considering safety of the people, Basey is planning to relocate.
*See Annex 3-5	



**Table 21.6-3 Evacuation Planning Approach of Tacloban**

<b>Tacloban</b>	
<b>Workshop date</b>	25 <sup>th</sup> July
<b>Contents</b>	Storm surge, tsunami and flood hazard maps were introduced. High risk area was confirmed. Since storm surge affected area is the largest among these three hazard, it was selected to use as base map for evacuation planning. Since affected area by JICA hazard map is larger than they used, the location of the ECs will be confirmed for next workshop.
<b>Meeting date</b>	5 <sup>th</sup> and 10 <sup>th</sup> September
<b>Contents</b>	Preparation of data of ECs and Barangays for Workshop was requested.
<b>Workshop date</b>	18 <sup>th</sup> and 19 <sup>th</sup> September
<b>Contents</b>	Locations, safety, gaps and number of evacuees of the ECs was confirmed. Based on the calculation of hazard map, the total number of evacuee's is about 156,400. This is about 70% of the population. Tacloban cognize to find more building to use as ECs.
<b>Meeting date</b>	3 <sup>rd</sup> November
<b>Contents</b>	Location map of ECs on the storm surge hazard area was shown by JICA Study Team. The gap of Evacuees and EC capacity was confirmed on the map. Tacloban were looking for buildings to be used as ECs and tried to increase EC capacity. A plan to expand transport terminal which will be used as EC capacitated 1,000 was confirmed. Also Tacloban is planning to renovate City hall area as operation center and at the same time can be used as evacuation place.
<b>Meeting date</b>	7 <sup>th</sup> November
<b>Contents</b>	Since allot of people live in affected area, and the area is too large, designated ECs are not enough. Therefore JICA Study Team suggested in considering distribution first without concentrating on the numbers. Tacloban focused on the coastal Barangays between Rizal central school (south of City hall) and Convention center.
<b>Evacuation planning concept</b>	As city level planning, confirming the large scale of ECs and consider the distribution. At the same time, look for an existing building to be able to use as ECs.
<b>1) Preparation of hazard map or historical record map</b>	Storm surge, tsunami and flood hazard maps were prepared by JICA Study Team.
<b>2) Setting target hazard type and level</b>	Comparing affected area between storm surge, tsunami and flood, since storm surge affected area is largest among these three, it was decides to use storm surge hazard map as base.
<b>3) Designation of affected area</b>	Based on the affected area of storm surge hazard map, numbers of evacuees were calculated basing on each Barangay.
<b>4) Designation of Evacuation Center (EC), route and method</b>	Tacloban prepared the list of ECs with capacity and information of building structures etc. The location was confirmed on the hazard map and safety ECs were confirmed.
<b>Seminar</b>	17 <sup>th</sup> November
<b>Contents</b>	Evacuation plan of coastal area was presented. <ul style="list-style-type: none"> <li>- Estimated evacuees and existing evacuation center capacities were calculated.</li> <li>- The gap was confirmed. It was very big.</li> <li>- As a first step, one of the coastal areas is focused in considering the distribution.</li> <li>- The distribution will be considered for the whole city.</li> <li>- To look for an existing buildings to be used as an evacuation center</li> </ul> Coordination with Barangay also needed.

\*See Annex 3-7



**Table 21.6-4 Evacuation Planning Approach of Palo**

<b>Palo</b>	
<b>Workshop date</b>	23 <sup>rd</sup> July
<b>Contents</b>	Storm surge, tsunami and flood hazard maps were introduced. High risk areas were also confirmed. Palo indicated the difference of flood inundation area through their experience. JICA Study Team confirmed with Palo the experienced situation. Palo is a flood prone area .Palo created 6 emergency response team for flood prone barangays, this system worked well, however during Typhoon Yolanda occasion, the emergency response team were not able to respond the whole affected area since majority of the area was affected not only the flood prone Barangays and members of the team were also affected by the typhoon. JICA Study Team highlighted the importance of preparedness.
<b>Meeting date</b>	9 <sup>th</sup> September
<b>Contents</b>	Preparation of data of ECs and Barangays for Workshop was confirmed.
<b>Workshop date</b>	29 <sup>th</sup> September
<b>Contents</b>	Contents of evacuation planning were explained. Palo has a plan of developing new provincial office in the Northern part. This area is considered to prepare as EC with 20,000 capacities.
<b>Meeting date</b>	4 <sup>rd</sup> November
<b>Contents</b>	Storm surge hazard map were selected as the base map for evacuation planning, storm surge affected area is larger than tsunami hazard. In addition, the flood hazard map has not been finalized yet. Flood affected area is larger than storm surge affected area, but it is not deep compare with storm surge hazard. And also since Palo has good practice on responding against flood, they instead chose the storm surge Based on the data and hazard map, numbers of evacuee's were calculated by JICA Study Team.
<b>Meeting date</b>	10 <sup>th</sup> November
<b>Contents</b>	Location map of EC was prepared by JICA Study Team. Based on this map, safety of the ECs was confirmed. Distribution of the Barangays to the EC was discussed. And Palo prepared the distribution and calculated the gaps between Evacuees and EC's capacity. As a result, including new ECs with 20,000 capacities at Provincial office area, it was balanced.
<b>Evacuation planning concept</b>	New evacuation area capacitated 20,000 will be developed in the north west of actual urban area. Coastal area Barangay will evacuate this area in the future.
<b>1) Preparation of hazard map or historical record map</b>	Storm surge, tsunami and flood hazard maps were prepared by JICA Study Team.
<b>2) Setting target hazard type and level</b>	Storm surge hazard map was selected as base map for evacuation planning.
<b>3) Designation of affected area</b>	Based on the affected area of storm surge hazard map, number of evacuee's was confirmed.
<b>4) Designation of Evacuation Center (EC), route and method</b>	12 ECs including new EC were designated. If the new EC is constructed, the gap will be clear. Route and method is needed to consider.
<b>Seminar</b>	17 <sup>th</sup> November
<b>Evacuation plan shown in the seminar on 17<sup>th</sup> November</b>	Evacuation plan of Palo was explained. - Construction of provincial government hall is planning. This area will be developed as EC capacitated 20,000. - Distribution was shown on the map. By the calculation, including the new EC, the gap is balanced.

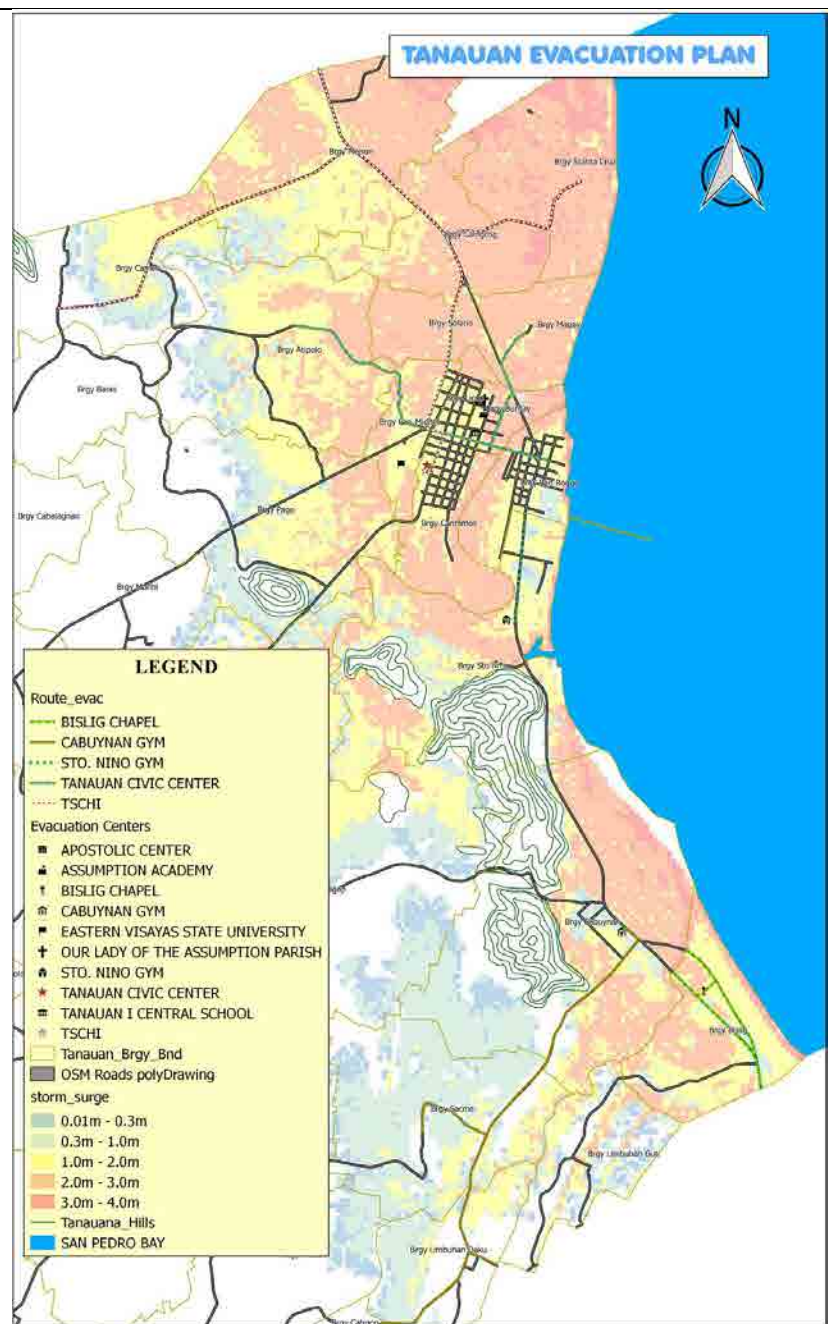




**Table 21.6-5 Evacuation Planning Approach of Tanauan**

<b>Tanauan</b>	
<b>Workshop date</b>	30 <sup>rd</sup> July
<b>Contents</b>	Storm surge, tsunami and flood hazard maps were introduced. And at the same time the high risk area was confirmed. Tanauan indicated the difference of flood inundation area through experience in which JICA Study Team confirmed with Tanauan the experienced situation. Tanauan was interested in flood. Because their frequent disaster is flood.
<b>Meeting date</b>	9 <sup>th</sup> September
<b>Contents</b>	Preparation of data of ECs and Barangays for Workshop was confirmed.
<b>Workshop date</b>	25 <sup>th</sup> September
<b>Contents</b>	Evacuation situation during Yolanda occasion were flooded area was confirmed on the map. In some cases, it is unusual for a national road in Tanauan area to be inundated, even though Tanauan established evacuation centers in urban areas, people would prefer to stay in their house and look after to their belongings. However during the case of Typhoon Yolanda, the sea water overtopped the road, and urban area were also inundated. JICA Study Team explained evacuation planning contents. Tanauan came up a data with ECs.
<b>Meeting date</b>	13 <sup>th</sup> November
<b>Contents</b>	Storm surge hazard map was selected as base map for evacuation planning because of the high level of danger and extent of affected area. The flood hazard map was not finalized yet. Based on the data and hazard map, numbers of evacuee's were calculated by JICA Study Team. And also location map of EC was prepared by the team. Based on this map, safety of the ECs was confirmed and gap of EC capacity and numbers of evacuee's were calculated. Coastal area were prioritized therefore Tanauan focuses on the evacuation plan for coastal Barangays.
<b>Meeting date</b>	14 <sup>th</sup> November
<b>Contents</b>	JICA study team drafted the distribution and Tanauan finalized the distribution. The gaps of the evacuees and EC's capacity were confirmed. Tanauan mentioned about Ambao hill. This hill can be considered as emergency evacuation place.
<b>Evacuation planning concept</b>	Coastal Barangays evacuation were prioritized. Distribution was considered for affected Barangays by storm surge.
<b>1) Preparation of hazard map or historical record map</b>	Storm surge, tsunami and flood hazard map were prepared by JICA Study Team.
<b>2) Setting target hazard type and level</b>	Storm surge was selected as base map of hazard.
<b>3) Designation of affected area</b>	Based on the affected area of storm surge hazard map, number of evacuee's was confirmed. Evacuees in coastal areas were estimated about 17,000. Total in Tanauan, about 29,800.
<b>4) Designation of Evacuation Center (EC), route and method</b>	9 ECs were designated. The capacity is calculated as 19,600. The gap is more than 10,000.
<b>Seminar</b>	17 <sup>th</sup> November
<b>Contents</b>	Evacuation plan was explained. <ul style="list-style-type: none"> <li>- Distribution of the Barangays and ECs was considered.</li> <li>- Evacuation of coastal area was prioritized.</li> <li>- More than 10,000 gaps were confirmed.</li> </ul> Evacuation route were planned based on the distribution.

\*See Annex 3-9



## 21.7 Issues and Recommendation for Evacuation Planning of 5 LGUs

Through workshops and meetings, 5 LGUs started to prepare their own evacuation plan. Since planning is just an initial stage, there are many issues were brought up.

Mostly the problem encounters is lack of ECs. Therefore LGUs are needed to find more buildings that can be utilized as ECs. Sometimes it is difficult to cover only LGU's capacity. However it should not focus on number of gaps, LGUs should finalize the distribution and confirm the gaps of the area base, and discuss with Barangays. And it is recommended that even the plan is not perfect, LGUs should try to conduct evacuation drill. The calculated situation is not always shown as the actual situation, therefore LGU should not only focused on the map and calculation planning.

In addition, since pre-emptive evacuation was focused in this pilot, LGUs should continue to prepare emergency evacuation plan..

The contents which was explained in these workshops and meeting were organized as guideline by the team. (Annex 4)

The issues and recommendation for each LGU were organized below.

**Table 21.7-1 Issues and Recommendation for 5 LGUs**

	<b>Issues</b>	<b>Recommendation</b>
<b>Guiuan</b>	<ul style="list-style-type: none"> <li>- Find more existing buildings that can be utilized as ECs to reduce capacity of person of new ECs.</li> <li>- Consider evacuation place for island people.</li> </ul>	Target year of construction of new ECs should be shown to discuss with Barangays to develop more practical plan. Evacuation place and transportation for island people should be considered as main island plan to avoid conflict of ECs.
<b>Basey</b>	<ul style="list-style-type: none"> <li>- Find evacuation place during storm.</li> <li>- Consider evacuation plan for rural area.</li> </ul>	Target year for the relocation should be shown to discuss with Barangays in hill area to find buildings to stay during the storm. Since rural area does not have hill area, Pre-emptive evacuation plan including transportation plan should be prepared. And emergency evacuation place such as Tsunami tower also needed to consider.
<b>Tacloban</b>	<ul style="list-style-type: none"> <li>- Find more existing building can be utilized as ECs</li> <li>- Consider how to balance the gaps of EC's capacity and evacuees by area base.</li> </ul>	ECs should be designated outside of hazardous area basically. However realistically, in case the horizontal evacuation has limitation, vertical evacuation also needs to consider. Discuss with Barangays to develop practical plan.
<b>Palo</b>	<ul style="list-style-type: none"> <li>- Consider evacuation planning until new evacuation area will be done completely.</li> </ul>	Target year to finalize the construction of new developing area should be shown to find buildings can be utilized as ECs.
<b>Tanauan</b>	<ul style="list-style-type: none"> <li>- Consider how to balance the gaps of EC's capacity and evacuees by area base.</li> <li>- Find more buildings can be utilized as ECs to reduce the gaps.</li> </ul>	Discussed with Barangays to find buildings can be used as ECs. The upland area can be utilized for emergency evacuation. However, it is difficult to stay there in the storm. Therefore if it is considered as tentative evacuation place for storm surge, putting roof and walls should be considered.

## Annex 1

### Form of Questionnaire for LGU and Barangay

#### Questionnaire for LGU Level

Area		General Questions	Follow-up Questions
3. DRRM (#9 DSWD)	1	Existing Barangay DRRMC, or any other systems/mechanisms for disaster preparedness/response/recovery	
	2	Status of Barangay DRRMP, or any other plans related to disaster (evacuation routes, centers, etc.)	Evacuation centers: selection, evaluation of the safety and capacity, set up, management, preparation of equipment, food and water
	3	Any issues to prepare the above-mentioned systems (technical capacity, manpower, etc.)	Any support provided by LGU
	4	Communication channel between barangays, LGU and higher level (normal and disaster situations)	
	5	Systems and roles of early warning and evacuation order to the people	Any support provided by LGU
	6	Gaps in disaster preparedness (ideal vs. reality)	
	7	Past training on DRRM (e.g. organizers, trainers, trainees, contents)	
	8	DRRM in school education	
	9	Mechanisms to support people with special needs for evacuation and response	
	10	Any good practices by LGU and barangays	

#### Questionnaire for Barangay Level

Area		General Questions	Follow-up Questions
3. DRRM	1	Existing Barangay DRRMC, or any other systems/mechanisms for disaster preparedness/response/recovery	
	2	Status of Barangay DRRMP, or any other plans related to disaster (evacuation routes, centers, etc.)	Evacuation centers: selection, evaluation of the safety and capacity, set up, management, preparation of equipment, food and water
	3	Any issues to prepare the above-mentioned systems (technical capacity, manpower, etc.)	Any support provided by LGU
	4	Communication channel between the Barangay and LGU (normal and disaster situations)	
	5	Systems and roles of early warning and evacuation order to the people	Any support provided by LGU
	6	Effective groups for disaster response and awareness-raising from Yolanda experience	
	7	Plans to organize groups for disaster response and awareness-raising	Any ideas to enhance the group capacity for disaster response
	8	Gaps in disaster preparedness (ideal vs. reality)	
	9	Past training on DRRM (e.g. organizers, trainers, trainees, contents)	
	10	DRRM in school education	
	11	Mechanisms to support people with special needs for evacuation and response	
	12	Disaster mitigation building method adopted by the community	

Result of Questionnaire for LGU(1/2)

Area	#	Tacloban	Palo	Tanauan
Interviewees		Gerald V Paragas, DRRMO ( 9277976924) Anano	Pipes Yawbay, DRRMO (910278869) Armande Cabaltera, MDPC (09202038737) Chritopher Uilarino, DRR Felipe T Ygrubay Jr. (09102788690) Rosalina R. Balderas, MSWDO (09272285819) Michael M. Quinanayan, DRRMO in charge (09356295516)	Emilito Pe. Lerios (9084398415) Marina T. Tribas, MSWDO (09279867993)
3. DRRM (#9 DSWD)	1	- Some Barangays established BDRRMC - LGU conducted sme orientation and organization.	- Palo's DRRMOffice has one DRRMO, 2 early warning and 3 data coding specialist -6 Teams for disaster respons were established before Yolanda. - It was focused on the flood. - Members are consist by LGU officers, staffs, Barangay Captain and Tanods (Barangay Police) - In case of Typhoon, the team is established at Signal 1.C25	- All Barangay have to establish BDRRMC by DRRM act. - LGU instructed the Barangay and all Barangay established BDRRMC
	2	- Tacloban Rehabilitaion and Recovery Plan (Tac RRP) - They are preparing contengency plan. This is focused on Disaster response - 31 Barangays are nominated as high risk area. - Earthquake, Lansldide, Storm surge, tayphoon, Tsunami - Tayphoon is including Storm surge, Flood and Landslide.	- Ideally Barangay has above system also but actually only above system exist.	- They prepared DRRMP. - But all documents was washed out, they don't have any copy now.
	3	- Tacloban city instruct but not established all. - IOM provide disaster kit to the Barangay as onitiative for establishment of the BDRRMC. - IOM print out figure of BDRRMC structure and provided to the Barangays. It is pasted on the wall of Barangay hall.	- Above system functioned at the Yolanda, but some problem also found out. - The member of the Team also were victims, so it was difficult to arrive to work. - Also it was not expected to happen the disaster in many barangays at the sae time. - In this situation, communication equipment such as Early warning, hand radio are needed.	
	4	- Early warning system were followed of PACASA's system. - City inform to the Barangay by txt message and visit by Bike.	- MDRRMC issue early warning and evacuation order, MDRRMO inform to Barangay Chairman	
	5	- the system is organized by hazard type.	- LGU had weather system. They had weather monitoring system at the mountain and directly received the data. They know when the mountain got rain, 7 hours after the water come to the city. So they inform to the Barangay during this 7hours. - This system had been destroyed by Yolanda. - Warning is followed by PAGASA system. - Raingages were set at Barangay halls but they were destroyed also. - Mpnitoring persons were assigned by LGU.	- Mayer issue evacuation order. - DRRM set up the HQ at Municipal hall. - DRRMO checked information from PAGASA from internet. - LGU prepared designated evacuation center. - The center were disignated by cooperation with Barangay officers - evacuation center is designated by hazard type. - MDRRMC member prepare reliefs. - Before Yolanda, information form PAGASA checked by internet. - Now they don't have IT equipment, so they want to return to regular activity level. - there was raingage at Amanrola which was monitored by a person who was trained by GTZ.
	6		- DRRM system is not organize at Barangay level.	- They also didn't understand stormsurge. It means they didn't know affect of storm surge. - if PAGASA explain tidal wave, people could evacuate voluntarily
	7	- Many pilot project with some donoers were cobducted. - Now they are organizing the models.		- Training for earthquake (rescue, Evacuate, Hazard map)
	8			
	9			- Barangay Council and VAW desk to support the vulnerable. Barangays have identified VAW desk and have started functioning as SW receive referral reports. No PWD/SC desks
	10			- Above ABC president called Tanauan's chairmans to Manila to present their experience from 15 to 19 July.

Result of Questionnaire for LGU(2/2)

Area	#	Basey	Guiuan
Interviewees		Meldy B. Adel, MDRRMO (09307521659) J. Norman L. Bateo, Admin/Training (09987343352) Mercy G. Caboboy, Operations and Warning (09497719189)	Felipe Padual, DRRMO Zenaida, MSDW
3. DRRM (#9 DSWD)	1	- DRRMC Meeting is held twice a month.	- LGU has responsibility to support Barangays. - Municipality is supported form National, Regional and Province.
	2	- MDRRMP is exist. (Like action plan) - it is needed to update after Yolanda. - At Barangay level, only Bacuba has DRRMP. - Before Yolanda, LGU conduct 40 orientation and instruction for the plan preparation. But it stop after Yolanda. - Annual budget (AIRA?) of Basey is Php6,000,000. 5% of total income of the LGU is used as calamity fund. - 70% of this 5% calamity fund is used for mitigation, and 30% of this fond is used for Quick response.	- "Disaster Risk Reduction and Management Handbook" had been prepared. First eddition was maybe around 2005. Actual eddition is 2011. - After Yolanda, all Baranagy want to prepare DRRMP - 30% of DRRMFund is used for caramuty e.g. reliefs - 70% of DRRF is used for preparedness (Capacity building, Equipment, Activities, Disaster consciouness, Evacuation Center, Radion system etc) - Ambulance, fire truck can be utilize LGU budget and donation of fire department - Budget from National Gov. is used for lihabilitation of road. This fund can not use for preparedness. - No fund from Region and Province - 20% of AIRA(?) is used for infrastructure - 11 million for CCA, 2 million for DRRM survey, seminar and Hazard mapping.
	3	- Disaster Recilient Building is needed to comply but this can not reply only training. - As instruction for Baranagy, Loger and deeper instruction is needed. They can provide only brief level. - Now people has high interest for disaster preparedness, so it is time to conduct instruction for the preparation for Disasrer Management, Mitigation, Preparedness and Response.	- Since all equipent had washed out, they have to start to purchase equipment first.
	4		- Basically using radio system to communicate with Baranagay. - Because they have island also.
	5	- Evacuation center will be selected by criteria (there is typhoon but not earthquake) - There is criteria but no building to satisfy. - Meaning of Storm Surge is not very clear until Tacloban Mayer explained on Radio.	- mentioned above
	6		
	7		
	8	- They planed to prepare academic curriculium for school safety before Yolanda. But it is not realized yet.	- All elementary school and high school conduct Tsunami and earthquake drill once a year
	9		
	10	- It provide to us the opportunity to consider about environent. - Positive impact was people helped each other. - Gov. and people should seriously against the disaster.	

### Result of Questionnaire for Barangay (1/2)

LGU	#	Tacloban		Palo		
Barangay		69	70	Salvacion	San Joaquin	
Reasons for selection		Highly vulnerable to disasters, good captain	Highly vulnerable to disasters, good captain	Representation of Palo barangays, good leadership of barangay captain	Badly damaged by Yolanda, active barangay captain	
Interviewees				Silvestre T. Motejo, Captain Leopoldo F. Regin Jr, Councilor Ritche M. Campo, Councilor Theodora C. Repasa, Councilor Nieva J. Montuya, Councilor Heminigilda O. Adre, Councilor Alexis R. Novillo, Councilor Eleda C. Monge, Secretary Rosilla M. Luyo, Treasurer		
<b>3. DRRM</b>	1	- CDRRMC is the same as BCP		- DRRMC = BC, established in Mar 2014 but not functional	- DRRMC is exist. Barangay councils are the members. - The people who have vehicle, who can provide medicine are also member.	
	2	- Exist the plan. This plan existed before Yolanda - role of council is specified. - Calamity fund want to use to purchase Handradio(Php50,000), Generator, Soeaker, Wine		- No plan - Calamity fund is used for response	- Emergency Preparedness and Response Plan has.	
	3	- since they understood the seminar's contents, it was easy			- since they had many experience of attending the seminar, training, drills, they had knowledge to formulate the plan.	
	4			- 2 days prior to Yolanda, captain received info from Mayor and he announced in barangay with help of tanods using megaphone	- LGU infromed only chairman.	
	5	* 35 casualties		- Evacuation centers: elementary school, barangay hall, daycare center, health center	- In disaster case, Chairman visit the council and informed. * 377 Casualties - Evacuation center was selected before Yolanda.	
	6	- First Response Team				
	7					
	8					
	9	- Evacuation drill will be conducted on 28 July - CDRMMO provide the training.( First aid, Earthquake, etc. - OCD, CDRRMO can provide the trining but the Barangay have to prepre snaks and lunches. - this barangay has petrol coppany so they provide the training fees.			- 2 day training by Child Fund on DRRMC	- First aid, Basic response to disaster, Disaster preparedness, etc. - Bureau of fire provide the training. - Barangay officers, Zone leaders, any one who can participate.
	10	- Earthquake drill, Fire drill, Tsunami drill once a year.			- Only fire drills	- Before, only earthquake drill was conducted but after Yolanda, drill of flood, Disasetr preparedness (education?) is conducting.
	11					
	12	- evacuation center of drill was changed to inland - since the plan exist, council knew their own role, they succed to make evacuation the Barangay people first time. - They knew what is storm Surge because of Barangay			- None, structures using coco lumber supported by CRS are only good for 2 years	- He explained if you don't evacuate, who will save you?



### Result of Questionnaire for Barangay (2/2)

LGU	#	Tanauan	Bacey	Guinan	
Barangay		San Roque	Calogcoog	Salvacion	
Reasons for selection		One of the most devastated by Yolanda, large population, presence of resettlement project	Affected by storm surge, proactive captain	Highly damaged island, proactive captain	Highly damaged
Interviewees		Corazen A. de la Cruz, Captain (09463503288) Rosaída D. Macavrlg, Secretary (09463563937)	Julian "Toots" S. Modesto III, Barangay Captain (09183656976, 09272252814)	Captain	Captain
<b>3. DRRM</b>	1	- DRRMC was established before Yolanda and it is active. - The member is Barangay Committee and 20 Tanods - 9 of tanods are rescue team. They received training form OCD and passed medical check of ODC criteria. - this Rescue team is original system of this Barangay.	- No DRRMC	- Just organizing DRRMC (Barangay Council members and 40-50 volunteers who are willing)	- NO DRRMC
	2	- DRRMP was planned to prepare before Yolanda but it was stoped. - Barangay is managed by budget from LGU (AIRA?) - 20% for Barangay Development Plan (BDP) - 10% for Sangrian Kabata (for Youth) - 5% for Calamity - 10% for Monitoring out going Expense (MOOE?) Training was payed from this budget	- No DRRMP	- DRRM Plan developed after Yolanda with support of Act Alliance, planning to provide training on rescue (including swimming), purchase equipment	- Not yet. - LGU instructed but they need training for preparation of the plan.
	3	- Evacuation of the people (transportation is not enough, information to urge all people)	- No idea how to prepra - No sample - No instruction from LGU		- No evacuation center
	4	- LGU informed to the chairman		- Received info about Yolanda from TV and text from Mayor 3 days before, information disseminated in the community via Council members, requesting to evacuate to the church which was the only evacuation center in the barangay	
	5	- she visited to the councils and informed. - Councils informed to zone people.	- LGU came to inform Barangay for evacuation two days before Yoanda. - One day before 6:00pm Track and vehicle for evacuation were provided by LGU.	- Evacuation center will be built in relocation site on higher land	
	6	- the rescue team	- Pastral Council was functioned.		
	7		- No idea		
	8				
	9	- Evacuation drill, training for rescue and first aid are conducted once a year	- Since he became the chairman on Nov election, he didn't know past traing.	- No DRRM training, only one DRRM seminar (about what is DRRM, what needs to be prepared, etc.) organized by UNDP attended by captain after Yolanda	
	10	- Fire drill is conducted	- Fire drill is conducted in school	- No drills at school	
	11			- Priority of evacuation to the church was given to SCs and PWD but because it was flooded there, most of casualties were SCs - No mapping of SCs and PWD but Councilors know where they live	
	12	- The rescue team was functioned. - Rope was effective to save people	- Disaster-resilient houses are supported by UMCOR (United Methodist) for those completely destroyed (6 built since Feb, plan to build 200 houses)		

## Annex 2

2014.08.11

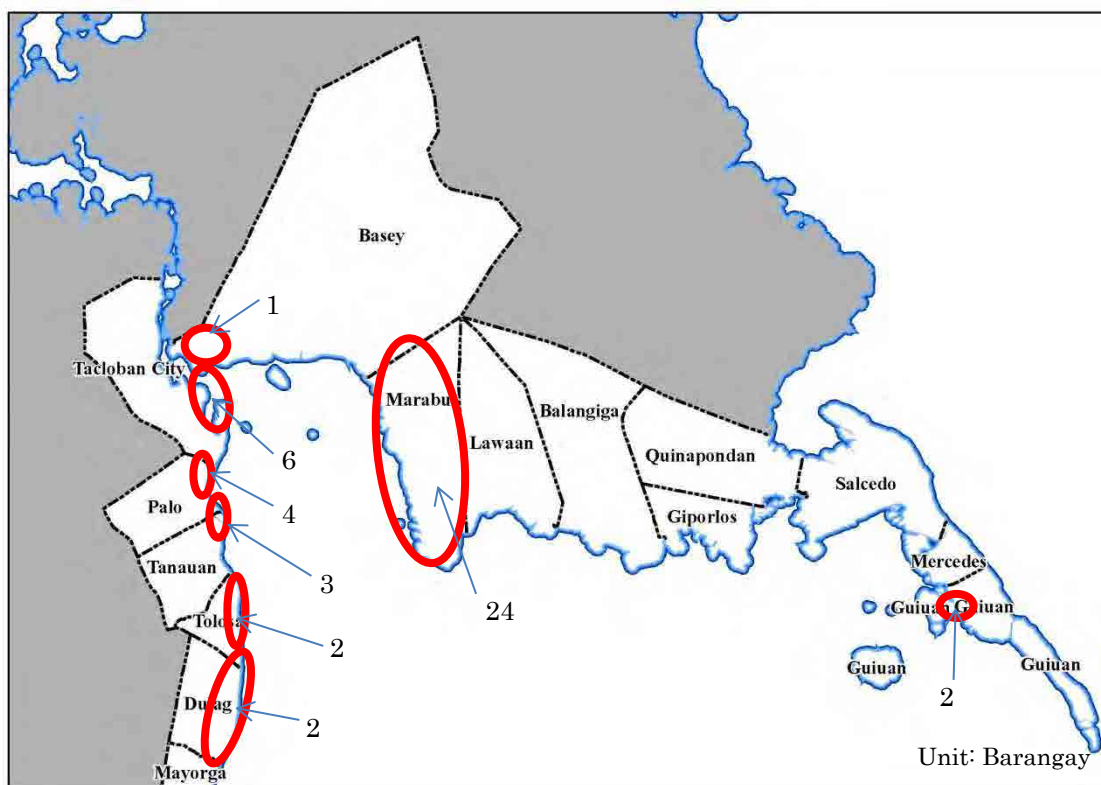
JICA Team

### The Project on Rehabilitation and Recovery from Typhoon Yolanda Result of Disaster Preparedness Activities in Barangays

#### 1. Interview with Barangay Chairman

The interviews with Barangay Chairman were conducted from 7<sup>th</sup> to 15<sup>th</sup> May. (Total 44 Barangays)(Marabut was meeting style with 24 Barangay Chairman)

##### (1) Location of Barangays area



**Figure 1 Location and number of Barangay conducted interview**

##### (2) Contents of the Interview

- How to get information about Yolanda and early warning system in the Barangay
- Preparedness before the Yolanda hit and evacuation condition
- Condition during the Yolanda hitting. (Height of the water, how to survive?)
- Condition after Yolanda hit. (How many days without support from outside, which kind of supports were needed?)
- Lessons (What should be done? What will be prepared?)

##### (3) Result

See Annex 1 (Result of the Interview) and Annex 2 (Signature Contents)

## 2. Analysis

Following points were marshaled by the interview.

### (1) Before Yolanda strike

People knew about Typhoon Yolanda almost one week before the Yolanda hit. And Barangay received evacuation order from LGU before 2 or 3 days. Most of the Barangays informed to the residents as usual way. (informed with megaphone, visit house to house etc.)

Since most of the Barangays set up evacuation centers before Yolanda hit, women, children and elder people living in the coastal area evacuated to the evacuation center before Yolanda hit. Though the evacuation directive had been informed to the residents through Barangay Council, some people ignored. Key reasons were following;

- They didn't know the meaning of "Storm Surge".
- They stayed at home to protect the house and property.
- They thought their area was safe. (No experience of damage by typhoon)
- Their houses were safe.(concrete structure)

The key reason that they didn't evacuate beforehand or didn't find safer place was that people didn't receive any detailed information regarding "Storm surge" of Yolanda (Super Typhoon). Therefore they couldn't have sense of danger like "Tsunami".

### (2) During Yolanda hitting

Since sea water came to their place (some Barangays had flood from river), the people stayed at their house started evacuation in the storm.

And also some evacuation centers were not safe. Therefore they had to move to other place.

Those people moved to higher place; hills, two stories house, broke the ceiling and climbed up to the beams. There were some cases that the evacuation center was not safe. School, church, big residential houses etc. were used as evacuation centers. The reason why the site was selected is following.

- It was designated evacuation center.
- There was no other choice as evacuation center. (Concrete building, enough size, etc.)

There were cases; since people evaluate the evacuation center would not be safe, they moved to another evacuation place and avoided the disaster. Therefore, if they could evaluate the safety of the evacuation place beforehand in the Barangay, they could have choice to evacuate to other area.

### (3) After Yolanda hit

Barangays were isolated because the road was blocked by rubble and trees etc. Because of this situation, people faced following condition.

- They had to rescue people, treat injured people, recovered bodies from the rubble etc. by themselves during first some days or weeks until supports from outside came.
- They needed to find food and water in the Barangay because their stocked foods were washed out.

By their experience before Yolanda, since they could go back to their home after typhoon, they didn't have plan of "after disaster". In most of Barangays, Barangay officers played a central role to reply this situation. Because of this experience, since they recognized that they have to conduct rescue and first aid by themselves during and after disaster, they need practical training such as rescue, first aid, etc.

(4) Actual state of preparedness against disaster

Preparation of BDRRMP is starting with MLGU support. However, the people are still in rehabilitation stage, most of Barangays do not have concrete measures or plan against next typhoon season with this vulnerable condition.

### 3. Problems

Through the situation of Yolanda disaster, following problems are marshaled.

- (1) Before Yolanda hit, evacuation directive from MLGU/BLGU could not urge evacuation action of residents.
  - 1) M/B LGU : Since they didn't have enough/concrete information such as "What is storm surge", "Water will come or not", "How strong the wind" etc., they couldn't explain the hazardous nature as residents could understand.
  - 2) Residents: They ignored the evacuation directive because they thought "my place is safe (it will not hit my place, my house is strong enough etc.)" .
- (2) The evacuation center was not safe
  - 1) Appropriate evacuation center was not designated.
  - 2) There is no safety building (with concrete and enough space) in the Barangay.
  - 3) They did not consider the possibility of safety of evacuation center.
- (3) After Yolanda hit, they needed to rescue, treat injured people, provide foods, and clean the debris etc. by themselves.
  - 1) There were no plan and system for after disaster
  - 2) The preparation (equipment, knowledge, system) was not enough for after disaster situation.
- (4) The preparation against the next typhoon season is not considered specifically.
  - 1) Some of the evacuation centers which were used for Yolanda were damaged, and the new evacuation centers are not prepared yet.
  - 2) Concrete image and plan for preparedness for allocation of role, equipment,

training etc. were not considered yet.

#### 4. Preparedness education Measures

##### (1) Short term: Before next Typhoon season

- 1) Organize preparation contents against the next typhoon season, and reduce the damages
- 2) Need to understand what happened by Yolanda.

##### (2) Middle- Long term:

The enhancement of community disaster preparedness capacity is needed through whole process, before, during, after. Since Community Based DRRM program is under preparation by OCD central, it is not mentioned here.

#### 5. Short term Preparedness Activities

As activities before next Typhoon season, following program was conducted.

##### (1) Contents of the Program

###### 1) Issue against short term

Preparedness against next typhoon season are not enough.

###### 2) Objective

Provide occasion to consider the preparation against next typhoon.

###### 3) Output

Confirm the lesson from Yolanda, and organize the preparation contents against next typhoon season.

###### 4) Outline of the Activities

- Target participants : residents in Zone level
- Number of participants : Around 50 people (depend on the condition of venue or expectation of the Barangay)
- Period : 1 hour
- Style of the activity : Workshop  
(Local staff hired by JICA team will facilitate the activity)

###### 5) Contents of the Program

**Table-1 Contents of the 1 Hour Workshop Program**

Topics	Time	Contents
1. Introduction	5 min	Explanation of the program and objective Self-introduction or Ice-breaking game
2. Result of the interview – Common subject matters	10 min	1. The early warning from LGU couldn't urge evacuation of the people. 2. Evacuation center was not safe. 3. After Yolanda passed, Since Barangay isolated by impassable condition of the road, the Barangay had to supply foods, clean the road etc. by themselves. 4. Preparation against next typhoon season is not ready yet in actual condition.

3. Good Practice	5 min	1. Evacuate from the Evacuation Center further out. 2. Training related disaster management and evacuation drill were effective. 3. Three municipals of Japan *Explain with experience of Yolanda.															
4 . "Storm surge" as natural phenomenon and illustration of Typhoon Yolanda	5 min	1. General phenomenon of "Storm Surge" 2. Phenomenon of Yolanda (once the sea water pulled toward offshore and came back to the land by wind) *Since most of BRGY chairman mentioned they didn't know the meaning of Storm Surge, explain briefly what happened by Yolanda.															
5 . Organize the preparedness for the future disaster event.	20 min	Organize with the table, which preparation can they do, and how to realize the preparation, in the steps of "Preparation/Equip, Evacuation, Rescue/Save, Survive (Before, Last minute, During and after) " <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Steps</th> <th style="width: 33%;">Necessary Preparation</th> <th style="width: 33%;">How to realize ?, device, idea</th> </tr> </thead> <tbody> <tr> <td>Preparation/Equip</td> <td></td> <td></td> </tr> <tr> <td>Evacuation</td> <td></td> <td></td> </tr> <tr> <td>Rescue/Save</td> <td></td> <td></td> </tr> <tr> <td>Survive</td> <td></td> <td></td> </tr> </tbody> </table>	Steps	Necessary Preparation	How to realize ?, device, idea	Preparation/Equip			Evacuation			Rescue/Save			Survive		
Steps	Necessary Preparation	How to realize ?, device, idea															
Preparation/Equip																	
Evacuation																	
Rescue/Save																	
Survive																	
6. Confirm what will we do against the next Typhoon	10 min	Let them conclude the action for the preparedness which they try before next Typhoon season. *Introduce evacuation bag															
7. Conclusion	5 min	Emphasize the importance of Preparation/Equip and evacuation															

## (2) Schedule of the Activities

Barangay	Municipality	Date	Participant No.
Baras	Palo	June 2	39
Salvacion	Palo	June 2	29
Mohon	Tanauan	June 3	-
Sto Niño	Tanauan	June 4	-
Doña Brigida	Tolosa	June 5	18
San Roque	Tolosa	June 5	62
Tanghas	Tolosa	June 9	55
Catato	Marabut	June 11	32

## (3) Materials

- Program and purpose of the Workshop (Annex 3)
- Introduction (Annex 4)
- Printout material and scenario (Annex 5)
- Table for organize (Annex 6)
- Conclusion paper (Annex 7)
- Handout (Annex 8)
- Sample question and answer (Annex 9)

## (4) Result of the 1 hour workshop

See Annex 10 (Result of the Workshops)

Following points were marshaled by the workshop.

1) Result of the interview

The result of interview was introduced as common subject matter. This part was worked as review “what happened at Yolanda”. And also their experiences of the Yolanda were told by some constituents. Most major experiences which were told was lack of food after Yolanda attack. And also the terrible situation as they found many bodies in debris was told. Then they mentioned “if we knew what would happen”, “If there was stronger evacuation center”, “If agencies explain clearly the situation” etc.

Through this part, they remembered their experience, and started to consider why the terrible situation occurred.

2) Good Practice

In this part, some good practice from Yolanda experience and Japanese three principals were introduced.

The remarkable experience is San Roque in Tolosa. All residents evacuated to the mountain and there was no casualty in this Barangay. Although they did not understand the meaning of “Storm Surge”, as LGU and TV or others informed “Super Typhoon” and “Evacuate”, the captain and officers explained the danger of the typhoon and continued to argue evacuation until last person evacuated. The Point was that they imaged what would happen by “Super Typhoon”, and the captain didn’t give up making all people evacuate. However it should be carefully to transfer this experience as good practice because sometime the captain has to give up by the time limit of evacuation.

Other experience was go higher place as much as possible. And the experience to tie their hips to steel beam or pole was introduced in Barangay. Baras in Palo.

3) “Storm surge” as natural phenomenon and illustration of Typhoon Yolanda

Since most Barangay told in the interview that they didn’t know what Storm Surge was, we explained Storm Surge as natural phenomenon. This kind of knowledge is needed to consider the countermeasures.

They mentioned that they needed this kind of explanation before Yolanda to be able to decide evacuation.

4) Organize the preparedness for the future disaster event

This part worked as brain storming to conclude “what we should prepare for next typhoon” for next part. Since it had only 20 min for this part, after categorize the “needed preparation”, most Barangay focused on the exercise of preparedness part.

5) Confirm what we will do against next Typhoon

This part was conclusion of this 1 hour workshop. Since it was only 1 hour workshop, deep discussion was not expected. However they found out some ideas

for preparation against next typhoon season. (See Table 2)

From their ideas and comments, it seems that they could organize the ideas clearly with sense of time frame. And their considerations are covered entire contents. As it is not only focused on equipment, but also enhancement of capacity. As it is not only focused on needs but also method, etc. Especially “Against next Disaster” part, their idea is very concrete and practical as they could do from now. In addition, remarkable points are that Barangay people strongly feel the needs of corporation within community.

**Table-2 Result of “What ca we do?”**

MIDDLE-LONG TERM PREPAREDNESS	WHAT SHOULD BARANGAY PREPARE?	WHAT CAN I DO?
<p>&lt;Facility&gt;</p> <ul style="list-style-type: none"> <li>- Preparation of equipment and materials,</li> <li>- Construction of evacuation center,</li> <li>- Preparation of transportation vehicle,</li> <li>- Checkup of evacuation rout etc.</li> </ul> <p>&lt;Enhancement of DRRM capacity&gt;</p> <ul style="list-style-type: none"> <li>- Having knowledge of DRRM,</li> <li>- Conducting drill and training</li> </ul>	<p>&lt;Facilities&gt;</p> <ul style="list-style-type: none"> <li>- Consideration of evacuation site,</li> <li>- Monitoring of safety for community people,</li> <li>- Construction of evacuation center,</li> <li>- Maintenance of evacuation route (including signage),</li> <li>- Preparation of equipment related to disaster management, etc.,</li> </ul> <p>&lt;Enhancement of DRRM capacity&gt;</p> <ul style="list-style-type: none"> <li>- Formulation of Barangay DRRM Plan,</li> <li>- Conducting education and training for youths</li> <li>- Conducting drills,</li> <li>- Establishment of cooperation structure of community people such as union of community,</li> <li>- Meeting among community,</li> <li>- Establishment teams (volunteer etc.),</li> <li>- Role sharing etc.</li> <li>- List up the ability of the community people and consider the formation of coordination.</li> </ul>	<ul style="list-style-type: none"> <li>- Cooperate as volunteer,</li> <li>- Construct the safety house by concrete in the safety area etc.</li> <li>- Become a leader of DRRM,</li> <li>- Take action as become good sample,</li> <li>- Discipline,</li> <li>- Prepare evacuation bag, etc.</li> </ul>
PREPARATION FOR NEXT DISASTER	WHAT SHOULD BARANGAY PREPARE?	WHAT CAN I DO?
<ul style="list-style-type: none"> <li>- Concrete goods such as food, water, clothes, medicine flashlight, radio, mat etc.</li> <li>- Capacity enhancement of DRRM such as awareness, learning good practice etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Enhancement of Barangay structure and strengthening of cooperation with community people such as formulation of Barangay DRRM Plan,</li> <li>- Management plan of evacuation center,</li> <li>- Organizing the DRRM Committee,</li> <li>- Establishment of volunteer and leadership etc.,</li> <li>- Strengthen evacuation system and facilities such as signage,</li> <li>- Awareness of importance of evacuation and location of evacuation center,</li> <li>- Confirmation of early warning system from LGU,</li> <li>- Stock of medicines at evacuation center,</li> </ul>	<ul style="list-style-type: none"> <li>- Enhancement of the DRRM capacity such as learning from experts, learning good practices, participate training related to disaster as much as possible etc.,</li> <li>- Preparation of family basis such as evacuation plan of family,</li> <li>- Preparation of evacuation bag (important documents, radio, flashlight, foods, clothes, match, lighter, medicine etc.,</li> <li>- Cooperation among communities such as do</li> </ul>



	<ul style="list-style-type: none"> <li>- Stock of relief goods and foods,</li> <li>- Conduct evacuation drills including practice of Japanese three principles for the Tsunami evacuation</li> </ul>	volunteer, coordination of Barangay officers etc.
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6) Other opinions during the Workshops

Some opinion were heard during the Workshops. Following opinions are including their lessons from Yolanda experience.

- Zero casualty and resilient barangay.
- Clarification of disaster should be delivered in easy way in next time.
- We have learned that in times of disaster, no one can really help us except our self.
- Group discussion such as organizing table for disaster preparation and priorities are needed.
- Community discussion and consolidation with the other group members, and sharing their experiences are good practices.
- Cooperation and coordination of our barangay is a key for protection.
- We will find our own way to become a resilient community from the disaster impact.
- Our community will prepare for our protection and identify a safe evacuation.
- We are going to form a barangay council building back batterer community.
- Make an evacuation plan, exercise the steps for mitigation the damage, and familiarized what we had learned.
- We have learned who, when, how in preparing before and during a disaster.
- We will prepare evacuation bag in our houses and evacuate early.
- We find out the importance of disaster preparedness, we will take action from our barangay and family
- Responsible persons in coping with the lives of the residents in the community is needed in preparation for natural disaster
- We are ready but not enough. We need more trainings and education of hazards risk assessments and risk reduction.
- Form an active Barangay Rescue Team.

7) Questions/Request

Followings are Questions and requests which they mentioned during the WSs.

- Awareness, good practice, communication and organize are applicable to minimize or to avoid casualties but it would be much better if this kind of workshop will have a drill
- Do you have evacuation drill to be conducted in our barangay?
- Can you help us building an evacuation center in our barangay?
- What will comes next?
- Is this helpful if we conduct a workshop for the constituent of our barangay?
- What kind of training we will conduct?
- We are willing that the national government will assist our barangay. Especially if they assist us for building evacuation center, we are very much thankful
- If the government had conducted this kind of program before Yolanda our preparation will be easy and we can minimize the damage if the damage can be avoided

8) Remarks

“No one come to save you. So you should do everything what you can do. Don’t

wait for other people's action." was emphasized in this workshop. Because according to the interview result, since they could not receive any help from outside during some days, they knew that they have to survive by themselves. Therefore the importance of preparedness of community and individual were emphasized. Since they had already had individual ideas as lessons from Yolanda experience, it seems that they could marshal their ideas well during this workshop. Therefore it seems that this workshop could provide opportunity to share and organize their ideas. So it is expected that these workshop would motivate them to prepare against next typhoon season.

#### 6. Conclusion

Through this workshop, community people could found out what they can do against next typhoon. And also through this workshop, it seems that they could share their experience and exchange lessons.

Sharing their experience and exchanging lessons among neighborhoods are very important because neighborhoods will stay in similar situation in disaster time. So if someone had good or bad experience and neighborhoods learn the lessons, even small things, then the knowledge will save the neighborhoods in next disaster. And these lessons should hand down to next generation in the community and other area also.

In addition, workshop style discussion is effective to provide opportunity to pull out their experience and marshal their thought. Because the opinion or idea will be categorized with exchanging opinions with other participants in workshop, their idea will be developed and linked with other ideas, and also they will know other ideas. Therefore it is recommended that, if possible, these Barangays continue the discussion more, develop the ideas.

And also it is expected to share the result with other Barangays by utilizing Barangay chairman's meeting etc. because accumulation of lesson will help enhancement of the Barangay DRRM capacity.

### Annex 3

#### 1. Selection of Evacuation Center (Municipality Basey)

No.	Evacuation Center	Safety against Risks				Structure of the Building			No. of Stories	Capacity of Persons In the Building	Evaluation	Remarks
		Flood	Storm Surge	Tsunami	Landslide	Steel	Concrete	Lumber				
1	Basey 1 Central Elem. School					Yes	Yes	Yes	1	832		
2	St. Michael Parish Church					Yes	Yes	Yes	1	600		
3	Basey District Hospital					Yes	Yes	No	1	400		
4	Brgy. Buscada Multi-purpose Hall					Yes	Yes	Yes	2	80		
5	Brgy. Hall Brgy. Loyoy					Yes	Yes	Yes	2	50		
6	ABC Hall					Yes	Yes	Yes	2	270		
7	Mun. Town Hall					Yes	Yes	Yes	2	600		
8	Satellite Operation Center Brgy. Inuntan					Yes	Yes	Yes	1	40		
9	Satellite Operation Center Brgy. Mabini					Yes	Yes	Yes	1	40		
10	Multi Purpose Hall Palaypay								2	70		Constructing

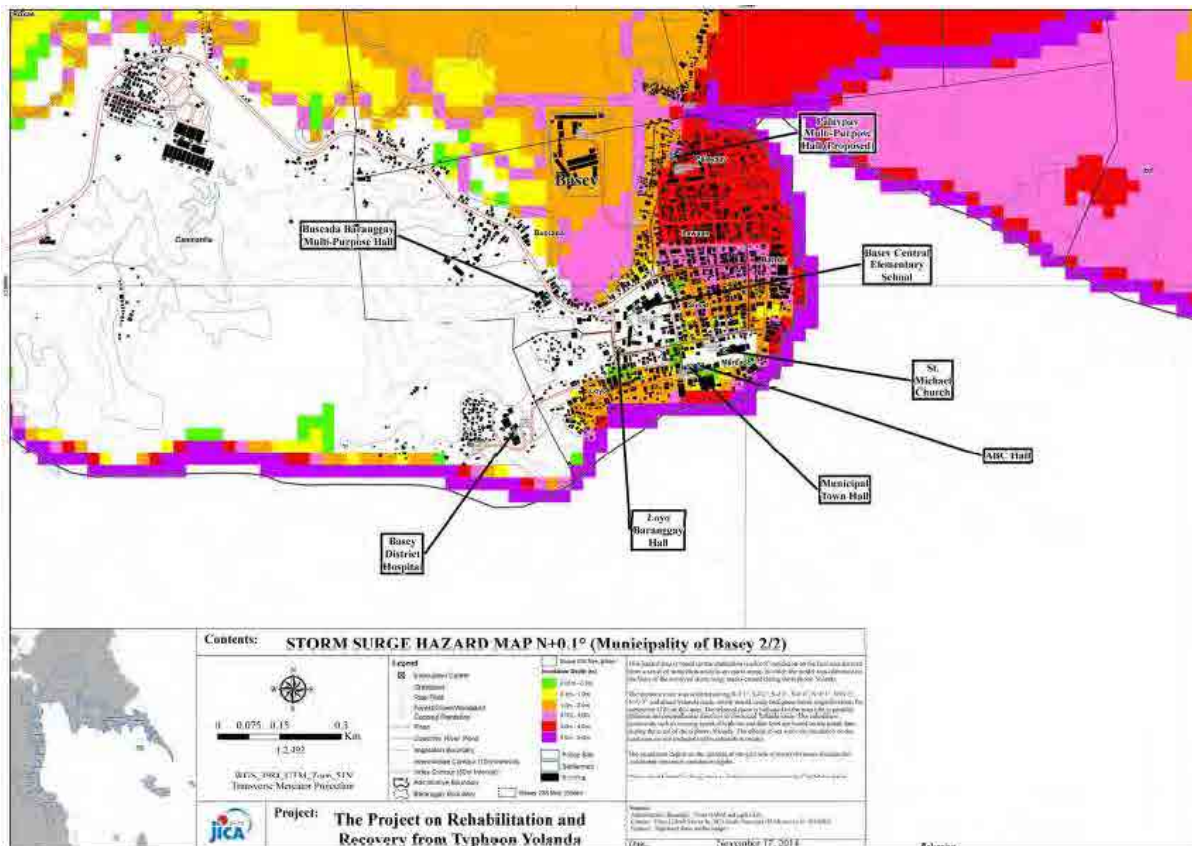
#### 2. Estimation of Evacuee No. of Barangay (Municipality Basey)

No.	Barangay	Total Population	Total Area (Km <sup>2</sup> )	Hazard Area (Km <sup>2</sup> )			Hazard Area (%)				Estimated No. of Evacuees (Pop×Max %)	Remarks
				Flood	Storm Surge	Tsunami	Flood	Storm Surge	Tsunami	Max %		
1	Amandayehan	995	1.41	0.00	0.67	0.63	0.00%	47.88%	44.73%	47.88%	476	
2	Anglit	497	1.60	0.00	1.60	1.08	0.00%	100.00%	67.45%	100.00%	497	
3	Bacubac	973	1.24	0.16	0.93	0.39	12.76%	74.84%	31.30%	74.84%	728	
4	Balante	555	4.78	0.00	3.20	0.00	0.00%	66.89%	0.00%	66.89%	371	
5	Baloog	142	6.93	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0	
6	Basiao	1,209	14.78	0.00	0.90	0.87	0.00%	6.10%	5.92%	6.10%	74	
7	Baybay	782	0.04	0.00	0.04	0.03	0.00%	99.88%	92.76%	99.88%	781	*
8	Binongtu-an	411	1.41	0.00	1.40	1.38	0.00%	99.76%	97.88%	99.76%	410	
9	Buenavista		10.19	0.00	7.77	4.21	0.00%	76.29%	41.28%	76.29%	0	
10	Bulao	1,099	59.26	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0	
11	Burgos		1.95	0.00	1.44	0.00	0.00%	74.10%	0.00%	74.10%	0	
12	Buscada	1,129	0.30	0.01	0.13	0.17	2.98%	41.52%	54.59%	54.59%	616	*
13	Cambayan		1.91	0.00	0.14	0.13	0.00%	7.29%	6.66%	7.29%	0	
14	Can-Abay	1,834	0.93	0.00	0.11	0.00	0.00%	11.57%	0.00%	11.57%	212	
15	Cancaiyas	567	23.02	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0	
16	Canmanilla	1,377	1.21	0.16	0.54	0.46	12.93%	44.25%	38.35%	44.25%	609	
17	Catadman	621	20.89	0.00	1.11	1.17	0.00%	5.33%	5.61%	5.61%	35	
18	Cogon	1,212	16.10	0.00	1.96	0.00	0.00%	12.16%	0.00%	12.16%	147	
19	Del Pilar	893	2.52	0.00	1.37	0.00	0.00%	54.38%	0.00%	54.38%	486	
20	Dolongan	1,221	7.60	0.00	1.83	0.00	0.00%	24.04%	0.00%	24.04%	294	
21	Guintiguí-An	394	1.58	0.00	0.84	0.00	0.00%	53.09%	0.00%	53.09%	209	
22	Guirang	2,374	56.83	0.00	1.04	0.00	0.00%	1.83%	0.00%	1.83%	43	
23	Iba	551	7.71	0.00	7.69	6.75	0.00%	99.76%	87.51%	99.76%	550	
24	Inuntan	664	4.02	0.00	0.02	0.00	0.00%	0.39%	0.00%	0.39%	3	
25	Lawa-An	850	0.04	0.00	0.04	0.04	0.00%	99.29%	100.00%	100.00%	850	*
26	Loog	1,402	42.17	0.00	1.31	0.00	0.00%	3.10%	0.00%	3.10%	43	
27	Loyo	1,369	0.09	0.00	0.04	0.04	0.00%	46.46%	42.74%	46.46%	636	*
28	Mabini	2,429	162.38	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0	
29	Magallanes	565	1.98	0.00	1.98	1.10	0.00%	100.00%	55.76%	100.00%	565	
30	Manlilnab	231	24.34	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0	
31	May-It	515	5.14	0.00	1.56	0.00	0.00%	30.35%	0.00%	30.35%	156	
32	Mercado	411	0.04	0.00	0.03	0.02	0.00%	67.44%	63.37%	67.44%	277	*
33	Mongabong	317	3.62	0.00	0.03	0.00	0.00%	0.77%	0.00%	0.77%	2	
34	New San Agustin	468	4.86	0.00	4.86	0.34	0.00%	100.00%	7.06%	100.00%	468	
35	Nouvelas Occidental	1,238	2.03	0.00	2.01	1.97	0.00%	99.35%	97.40%	99.35%	1,230	
36	Old San Agustin	1,760	22.69	0.00	7.12	0.04	0.00%	31.38%	0.18%	31.38%	552	
37	Palaypay	2,653	0.06	0.00	0.06	0.06	0.00%	100.00%	97.07%	100.00%	2,653	*
38	Panugmonon	627	1.78	0.00	1.33	0.10	0.00%	74.68%	5.75%	74.68%	468	
39	Pellit	627	7.88	0.00	1.11	0.00	0.00%	14.09%	0.00%	14.09%	88	
40	Roxas	1,320	4.97	0.60	3.49	0.76	12.15%	70.27%	15.31%	70.27%	928	
41	Salvacion	1,502	1.47	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0	
42	San Antonio	2,584	1.52	0.00	0.13	0.11	0.00%	8.36%	7.45%	8.36%	216	
43	San Fernando	1,541	48.63	0.00	4.38	3.06	0.00%	9.01%	6.29%	9.01%	139	
44	Sawa	986	3.94	0.00	1.44	0.00	0.00%	36.65%	0.00%	36.65%	361	
45	Serum	945	2.47	0.00	2.46	1.13	0.00%	99.53%	45.66%	99.53%	941	
46	Sugca	251	2.20	0.00	2.20	2.15	0.00%	100.00%	97.63%	100.00%	251	
47	Sugponon	250	2.61	0.00	2.60	2.56	0.00%	99.61%	97.98%	99.61%	249	
48	Sulod	776	0.05	0.00	0.03	0.03	0.00%	60.70%	66.65%	66.65%	517	*
49	Tinaogan	1,270	4.96	0.00	0.94	0.91	0.00%	18.93%	18.43%	18.93%	240	
50	Tingib	1,069	3.15	0.00	1.85	0.11	0.00%	58.77%	3.55%	58.77%	628	
51	Villa Aurora	932	22.62	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0	
52												
Total											19,002	

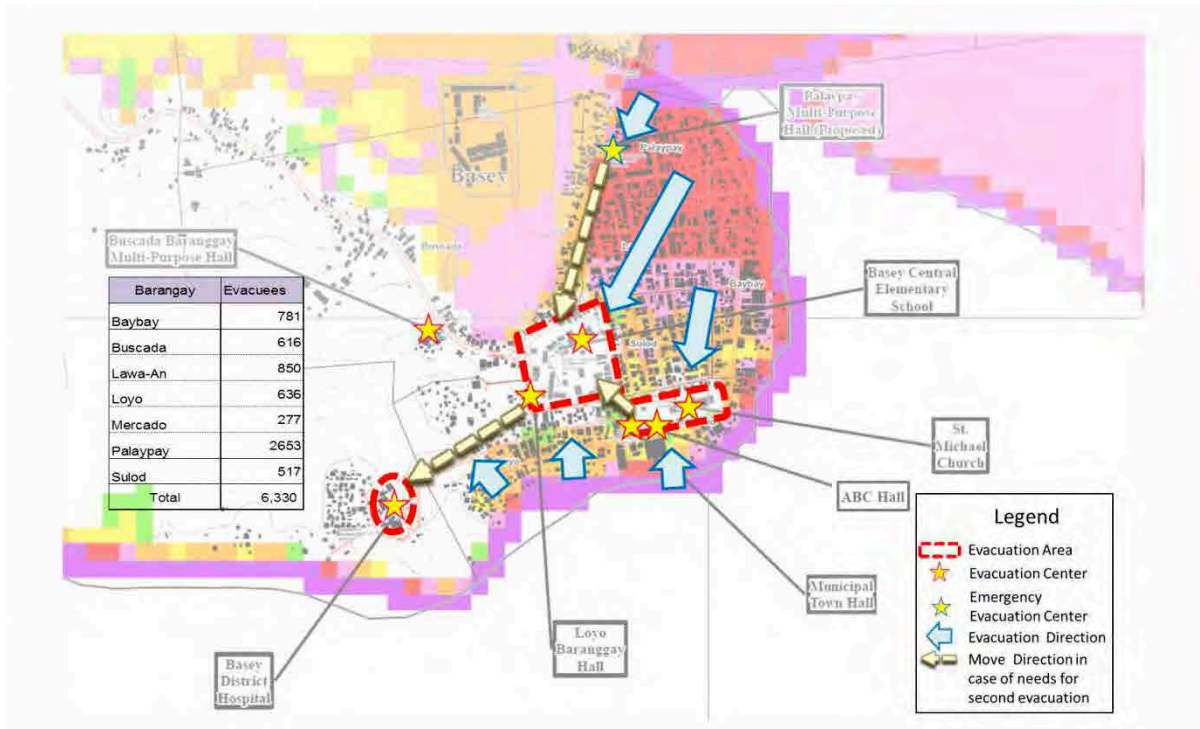
### 3. Evacuation Place Allocation for Barangay (Municipality Basey)

No.	Evacuation Center	Capacity of Persons	Barangay			Transportation		Needs for consideration			Evaluation	
			Name	No. of Evacuees	Distance (km)	Walking	Vehicle	Provide Transportation		Starting time for Evacuation		Needs of Emergency evacuation
								No. of Vehicles	Provider			
1	Basey 1 Central Elem. School	832										
2	St. Michael Parish Church	600									only for emergency evacuation	
3	Basey District Hospital	400										
5	Brgy. Hall Brgy. Loyo	50										
6	ABC Hall	270										
7	Mun. Town Hall	600										
8	Satellite Operation Center Brgy. Inuntan	40										
9	Satellite Operation Center Brgy. Mabini	40										
10	Multi Purpose Hall Palaypay	70										
	<b>Total</b>	<b>2902</b>	<b>Barangay</b>	<b>Evacuees</b>								
			Baybay	781								
			Buscada	616								
			Lawa-An	850								
			Loyo	636								
			Mercado	277								
			Palaypay	2653								
			Sulod	517								
			<b>Total</b>	<b>6,330</b>								

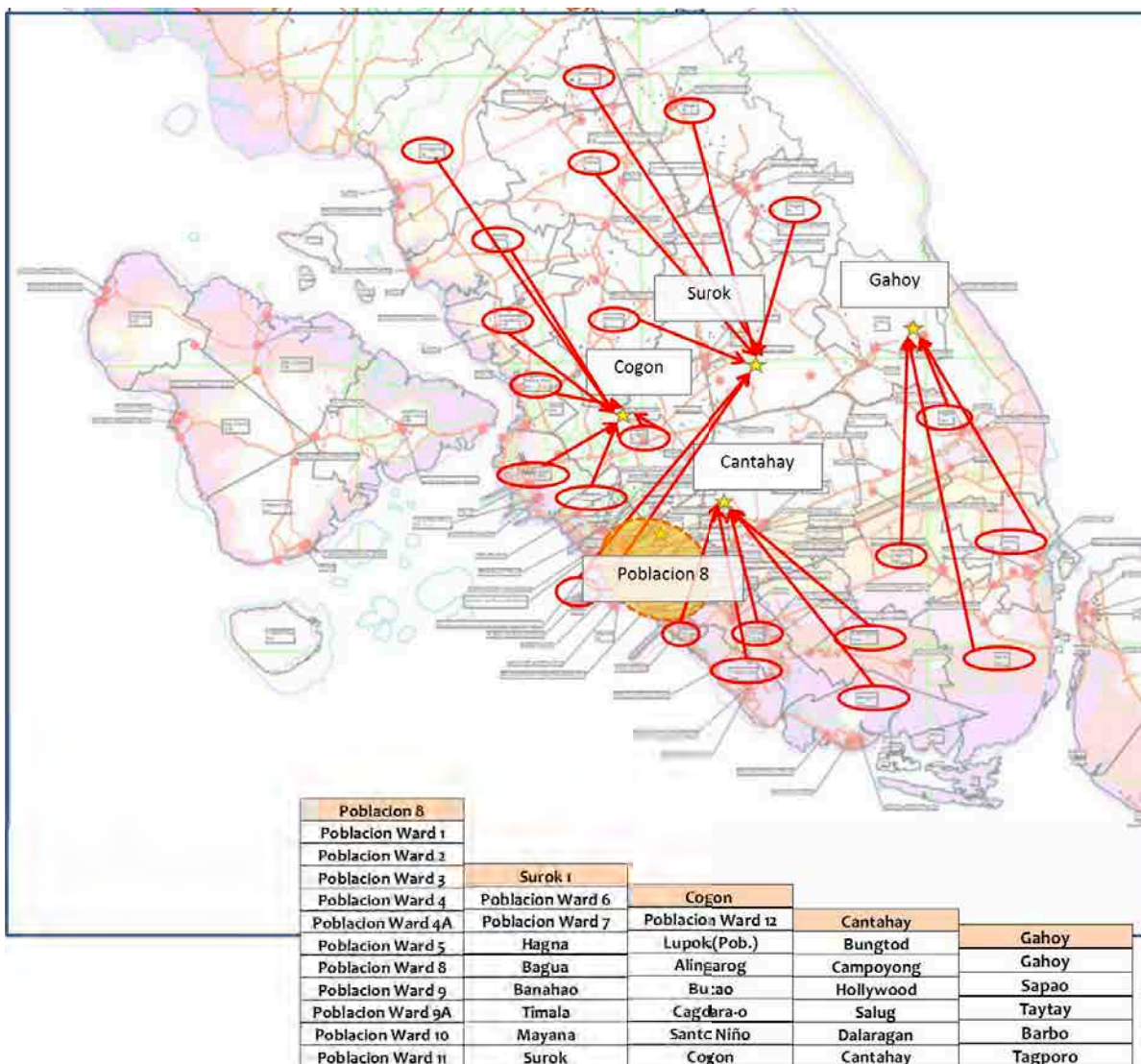
### 4. New Evacuation Centers to be considered (Municipality Basey)



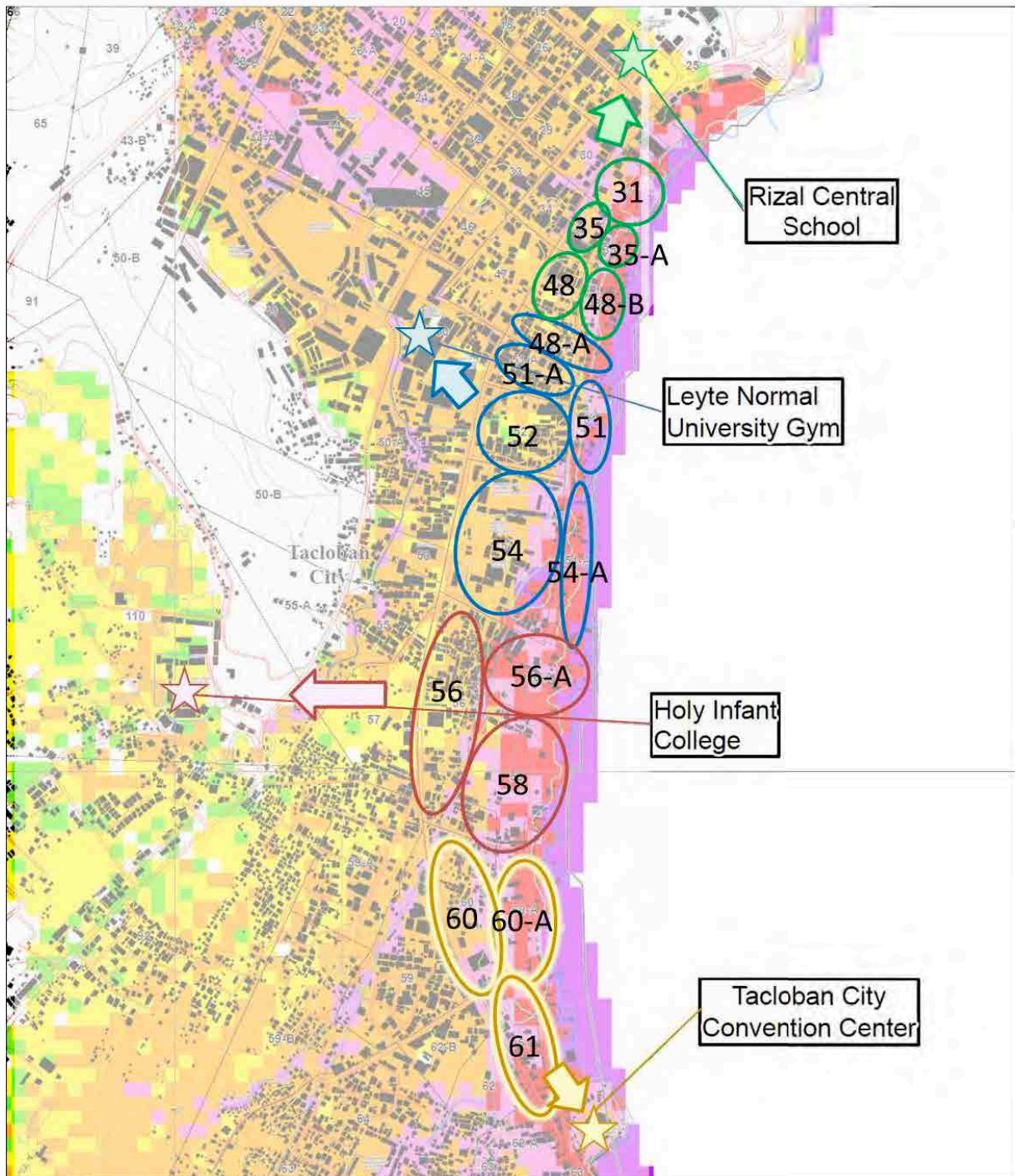
### 5. Evacuation Direction (Municipality Basey)



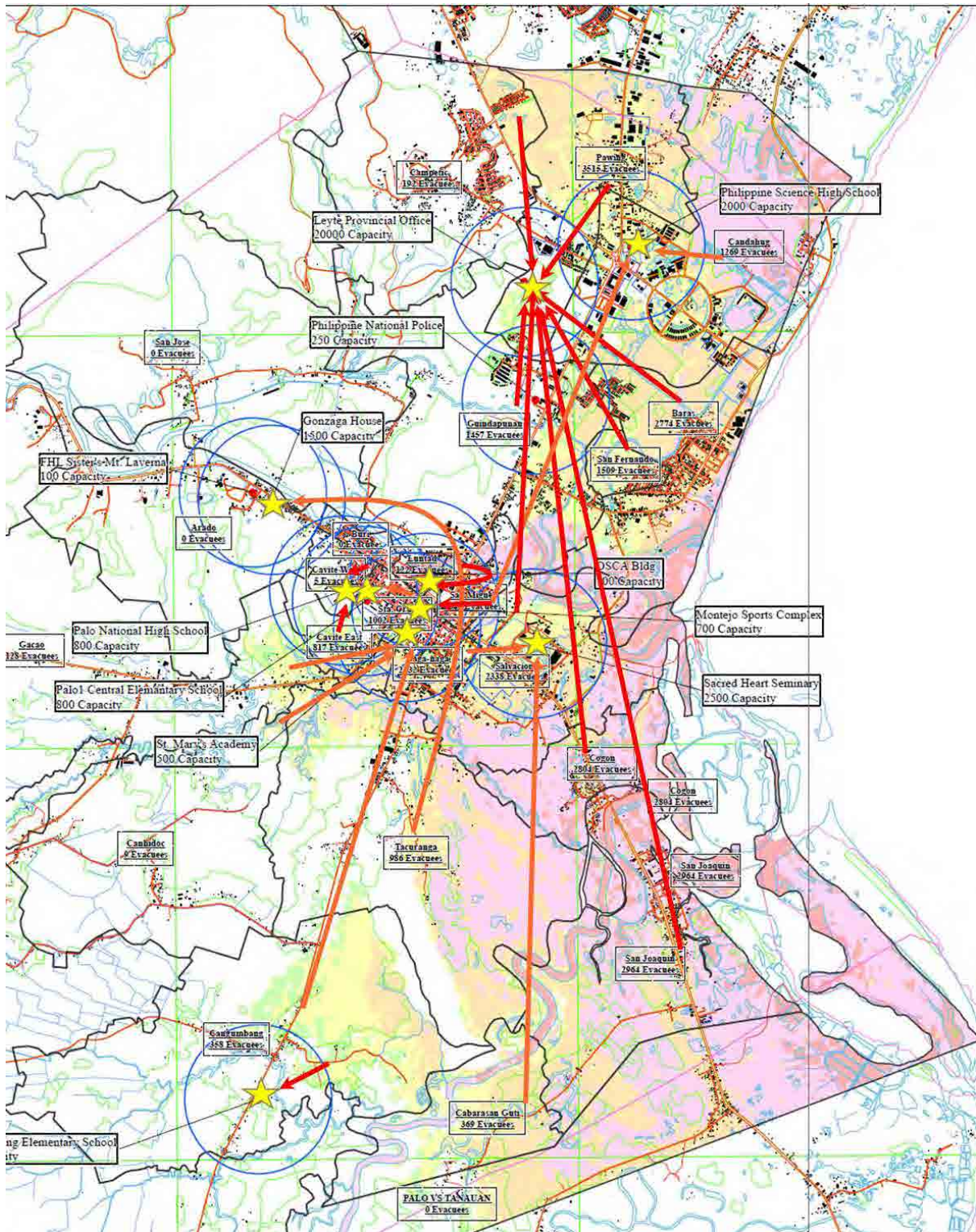
6. Workshop Result on Guiuan Evacuation Plan  
 (to be completed by Palo Municipality)



7. Workshop Result on Tacloban Evacuation Plan  
(to be completed by Palo Municipality)

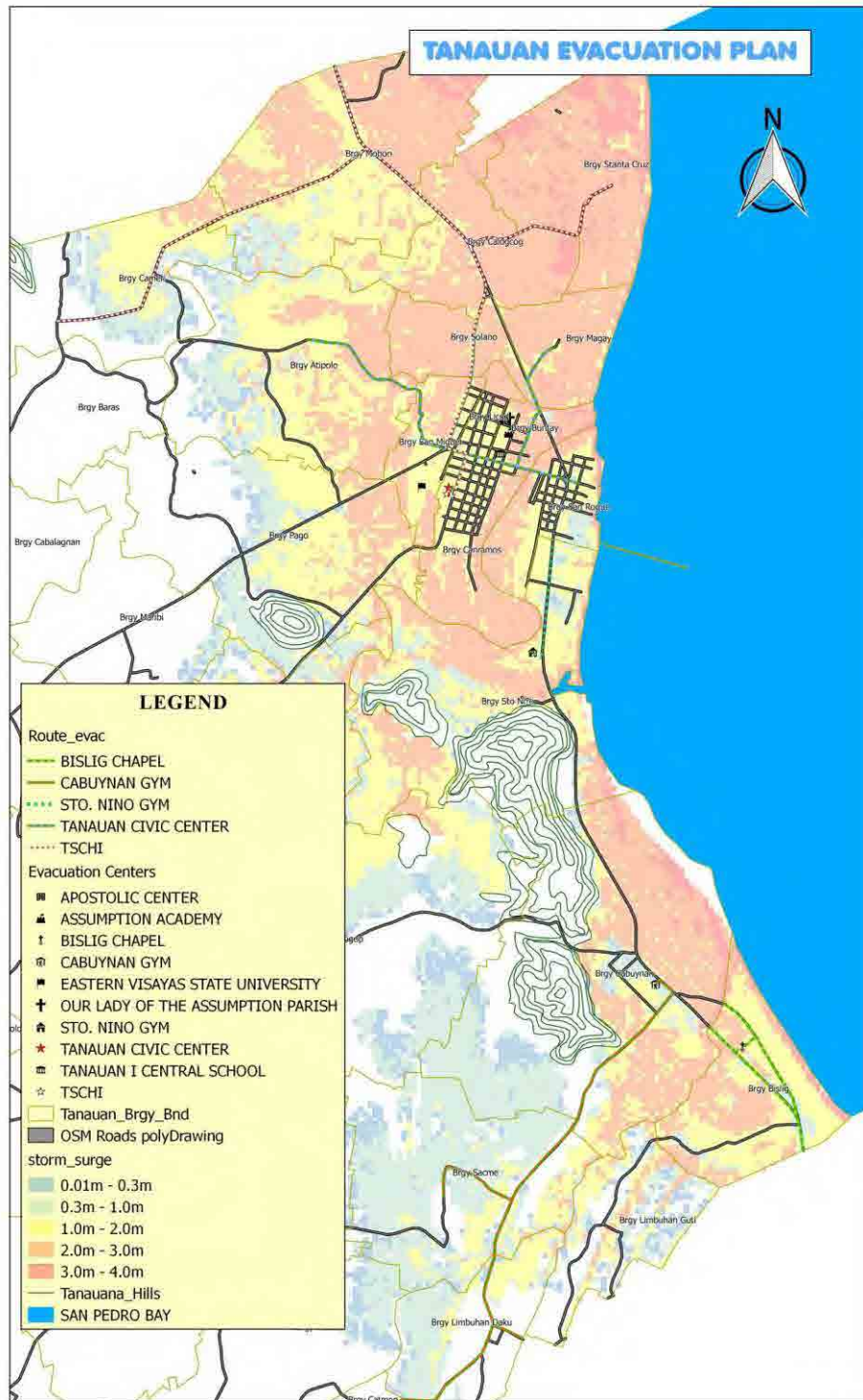


### 8. Workshop Result on Palo Evacuation Plan (to be completed by Palo Municipality)





9. Workshop Result on Tanauan Evacuation Plan  
 (to be completed by Tanauan Municipality)



## **Annex 4**

### **A Method for Evacuation Planning**

#### A Method for Evacuation Planning

##### 1. Introduction

First of all, most important point for evacuation is to aim “Zero Casualty” during disaster event. Therefore at first, people should not stay in the disaster vulnerable area. Secondly, people should not come close to the disaster vulnerable area. Thirdly, if people are in the disaster vulnerable area, they should go away from the area.

However, unfortunately, sometimes people stay in the vulnerable area during the disaster event. Therefore we have to consider how to go away from the dangerous area smoothly. Evacuation planning is to support the smooth evacuation of the people.

##### 2. Basic principles for evacuation measures

As mentioned above, smooth evacuation is important to realize “Zero Casualty”. Therefore target area, evacuation place, evacuation route, early warning system and distribution method of information should be designated and formulated beforehand. And also since the plan should be well understood to act appropriately by the people who will face to the disaster situation, disaster preparedness education, awareness activities and evacuation drill are important to promote “proactive evacuation action”.

Followings are important principles to formulate feasible evacuation plan.

- Safer place for evacuation is ensured
- Evacuation plan with safer way is formulated
- Correct information to urge evacuation is provided
- All people take proactive evacuation action with certainly
- Disaster preparedness education for proactive action is promoted

In this guideline, confirmation of safer place for evacuation and procedure of evacuation planning are shown. This evacuation planning is focused on pre-emptive evacuation.

##### 3. Items of Evacuation Planning (City and Municipality Level)

Followings are items of the evacuation planning.

- 1) Prepare hazard map or historical disaster record map
- 2) Setting hazard type and level
- 3) Designate affected area and confirm the number of evacuees
- 4) Confirm safety of the evacuation center and capacity of persons to stay
- 5) Consider distribution of the evacuees on the map
- 6) Consider evacuation route
- 7) Consider evacuation method
- 8) Consider procedure and timeline for evacuation
- 9) Evaluate the plan by evacuation drill and improve the plan

4. Contents of each items

1) Prepare hazard map or historical disaster record map

At first, preparation of historical disaster record maps or disaster hazard maps which are supposed to occur in the future is needed. This map will be used as base for evacuation planning. And vulnerable area of the LGU can be confirmed by using this map.

However it is needed to cognize that each hazard map or the historical map has conditions. We need to understand well about the situation shown by the map “in which condition” it will occur or had occurred. Therefore if the conditions are changed, the hazardous area also will be changed. The map should be treated as rough indication, and it is not showing absolute area against any disasters. These maps are NOT showing safety area. This map is used to consider dangerous area.

2) Setting hazard type and level

Evacuation plan should be prepared based on the worst scenario. Therefore at least it is assumed worst experience of the area, and the affected area should be considered based on the worst case.

In addition, the evacuation center should be selected in the location as much as safe against any type of hazard, because if LGU shows different evacuation centers by hazard types, the people will confuse where should go. However, if the hazard situation is extremely different by geological character, it should be considered flexibly.

3) Designate affected area and confirm the number of evacuees

Based on the map prepared as above, the number of evacuee is calculated.

Exact number of evacuee is not required in this level, because to grasp approximately number of evacuees in the LGU is important. It is calculated based on the percentage of affected area by hazard or historical map. If the map was prepared by data such as GIS, the calculation is easy. However as mentioned above, since it is not required to have exact number, it can be calculated by approximate percentage of the area.

If there are some hazard maps, the biggest value should be used for the calculation.

For example, there are three types of hazard maps, Flood, Storm Surge and Tsunami. There is a Barangay with 700 populations, and the affected area by flood is 30%, by Storm Surge is 60% and by Tsunami is 40%. Then since the maximum affected area is 60% in this case, number of evacuee is calculated as  $700 \times 0.6 = 420$ . If any special situation such as conservation area or mountain area, etc. it can be reflect the situation.

**Table 1 Estimation of Barangay Basis Evacuee Numbers**

Estimation of Evacuee No. of Barangay								
No.	Barangay	Total Population	Hazard Area (%)				Estimated No. of Evacuees (Pop×Max %)	Remarks
			Flood	Storm Surge	Tsunami	Max %		
1	ZZZ	700	30.0%	60.0%	40.0%	60.0%	420	Sample
2	QQQ	1500	20.0%	100.0%	90.0%	100.0%	1500	Sample

4) Confirm safety of the evacuation center and capacity of persons to stay

The locations of the candidates for evacuation center are confirmed by using the map. It will be checked if

the building locates in the hazard area or not. Then the structure of the building should be confirmed if it is strong enough against the assumed disaster or not. The inspection should be done separately by engineer, and the results of the inspection should be referred for this confirmation. In the sample, it is confirmed only structure type of the buildings, however if possible this part should be developed separately. Also confirmation of the capacity how many people can stay is confirmed.

In addition, basic information such as number of stories, number of latrine, kitchen, etc. also are confirmed if possible.

Following table is a sample of confirmation sheet for the safety of evacuation centers.

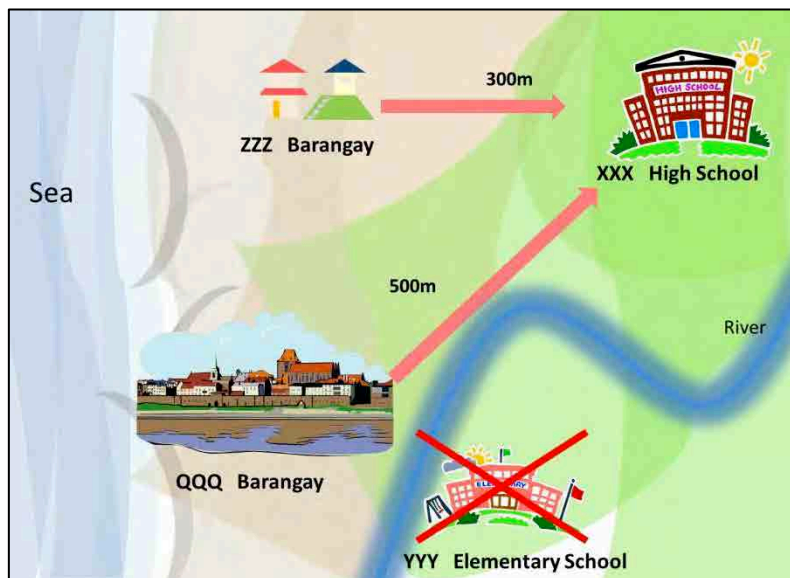
**Table 2 Confirmation of Safety and Capacity of Evacuation Centers**

**Selection of Evacuation Center**

No.	Evacuation Center	Hazard aea				Structure of the Building			No. of Stories	Capacity of Persons In the Building	Evaluation	Remarks
		Flood	Storm Surge	Tsunami	Landslide	Steel	Concrete	Lumber				
TAN-001	XXX High School	No	No	No	No	Yes	Yes	Yes	3	1500	OK	Sample
TAN-002	YYY Elementary School	Yes	Yes	Yes	No	Yes	Yes	No	1	100	No	Sample

5) Consider the distribution of the evacuees on the map

After confirmation of the number of evacuees and capacity of the evacuation centers, distances from Barangays to the evacuation centers are confirmed. The location of evacuation centers and the Barangays are confirmed on the map. Basically walking distance for the evacuation is targeted about 500m.



**Figure 1 Confirmation of Location of Evacuation Center**

After confirmation of the distance, it is needed to confirm if all evacuees are possible to stay at the designating evacuation center or not.

For example, YYY elementary school is not appropriate as evacuation center according to the Table 2, because the school locates in the hazard area of Flood, Storm surge and Tsunami. Therefore, though the

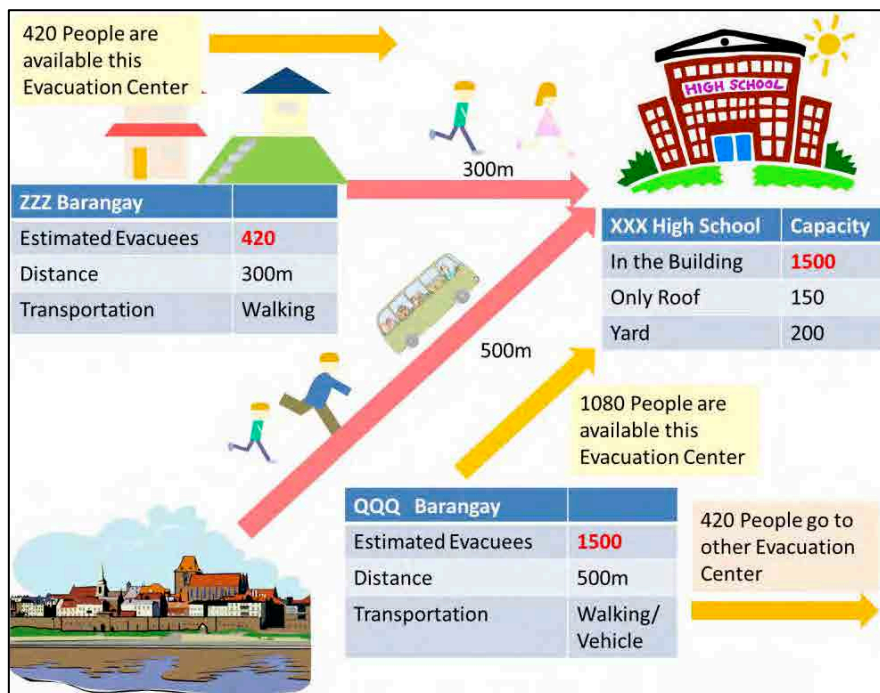
nearest place for evacuees from QQQ Barangay is YYY elementary school, it cannot be used. Then as next step, they need to find another place. Second candidate is XXX High school for them. However this high school is used as evacuation center for ZZZ barangay also. Since capacity of the high school is 1500 and evacuees from ZZZ Barangay is 420,  $1500-420=1080$ . 1080 evacuees are available to stay there. Since the evacuees from QQQ Barangay is 1500,  $1500-1080=420$ . 420 evacuees are not available for this high school. Therefore 420 evacuees from QQQ Barangay need to find other evacuation center. Or if ZZZ Barangay has alternative centers, near and enough capacity, ZZZ Barangay is able to consider that center also.

This procedure will be repeated until all evacuees are accommodated. However, it is not needed to consider exact number of evacuees because the evacuees are not always the same number, depend on the occasion such as date of week, season or special event day etc. So if the general figure is grasped, it is sufficed for the planning.

In case the huge numbers of evacuees are not available near the Barangay, the LGU need to find more buildings to be able to use as evacuation center. Even if it has some distance from the Barangay, basically the evacuation centers should be selected outside of the hazard area. Since this evacuation will be done pre-emptively, people still have a certain amount of time to arrive there. If there is no more appropriate public building, it should be consider private building also.

**Table 3 Consideration of Evacuation Place for Barangay**

3. Evacuation Place for Barangay											
No.	Evacuation Center	Capacity of Persons	Barangay			Transportation		Needs for consideration			Evaluation
			Name	No. of Evacuees	Distance (km)	Walking	Vehicle	Provide Transportation	Emergency evacuation	Others	
TAN-001	XXX High School	1500	ZZZ	420	0.3	Yes	Yes	No	No		
			QQQ	1500	0.5	Yes	Yes	Yes	Yes	Only 1080 is available	Find EC for 420 People



**Figure 2 Allocations of Evacuees**

6) Consider evacuation route

After setting of the allocation of evacuation centers, the routes are considered.

Basically, the route should not pass inside of the hazard area, not cross the river and also avoid passing near steep slope area. In addition, Direction of the evacuation route should not designate toward the hazard.

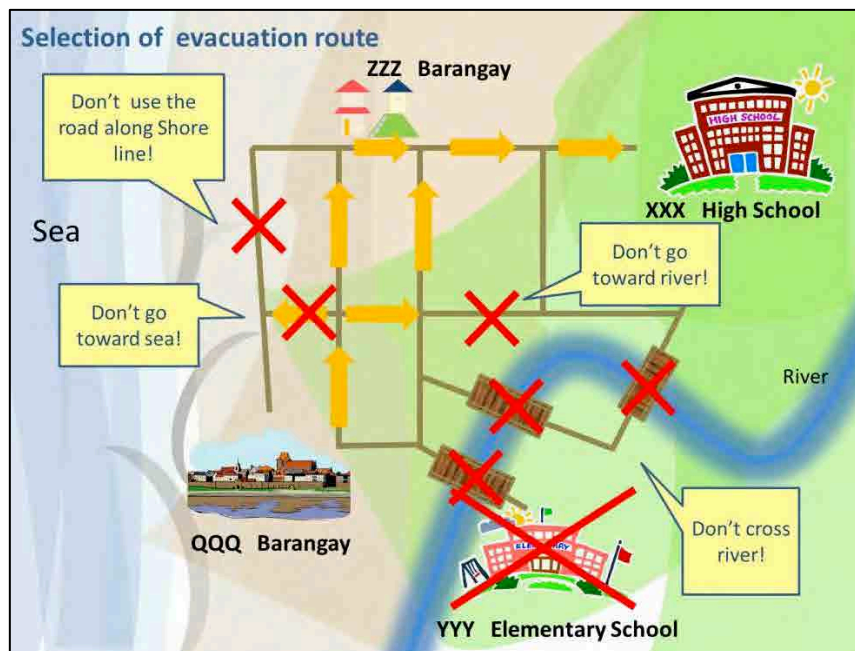


Figure 3 Policy of the Evacuation Route Plan

7) Consider evacuation method

Basically evacuation should be done by walking. The maximum length of the route should be set less than 2.0km. However appropriately it is better to set about 500m. Walking is basic manner for evacuation. Utilization of vehicle should be avoided because of the traffic congestion. It will bother emergency transportations and evacuation of people who need assistance.

For the people who need assistance, such as elder people, disability people, pregnant women, family with some small children etc., it is needed to prepare providing transportation and method to assist. It should be discussed with related people, and prepared beforehand.

As a reference, walking speed is calculated less than 1.0m/s. If the distance was 500m,  $1.0 \times 500 / 60 = 8.3$ min. In addition, remark that because it is very dangerous to move during the storm, heavy rain or strong wind, don't move in the storm. Evacuation should complete before the storm start. This is cardinal rule.

8) Consider the procedure and timeline for evacuation

After planning the evacuation method, the procedure and timeline for each action should be considered. The information such as who, where, how and when should be organized.

For example, if the landfall of typhoon was estimated after three days, During 72 hours, what will LGU do? It should be make clear the contents of actions, timing, location and role sharing.

Regarding this part, since DILG had prepared manuals<sup>1</sup> published in 2015, it is not described the details.

<sup>1</sup> Disaster Preparedness Manual; Checklist of Minimum Critical Preparation for Mayors, Checklist for  
21 - 52

9) Evaluate the plan by evacuation drill and improve the plan

After planning the actions with timelines, the evacuation drills should be conducted. Because, the target people are require to act as planned. Since these actions should be done almost automatically by each person, periodical practice is needed to be able to act without thinking, where to go, what should do and when, etc. The drills can provide the opportunity to aware the system to the people.

On the other hand, the plan should be evaluate if functions or not. Since the drill is practical activity, the problems and issues can be found through these activities. In addition, it is recommended that the drills try by different scenario of disaster, different time (daytime, night time, early morning, etc.), and different seasons (if any difference) etc. because some new problems will be found through the different situations. Based on the result of the evacuation drill, the evacuation plan can be improved.

5. Conclusion

This is a brief guideline for the evacuation planning for City and Municipal level. As a LGU evacuation plan, grasping whole figure of the LGU is important as a first step. Therefore it should not be concentrate the details of the plan. Start to have crude plan first, then, discuss with Barangays, and improve the plan through the drills.

Please consider how to make the people away from the dangerous area smoothly.

end

## **Chapter 22 Emergency Transport Plan by LGUs**

### **22.1 Purpose**

Purposes of formulation and implementation of emergency transport plan will be as follows:

- Smooth flow of the people and freight is needed for life saving, livelihood support of sufferers and restoration of infrastructure after a large disaster.
- Transportation capacity should be examined and emergency routes enabling emergency transport shall be prioritized and coordinated with the organizations concerned.

The emergency transport plan should include the following.

- To confirm organization which can implement necessary actions quickly
- To prevent traffic disorder due to a disaster
- To ensure proactive countermeasure for obstacle clearance on the emergency routes

### **22.2 Procedure**

The following shall be decided by LGU with workshop discussion and consultation.

- Categorization of requirements in emergency
- Organization, responsibility and authority in emergency
- Priority of actions and orders
- Location of emergency routes, gate ways, storage, distribution centers, evacuation centers etc.

The emergency transport plans were formulated with the following procedure.

#### **22.2.1 Prior explanation and consultation before workshop**

The outline and requirement of emergency transport plan was explained by the study team and the check sheets were filled with interview and consultation (the check sheets are attached in Attachment-1 in this section) on early September 2014.

#### **22.2.2 Planning and discussion in the workshop**

Contents of emergency transport plan was studied and discussed in the workshop on September 2014.

#### **22.2.3 Preparation of draft emergency transport plan**

Draft emergency transport plan was prepared by the study team on October 2014 and it was examined by each LGU.

#### **22.2.4 Revision of emergency transport plan**

The emergency transport plan was revised according to the result of discussion with LGU and the



study team on February 2015.

## **22.3 Contents of Emergency Transport Plan**

### **22.3.1 Emergency transportation route and road development plan**

DPWH will designate many of arterial roads and secondary roads as emergency transport routes.

LGU shall aim to designate access road between transport point and emergency transport routes and to secure them.

- Responsible and controlling section
- Location of transportation point
- Location of transport route
- Prioritization of clearance of access road
- Required road development project

### **22.3.2 Transportation capacity**

LGU shall decide the method of securing and operating vehicles/boats for emergency transport.

- Responsible and controlling section
- Designation of vehicles/boats to be used
- Quantity of vehicles/boats to be used
- Location of usual parking place
- Drivers of the vehicles/boats
- Operators and workers of loading and unloading of relief materials
- Ways of fuel stock (quantity and location)
- Person to request relief such as helicopter operation

### **22.3.3 Collection and transmission of road damage information**

It is important for evacuation and transport plan at emergency that LGU should get road damage information quickly and that the road conditions should be informed to the public.

- Responsible and controlling section
- Way to collect road information
- Kind of information
- Way to inform to public
- Public relations method

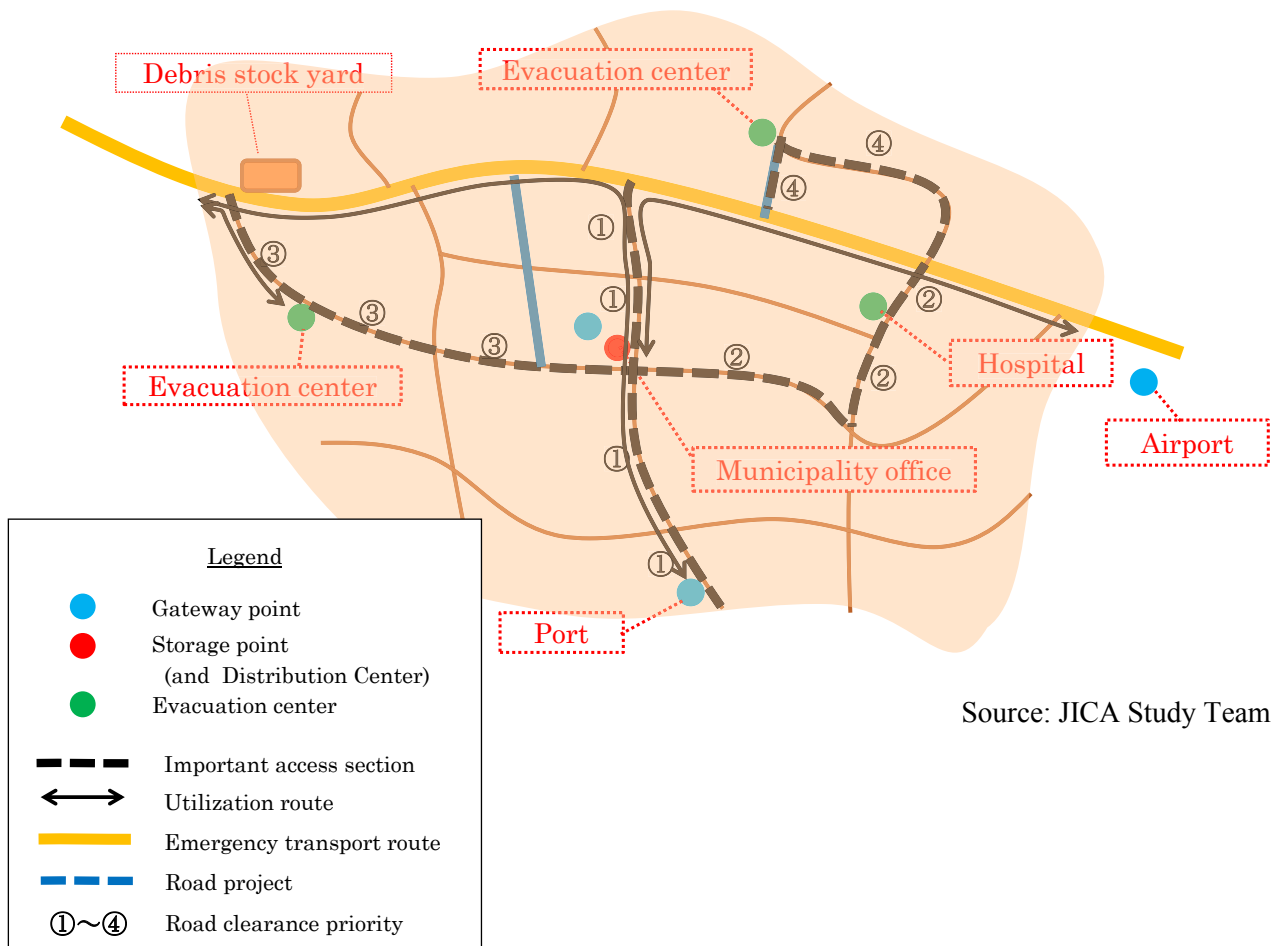
### 22.3.4 Road cleaning after a disaster

LGU should decide the priority of road cleaning and the method of securing machines and workers in order to clear the road quickly, when roads are disrupted by debris and obstacles.

- Responsible and controlling section
- Priority of road cleaning at a disaster
- Sections and workers for road cleaning
- Equipment and machines for road cleaning
- Location of temporal stock yard for debris
- Organization to cooperate with

### 22.3.5 Schematic Diagram

The following is schematic diagram of emergency transport plan.



Source: JICA Study Team

Figure 22.3-1 Schematic Diagram of Emergency Transport Plan

## 22.4 Emergency Transport Plans of 5 LGUs

### 22.4.1 Tacloban

#### (1) Major policy related with emergency transport

Smooth flow of the people and freight is needed for life saving, livelihood support of sufferers and restoration of infrastructure after a large disaster.

Ensuring of transportation capacity and emergency routes enabling emergency transport is required.

The purposes of the planning are following;

- To confirm organization which can implement above matters quickly
- To prevent traffic disorder due to a disaster
- To ensure proactive countermeasure for obstacle clearance of the emergency

Table 22.4-1 shows implementing body and major role.

**Table 22.4-1 Implementing Body and Major Role in Tacloban City**

Item	Implementing Body	Major Role
Ensuring transportation route	Rescue Unit DRRMO	✓ Making an evacuation plan
	Engineering Office	✓ Making a road developing plan, Constructing and Maintaining
		✓ Controlling traffic
Ensuring transportation capacity	LGU Health Unit	✓ Ensuring vehicles for first aid
	Social Welfare Office	✓ Ensuring vehicles for relief goods
	Engineering Office	✓ Ensuring vehicles for road cleaning and restoration
	General Services Office	
Collection and transmission of road damage information	DRRMO	✓ Ensuring means of the communication
		✓ Managing the work
Road cleaning after a disaster	Engineering Office	✓ Deciding the priority
	General Services Office	✓ Ensuring machines, workers and temporal stockyards
		✓ Managing the cleaning work

Source: JICA Study Team

The area of transport is restricted in the municipality.

The evacuation plan and this plan must be coordinated adequately.

## **(2) Ensuring transportation route**

It was assumed that main routes from many national roads are designated as emergency transport routes, because DPWH didn't yet designate the routes.

Tacloban has many evacuation centers, a bus terminal, a port and an airport as transport points.

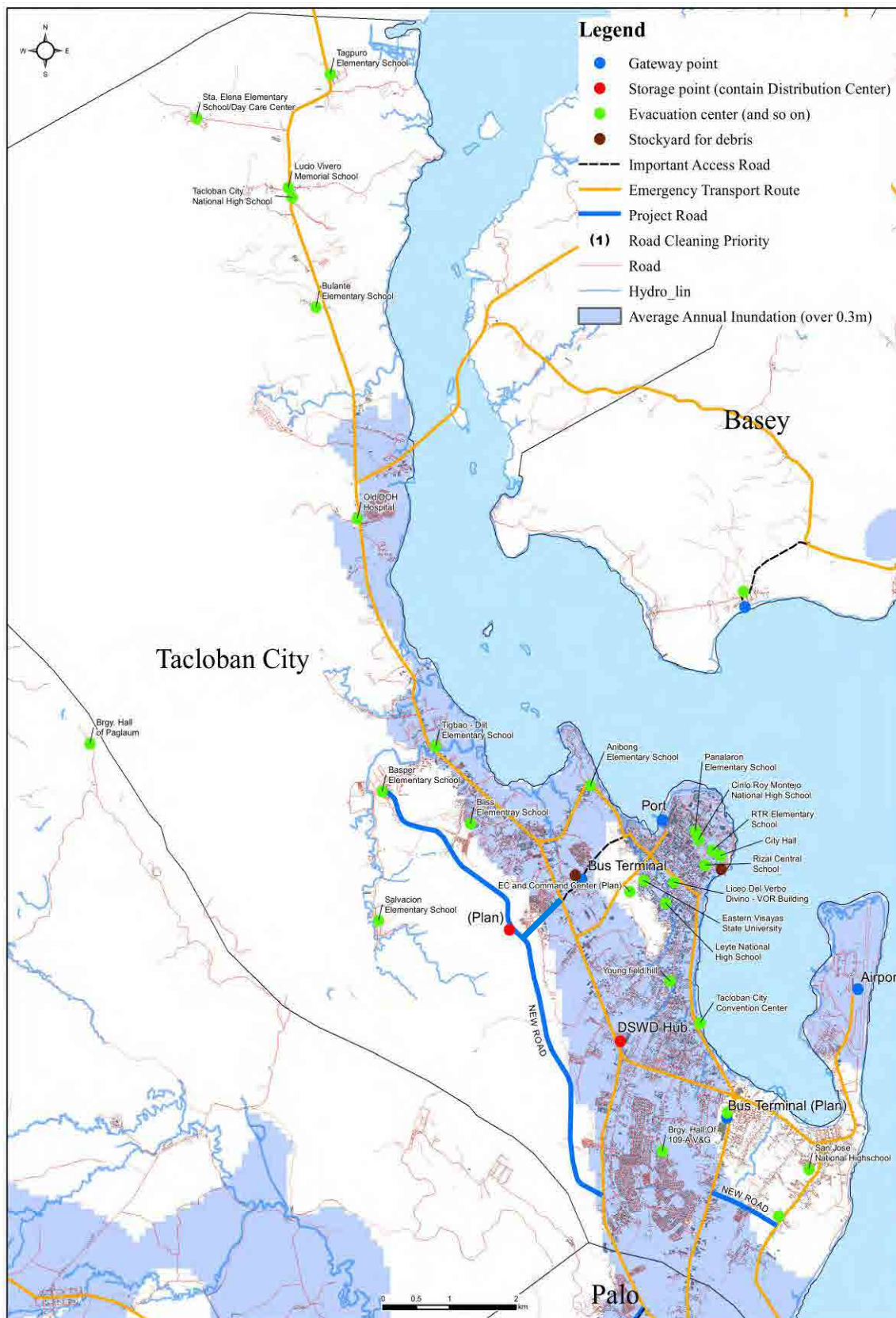
Figure 22.4-1 shows transport points and access routes between transport points and emergency transport routes in Tacloban.

Road administrator of LGU maintains the access roads and makes efforts for developing necessary roads before a disaster.

Road administrator of LGU controls traffic according to the road condition after a disaster.

LGU always stocks the minimum quantity of relief goods at the adequate place.

Beforehand, LGU designates the landing place for transport by a helicopter.



Source: JICA Study Team

Figure 22.4-1 Transport point and important access route in Tacloban City

### (3) Ensuring transportation capacity

LGU plans a method of ensuring and operating vehicles/boats for emergency transport.

Table 22.4-2 shows the transportation capacity which LGU ensures at a disaster.

When an unanticipated situation occurs and LGU cannot ensure the capacity by itself, it ensures an alternative transport in cooperation with other organization: CGA, province etc.

LGU uses the boat for transportation at the flooded area as necessary.

City Mayor asks Air Force of the Philippines to operate a helicopter as necessary.

**Table 22.4-2 Transportation capacity in Tacloban City**

Item	Number	Ensuring method	Remark
Vehicle	Van Vehicle	6	LGU own
	Large Truck	6	LGU own
	Outrigger Boat	2	LGU own
	Small Boat	1	LGU own
Worker for loading	undecided	LGU staff (supervision) Volunteers, Private company	
Parking space	-	LGU own site	
Fuel stock	1-day use	Buying from gas station	Better plan is to stock 3-day use.

Source: JICA Study Team

### (4) Collection and transmission of road damage information

DRRMO gets the information of road damage information quickly, and informs condition roads to public at a disaster.

LGU cooperate with related organizations at collection and transmission.

Table 22.4-3 shows the method and contents of information.

**Table 22.4-3 Method and contents of information in Tacloban City**

Item	Method	Contents of information
Collecting the road information	Patrol on foot Patrol by cycle Patrol by motorcycle Telephone Radio communication devices Satellite phone	Level of obstacle Occurrence time Road condition
Informing to public	Patrol Radio communication machine	Level of obstacle Prospect of restoration Alternative route

Source: JICA Study Team

## (5) Road cleaning after a disaster

Beforehand, General Services Office and Engineering Office decide a priority of road cleaning and a method of ensuring machines and worker in order to clear the road quickly, when roads are disrupted by debris and obstacles.

LGU cleans the road with cooperation of DPWH, Military, Barangay, Private Company, volunteer and NGO.

Table 22.4-4 shows the road cleaning capacity which LGU ensures at a disaster.

Figure 22.4-1 shows the priority of road cleaning except national roads.

**Table 22.4-4 Road cleaning capacity in Tacloban City**

Item		Number	Ensuring method	Remark
Vehicle/ Machine	Dump truck	10	LGU own	
	Truck	20	Borrow from other LGU	
	Back-hoe	4	Borrow from other LGU	
	Pay-loader	4	Borrow from other LGU	
Worker for cleaning		undecided	LGU staff, Volunteer, NGO	
Temporal stockyards for debris		2 site	LGU's own site	

Source: JICA Study Team

### 22.4.2 Palo

#### (1) Major policy related with emergency transport

Smooth flow of the people and freight is needed for life saving, livelihood support of sufferers and restoration of infrastructure after a large disaster.

Ensuring of transportation capacity and emergency routes enabling emergency transport.

The purposes of the planning are following;

- To confirm organization which can implement above matters quickly
- To prevent traffic disorder due to a disaster
- To ensure proactive countermeasure for obstacle clearance of the emergency

Table 22.4-5 shows implementing body and major role.

**Table 22.4-5 Implementing Body and Major Role in Palo Municipality**

Item	Implementing Body	Major Role
Ensuring transportation route	MDRRMO	✓ Making an evacuation plan
	Engineering Office	✓ Making a road developing plan, Constructing and Maintaining
		✓ Controlling traffic

Ensuring transportation capacity	MHU	✓ Ensuring vehicles for first aid
	MSWDO	✓ Ensuring vehicles for relief goods
	General Services Office, Engineering Office	✓ Ensuring vehicles for road clearing and restoration
Collection and transmission of road damage information	General Services Office, Engineering Office	✓ Ensuring means of the communication ✓ Managing the work
Road cleaning after a disaster	General Services Office, Engineering Office	✓ Deciding the priority ✓ Ensuring machines, workers and temporal stockyards ✓ Managing the cleaning work

Source: JICA Study Team

The area of transport is restricted in our municipality.

The evacuation plan and this plan must be coordinated adequately.

## **(2) Ensuring transportation route**

It was assumed that national roads between Tacloban and Abuyog, Palo and Santa Fe, Palo and Pastrana are designated as emergency transport routes.

Palo has three evacuation centers plan and one bus terminal plan.

Figure 22.4-2 shows transport points and access roads between transport points and emergency transport routes in Palo.

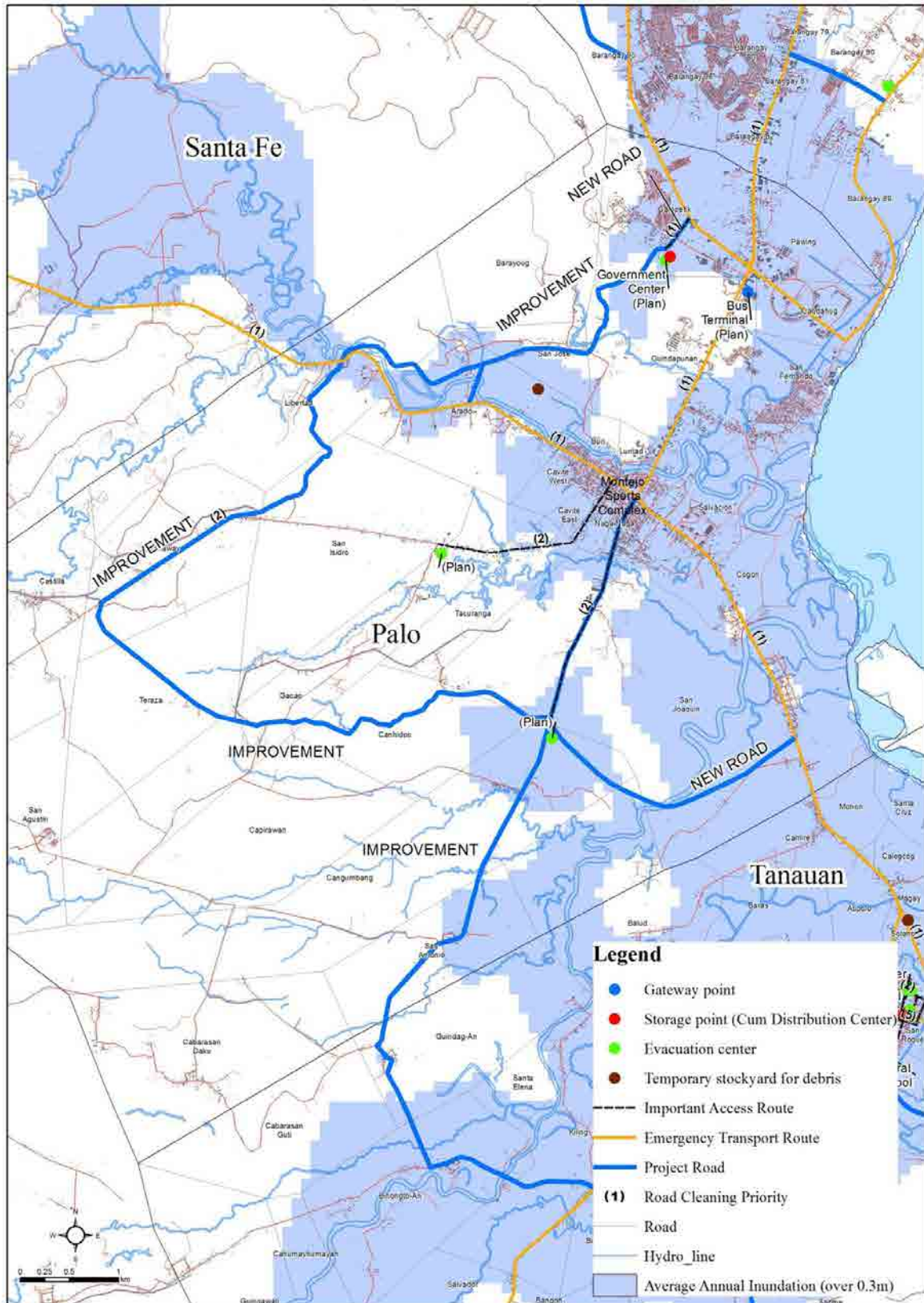
Road administrator of LGU maintains the access roads and makes efforts for developing necessary roads before a disaster.

Road administrator of LGU controls traffic according to the road condition after a disaster.

Although Palo has no storage point, the minimum quantity of relief goods always must be stocked at the adequate place.

Beforehand, LGU designates the landing place for transport by a helicopter.





Source: JICA Study Team

Figure 22.4-2 Transport point and important access route in Palo Municipality

### (3) Ensuring transportation capacity

MDRRMO plans a method of ensuring and operating vehicles/boats for emergency transport.

Table 22.4-6 shows the transportation capacity which LGU ensures at a disaster.

When an unanticipated situation occurs and LGU cannot ensure the capacity by itself, it ensures an alternative transport by cooperating with other organization: CGA, province etc.

LGU uses the boat for transportation at the flooded area as necessary.

**Table 22.4-6 Transportation capacity in Palo Municipality**

Item		Number	Ensuring method	Remark
Vehicle	Small Truck	2	LGU own	
	Boat	3	LGU own	
Worker for loading		as needed	LGU staffs	
Parking space		-	LGU own site	Gymnasium
Fuel stock		Nothing	Buying from gas station	Better plan is to stock 3-day use.

Source: JICA Study Team

### (4) Collection and transmission of road damage information

MDRRMO gets the information of road damage information quickly, and informs condition roads to public regarding the calamity.

LGU cooperate with related organizations at collection and transmission of information from the provincial government to the municipality and vice versa.

Table 22.4-7 shows the method and contents of information.

**Table 22.4-7 Method and contents of information in Palo Municipality**

Item	Method	Contents of information
Collecting regarding the status of road network	Patrol by motorcycle	Level of obstacle
	Patrol by car	
	Telephone	
	Radio communication handheld radio	
Informing to public	Information dissemination through public address system (Bandillo)	Alternative route
	Radio communication handheld radio	

Source: JICA Study Team

### (5) Road cleaning after a disaster

Beforehand, LGU decides the priority of road cleaning and a method of ensuring machines and worker in order to clear the road quickly, when roads are disrupted by debris and obstacles.

LGU makes a special team for road cleaning after a disaster.

Figure 22.4-2 shows the priority of road cleaning except national roads.

LGU cleans the road with cooperation of DPWH, Military and NGO.

Table 22.4-8 shows the road cleaning capacity which LGU ensures at a disaster.

**Table 22.4-8 Road cleaning capacity in Palo Municipality**

Item		Number	Ensuring method	Remark
Vehicle/ Machine	Dump truck	4	LGU's own	
	Back-hoe	1	Borrow from NGO	
	Pay-loader	1	Borrow from NGO	
Worker for cleaning		as needed	Special team	
Temporal stockyards for debris		1 site	LGU's own	

Source: JICA Study Team

### 22.4.3 Tanauan

#### (1) Major policy related with emergency transport

Smooth flow of the people and freight is needed for life saving, livelihood support of sufferers and restoration of infrastructure after a large disaster.

Ensuring of transportation capacity and emergency routes enabling emergency transport.

The purposes of the planning are following;

- To confirm organization which can implement above matters quickly
- To prevent traffic disorder due to a disaster
- To ensure proactive countermeasure for obstacle clearance of the emergency

Table 22.4-9 shows implementing body and major role.

**Table 22.4-9 Implementing Body and Major Role in Tanauan Municipality**

Item	Implementing Body	Major Role
Ensuring transportation route	DRMO, Mayor's office	✓ Making an evacuation plan
	Engineering Office	✓ Making a road developing plan, Constructing and Maintaining ✓ Controlling traffic
	Traffic law enforcer	✓ Controlling traffic
Ensuring transportation capacity	MHO	✓ Ensuring vehicles for first aid
	MSWD	✓ Ensuring vehicles for relief goods
	General Service, Engineering Office	✓ Ensuring vehicles for road clearing and restoration
Collection and transmission of road damage information	Engineering Office	✓ Ensuring means of the communication
		✓ Managing the work

Road cleaning after a disaster	Engineering Office, General Service	<ul style="list-style-type: none"> <li>✓ Deciding the priority</li> <li>✓ Ensuring machines, workers and temporal stockyards</li> <li>✓ Managing the cleaning work</li> </ul>
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Source: JICA Study Team

The area of transport is restricted in our municipality.

The evacuation plan and this plan must be coordinated adequately.

Ensuring transportation route

It was assumed that national roads between Tacloban and Abuyog, Tanauan and Dagami are designated as emergency transport routes, because DPWH didn't yet designate the routes.

Traffic can pass through these roads at a flood, because some parts of them are embankment structures.

Tanauan has seven evacuation centers and only municipality office as a storage point, without port and bus terminal.

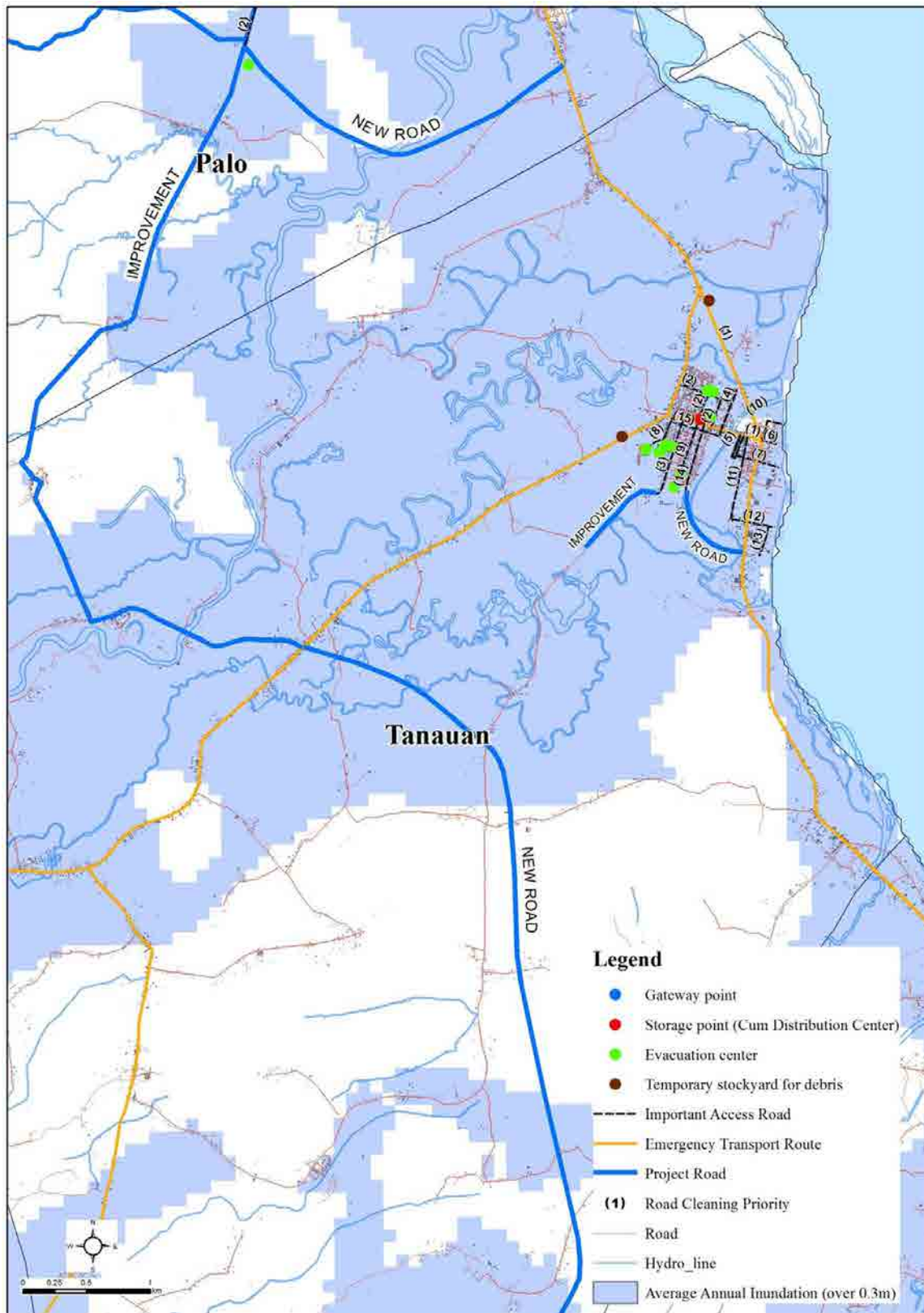
Figure 22.4-1 and Figure 22.4-4 show transport points and access roads between transport points and emergency transport routes in Tanauan.

Road administrator of LGU maintains the access roads and makes efforts for developing necessary roads before a disaster.

Road administrator and traffic administrator of LGU controls traffic according to the road condition after a disaster.

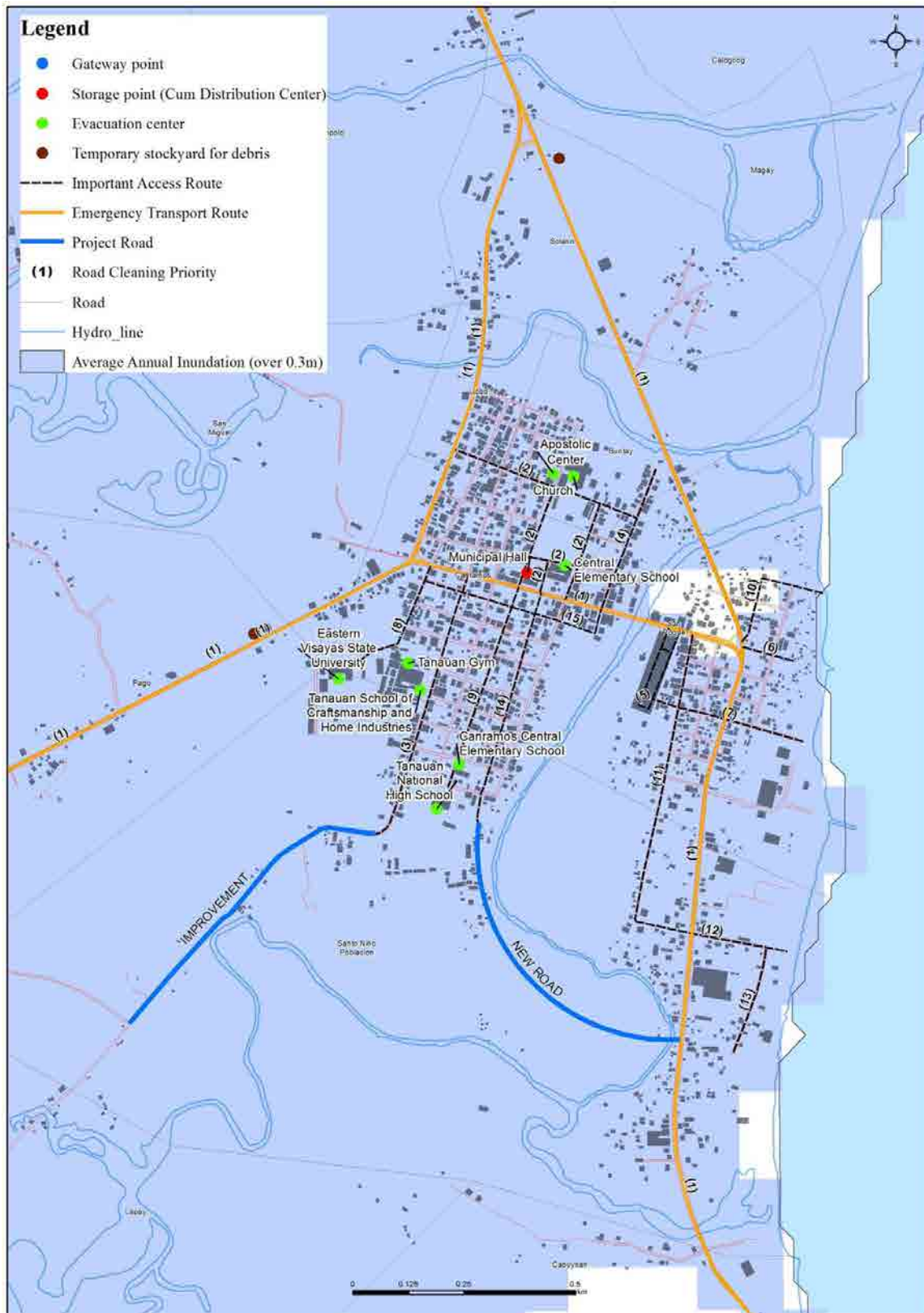
LGU always stocks the minimum quantity of relief goods at the adequate place.

Beforehand, LGU designates the landing place for transport by a helicopter.



Source: JICA Study Team

Figure 22.4-3 Transport point and important access route in Tanauan Municipality



Source: JICA Study Team

**Figure 22.4-4 Transport point and important access route (Central area) in Tanauan Municipality**

## (2) Ensuring transportation capacity

LGU plans a method of ensuring and operating vehicles/boats for emergency transport.

Table 22.4-10 shows the transportation capacity which LGU ensures at a disaster.

When an unanticipated situation occurs and LGU cannot ensure the capacity by itself, it ensures an alternative transport by cooperating with other organization: CGA, province etc.

LGU uses the boat for transportation at the flooded area as necessary.

**Table 22.4-10 Transportation capacity in Tanauan Municipality**

Item		Number	Ensuring method	Remark
Vehicle	Van Vehicle	4	LGU own	For relief goods
	Ambulance	1	LGU own	For first aid
	Boat	1	LGU own	Existing boat does not function because of broken engine.
Worker for loading		as needed	LGU staffs	
Parking space		-	LGU own site	
Fuel stock		Nothing	Buying from gas station	Better plan is to stock 3-day use.

Source: JICA Study Team

## (3) Collection and transmission of road damage information

LGU gets the information of road damage information quickly, and informs condition roads to public at a disaster.

LGU cooperate with related organizations at collection and transmission.

Table 22.4-11 shows the method and contents of information.

**Table 22.4-11 Method and contents of information in Tanauan Municipality**

Item	Method	Contents of information
Collecting the road information	Patrol by motorcycle Patrol by cycle (plan)	Level of obstacle
Informing to public	Patrol and loud speaker Notice on the road Cooperation of barangay officials (plan)	Alternative route

Source: JICA Study Team

## (4) Road cleaning after a disaster

Beforehand, LGU decides the priority of road cleaning and the method of ensuring machines and worker in order to clear the road quickly, when roads are disrupted by debris and obstacles.

Figure 22.4-3 and Figure 22.4-4 show the priority of road cleaning except national roads.

LGU cleans the road with cooperation of DPWH, Military and NGO.

Table 22.4-12 shows the road cleaning capacity which LGU ensures at a disaster.

**Table 22.4-12 Road cleaning capacity in Tanauan Municipality**

Item		Number	Ensuring method	Remark
Vehicle/ Machine	Dump truck	4	Borrow from other LGU and private	
	Back-hoe	1	Borrow from other LGU and private	
	Pay-loader	1	Borrow from other LGU and private	
Worker for cleaning		as needed	LGU staffs, Private company staffs, Barangay officials, Volunteers	
Temporal stockyards for debris		as needed	Borrow from private	

Source: JICA Study Team

#### 22.4.4 Basey

##### (1) Major policy related with emergency transport

Smooth flow of the people and freight is needed for life saving, livelihood support of sufferers and restoration of infrastructure after a large disaster.

Ensuring of transportation capacity and emergency routes enabling emergency transport.

The purposes of the planning are following;

- To confirm organization which can implement above matters quickly
- To prevent traffic disorder due to a disaster
- To ensure proactive countermeasure for obstacle clearance of the emergency

Table 22.4-13 shows implementing body and major role.

**Table 22.4-13 Implementing Body and Major Role in Basey Municipality**

Item	Implementing Body	Major Role
Ensuring transportation route	DRRMO	✓ Making an evacuation plan
	Engineering Office	✓ Making a road developing plan, Constructing and Maintaining ✓ Controlling traffic
Ensuring transportation capacity	RHU	✓ Ensuring vehicles for first aid
	MSWDO	✓ Ensuring vehicles for relief goods
	Engineering Office DENR	✓ Ensuring vehicles for road cleaning and restoration
Collection and transmission of road damage information	General Services Office,	✓ Ensuring means of the communication
	Engineering Office	✓ Managing the work



Road cleaning after a disaster	Engineering Office DENR	<ul style="list-style-type: none"> <li>✓ Deciding the priority</li> <li>✓ Ensuring machines, workers and temporal stockyards</li> <li>✓ Managing the cleaning work</li> </ul>
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Source: JICA Study Team

The area of transport is restricted in our municipality.

The evacuation plan and this plan must be coordinated adequately.

**(2) Ensuring transportation route**

It was assumed that national roads between Tacloban and Guiuan, Basey and Santa Rita are designated as emergency transport routes.

Evacuation centers, bus terminal and storage point as transport points shall be designated.

Figure 22.4-5 and Figure 22.4-6 show transport points and access roads between transport points and emergency transport routes in Basey.

Planned bus terminal will be used as a transport point.

Basey II Central Elementary School in the risky zone should be reconstructed with 2 ~ 3 story building. The second and third stories will be used as emergency evacuation center for emergency such as tsunami.

Road administrator of LGU maintains the access roads and makes efforts for developing necessary roads in ordinary times.

Road administrator of LGU controls traffic according to the road condition after a disaster.

LGU ensures sea routes for two islands in Basey, therefore LGU maintains and improves the ports.

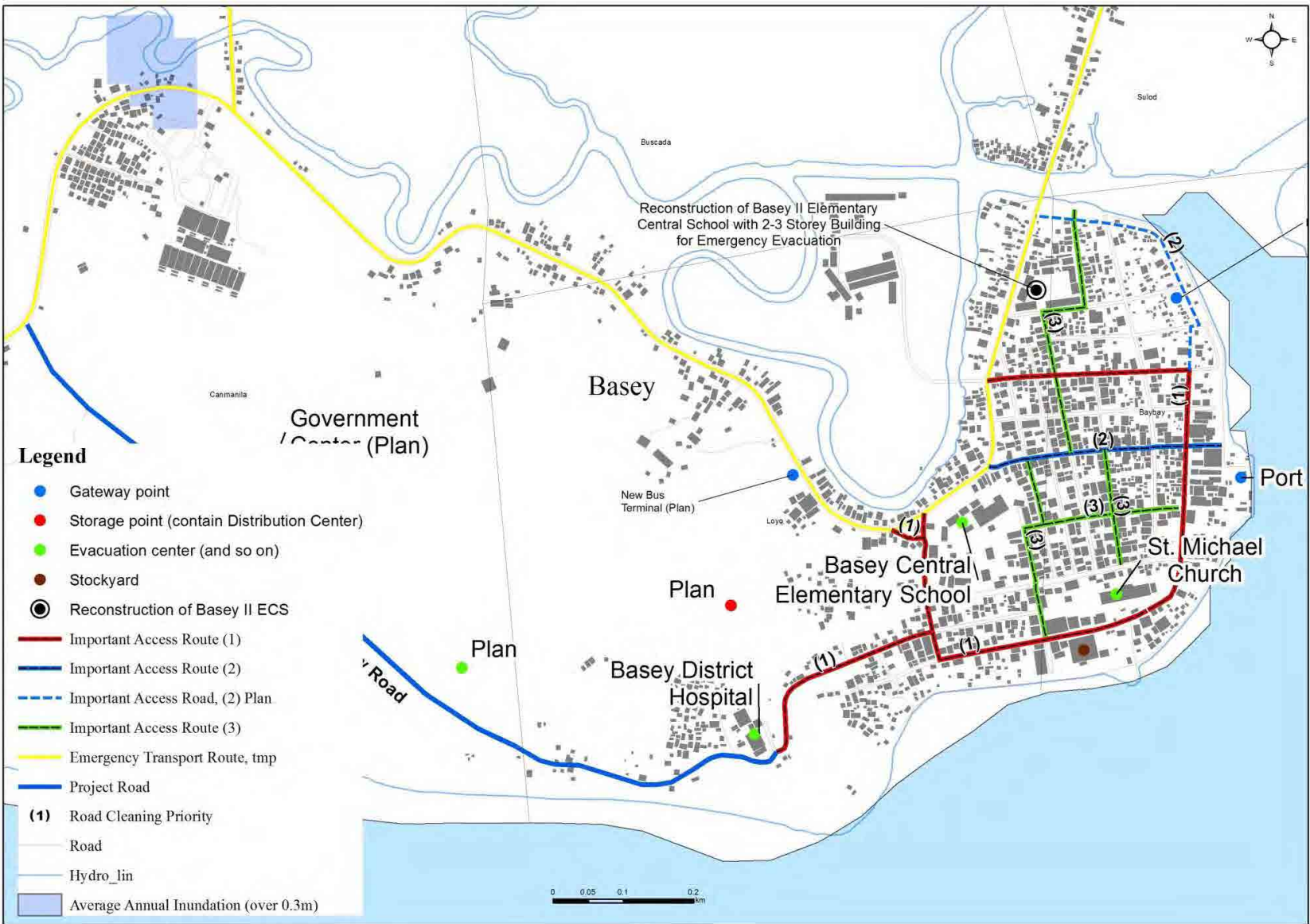
LGU always stocks the minimum quantity of relief goods at the adequate place.

Beforehand, LGU designates the landing place for transport by a helicopter.



Source: JICA Study Team

Figure 22.4-5 Transport point and important access route in Basey Municipality



Source: JICA Study Team

Figure 22.4-6 Transport point and important access route (Central Area) in Basey Municipality

### (3) Ensuring transportation capacity

DRRMO plans a method of ensuring and operating vehicles/boats for emergency transport.

Table 22.4-14 shows the transportation capacity which LGU ensures at a disaster.

When an unanticipated situation occurs and LGU cannot ensure the capacity by itself, it ensures an alternative transport by cooperating with other organization: CGA, province etc.

LGU uses the boat for transportation at the flooded area as necessary.

**Table 22.4-14 Transportation capacity in Basey Municipality**

Item		Number	Ensuring method	Remark
Vehicle	Small Truck	2	LGU own	
	Van Vehicle	1	LGU own	
	Boat	as needed	Borrow from private	
Worker for loading		as needed	LGU staffs, Barangay, Volunteers	
Parking space		-	LGU own site	
Fuel stock		Nothing	Buying from gas station	Better plan is to stock 3-day use.

Source: JICA Study Team

### (4) Collection and transmission of road damage information

LGU information officer gets the information of road damage information quickly, and informs condition roads to public at a disaster.

LGU cooperate with related organizations at collection and transmission.

Table 22.4-15 shows the method and contents of information.

**Table 22.4-15 Method and contents of information in Basey Municipality**

Item	Method	Contents of information
Collecting the road information	Patrol on foot Patrol by motorcycle Patrol by car Telephone, Satellite phone Radio communication machine	Condition of damage and roads
Informing to public	Patrol and loud speaker Notice on the road Radio communication machine Emergency power supply	Level of obstacle Prospect of restoration Alternative route

Source: JICA Study Team

## (5) Road cleaning after a disaster

Beforehand, Engineering office and DRRMO decides the priority of road cleaning and the method of ensuring machines and worker in order to clear the road quickly, when roads are disrupted by debris and obstacles.

LGU makes a special team for road cleaning after a disaster.

Figure 22.4-6 shows the priority of road cleaning except national roads.

LGU cleans the road with cooperation of DPWH, Military, Barangay, Private company and NGO.

Table 22.4-16 shows the road cleaning capacity which LGU ensures at a disaster.

**Table 22.4-16 Road cleaning capacity in Basey Municipality**

Item	Number	Ensuring method	Remark
Vehicle/ Machine	Dump truck	10	Borrow from NGO
	Back-hoe	3	Borrow from NGO
	Wheel-loader	3	Borrow from NGO
Worker for cleaning	as needed	LGU staff	
Temporal stockyards for debris	1 site	LGU's own	

Source: JICA Study Team

## 22.4.5 Guiuan

### (1) Major policy related with emergency transport

Smooth flow of the people and freight is needed for life saving, livelihood support of sufferers and restoration of infrastructure after a large disaster.

Ensuring of transportation capacity and emergency routes enabling emergency transport.

The purposes of the planning are following;

- To confirm organization which can implement above matters quickly
- To prevent traffic disorder due to a disaster
- To ensure proactive countermeasure for obstacle clearance of the emergency

Table 22.4-17 shows implementing body and major role.

**Table 22.4-17 Implementing Body and Major Role in Guiuan Municipality**

Item	Implementing Body	Major Role
Ensuring transportation route	DRRMO Barangay	✓ Making an evacuation plan
	Engineering Office	✓ Making a road developing plan, Constructing and Maintaining ✓ Controlling traffic

Ensuring transportation capacity	RHU Rescue Team	✓	Ensuring vehicles for first aid
	MSWDO	✓	Ensuring vehicles for relief goods
	Engineering Office	✓	Ensuring vehicles for road cleaning and restoration
Collection and transmission of road damage information	Command Center	✓	Ensuring means of the communication
	DRRMO	✓	Managing the work
Road cleaning after a disaster	General Services Office	✓	Deciding the priority
		✓	Ensuring machines, workers and temporal stockyards
		✓	Managing the cleaning work

Source: JICA Study Team

The area of transport is restricted in our municipality.

The evacuation plan and this plan must be coordinated adequately.

## **(2) Ensuring transportation route**

It was assumed that national roads between Guiuan and Mercedes are designated as emergency transport routes, because DPWH didn't yet designate the routes.

Guiuan has evacuation centers, a bus terminal, an airport and many ports as transport points.

Figure 22.4-7 and Figure 22.4-8 show transport points and access routes between transport points and emergency transport routes in Guiuan.

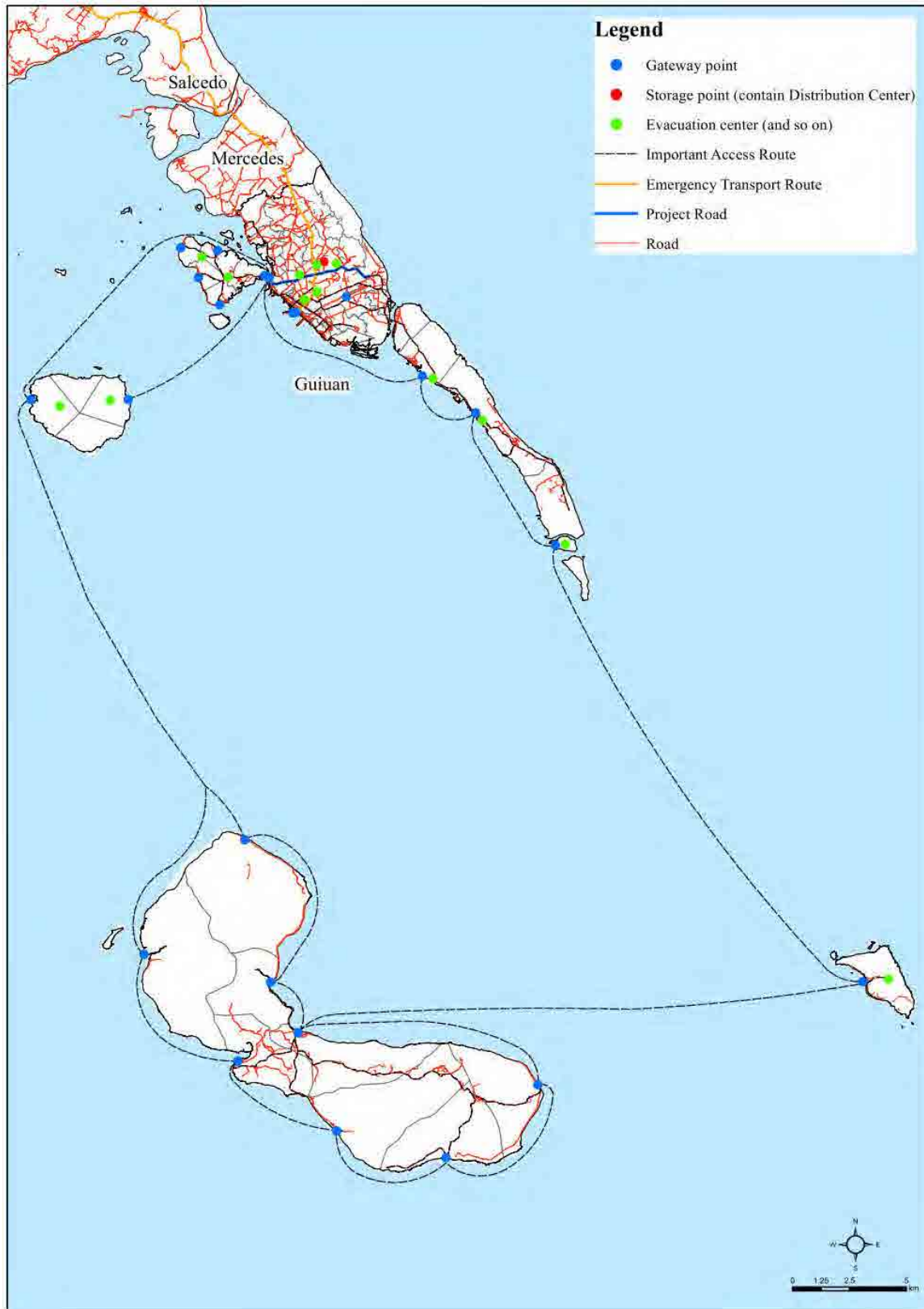
Road administrator of LGU maintains the access roads and makes efforts for developing necessary roads before a disaster. Especially the access routes of ports and airports which nearby LGUs might use are important.

Road administrator of LGU controls traffic according to the road condition after a disaster.

LGU ensures sea routes for islands in Guiuan, therefore LGU maintains and improves the ports.

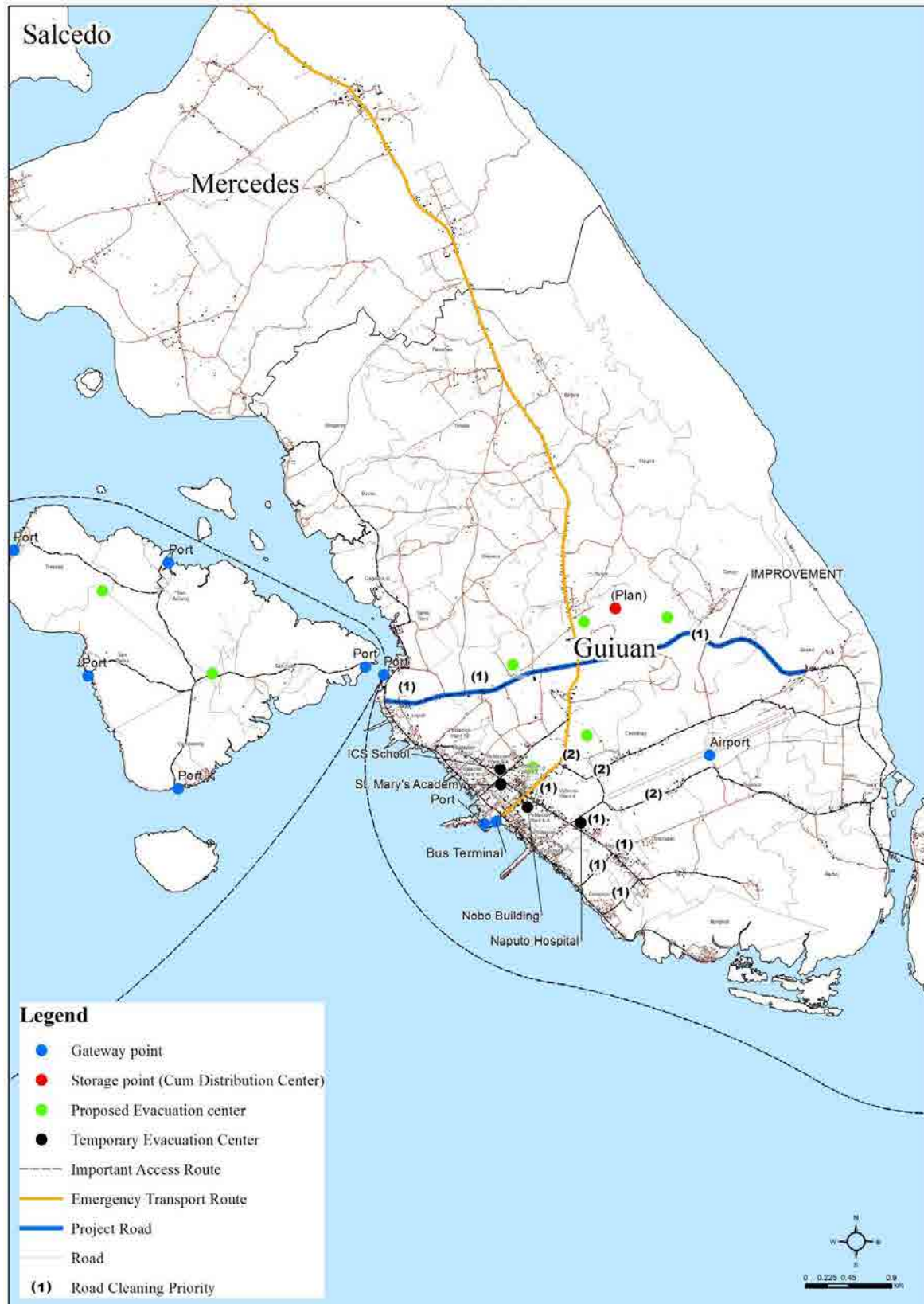
LGU always stocks the minimum quantity of relief goods at the adequate place.

Beforehand, LGU designates the landing place for transport by a helicopter.



Source: JICA Study Team

**Figure 22.4-7** Transport point and important access route in Guianan Municipality



Source: JICA Study Team

**Figure 22.4-8 Transport point and important access route (Central Area) in Guiuan Municipality**



### (3) Ensuring transportation capacity

A method of ensuring and operating vehicles/boats for emergency transport should be planned.

Table 22.4-18 shows the transportation capacity which LGU ensures at a disaster.

When an unanticipated situation occurs and LGU cannot ensure the capacity by itself, it ensures an alternative transport by cooperating with other organization: CGA, province etc.

LGU needs the boat for transportation to islands.

Command center asks Air Force of the Philippines to operate a helicopter as necessary.

**Table 22.4-18 Transportation capacity in Guiuan Municipality**

Item		Number	Ensuring method	Remark
Vehicle	Small Truck	3	LGU own Borrow from private	Additional 3~4 vehicles (mini buses and trucks) shall be required.
	Large Truck	1	LGU own	
	Ambulance Boat	1	LGU own	
	Small Patrol Boat	1	LGU own	
Worker for loading		As needed	Volunteers	
Parking space		-	LGU own site	
Fuel stock		Nothing	Buying from gas station	To stock 3-day use.

Source: JICA Study Team

### (4) Collection and transmission of road damage information

Command center and DRRMO get the information of road damage information quickly, and inform condition roads to public at a disaster.

LGU cooperate with related organizations at collection and transmission.

Table 22.4-19 shows the method and contents of information.

**Table 22.4-19 Method and contents of information in Guiuan Municipality**

Item	Method	Contents of information
Collecting the road information	Patrol on foot Telephone Radio communication machine Satellite phone	Level of obstacle
Informing to public	Patrol and loud speaker Radio communication machine	Level of obstacle Prospect of restoration Alternative route

Source: JICA Study Team

**(5) Road cleaning after a disaster**

Beforehand, General Services Office decides the priority of road cleaning and the method of ensuring machines and worker in order to clear the road quickly, when roads are disrupted by debris and obstacles.

The first priority of road cleaning is Emergency Transport Route, and DPWH implements it.

The first priority of road cleaning in LGU controlled routes are the access routes of ports and airports which nearby LGUs might use.

LGU cleans the road with cooperation of DPWH, Military, Barangay, Private Company, volunteer and NGO.

Table 22.4-20 shows the road cleaning capacity which LGU ensures at a disaster.

**Table 22.4-20 Road cleaning capacity in Guiuan Municipality**

Item		Number	Ensuring method	Remark
Vehicle/ Machine	Dump truck	undecided	LGU own, Borrow from private	
	Truck	undecided	LGU own, Borrow from private	
	Wheel-loader	undecided	LGU own, Borrow from private	
Worker for cleaning		undecided	LGU staff, Barangay, Volunteer	
Temporal stockyards for debris		undecided	LGU's own site	

Source: JICA Study Team

## Chapter 23 Social Sector Analysis Matrix (Health)

### 23.1 Tacloban

	Technical Findings/Observation	Implications (Effects)	Policy Options/ Interventions (Programs / Projects)	Responsible Organizations/ Offices	Time Frame
1	<ul style="list-style-type: none"> <li>• Insufficient health services</li> <li>- Lack of modern medical facilities and equipment in public hospitals , birthing centers and urban health units</li> <li>- Lack of health manpower</li> <li>- Lack of medical supplies in public hospital and health centers</li> </ul>	<ul style="list-style-type: none"> <li>• Patients receive inefficient medical services</li> <li>• Low delivery of health services</li> <li>• Poor quality of care</li> <li>• Multi-tasking, demoralization of health personnel</li> <li>• Risk of endangering lives of persons who needs emergency health assistance</li> <li>• Increase morbidity cases</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Strength and secure access to quality health services</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Mobilize the Government budget</li> <li>• Linkages to NGOs &amp; INGOs and other stakeholders</li> <li>• Purchase of needed modern equipment</li> <li>• Modernize the hospitals and birthing health facilities</li> <li>• Implementation of Magna Carta Law on Health Personnel</li> <li>• Implementation of the Staffing Pattern based on the DOH Licensing Department</li> <li>• LGU hiring personnel and filling up of vacant positions and creation of new positions</li> <li>• Establish more effective procurement system</li> <li>• Efficient procurement of medicines and other medical supplies and equipment</li> <li>• Set up of a Centralized Drug Management System</li> </ul>	DOH, CHO, City Hospitals and NGOs & INGOs, LGU, Chairperson on the Committee on Health (Member of the Legislative Body)	2015-2025 (Modernize the hospitals and birthing health facilities)  2015-2020 (Human resource)  2015-2016 (Medicines and other medical supplies)
2	<ul style="list-style-type: none"> <li>• Lack of access to safe, potable, clean</li> </ul>	<ul style="list-style-type: none"> <li>• High risk of water borne diseases</li> </ul>	<p><u>Policy</u></p>	LGU, CHO, City Engineer, City	2015-2025

	drinking water	<ul style="list-style-type: none"> <li>Poor behavior about the environment</li> </ul>	<ul style="list-style-type: none"> <li>Strict enforcement of the sanitation code</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Construction, Connections to local pipe lines</li> <li>Installation of Jetmatic pumps and deep wells</li> <li>Local rationing of water</li> <li>Health Education (IEC) activity to safe water access</li> </ul>	General Services	
3	<ul style="list-style-type: none"> <li>Unsafe deliveries and poor nutrition</li> <li>- Lack of awareness to reproductive health among the youth</li> <li>- Program approach on MNCHN (Maternal Neonatal Child Health Nutrition) not properly integrated</li> </ul>	<ul style="list-style-type: none"> <li>Increase incidence of teenage pregnancy, early marriages, STI, HIV/AIDS</li> <li>Increase number of school drop outs</li> <li>Increase of the incidence of maternal, neonatal and child mortality</li> <li>Increase of the incidence of malnutrition</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Adopt the National Reproductive Health Law</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Integration of Reproductive Health on the DepEd curriculum</li> <li>IEC activity on Adolescent Fertility Awareness/ Life at the Crossroads</li> <li>Establishment of Youth Center</li> <li>Establishment of mobile ARH (Adolescent Reproductive Health) caravan</li> <li>Integration of ARH services in all health facilities</li> <li>Implementation of comprehensive MNCHN program of concern agencies</li> <li>Proper mobilization of CHTs</li> </ul>	CHO, City Population Office, City Nutrition Office, LGU	2015-2025

4	<ul style="list-style-type: none"> <li>Inadequate supplies of family planning commodities</li> </ul>	<ul style="list-style-type: none"> <li>Low contraceptive prevalence rate</li> <li>Large family size</li> <li>Insufficient schools</li> <li>Increase of poverty</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Implementation National Reproductive Health Law</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Procurement of family planning commodities</li> <li>Provision of family planning services</li> <li>Behaviour Change Communication</li> </ul>	CHO, City Population Office, LGU	2015-2025
5	<ul style="list-style-type: none"> <li>Congested Public Cemetery</li> </ul>	<ul style="list-style-type: none"> <li>Threat to health in the community and the environment</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Safer location for public cemetery</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Closure and transfer of cemetery</li> <li>Identify and develop other site free from hazards</li> <li>Increase awareness on cremation</li> </ul>	CHO, LGU	2015-2020
6	<ul style="list-style-type: none"> <li>Big gap as a priority mental health and psychosocial training</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient health care services</li> <li>Increase cases of depression, violent behavior and psychosis</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Establishment of mental and psychosocial health program</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Capacity Building of health personnel</li> <li>Establishment of mental health institution</li> </ul>	CHO, CSWDO, City Hospitals, LGU	2015 (1st quarter)
7	<ul style="list-style-type: none"> <li>Lack of motivation to Community Health Team (BHWs, BNS &amp; BSPOs)</li> </ul>	<ul style="list-style-type: none"> <li>Low morale in the delivery of health services</li> <li>Poor health services</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Strengthening the Community Mobilization Approach</li> </ul> <p><u>Programs / Projects</u></p>	CHO, DOH, POPCOM, City Population Office, City Nutrition Office	2015 - 2020

			<ul style="list-style-type: none"> <li>• Capacity Building of Community Health Team</li> <li>• Provision and availability of honorarium</li> <li>• PhilHealth accreditation</li> </ul>		
8	<ul style="list-style-type: none"> <li>• Lack of policy guidelines from National and INGOs during calamities</li> </ul>	<ul style="list-style-type: none"> <li>• Over stocking and under stocking of medical supplies, commodities and services</li> <li>• No standard of health services</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Standardization of Guidelines and Policies from the national and INGOs on the support and delivery of health services</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Develop the standard and documented</li> <li>• Orientation on the concerned agencies on the standardized policy guidelines</li> </ul>	CHO, LGU	2015 - 2016
9	<ul style="list-style-type: none"> <li>• Insufficient response to emergencies and calamities</li> </ul> <p>- Slow response of rehabilitation, repair and construction of health facility after a calamity</p> <p>- Lack of mobility and communication</p>	<ul style="list-style-type: none"> <li>• High morbidity and mortality</li> <li>• Threat to outbreaks and epidemics</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Budget allocation from the national government (DOH) for responding a calamity</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Immediate reassessment of health facilities and repair</li> <li>• Procurement plan for emergencies and calamities</li> </ul>	DOH, INGOs and other partners, LGU	2015 -2016 (Rehabilitation)  2015-2025 (Plan for emergencies and calamities)

	equipment				
10	<ul style="list-style-type: none"> <li>Inadequate plan to informal Settlers, Housing Congestion and Pollution</li> </ul>	<ul style="list-style-type: none"> <li>Increase morbidity and mortality</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Enforcement of Urban Development and Housing Act (UDHA) Law</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Establishment of Migration Information Center</li> <li>Regular monitoring of migrants per barangay</li> <li>Advocacy and IEC on environmental health protection</li> </ul>	LGU, CHO, City Population Office, City Planning, City Housing, Barangay Affairs Office, City Local Government Operation Office	2015 - 2016

### 23.2 Palo

	Technical Findings/Observation	Implications (Effects)	Policy Options/ Interventions (Programs / Projects)	Responsible Organizations/ Offices	Time Frame
1	<ul style="list-style-type: none"> <li>Insufficient health services</li> <li>- Two(2) main health centers were totally damaged and operating at temporal space</li> <li>- Lack of health manpower</li> </ul>	<ul style="list-style-type: none"> <li>Low delivery of health services</li> <li>Poor quality of care</li> <li>Insufficient medical equipment</li> <li>Increasing morbidity cases</li> <li>Insufficient implementation of health programs</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Rehabilitate and secure access to quality health services</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Reconstruction of Main Health Centers</li> <li>Efficient procurement of medicines and other medical supplies and equipment at Main Health Centers</li> <li>Provide a service vehicle for RHU staff to deliver</li> </ul>	LGU, DOH, INGOs, NGOs	2014-2015 2014-2015 2015-2016

			<p>and monitor health services</p> <ul style="list-style-type: none"> <li>• Construct more Barangay Health Stations with health staff to increase the accessibility of quality health services</li> <li>• Intensify the referral system</li> <li>• Strengthening of Community Health (Barangay Health Board)</li> <li>• Implementation of Magna Carta Law</li> <li>• Provide transportation like motorcycles or bicycles for Midwives to manage for delivering health services in the communities</li> </ul>		<p>2015-2025</p> <p>2015</p> <p>2015-2025</p> <p>2015-2025</p> <p>2015-2018</p>
2	<ul style="list-style-type: none"> <li>• Poor control of infectious diseases</li> </ul> <p>-Inadequate health education at community</p> <p>-Poor knowledge of infectious control diseases (TB, Dengue fever, Diarrhea, etc.)</p>	<ul style="list-style-type: none"> <li>• Increase the infectious diseases</li> <li>• Increase drug resistance</li> <li>• Decrease productivity</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Provide adequate knowledge and prevent the infectious diseases</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Community mobilization by Barangay Health Workers</li> <li>• Health Education on infection Control disease at schools</li> <li>• Promote Long Lasting Insecticidal Nets (LLIN) distribution</li> <li>• Networking with other sectors like DepED</li> <li>• Advocacy campaign with IEC materials and conduct Behaviour Change Communication</li> <li>•</li> </ul>	MHO, PHN, DepED Nurses, Barangay Leaders	2015-2025



3	<ul style="list-style-type: none"> <li>No mental health program for post disaster</li> </ul>	<ul style="list-style-type: none"> <li>Relapse of psychiatric cases</li> <li>Increase level of anxiety</li> <li>Increase of drop out from schools</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Establish mental health program</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Develop training program and carry on the training to health personal</li> <li>Educate community with regards mental health</li> <li>Networking with other sectors like Education, Social Welfare</li> <li>Procurement of medicines</li> <li>Intensify the referral system</li> </ul>	DOH, DpED, DSWD, LGU, INGO, Barangay leaders	2015-2025
4	<ul style="list-style-type: none"> <li>Limited laboratory services</li> </ul>	<ul style="list-style-type: none"> <li>Delay the diagnoses and the treatment</li> <li>Increased out-of-pocket expenditures of patients for laboratory work-up</li> <li>Poor/No regular monitoring of patients needing laboratory work-up</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Re-establish Laboratory service</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Equipping of RHU Lab</li> <li>Provide regular Medical Technologist and laboratory technician at RHU (Municipal Health Office)</li> <li>Advocacy for routine/regular health check</li> </ul>	LGU, DOH, INGO	2015-2016
5	<ul style="list-style-type: none"> <li>Increase of Teenage pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Increase of drop out from schools</li> <li>Increase Maternal Mortality Rate</li> <li>Un-wanted pregnancy</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Safe and planned Pregnancy</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Conduct Health Education at School</li> <li>Networking with other sectors like Education,</li> </ul>	DOH, DpED, DSWD, LGU, INGO, NGOs	2015-2020

			<p>Social Welfare</p> <ul style="list-style-type: none"> <li>• Establishment of youth-friendly center</li> <li>• Collaborate work with active organizations working for youth</li> <li>• Collaborate work with religious sectors</li> </ul>		
6	<ul style="list-style-type: none"> <li>• Poor management of data storage</li> </ul>	<ul style="list-style-type: none"> <li>• Weak data management and utilization</li> <li>• In-sufficient information sharing</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Establish data storage system and management system</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• IT Training to Municipal Health Workers</li> <li>• Provide data management officer who are familiar with IT</li> <li>• Plan the data management especially data storage</li> <li>• Plan the data utilization</li> <li>• Establish the IT Section at Municipal office</li> </ul>	LGU, MHO	2015-2018
7	<ul style="list-style-type: none"> <li>• Poor waste disposal</li> <li>- Unsafe disposal of placenta at birthing facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Poor environmental sanitation</li> <li>• Contribute other diseases</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Safe and proper waste disposal</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Construct placenta pit at Birthing facilities</li> <li>• Proper implementation of DOH Guidelines and policies</li> <li>• Educate health staff about the proper management of waste disposal</li> </ul>	MHO	2015-2018

8	<ul style="list-style-type: none"> <li>• Poor Family Planning</li> <li>- Low current prevalence of Family Planning methods (contraceptives) users</li> </ul>	<ul style="list-style-type: none"> <li>• Big family size with low income</li> <li>• Increase poverty</li> <li>• Increase malnutrition</li> <li>• Increase child illnesses</li> <li>• Low school attendance</li> <li>• Increase of drop out from schools</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Intensify Family Planning</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Advocacy for use of modern family planning methods</li> <li>• Provision of commodities</li> <li>• Increase community awareness through health education</li> <li>• Monitoring of children’s nutritional status</li> <li>• Introduction of Income Generation Activities</li> <li>• Increase enrolment of PhilHealth indigent families</li> </ul>	DOH, MHO, LGU, INGOs, NGOs, Barangay Officials	2015-2025
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**23.3 Tanauan**

	<b>Technical Findings/Observation</b>	<b>Implications (Effects)</b>	<b>Policy Options/ Interventions (Programs / Projects)</b>	<b>Responsible Organizations/ Offices</b>	<b>Time Frame</b>
1	<ul style="list-style-type: none"> <li>• Poor accessibility to receive health services</li> <li>- Structural damage of health facilities</li> <li>- Inadequate health facilities</li> <li>- Inadequate human resource</li> </ul>	<ul style="list-style-type: none"> <li>• Increased home delivery</li> <li>• Multi-tasking, demoralization of health personnel</li> <li>• Low delivery of health services</li> <li>• Poor quality of care</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Enhance access to quality health services for all people</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Integrate health education activities in all program</li> <li>• Construct more Barangay Health Stations to increase the accessibility of quality health services</li> <li>• Integrate birthing services at Barangay Health Stations</li> <li>• Hire health workers to take charge the Barangay Health Stations</li> <li>• Strengthening referral system</li> <li>• Rebuilding of Main Health Center with emergency care</li> </ul>	DOH, LGU (Municipal Health Office), NGO, INGO	2015-2020
2	<ul style="list-style-type: none"> <li>• Poor treatment outcome of infectious diseases</li> </ul>	<ul style="list-style-type: none"> <li>• Increase drug resistance</li> <li>• Increase the infectious diseases</li> <li>• Decrease productivity</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Strengthening of health system</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Rebuilding of Main Health Center</li> <li>• Prevention and control of infectious diseases</li> <li>• Behaviour Change Communication</li> <li>• Networking with other stakeholders</li> <li>• Strengthening of support system in community</li> </ul>	LGU (Municipality Health Office), LGU (for rebuilding), Barangay officials, Association of Barangay Captains (ABC)	2015-2017

3	<ul style="list-style-type: none"> <li>No Laboratory services</li> </ul>	<ul style="list-style-type: none"> <li>Delay the diagnoses and the treatment</li> <li>Routine examination not performed</li> <li>Additional expense for receiving the services</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Restore Laboratory services</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Procurement of laboratory equipment and supplies</li> <li>Construction of laboratory in the main health center</li> <li>Advocacy for routine health check</li> </ul>	LGU	2015
4	<ul style="list-style-type: none"> <li>No mental health program for post disaster</li> </ul>	<ul style="list-style-type: none"> <li>Relapse of psychiatric cases</li> <li>Increase level of anxiety</li> <li>Increase of drop out from schools</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Establish mental health program</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Develop training program and carry on the training to health personal</li> <li>Educate community with regards mental health</li> <li>Networking with other sectors like Education, Social Welfare</li> <li>Procurement of medicines</li> <li>Construct of Mental health care center</li> </ul>	DOH, DpED, DSWD, LGU, INGO	2015-2025
5	<ul style="list-style-type: none"> <li>Increase of Teenage pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Increase of drop out from schools</li> <li>Increase Maternal Mortality Rate</li> <li>Un-wanted pregnancy</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Safe and planned Pregnancy</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Health Education</li> <li>Availability of birthing facility</li> <li>Networking with other sectors like Education, Social Welfare</li> </ul>	DOH, DpED, DSWD, LGU, INGO	2015-2020

			• Establishment of youth-friendly center		
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### 23.4 Basey

	Technical Findings/Observation	Implications (Effects)	Policy Options/ Interventions (Programs / Projects)	Responsible Organizations/ Offices	Time Frame
1	<ul style="list-style-type: none"> <li>• Service delivery disrupted by damaged health facilities</li> <li>- There is no room for storage of equipment and medicines in Barangay Health Stations</li> </ul>	<ul style="list-style-type: none"> <li>• Un-healthy life style</li> <li>• Increase disease burden</li> <li>• People with poor access to basic health services</li> <li>• Affect to vulnerable / disadvantaged families and individuals</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Recover the access to quality health services</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Inclusion in Health Facility Enhancement Program of DOH</li> <li>• Explore INGO assistance to repair facilities</li> <li>• Explore INGO assistance to support medical equipment and medicines</li> <li>• Establish outreach program</li> </ul>	DOH, LGU, NGOs	2014 -2015 (On-going)
2	<ul style="list-style-type: none"> <li>• Increasing limited accessibility to health services and increasing poor health services</li> <li>- Possibility of inadequate Barangay Health Stations in relocation area</li> </ul>	<ul style="list-style-type: none"> <li>• Un-healthy life style</li> <li>• Increase disease burden</li> <li>• Increase unsafe home delivery</li> <li>• Affect to vulnerable / disadvantaged families and individuals</li> <li>• Poor health services at community level</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Provide adequate health services equally to all people</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Rehabilitate or renovate to a more conducive health centre to cater the relocated constituents</li> <li>• Establishment of birthing centres at 3 Barangay Health Stations (out of 8 Barangay Health Stations)</li> <li>• Rehabilitate or renovate to a more conducive health</li> </ul>	DOH, LGU, NGOs	2015-2025

	(Brgy Bacubca, Brgy Tingib, Brgy New San Agustin) - Limited birthing centers - Congestion of Main Health Center due to the limited health facilities - Insufficient health human resource - Lack of motivational support to volunteer health workers (CHT, BHWs, BNS)		<p>centre to cater the relocated constituents</p> <ul style="list-style-type: none"> <li>• Establish the maternity waiting home at main health center</li> <li>• Establishment of birthing centres at all Barangay Health Stations with maternity waiting home</li> <li>• Establish an additional main health centre</li> <li>• Providing more health human resource</li> <li>• Provision of incentives to volunteer health workers</li> <li>• Creation of re-resolution to protect the continuity of BHWs' work regardless of who sits as Barangay officials</li> </ul>		
3	<ul style="list-style-type: none"> <li>• Inadequate human resource and training for psychosocial care</li> </ul>	<ul style="list-style-type: none"> <li>• Un-attended people with mental disorder</li> <li>• Increased un-productive population</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Provide psychosocial support for healthy life</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Implement the Mental health and psycho-social Program (MHPSS)</li> <li>• Periodical training of the emotional care to health workers</li> <li>• Procurement of medicines</li> </ul>	MHO, DOH, NGOs	2015-2025

4	<ul style="list-style-type: none"> <li>• Low access to sanitary toilets</li> <li>-Especially people living coastal area</li> <li>- No policy regulation</li> </ul>	<ul style="list-style-type: none"> <li>• Increased risk for sanitation-related diseases</li> <li>• Water pollution</li> <li>• Poor behavior about the environment</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Enhance access to sanitary toilets</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Intensive advocacy campaign</li> <li>• PhATS (Philippine Approach Total Sanitation) training</li> <li>• CHT mobilization</li> <li>• Networking (Co-work with related sectors - Education, Engineering, etc.)</li> <li>• Health Education at school</li> <li>• Provision of sanitary toilets</li> <li>• Discussion on technology options (toilet designs) for coastal barangays</li> <li>• Policy recommendation with evidence for the regulation</li> </ul>	MHO, Municipal Engineering Office, Barangay	2015-2025
5	<ul style="list-style-type: none"> <li>• Teenage pregnancy</li> <li>- Neglected program from the LGU/Community</li> <li>-Luck of responsible parenthood</li> <li>- School dropouts leading to</li> </ul>	<ul style="list-style-type: none"> <li>• Increase of drop out from schools</li> <li>• Increase Maternal Mortality</li> <li>• Un-wanted pregnancy</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Safe and planned Pregnancy</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Provision of Health class for youth on sex education</li> <li>• Adequate maternal services for very high risk teenage pregnancies</li> <li>• Strict compliance of prenatal /post-natal check</li> <li>• Prompt efficient referral system</li> </ul>	DOH, LGU	2015-2020



	non-productive citizenry		<ul style="list-style-type: none"> <li>• Mobilization by CHT</li> </ul>		
6	<ul style="list-style-type: none"> <li>• Limited funds for nutrition program</li> </ul>	<ul style="list-style-type: none"> <li>• Poor implementation of nutrition program</li> <li>• Increasing malnutrition prevalence rate (0-71 months = under 6 years)</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Enhance nutrition program for Healthy children</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Resource mobilization for additional funds for nutrition program</li> <li>• Prompt implementation of routinely nutrition activities</li> <li>• Request and dispatch more nutrition human resources</li> </ul>	DOH, LGU, NGOs	2015-2014
7	<ul style="list-style-type: none"> <li>• Neglected program on NCDs</li> </ul>	<ul style="list-style-type: none"> <li>• Increase the incidence of NCDs</li> <li>• Remain the lack of knowledge</li> <li>• Increase the medical cost</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Establish to strength of NCDs program</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Strength of Advocacy campaign</li> <li>• Information dissemination to prevent NCDs</li> <li>• Sustainability of medications</li> <li>• Provide more maintenance medicines aside from giving to new patients</li> </ul>	DOH, LGU	2015-2024

**23.5 Guiuan**

	<b>Technical Findings/Observation</b>	<b>Implications (Effects)</b>	<b>Policy Options/ Interventions (Programs / Projects)</b>	<b>Responsible Organizations/ Offices</b>	<b>Time Frame</b>
1	<ul style="list-style-type: none"> <li>• Service delivery disrupted by damaged health facilities and insufficient Barangay Health Stations</li> <li>- Eight (8) Barangays without Health Stations</li> </ul>	<ul style="list-style-type: none"> <li>• Un-healthy life style</li> <li>• Increase disease burden</li> <li>• Increase home delivery</li> <li>• People with poor access to basic health services</li> <li>• Affect to vulnerable / disadvantaged families and individuals</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Recover and secure access to quality health services</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Inclusion in Health Facility Enhancement Program of DOH</li> <li>• Explore INGO assistance to repair facilities not included in HFEP</li> <li>• Explore assistance from DOH &amp; INGO for construction of Barangay Health Stations</li> <li>• Establish outreach program</li> <li>• Strengthening of Community Health (Barangay Health Board)</li> </ul>	MHO, Local Health Board, PHO	<p>Sept – Dec 2014 (On-going) for rehabilitating the damaged health facilities</p> <p>2015- 2017 (for construction of Barangay Health Stations)</p>
2	<ul style="list-style-type: none"> <li>• Low access to sanitary toilets</li> <li>-Especially people living coastal area</li> <li>- No policy regulation</li> </ul>	<ul style="list-style-type: none"> <li>• Increased risk for sanitation-related diseases</li> <li>• Water pollution</li> <li>• Poor behavior about the environment</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Enhance access to sanitary toilets</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Intensive advocacy campaign</li> <li>• PhATS (Philippine Approach Total Sanitation) training</li> <li>• CHT mobilization</li> </ul>	MHO, Municipal Engineering Office, Barangay	2015-2025

			<ul style="list-style-type: none"> <li>• Networking (Co-work with related sectors - Education, Engineering, etc.)</li> <li>• Health Education at school</li> <li>• Provision of sanitary toilets</li> <li>• Discussion on technology options (toilet designs) for coastal barangays</li> <li>• Policy recommendation with evidence for the regulation</li> </ul>		
3	<ul style="list-style-type: none"> <li>• Unsafe deliveries               <ul style="list-style-type: none"> <li>- Home deliveries (14%)</li> <li>- Increasing incidence of teen-age pregnancy (17%)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Increase risk for maternal &amp; infant mortality</li> <li>• Increase un-wanted pregnancy</li> <li>• Increase school dropout rate</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>• Enhance planned pregnancy and safe delivery</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>• Intensive advocacy campaign for facility-based delivery</li> <li>• Establish Waiting Home at Main Health Center</li> <li>• Improve referral system</li> <li>• Provision of transport vehicle to geographically-isolated areas</li> <li>• Establish Maternal House</li> <li>• Establish Birthing facility at Barangay Health Stations</li> <li>• Establish Youth Development Programs/Youth Center</li> <li>• Community &amp; School-based advocacy</li> </ul>	MHO, DOH, DSWD Barangay	2015-2025

4	<ul style="list-style-type: none"> <li>Limited laboratory services at Rural Health Unit</li> </ul>	<ul style="list-style-type: none"> <li>Delay the diagnoses and the treatment</li> <li>Increased out-of-pocket expenditures of patients for laboratory work-up</li> <li>Poor/No regular monitoring of patients needing laboratory work-up</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Restore Laboratory service</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Equipping of RHU Lab</li> <li>Advocacy for routine/regular health check</li> </ul>	MHO, LHB	2015-2018
5	<ul style="list-style-type: none"> <li>Inadequate care taking on mental burden / stress</li> </ul>	<ul style="list-style-type: none"> <li>Un-attended people with mental disorder</li> <li>Increased un-productive population</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Establish mental health program</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>Implement the Mental health and psycho-social Program (MHPSS)</li> <li>Periodical training of the emotional care to health workers</li> <li>Procurement of medicines</li> </ul>	MHO, DOH NGOs	2015-2025
6	<ul style="list-style-type: none"> <li>Poor management of data storage</li> </ul>	<ul style="list-style-type: none"> <li>In-sufficient information sharing</li> <li>Weak data management and utilization</li> </ul>	<p><u>Policy</u></p> <ul style="list-style-type: none"> <li>Establish data storage and management system</li> </ul> <p><u>Programs / Projects</u></p> <ul style="list-style-type: none"> <li>IT Training to Municipal Health Workers</li> <li>Plan the data utilization</li> <li>Networking (Co-work with related sectors - IT Section, etc.)</li> </ul>	MHO	2015-2018

## Chapter 24 Social Sector Analysis Matrix (Social Welfare)

### 24.1 Tacloban

Technical Findings	Implications	Policy Options/ Programs and Projects	Responsible Organizations/Offices	Timeframe
1. Damaged and absence of social welfare facilities and equipment a. Damaged Daycare Centers including in NBZ b. Damaged CSWDO c. Damaged OSCA and Day Center for Senior Citizens d. Damaged Social Development Center for Children (SDCC) e. Damaged ICT Training Center for Out-of-school Youth (OSY), PWD and other vulnerable population f. Absence of facilities for Children in Conflict with the Law (CICL) g. Absence of PWD Affairs Office	<ul style="list-style-type: none"> <li>• Overpopulation at Daycare Centers</li> <li>• Disaster vulnerability of daycare children and workers</li> <li>• Deteriorating social interaction of senior citizens</li> <li>• Insufficient service delivery of CSWD and OSCA</li> <li>• Insufficient service delivery for VAWC cases despite demand increase after Yolanda</li> <li>• Absence of appropriate reintegration programs for CICL</li> </ul>	<p><u>Policy Options:</u></p> <ol style="list-style-type: none"> <li>1. Build safer and more appropriate spaces for social services for the vulnerable population</li> <li>2. Enforcement of national laws and ordinances regarding the accessibility of facilities and buildings for PWD senior citizens</li> </ol> <p><u>Priority Programs and Projects:</u></p> <ol style="list-style-type: none"> <li>1) Construct the CICL holding center, PWD Affairs Office, permanent Child-friendly Spaces (CFS) and Women-friendly Spaces, mobile CFS and an additional Day Center for Senior Citizens in a more accessible location</li> <li>2) Rehabilitate OSCA, CSWDO (including a counseling space for VAWC/families/couples), Daycare Centers and the existing Day Center for Senior Citizens</li> <li>3) Provide a water system for SDCC and Women and Children's Shelter</li> <li>4) Rehabilitate ICT Training Center facilities and equipment</li> <li>5) Strengthen capacity of vulnerable population on DRRM through Barangay Councils, volunteers and Senior Citizens</li> </ol>	<ol style="list-style-type: none"> <li>1) LGU</li> <li>2) LGU</li> <li>3) LGU, CGSO, CEO</li> <li>4) LGU</li> <li>5) CSWDO, CDRRMO, community volunteers, Barangay Fire</li> </ol>	<ol style="list-style-type: none"> <li>2014-2016</li> <li>2014-2016</li> <li>2014-2015</li> <li>2014-2015</li> <li>2014-2020</li> </ol>

<p>h. Absence of a separate counseling space for CSWD clients</p> <p>i. Lack of facilities at the Women and Children's Shelter</p>	<p>despite possible increase of CICL cases</p> <ul style="list-style-type: none"> <li>• Insufficient service delivery to respond to PWD's recovery and reconstruction needs</li> </ul>	<p>Associations</p>	<p>Protection, Barangay Councils, Senior Citizens Associations</p>	
<p>2. Insufficient service delivery to clients including children, women, senior citizens and PWD due to:</p> <p>a. Shortage of CSWDO personnel including social workers</p> <p>b. Poor referral mechanisms and case management (e.g. lack of multi-disciplinary functions at EVRMC WCPU, absence of CICL Center)</p> <p>c. Increasing risk of VAWC, child trafficking and CICL after Yolanda</p>	<ul style="list-style-type: none"> <li>• Increase of stress among CSWDO workers</li> <li>• Poor quality service</li> <li>• Increase of unattended cases of VAWC, CICL and OSY</li> </ul>	<p><u>Policy Option:</u></p> <p>Strengthen the social welfare system for the vulnerable population</p> <p><u>Priority Programs and Projects:</u></p> <p>1) Strengthen multi-sectoral referral mechanisms for GBV, CICL and trafficking including:</p> <ul style="list-style-type: none"> <li>✧ Reactivate BCPC and VAWC Desks at Barangay level</li> <li>✧ Strengthen networking and linkages at city level among LCPC, CIACAT, GAD, City Peace and Order, etc.</li> <li>✧ Procure vehicles for transportation of clients</li> </ul> <p>2) Institutionalize city-level psychosocial support for families, communities and target individuals</p> <p>3) Increase the number of social workers and support staff at CSWDO</p>	<ul style="list-style-type: none"> <li>✧ CSWDO, DILG, Barangay Councils</li> <li>✧ CSWDO, DSWD, Philippines National Police, DEPED, EVMRC, Regional Trial Court, City Health Office, POPCOM, DSWD</li> <li>✧ DSWD, LGU</li> <li>2) CSWDO, City Health Office, City Hospital, EVMRC</li> <li>3) LGU, SP (Legislative Branch)</li> </ul>	<p>2014-2015</p>

		<p>4) Intensify skills training for vulnerable women including GBV survivors</p> <p>5) Intensify the UNLAD Kabataan Program for OSY and in-school needy youth (e.g. leadership training, skills training, etc.)</p>	<p>4) Comprehensive Livelihood and Entrepreneurial Program (CLEP), LGU, TESDA for women/children/ youth</p> <p>5) CSWDO, DSWD</p>	
3. Increased number of displaced families	<ul style="list-style-type: none"> <li>Increased poverty from loss of shelters, income and assets</li> <li>Disaster vulnerability</li> </ul>	<p><u>Policy Option:</u> Restore the lives of the displaced people</p> <p><u>Priority Programs and Projects:</u></p> <p>1) Provide temporary and permanent shelters</p> <p>2) Provide alternative livelihood programs including training and capital assistance to displaced people</p>	<p>1) LGU, City Housing, CSWD</p> <p>2) CLEP, CSWD, TESDA, DSWD, NGOs, INGOs</p>	2014-2016

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Produced by CSWD and City Planning Office

## 24.2 Palo

Technical Findings	Implications	Policy Options/Programs and Projects	Responsible Organizations/Offices	Timeframe
<p>1. Lack/absence of safe and functional social welfare facilities:</p> <p>a) 5 totally damaged and 33 partially damaged Daycare Centers</p> <p>b) Absence of shelters for VAWC survivors</p>	<ul style="list-style-type: none"> <li>Lack of comfort and safety for daycare children and workers</li> <li>Congestion and lack privacy for clients at MSWD Office</li> <li>Lack of protection for VAWC survivors</li> </ul>	<p><u>Policy Option</u></p> <p>Increase availability of safer and more functional social welfare services</p> <p><u>Priority Programs and Projects</u></p> <p>1) Rehabilitate all Daycare Centers and enforce the building code particularly for those used as evacuation centers in safe areas</p>	LGU, INGOs	2015-2018

<p>c) Temporary Office for MSWD</p> <p>d) Absence of an office for PWD to provide necessary recovery and reconstruction support</p> <p>e) Lack of facilities and equipment for senior citizens</p> <p>f) Partially damaged provincial and regional facilities (Regional Reception and Study Center for Children, Regional Home for Girls, Regional Heaven for Women and Provincial Day Center for Senior Citizens)</p>	<ul style="list-style-type: none"> <li>Limited service for senior citizens</li> </ul>	<ol style="list-style-type: none"> <li>Assess the location of Daycare Centers and relocate them from NBZ</li> <li>Establish additional Daycare Centers in permanent relocation sites as needed</li> <li>Establish a semi-permanent Women-friendly Space in Salvacion</li> <li>Establish an office for PWD</li> <li>Build DRRM capacity of daycare children and workers through integrating DRRM in yearly session plans and conducting annual drills</li> <li>Procure a septic tank at Day Center for Senior Citizens</li> <li>Build DRRM capacity of senior citizens through activities by Day Center and Barangay Senior Citizens' Associations</li> <li>Restore all the regional and provincial social welfare institutions</li> </ol>	<p>DENR, MEO</p> <p>LGU</p> <p>LGU, DSWD, Plan, UNFPA</p> <p>LGU</p> <p>MSWD, MDRRMO, INGOs, Daycare Workers</p> <p>LGU, OSCA</p> <p>Senior Citizens' Associations, OSCA, MSWD, MDRRMO</p> <p>DSWD</p>	<p>2015-2018</p> <p>2015-2018</p> <p>2015</p> <p>2015-2018</p> <p>2015 onwards</p> <p>2015-2016</p> <p>2015 onwards</p> <p>2015</p>
<p>2. Insufficient social welfare services to respond to the increased needs of the vulnerable population after Yolanda:</p> <p>a) Increased psychosocial needs</p> <p>b) Recovery and reconstruction needs of</p>	<ul style="list-style-type: none"> <li>Increased poverty and social problems such as early marriage, teenage pregnancy and delinquencies among the vulnerable population</li> <li>Social isolation and poor health of PWD</li> </ul>	<p><u>Policy Option</u></p> <p>Establish a more inclusive and effective social welfare system for the vulnerable population</p> <p><u>Priority Programs and Projects</u></p> <ol style="list-style-type: none"> <li>Increase the number of Social Workers and Social Development Workers at MSWD</li> <li>Establish a combined PWD-Senior Citizen Help Desk in each barangay as a referral</li> </ol>	<p>LGU</p> <p>MSWD, Barangay Councils, OSCA, COSE</p>	<p>2015-2020</p> <p>2015-2016</p>



PWD and senior citizens c) Increasing risk of VAWC d) Risk of increased school drop-out-rates among displaced children and youth	and senior citizens • Disintegration of families • Increase of unattended cases of VAWC • Increase of child labor and children in conflict with the law	3) Advocate Barangay Councils on inclusion of PWD and senior citizens in recovery and reconstruction including livelihood assistance	MSWD, Barangay Councils, OSCA, DSWD	2015-2016
		4) Ensure the usage of 1% IRA barangay budget for PWD and senior citizens	DILG, LGU	2015 onwards
		5) Review the eligibility of pension and increase the number of beneficiaries	LGU, OSCA	2015-2018
		6) Enhance the GBV program through strengthening the referral pathway and establishing VAWC Desks at both barangay and municipal (WFS) levels	MSWD, DOH, PNP, DSWD, Barangay Councils	2015-2018
		7) Reactivate BCPC and capacitate the members on VAWC issues	Barangay Councils, MSWD	2015-2016
		8) Provide psychosocial support to Yolanda-affected children and youth (e.g. through play forums and theater arts)	Palo Cultural and Arts Organization (PCAO), MSWD, DEPED	2015-2016
		9) Enhance the Intervention and Diversion Program for children in conflict with the law	BCPC, Barangay Councils, DILG, PNP, MSWD	2015 onwards

Produced by: MSWD, OSCA

### 24.3 Tanauan

Technical Findings	Implications	Policy Options/Programs and Projects	Responsible Organizations/Offices	Timeframe
1. Lack of availability of functional social welfare facilities: g) Damaged Daycare Centers (All 54 Daycare Centers) h) Damaged OSCA/SCAT Office	<ul style="list-style-type: none"> <li>Disaster vulnerability of social welfare service staff and clients</li> <li>Congestion at the</li> </ul>	<u>Policy Option</u> Build more disaster-resilient social welfare facilities  <u>Priority Programs and Projects</u> <ul style="list-style-type: none"> <li>Repair and reconstruct all damaged Daycare Centers</li> </ul>	<ul style="list-style-type: none"> <li>LGU, NGOs</li> </ul>	2015-2017

<p>repaired but in NBZ</p> <p>i) Absence of Day Center for Senior Citizens and a PWD Office</p> <p>j) Damaged MSWD Office</p> <p>k) Damaged Regional Rehabilitation Center for Children and Youth (for young offenders)</p> <p>l) Lack of safe spaces for vulnerable women, children and youth (only referral to regional facilities in Palo)</p> <p>m) Damaged Municipal Civic Center (basketball courts, stadium, etc.) and other sports facilities</p>	<p>existing OSCA/SCAT Office</p> <ul style="list-style-type: none"> <li>Lack of capacity of the Regional Rehabilitation Center for Children and Youth to accommodate the increasing cases of young offenders</li> <li>Deteriorating health</li> </ul>	<p>(80% completed)</p> <ul style="list-style-type: none"> <li>Relocate OSCA/SCAT Office to a safer area and provide equipment and furniture</li> <li>Relocate 2 Daycare Centers from NBZ</li> <li>Establish a Day Center for Senior Citizens</li> <li>Repair the Regional Rehabilitation Center for Children and Youth</li> <li>Establish Women-friendly Spaces including in Canramos</li> <li>Establish an office for PWD</li> <li>Rehabilitate the sports facilities</li> </ul>	<ul style="list-style-type: none"> <li>LGU, OSCA</li> <li>LGU, OSCA</li> <li>LGU, OSCA, NGOs</li> <li>National and Regional DSWD, MSWD</li> <li>LGU, UNFPA, Plan International</li> <li>LGU</li> <li>LGU, NGOs</li> </ul>	<p>2015-2017</p> <p>2015</p> <p>2015-2020</p> <p>2015</p> <p>2015-2018</p> <p>2015-2018</p> <p>2015-2017</p>
<p>2. Increase of displaced population (1200 families targeted):</p> <p>e) Lack of housing</p> <p>f) Lack of access to social welfare services</p> <p>g) Lack of livelihood</p>	<ul style="list-style-type: none"> <li>Increased poverty and disaster vulnerability of the displaced population</li> </ul>	<p><u>Policy Option</u></p> <p>Reduce poverty and disaster risks of the displaced population</p> <p><u>Priority Programs and Projects</u></p> <ul style="list-style-type: none"> <li>Implement the resettlement plans in 3 sites</li> <li>Establish additional Day Care Centers in resettlement areas</li> <li>Conduct skills training for alternative livelihood for the displaced population</li> </ul>	<ul style="list-style-type: none"> <li>LGU, NHA, NGOs</li> <li>LGU</li> <li>LGU, TESDA, NGOs</li> </ul>	<p>2015-2018</p> <p>2015-2018</p> <p>2015-2020</p>

<p>3. Lack of availability of appropriate social welfare services in response to the recovery and reconstruction needs:</p> <p>a. Weak referral mechanism and municipal multi-disciplinary system for VAWC</p> <p>b. Increase of young people who lost their jobs and are out of school</p> <p>c. Poor psychosocial status of vulnerable population including senior citizens and youth</p> <p>d. Increasing health and livelihood needs of senior citizens and PWD</p>	<ul style="list-style-type: none"> <li>• Increased poverty and disaster risks of the vulnerable population</li> <li>• Increase in youth committing crimes</li> <li>• Poorer health status of senior citizens</li> </ul>	<p><u>Policy Option</u></p> <p>Improve the availability of social welfare services for all vulnerable groups</p> <p><u>Priority Programs and Projects</u></p> <p><b>For VAWC</b></p> <ul style="list-style-type: none"> <li>• Reactivate VAWC Desks at barangay level</li> <li>• Strengthen WCPU's capacity through recruitment of a psychiatrist at the new main health center</li> </ul> <p><b>For Youth</b></p> <ul style="list-style-type: none"> <li>• Involve youth in DRRM activities</li> <li>• Promote skills training for out-of-school youth</li> </ul> <p><b>For Senior Citizens</b></p> <ul style="list-style-type: none"> <li>• Extend psychosocial training for senior citizens in remote barangays (currently 13 trained at municipal level)</li> <li>• Include senior citizens in livelihood assistance</li> <li>• Implement social activities at a new Day Center for Senior Citizens</li> <li>• Enhance the eligibility for pension beneficiaries (currently older than 77 years and indigent only)</li> </ul>	<ul style="list-style-type: none"> <li>• MSWD, Barangay Councils</li> <li>• MSWD, DOH</li> <li>• DRRMO, SK</li> <li>• TESDA, LGU (MSWD), DEPED</li> <li>• OSCA, FSCAT, COSE</li> <li>• LGU, NGOs, OSCA, Senior Citizens Associations</li> <li>• OSCA</li> <li>• National DSWD, LGU, OSCA</li> </ul>	<p>2015 onwards</p> <p>2015-2016</p> <p>2015-2018</p> <p>2015-2017</p> <p>2015-2018</p> <p>2015-2017</p> <p>2015-2018</p> <p>2015-2018</p>
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		<ul style="list-style-type: none"> <li>• Implement the new guidelines on PhilHealth for all senior citizens</li> <li>• Conduct DRRM training for OSCA staff and Senior Citizens' Association</li> </ul> <p><b>For PWD</b></p> <ul style="list-style-type: none"> <li>• Increase manpower of MSWD to respond to various clientele needs particularly PWD</li> <li>• Enhance the medical outreach program for PWD</li> <li>• Include PWD and their families in livelihood assistance</li> </ul>	<ul style="list-style-type: none"> <li>• National DSWD, LGU, OSCA</li> <li>• DRRMO, MSWD, OSCA</li> <li>• LGU (Mayor's Office, MSWD)</li> <li>• RHU, MSWD, NGOs</li> <li>• MSWD, NGOs</li> </ul>	<p>2015 onwards</p> <p>2015-2017</p> <p>2015-2018</p> <p>2015 onwards</p> <p>2015 onwards</p>
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Produced by: MSWD, OSCA, SPAWN ORG

#### 24.4 Basey

Technical Findings	Implications	Policy Options/ Programs and Projects	Responsible Organizations/Offices	Timeframe
<p>4. Shortage of safe and functioning social welfare facilities</p> <p>j. Out of 62 Daycare Centers, 29 totally damaged and 33 partially damaged. Majority unfunded for reconstruction and none can serve as an evacuation center</p> <p>k. OSCA/Day Center for Senior Citizens in Mercado repaired without structural improvement</p>	<ul style="list-style-type: none"> <li>• Disaster vulnerability of daycare children and workers</li> <li>• Disaster vulnerability at OSCA/Day Center</li> <li>• Worsened vulnerability of PWD</li> <li>• Increased unattended cases of violence against women and</li> </ul>	<p><u>Policy Option:</u></p> <p>Increase the availability of disaster-resilient social welfare services</p> <p><u>Priority Programs and Projects:</u></p> <ol style="list-style-type: none"> <li>1) Relocate Daycare Centers in NBZ</li> <li>2) Repair and reconstruct damaged Daycare Centers</li> <li>3) Establish an MSWD Office including a safe space for WCPU</li> </ol>	<p>1)2) LGU (MSWD), INGOS, Barangay Councils, Daycare Parents Committees</p> <p>3) LGU, WCPU (Police, RHU, Public Attorney's Office)</p>	<p>2015-2020</p> <p>2015-2020</p> <p>2015-2018</p>

<p>despite its geo-hazardous location</p> <p>l. Temporary office space for MSWD</p> <p>m. No crisis centers for women and children and rehabilitation centers for youth (only referral to Palo and Tanauan)</p> <p>n. 17 Senior Citizens Centers totally damaged and 23 partially damaged</p>	<p>children and children in conflict with the law</p>	<p>4) Advocate LGU and barangays to prioritize reconstruction of social welfare facilities in order to address the funding gaps</p>	<p>4)DSWD, MSWD, Local Poverty Reduction Action Teams</p>	<p>2015-2016</p>
<p>5. Limited social welfare services for increasingly vulnerable women, children, senior citizens, PWD and youth</p> <p>a. Lack of GBV response</p> <p>b. Limited recovery and reconstruction assistance for senior citizens and PWD</p> <p>c. Less livelihood alternatives for Yolanda-affected senior citizens, female-headed households and indigenous people (Manwa tribe)</p> <p>d. Increasing numbers of unemployed youth and</p>	<ul style="list-style-type: none"> <li>• Increased poverty and disaster vulnerability of senior citizens, PWD, women (particularly female-headed households), children and youth</li> <li>• Increased risk of VAWC (71 reported cases in 2013 Jan-Dec and 87 cases in 2014 Jan-Aug)</li> <li>• Increased numbers of</li> </ul>	<p><u>Policy Option:</u></p> <p>Improve LGU and barangay's system to provide appropriate social welfare services to the vulnerable population</p> <p><u>Priority Programs and Projects:</u></p> <ol style="list-style-type: none"> <li>1) Evaluate the impact and update 4Ps beneficiaries</li> <li>2) Strengthen barangay referral for GBV by awareness raising of Barangay Councils, reactivation of VAW Desks and capacity building of Daycare Workers</li> <li>3) Re-establish the Manpower Training Center and support livelihood training for out-of-school youth and female-headed households</li> </ol>	<ol style="list-style-type: none"> <li>1) Barangay Councils, 4Ps Parents Leaders, DSWD, MSWD</li> <li>2) GAD Focal Person, WCPU, MSWD, Barangay Councils</li> <li>3) LGU, TESDA</li> </ol>	<p>Every 6 months</p> <p>2015 onwards</p> <p>2015-2020</p>

out-of-school children	children in conflict with the law, out-of-school youth and child trafficking	4) Reproduce the lists of PWD and solo parents for their recovery assistance	4)MSWD, Barangay Councils	2014
		5) Reactivate BCPC through advocating Barangay Councils and build DRRM capacity of women and children through BCPC	5)MDRRMO, LGU (MSWD), Barangay Councils	2015 onwards
		6) Mobilize Senior Citizens Associations to capacitate senior citizens on DRRM (e.g. through quarterly cluster meetings)	6)MDRRMO, OSCA President, MSWD	2015 onwards

Produced by MSWD

## 24.5 Guiuan

Technical Findings/Observations	Implications (Effects)	Policy Options/Interventions (Programs and Projects)	Responsible Organizations/Offices	Timeframe
1. Increasing shortage of social welfare facilities while the community vulnerability has increased after Yolanda. The issues include: n) Lack of access and availability of safe spaces for GBV survivors except in Borongan o) Dysfunctional Daycare Centers without sufficient funding for reconstruction.	<ul style="list-style-type: none"> <li>Increased unattended cases of violence against women and children</li> <li>Increased disaster vulnerability of daycare children and daycare workers</li> <li>Worsened vulnerability of PWD</li> <li>Poor psychosocial status of senior</li> </ul>	<u>Policy Option</u> Improve availability of disaster-resilient social welfare services		
		<u>Priority Programs and Projects</u> <ul style="list-style-type: none"> <li>Restore more structurally-resilient Daycare Centers and a Day Center for senior citizens, especially those serve as evacuation centers</li> <li>Develop a disaster-resilient model community where JICA is supporting the rehabilitation of a Daycare Center</li> <li>Establish a semi-permanent Women-friendly Space in the Cogon relocation site to serve as a WCPU</li> </ul>	1)DSWD, MSWD, DPWH	2014-2019
			2)Barangay Council, LGU, JICA	2014-2015
			3)LGU (MSWD, DOH), Police, UNFPA, Plan, DSWD	2014-2015

<p>Some of the centers were repaired without mitigation measures and cannot serve as evacuation centers</p> <p>p) No facilities for PWD in order to respond to their recovery needs</p> <p>q) Senior citizens' Day Center repaired but can no longer function as an evacuation center for prisoners</p>	<p>citizens</p>	<ul style="list-style-type: none"> <li>• Establish a half-way home for abused and abandoned children</li> <li>• Advocate for foster families or alternative family care due to the lack of safe spaces for abused and neglected children</li> <li>• Build capacity of senior citizens on DRRM through Senior Citizens' Associations (e.g. General Assembly in every October)</li> <li>• Promote senior citizens' participation in DRRM planning</li> </ul>	<p>4) LGU (MSWD), DSWD</p> <p>5) DSWD, MSWD</p> <p>6) MDRRMO, MSWD, OSCA, Barangay Councils, Senior Citizens' Associations</p> <p>7) MDRRMO, MSWD, OSCA, Barangay Councils, Senior Citizens' Associations</p>	<p>2014-2017</p> <p>Ongoing</p> <p>2014-2016</p> <p>2014 onwards</p>
<p>2. Increasing vulnerability of women, children, senior citizens and PWD. The issues include:</p> <p>a) Limited service for GBV survivors, senior citizens and PWD in recovery and reconstruction</p> <p>b) Less livelihood alternatives for the Yolanda-affected senior citizens</p> <p>c) Increasing number of children in conflict with the law</p>	<ul style="list-style-type: none"> <li>• Increased poverty and disaster vulnerability of senior citizens, women, children and PWD</li> <li>• Increased cases of violence against women and children <ul style="list-style-type: none"> <li>✓ 3 rape cases reported in 2013 while 6 cases in 2014 (up to Aug)</li> <li>✓ 4 DV cases reported in 2013</li> </ul> </li> </ul>	<p><u>Policy Options</u></p> <ol style="list-style-type: none"> <li>1. Increase capacity of MSWD including on PWD issues</li> <li>2. Promote economic empowerment of the vulnerable population</li> <li>3. Strengthen protection services for women and children</li> </ol> <p><u>Priority Programs and Projects</u></p> <ol style="list-style-type: none"> <li>1) Increase manpower of MSWD, particularly permanent social workers</li> <li>2) Update and monitor pension beneficiaries considering the increased demand after Yolanda and resume microfinance support for senior citizens</li> </ol>	<p>1) Executive/legislative (LGU)</p> <p>2) LGU, DSWD, MSWD, OSCA</p>	<p>October for budget allocation</p> <p>2014-2017 for pension and 2014 onwards for micro-finance</p> <p>2014-2019</p>

d) Increasing number of out-of-school youth	while 5 cases in 2014 (up to Aug)	3) Pilot VAWC Desk in Cantahay, evaluate the impact and replicate in other barangays	3)MSWD, Barangay Council	2014-2016
		4) Recruit a focal person for PWD	4)LGU (Budget Officer, MSWD)	2014 onwards
		5) Enhance the existing productivity skills training for youth and women for their economic empowerment	5)TESDA, DEPED, MSWD	

Produced by: MSWD



## Chapter 25 Social Sector Analysis Matrix (Education)

### 25.1 Tacloban

Technical Findings	Implications	Policy Options/ Programs and Projects	Responsible Organizations/Offices	Timeframe
1. Increased unsafe and inadequate classrooms and school buildings a. Damaged classrooms and buildings b. Insufficient classrooms due to the increase of enrolment in the relocation sites c. Schools used as evacuation centers are damaged or not relocated yet	<ul style="list-style-type: none"> <li>• Poor quality education</li> <li>• Disaster vulnerability of schools children and teachers and surrounding communities</li> <li>• Increase of school drop-outs</li> </ul>	<p><u>Policy Option:</u> Build a child-friendly, gender-sensitive, safe and motivating educational environment for school children and teachers</p> <p><u>Priority Programs and Projects:</u></p> <ol style="list-style-type: none"> <li>1) Repair/rehabilitation of damaged classrooms and school buildings</li> <li>2) Construction of classrooms, school buildings and WASH facilities</li> <li>3) Employing structural mitigation for school buildings</li> <li>4) Improving accessibility for PWD and senior citizens (as evacuation centers)</li> </ol>	DEPED, DPWH, LGU, INGOs, NGOs	2014-2018
2. Lack of knowledge on DRRM and CCA among teachers and students at all levels	<ul style="list-style-type: none"> <li>• Unprepared for disasters, resulting in the loss of lives and properties</li> </ul>	<ol style="list-style-type: none"> <li>1) <u>Elementary and secondary education:</u> Strengthening DRRM in education through the subject integration research (integration of DRRM in various subjects), boy scouts and girl scouts, Pupils and Students Organizations, and journalism programs</li> <li>2) <u>Tertiary education:</u> Curriculum revision (integration of DRRM and CCA)</li> </ol>	DEPED, LGU, INGOs, NGOs  SUC, CHed, LGU	2014-2018  2015-2016
3. Increasing number of school leavers due to the distance from	<ul style="list-style-type: none"> <li>• Increase of drop-out rates especially at secondary</li> </ul>	<ol style="list-style-type: none"> <li>1) Provision of financial assistance to non-4Ps recipient families and additional financial assistance to 4Ps recipients</li> </ol>	DEPED, LGU, DSWD, CSWD, INGOs, NGOs,	2014-2016

bunkhouses to schools and trauma among teachers and school children	level and among vulnerable children including children with disabilities <ul style="list-style-type: none"> <li>• Child labor</li> <li>• Increase of absenteeism and truancy</li> </ul>	2) Enhancing ALS for out-of-school youth 3) Implementation of the school feeding program 4) Provision of psychosocial support to teachers and students 5) Enhancing SPED (for children with disabilities) training for teachers		
4. Loss of school materials and equipment including: a. Textbooks, instructional materials, educational and learning materials/supplies b. ICT equipment c. School furniture	<ul style="list-style-type: none"> <li>• Low academic performance of students</li> <li>• Poor quality education</li> <li>• Increase of absenteeism and truancy</li> </ul>	1) Provision of textbooks, learning materials, ICT equipment and school furniture	DEPED, LGU, INGOs, NGOs	2014-2016

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## 25.2 Palo

Technical Findings	Implications	Policy Options/Programs and Projects	Responsible Organizations/Offices	Timeframe
1. Damaged and unsafe school buildings and classrooms: a) Reconstruction of damaged schools without application of uniformed structural standards and utilities (e.g. comfort rooms,	<ul style="list-style-type: none"> <li>• Increased disaster vulnerability of school teachers and students and surrounding communities</li> <li>• Increased school drop-out rates</li> </ul>	<u>Policy Option</u> 1. Improve disaster-resilience of schools 2. Ensure accessibility to schools from transitional and relocation sites		

<p>hand washing facilities, electricity, etc.)</p> <p>b) Lack of school buildings as evacuation centers particularly along the coastal line (school evacuation center only available in central Palo for the coastal communities)</p> <p>c) Schools in NBZ (e.g. San Fernando)</p> <p>d) Lack of classrooms and teachers to accommodate additional students in communities around relocation sites (e.g. national high school)</p> <p>e) Lack of school furniture and learning materials</p>	<ul style="list-style-type: none"> <li>• Poor academic performance among students</li> <li>• Classrooms not conducive to learning</li> </ul>	<p><u>Priority Programs and Projects</u></p> <ol style="list-style-type: none"> <li>1) Rehabilitate school buildings/classrooms by enforcing uniformed structural standards (e.g. accessibility for PWD)</li> <li>2) Update the list of schools that still have the capacity to function as evacuation sites</li> <li>3) Relocation of schools to safer areas</li> <li>4) Upgrade elementary and high schools in relocation sites including increasing the number of teachers, building additional classrooms and ancillary facilities, and providing learning materials</li> </ol>	<p>MDRRM, DEPED, DPWH</p> <p>LGU and DEPED</p> <p>LGU</p> <p>Division DEPED (Personnel Audit)</p>	<p>2015-2018</p> <p>2015</p> <p>2015-2020</p> <p>2015-2018</p>
<p>2. Risk of higher drop-out rates due to:</p> <p>a) Financial burden for displaced families with children (e.g. elementary school in Pawing 1km away from bunkhouse site in Candahug)</p> <p>b) Traumatized school teachers and</p>	<ul style="list-style-type: none"> <li>• Increasing number of out-of-school youths (OSY)</li> <li>• Poor quality education</li> <li>• Poor performance among students</li> <li>• Child labor</li> <li>• Health problems (e.g.</li> </ul>	<p><u>Policy Option</u></p> <p>Zero-out the drop-out rates at all levels</p> <p><u>Priority Programs and Projects</u></p> <ol style="list-style-type: none"> <li>1) Provide psychosocial support for teachers and students.</li> <li>2) Ensure the implementation of Alternative Learning System in all barangays</li> </ol>	<p>PCAO, LGU, NGO, PETA, DWSO, and DEPED</p>	<p>2015-2016</p> <p>2015 onwards</p>

children	malnourished children)	<p>3) Introduce a new school monitoring system of 4Ps in order to review and recommend 4Ps beneficiaries to the respective Barangay Council</p> <p>4) Intensify assistance for students identified as potential drop-outs (e.g. Sagip Kamag-aral, Adopt a Pupil Program, School-base Deeding Program, and Gulayan sa Paaralan para sa feeding ng mga bata Program)</p> <p>5) Implement extra-curricular activities (sports and recreation) for students</p> <p>6) Intensify the implementation of home visits by teachers</p>	<p>DEPED, MSWD, Barangay Councils</p> <p>DEPED</p> <p>DEPED</p> <p>DEPED</p>	<p>2015 onwards</p> <p>2015 onwards</p> <p>2015 onwards</p> <p>2015 onwards</p>
<p>3. Lack of DRRM capacity at schools and surrounding communities</p> <p>a) Limited school drills (earthquakes and fire only)</p> <p>b) Lack of linkages between school preparedness and community preparedness</p> <p>c) Lack of development and implementation of evacuation plans at schools</p> <p>d) Lack of basic equipment for disaster preparedness</p> <p>e) Lack of updated DRRM training for teachers and students</p>	<p>• Increased disaster vulnerability of school teachers and students and surrounding communities</p>	<p><u>Policy Option</u></p> <p>Strengthen disaster preparedness of communities through safer schools</p> <p><u>Priority Programs and Projects</u></p> <p>1) Strengthen linkages between schools and communities through joint quarterly DRRM training</p> <p>2) Pilot a project to strengthen community preparedness at JICA-supported Arado Elementary School through promotion of community participation in school disaster preparedness activities</p> <p>3) Support all schools to develop, review and conduct evacuation plans on a regular basis</p> <p>4) Improve the integration of DRRM in curriculum and conduct TOT for teachers (e.g. swimming classes during physical education and new modules on DRRM)</p>	<p>MDRRMO, DEPED, Bureau of Fire Protection, PNP, JICA, NGOs</p>	<p>2015 onwards</p> <p>2015-2017</p> <p>2015 onwards</p> <p>2015-2017</p>

		5) Include the budget allocation for emergency equipment (e.g. first aid kits, warning system, etc.) at all schools through Maintenance and Other Operating Expenses		2015 onwards
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### 25.3 Tanauan

Technical Findings/Observations	Implications/Effects	Policy Options/Programs and Projects	Responsible Organizations/Offices	Timeframe
1. Lack of safe and functional schools a) Damaged school buildings, classrooms and workshop laboratories b) Lack of funding for school rehabilitation c) Rehabilitation/repair without standard mitigation measures especially for schools located in the coastal areas d) Difficulty in acquisition of land for additional/expansion of schools e) Lack of school facilities and learning materials including for the Alternative Learning System for Out-of-school Youth (OSY)	<ul style="list-style-type: none"> <li>• Poor quality education and performance of students</li> <li>• Structural vulnerability to disasters</li> <li>• Shortage of schools to function as community evacuation centers</li> <li>• Increase of OSY</li> </ul>	<u>Policy Options</u> 1. Improve disaster-resilience of schools 2. Strengthen disaster preparedness of communities through safer schools	LGU, DEPED, DPWH, JICA	
		<u>Priority Programs and Projects</u> <ul style="list-style-type: none"> <li>• Provide learning facilities (e.g. vocational training facilities) and materials for teachers and students</li> <li>• Develop disaster-resilient model communities with 2 JICA-funded elementary schools through community participation in building safer schools</li> <li>• Enforce a safer building code for school rehabilitation</li> <li>• Implement the relocation of schools from NBZ (e.g. Santa Cruz)</li> <li>• Build a high school safe and accessible for students from remote areas</li> </ul>		2015-2018
				2015-2017
				2015-2018
				2015-2018

<p>2. Risk of higher drop-out rates at all levels due to:</p> <p>c) Financial constraints: increased poverty after Yolanda, distance from transitional/relocation sites, lunch cost, etc.</p> <p>d) Poor psychosocial status of teachers and students</p> <p>e) Shortage of high school teachers</p> <p>f) Lack of integration of DRRM in education</p>	<ul style="list-style-type: none"> <li>• Increased number of OSY</li> <li>• Poor quality education and school performance</li> <li>• Further reduction of secondary and tertiary education enrolment</li> <li>• Disaster vulnerability of school teachers and children</li> </ul>	<p><u>Policy Option</u></p> <p>Improve accessibility and availability of schools</p>	<p>LGU, DOTC, DEPED</p> <p>DSWD, DEPED, DOH, NGOs</p> <p>DEPED, LGU</p> <p>LGU, DEPED, DOH, NGOs, Religious Sector</p> <p>DEPED</p> <p>MDRRM, Bureau of Fire Protection, PNP,</p> <p>DEPED</p> <p>LGU, DEPED</p>	<p>2015-2018</p> <p>2015-2018</p> <p>2015 onwards</p> <p>2015-2018</p> <p>2015 onwards</p> <p>2015 onwards</p> <p>2015 onwards</p>
		<p><u>Priority Programs and Projects</u></p> <p>a) Support transportation for displaced students</p> <ul style="list-style-type: none"> <li>• Provide school buses</li> <li>• Change the attitude of 4Ps parents to ensure utilization of the benefits for their children's education</li> </ul>		
		<p>b) Implement the school feeding program for displaced school children through Gulayan sa Paaralan Project</p>		
		<p>c) Establish SPED program for high school students with disabilities</p>		
		<p>d) Ensure provision of psychosocial training to teachers and psychosocial care to school children at all schools</p>		
		<p>e) Increase the numbers of teachers at secondary education including through promotion of teachers</p>		
		<p>f) Intensify the conduct of school drills for all types of disasters</p>		
<p>g) Implement the new senior high school system</p>				

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## 25.4 Basey

Technical Findings	Implications	Policy Options/ Programs and Projects	Responsible Organizations/Offices	Timeframe
5. Increased number of dysfunctional and unsafe schools	<ul style="list-style-type: none"> <li>• Poor quality education</li> <li>• Structural vulnerability to</li> </ul>	<p><u>Policy Option:</u></p> <p>Implement the Guidelines on DRRM at all schools including the</p>		

<p>d.Schools repaired by different donors without stronger structural measures (DEPED does not have a disaster-resilient building code)</p> <p>e. Need for relocation of schools in NBZ (e.g. San Antonio)</p> <p>f. Possible need for upgrading/building schools in relocation sites</p> <p>g.Lack of schools able to function as evacuation centers particularly in Basey 2 District</p>	<p>disasters</p> <ul style="list-style-type: none"> <li>• Increased school drop-out rates</li> </ul>	<p>disaster-resilient building code and DRRM education</p> <p><u>Priority Programs and Projects:</u></p> <ol style="list-style-type: none"> <li>1) Integrate DRRM in school improvement plans and school development plans of all schools to improve the school location, structural measures, etc.</li> <li>2) Provide learning materials to students and teachers</li> <li>3) Construct resilient school buildings particularly for those serve as evacuation centers</li> <li>4) Assess the school locations in geo-hazardous areas and relocate them as needed (e.g. Palaypay Elementary School)</li> </ol>	<ol style="list-style-type: none"> <li>1) DEPED, INGOs, NGOs, LGU (MDRRM), private stakeholders</li> <li>2) DEPED</li> <li>3) LGU, DEPED, DPWH, DENR</li> <li>4) LGU, DEPED, DPWH, DENR</li> </ol>	<p>Annually</p> <p>2015-2016</p> <p>2015-2020</p> <p>2015-2020</p>
<p>6. Psychosocial impact on teachers and students</p>	<ul style="list-style-type: none"> <li>• Increased school drop-out rates</li> <li>• Poor quality education</li> <li>• Increased transfer of students as a result of migration of their families who fear calamities</li> </ul>	<ol style="list-style-type: none"> <li>1) Build capacity of teachers to provide psychosocial care to students</li> <li>2) Continue psychosocial support to teachers by NGOS and psychologists from other parts of the Philippines</li> <li>3) Develop a set of standard for psychosocial support at schools</li> </ol>	<p>DEPED, DOH, NGOs, INGOs</p>	<p>2015-2016</p>
<p>7. Lack of integration of DRRM in education</p> <p>a. School drills cover earthquakes only</p> <p>b. Outdated and limited references on DRRM in instructional materials and lack of trained teachers</p>	<ul style="list-style-type: none"> <li>• Higher disaster vulnerability of school teachers and children</li> </ul>	<ol style="list-style-type: none"> <li>1) Incorporate typhoon, storm surge and flood drills at schools</li> <li>2) Update/improve instructional materials' references on DRRM based on Yolanda experience and conduct TOT</li> </ol>	<p>DEPED, LGU, PHILOCS/DOST, PAGASA, NGOs, INGOs</p>	<p>2015 onwards</p> <p>2015-2020</p>

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## 25.5 Guiuan

Technical Findings/Observations	Implications (Effects)	Policy Options/Interventions (Programs and Projects)	Responsible Organizations/Offices	Timeframe
<p>1. Increase of dysfunctional schools</p> <p>f) Rehabilitation/repair of schools done without enforcement of disaster-resilient building code as evacuation centers</p> <p>g) Funding gaps to rehabilitate all schools (134 out of 276 damaged elementary school classrooms and 18 out of 64 damaged high school classrooms unfunded)</p> <p>h) Possible lack of classrooms/schools in relocation sites (e.g. only combination classes for elementary level in Tagporo)</p>	<ul style="list-style-type: none"> <li>• Poor quality education</li> <li>• Structural vulnerability to disasters</li> <li>• Increased school drop-out rates</li> </ul>	<p><u>Policy Option</u></p> <p>Reconstruction of safer schools</p> <p><u>Priority Programs and Projects</u></p> <ul style="list-style-type: none"> <li>• Rehabilitate school buildings/classrooms by enforcing uniformed building standards</li> <li>• Assess and upgrade schools in relocation sites especially for island barangays</li> <li>• Provide school materials to both teachers and students</li> </ul>	<p>LGU, DEPED, DPWH, NGOs, Barangay</p>	<p>2014-2017</p> <p>2014-2019</p> <p>2014-2016</p>
<p>2. Risk of higher school drop-out rates at all levels because:</p> <p>g) Children have to help their parents earn income (increased poverty after Yolanda)</p> <p>h) There are no safe schools for children (e.g. 17 schools are still being repaired in Guiuan South)</p> <p>i) Children have to commute from transitional/relocation sites (e.g. 1</p>	<ul style="list-style-type: none"> <li>• Increased number of out-of-school youths</li> <li>• Further reduction in secondary and tertiary education enrolment</li> <li>• Poor quality education</li> </ul>	<p><u>Policy Options</u></p> <ol style="list-style-type: none"> <li>1. Improve the psychosocial status of school teachers and students</li> <li>2. Provide inclusive and equitable education service at all levels</li> </ol> <p><u>Priority Programs and Projects</u></p> <ul style="list-style-type: none"> <li>• Build capacity of teachers to provide psychosocial support to students</li> <li>• Provide psychosocial support program for Yolanda-affected teachers</li> </ul>	<p>LGU, DEPED, NGOs, DSWD, DOH</p>	<p>2014-2017</p> <p>2014-2017</p>



<p>secondary school available for 8 barangays in Homonhon Island with poorer accessibility after Yolanda)</p> <p>j) Students and teachers are traumatized</p> <p>k) Children with disabilities have possibly increased</p>		<ul style="list-style-type: none"> <li>• Promote the Alternative Learning System for out-of-school youth especially on islands (currently only available in mainland)</li> <li>• Promote secondary education at community level (awareness raising among parents) through Barangay officials as change agents</li> <li>• Enhance the SPED program for children with disabilities</li> </ul>		<p>2014 onwards</p> <p>2014 onwards</p> <p>2014 onwards</p>
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## Chapter 26 Social Sector Analysis Matrix (Solid Waste Management)

### 26.1 Tacloban

#### Analysis Matrix of Solid Waste Management: workshop on September 19, 2014

#### Tacloban: Mr. Bong Hijada Priority Subject

Technical Findings/Observations	Implications (Effects)	Policy Options/ Interventions (Programs & Projects)	Responsible Organizations/ Offices	Timeframe
1. Current 10 years' SWM plan will terminate in 2017	<ul style="list-style-type: none"> <li>• SWM surrounding conditions has changed after the Yolanda</li> <li>• The plan constitutes the basic sectorial strategy for long term.</li> <li>• The plan should link closely with RRP, DRRMP, CLUP, CDP and annual budget.</li> </ul>	To update and review the 10 years' SWM Plan	CENRO	2015-2016
2. Permanent relocated houses will be constructed in the area adjacent to the existing dumpsite (250m).	<ul style="list-style-type: none"> <li>• To ensure environment protection and health of the residents</li> </ul>	To develop a new sanitary landfill at another lot <ul style="list-style-type: none"> <li>• In compliance with Republic Act 9003</li> <li>• Suitable and adequate location, size, cell-wise development, design to be studied.</li> <li>• Technical training for operation &amp; maintenance</li> <li>• Internal and external financial source is essential for project implementation.</li> </ul>	DENR, CENRO,	Conceptualization on going Construction in 2015
3. Needs to strengthen recycling system	<ul style="list-style-type: none"> <li>• To divert waste</li> <li>• To protect and conserve natural resources</li> <li>• To prolong life of landfill site</li> </ul>	To promote recycling system <ul style="list-style-type: none"> <li>• Public awareness to promote the cooperation of the segregation at household level</li> <li>• Establishment of MRF in every barangays</li> <li>• Establishment of City MRF at landfill site</li> <li>• Hand-in-hand cooperation with junk shop</li> </ul>	CENRO, Barangays	Implementation starts in 2015 and continues afterwards.

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4.Needs for revenue enhancement especially by collecting SWM Fees	<ul style="list-style-type: none"> <li>• Big gap between revenue and expenditures</li> <li>• For SWM cost recovery</li> </ul>	<ul style="list-style-type: none"> <li>• To promote campaigns to make the stakeholders understand the reasons:             <ol style="list-style-type: none"> <li>1) Necessity to provide better SWM services</li> <li>2) Service users' pay rule</li> </ol> </li> </ul>	CMO, SP, CRO, CMO, CENRO	ASAP
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## 26.2 Palo

### Analysis Matrix of Solid Waste Management: Workshop held on September 29, 2014

Palo: Mr. Mervin C. Millar and Ms. Anecita A. Estrada Priority Subject

Technical Findings/Observations	Implications (Effects)	Policy Options/ Interventions (Programs & Projects)	Responsible Organizations/ Offices	Timeframe
<ul style="list-style-type: none"> <li>• Current draft of 10-years' SWM Plan finished in 2010. New Plan has to be prepared..</li> </ul>	<ul style="list-style-type: none"> <li>• Order of Republic Act 9003</li> <li>• The plan constitutes the basic sectorial strategy for long term.</li> <li>• SWM surrounding conditions has changed after the Yolanda</li> <li>• Should link closely with RRP, DRRMP, CLUP, CDP and annual budget.</li> </ul>	To formulate the 10-years' SWM Plan in compliance with Republic Act 9003 and submit to DENR	MGSO, MPDO, MTO	Preparation: 2014-2015 Implementation: 2015-2024
<ul style="list-style-type: none"> <li>• Needs to convert controlled dumpsite to sanitary landfill</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure environment protection and health of the residents:</li> </ul>	To study the development of new sanitary landfill in compliance with Republic Act 9003 <ul style="list-style-type: none"> <li>• Work toward <u>development in association with the adjacent LGUs</u> because the development cost and O&amp;M cost are high.</li> <li>• Technical training for operation &amp; maintenance</li> </ul>	DENR, EMB, LGU, Donor and private entities	Up to the joint discussion with adjacent LGUs in 2015
<ul style="list-style-type: none"> <li>• Needs to strengthen recycling and MRF system</li> </ul>	<ul style="list-style-type: none"> <li>• Waste diversion</li> <li>• Natural environment protection</li> <li>• Prolongation of dumping site life</li> </ul>	To promote the recycling system <ul style="list-style-type: none"> <li>• Public awareness and cooperation of the segregation at source</li> <li>• MRF in every barangays</li> <li>• Work in cooperation with junk shops</li> </ul>	MGSO, MMO, Barangay IEC team and core coordinators	Implementation starts in 2015 and continues afterwards.

<ul style="list-style-type: none"> <li>• SWM cost is unclear.</li> </ul>	<ul style="list-style-type: none"> <li>• Necessary to understand the standard SWM cost of LGU for:               <ol style="list-style-type: none"> <li>1) Providing good service with lower cost</li> <li>2) Base information for adequate SWM fee setting in future</li> </ol> </li> </ul>	<p>To create the technical working group under the MSWMB</p> <p>To estimate and disclose every year</p>	<p>MSWMB, TWG</p>	<p>Annually from 2015</p>
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### 26.3 Tanauan

#### Analysis Matrix of Solid Waste Management: Workshop on September 25, 2014

Tanauan: Ms. Sherlyn of MAO, Mr. Allan of MGSO and Mr. Niceforo, MA Priority Subject

Technical Findings/Observations	Implications (Effects)	Policy Options/ Interventions (Programs & Projects)	Responsible Organizations/ Offices	Timeframe
<ul style="list-style-type: none"> <li>• Current draft of 10-years SWM Plan washed out.</li> </ul>	<ul style="list-style-type: none"> <li>• SWM surrounding conditions has changed after the Yolanda</li> <li>• The plan constitutes the basic sectorial strategy for long term.</li> <li>• Should link closely with RRP, DRRMP, CLUP, CDP and annual budget.</li> </ul>	<p>To formulate the 10-years' SWM Plan in compliance with Republic Act 9003 and submit to EMB of DENR</p>	<p>MAO, MGSO, MPDO</p>	<p>Preparation starts in October 2014, particularly for waste analysis characterization survey</p> <p>The plan is finalize in the middle of 2015</p>
<ul style="list-style-type: none"> <li>• Needs to convert open dumpsite to sanitary landfill</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure environment protection and health of the residents: Especially permanent resettlement is more or less 1 km from DS</li> </ul>	<p>To study the development of new sanitary landfill in compliance with Republic Act 9003</p> <ul style="list-style-type: none"> <li>• Work toward <u>development in association with the adjacent LGUs</u> (e.g.) the development cost and O&amp;M cost are high.</li> <li>• Technical training for operation &amp; maintenance</li> </ul>	<p>DENR, EMB, LGU, Donor and private entities</p>	<p>Study 2015 Development 2016-2020</p>

<ul style="list-style-type: none"> <li>Yolanda collapsed composting facilities</li> </ul>	<ul style="list-style-type: none"> <li>To reduce the disposal waste</li> <li>Technical learning by using vermin-culture</li> <li>Farmers expect to avail low cost fertilizer.</li> </ul>	<p>Immediate rehabilitate facilities</p> <p>Expand the production (10 bags x 40 kg/bag b/Yolanda) additionally in 9 Barangays</p>	MAO, Barangays	Rehabilitation 2014 Expansion 2015
<ul style="list-style-type: none"> <li>Recycling and MRF system is not functioning.</li> </ul>	<p>Necessary for:</p> <ul style="list-style-type: none"> <li>Waste diversion</li> <li>Natural environment protection</li> <li>Prolongation of dump site life</li> </ul>	<p>To promote the recycling system in entire LGU</p> <ul style="list-style-type: none"> <li>Public awareness and cooperation of the segregation at source</li> <li>MRF in every barangays</li> <li>Work in cooperation with junk shops</li> <li>Municipal MRF absorbs excess of unutilized waste from barangays</li> </ul>	MAO, MGSO, Barangays	2015 - 2024
<ul style="list-style-type: none"> <li>SWM cost is unclear.</li> </ul>	<ul style="list-style-type: none"> <li>Necessary to understand the standard SWM cost of LGU for:             <ol style="list-style-type: none"> <li>Providing good service with lower cost</li> <li>Base information for adequate SWM fee setting in future</li> </ol> </li> </ul>	<p>To create the technical working group under the MSWMB</p> <p>To estimate and disclose every year</p>	MSWMB, MEO, TWG	Annually from 2015
<ul style="list-style-type: none"> <li>Needs to minimize the gap between SWM expenditures and revenues</li> </ul>	<ul style="list-style-type: none"> <li>Necessary for SWM cost recovery</li> </ul>	<p>To promote campaigns to make the stakeholders understand the reasons:</p> <ol style="list-style-type: none"> <li>Necessity to provide better SWM services to citizens</li> <li>Already regulated in the LGU ordinance</li> </ol>	Mayor, MTO, MSWMB	2015 and periodically

**26.4 Basey**

**Analysis Matrix of Solid Waste Management: workshop on September 17, 2014**

**Basey: Mr. Nicanor S. Cabunag** Priority Subject

Technical Findings/Observations	Implications (Effects)	Policy Options/ Interventions (Programs & Projects)	Responsible Organizations/ Offices	Timeframe
<ul style="list-style-type: none"> <li>Current draft of 10-years SWM Plan has not formulated scientifically.</li> </ul>	<ul style="list-style-type: none"> <li>The plan constitutes the basic sectorial strategy for long term.</li> <li>SWM surrounding conditions has changed after the Yolanda</li> <li>Should link closely with RRP, DRRMP, CLUP, CDP and annual budget.</li> </ul>	<p>To formulate the 10-years' SWM Plan by setting the procedures and criteria as follow:</p> <ol style="list-style-type: none"> <li>1) Basic data analysis</li> <li>2) SWM policy setting</li> <li>3) Recycling</li> <li>4) Resource procurement planning</li> <li>5) Implementation schedule</li> <li>6) Financing planning</li> </ol>	<p>SWMB, MSWMO, MPDO</p>	<p>Preparation:2014 Implementation: 2015-2024</p>
<ul style="list-style-type: none"> <li>Needs to convert open dumpsite to categorized disposal facilities and sanitary landfill</li> </ul>	<ul style="list-style-type: none"> <li>Order of Republic Act 9003, 2000</li> <li>To preserve natural environment: air, groundwater, beautification and prevent from insects generation, stray animals breeding, etc</li> <li>To facilitate material recover and composting</li> <li>To receive and isolate toxic waste</li> </ul>	<p>To develop sanitary landfill</p> <ul style="list-style-type: none"> <li>Suitable and adequate location, size, cell-wise development, design to be studied.</li> <li>Land acquisition by LGU</li> <li>Procurement of heavy equipment by LGU for regular operation</li> <li>Technical training for operation &amp; maintenance</li> <li>Internal and external financial source is essential for project implementation.</li> </ul>	<p>DENR, EMB, LGU, Donor and private entities</p>	<p>Implementation starts in 2014 according to the proposal of UNDP</p>
<ul style="list-style-type: none"> <li>Needs to strengthen recycling and MRF system</li> </ul>	<ul style="list-style-type: none"> <li>Waste diversion</li> <li>Natural environment protection</li> <li>Prolongation of dumpsite life</li> </ul>	<p>To promote the recycling system</p> <ul style="list-style-type: none"> <li>Public awareness and cooperation of the segregation at household level</li> <li>MRF in every barangays</li> <li>Work in cooperation with junk shops</li> </ul>	<p>MSWMO, MIO, Barangay IEC team and core coordinators</p>	<p>Implementation starts in 2015 and continues afterwards.</p>

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		<ul style="list-style-type: none"> <li>MRF municipal absorbs excess of unutilized waste from barangays</li> </ul>		
<ul style="list-style-type: none"> <li>Needs for estimation of SWM cost</li> </ul>	<ul style="list-style-type: none"> <li>Necessary to understand the standard SWM cost of LGU for:                             <ol style="list-style-type: none"> <li>Providing good service with lower cost</li> <li>Base information for adequate SWM fee setting in future</li> </ol> </li> </ul>	To activate the technical working group	MSWMO, TWG	Update every year along with the annual budget preparation schedule
<ul style="list-style-type: none"> <li>Needs to collect SWM Fee from households</li> </ul>	<ul style="list-style-type: none"> <li>SWM cost recovery</li> </ul>	To promote campaigns to make the stakeholders understand the reasons: <ol style="list-style-type: none"> <li>Necessity to provide better SWM services</li> <li>Already regulated in the LGU ordinance</li> <li>Users' pay rule</li> </ol>	Mayor, MTO, MSWMO	ASAP

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## 26.5 Guiuan

### Analysis Matrix of Solid Waste Management: workshop on September 15, 2014

Guiuan: Mr. Rizalde C. Salamida Priority Subject

Technical Findings/Observations	Implications (Effects)	Policy Options/ Interventions (Programs & Projects)	Responsible Organizations/ Offices	Timeframe
<ul style="list-style-type: none"> <li>Current draft of 10-years SWM Plan has not formulated scientifically.</li> </ul>	<ul style="list-style-type: none"> <li>The plan constitutes the basic sectorial strategy for long term.</li> <li>SWM surrounding conditions has changed after the Yolanda</li> <li>No linkage at present with RRP, DRRMP, CLUP, CDP and annual budget.</li> </ul>	To formulate the 10-years' SWM Plan by setting the procedures and criteria as follow: <ol style="list-style-type: none"> <li>Basic data analysis</li> <li>SWM policy setting</li> <li>Recycling</li> <li>Resource planning</li> <li>Implementation schedule</li> <li>Financing planning</li> </ol>	SWMB, MGSO, MPDO	Preparation:2015 5 Implementation: 2015-2024

<ul style="list-style-type: none"> <li>Needs for estimation of SWM cost</li> </ul>	<ul style="list-style-type: none"> <li>Necessary to understand the standard SWM cost of LGU for:               <ol style="list-style-type: none"> <li>7) Providing good service with lower cost</li> <li>8) Base information for adequate SWM fee setting in future</li> </ol> </li> </ul>	To form technical team including general service office in cooperation with accounting office and engineering office	MGSO, MAO and MEO	Update every year along with the annual budget preparation schedule
<ul style="list-style-type: none"> <li>Needs to collect SWM Fee from households</li> </ul>	<ul style="list-style-type: none"> <li>SWM cost recovery</li> </ul>	To promote campaigns to make the stakeholders understand the reasons: <ol style="list-style-type: none"> <li>8) Necessity to provide better SWM services</li> <li>9) Already regulated in the LGU ordinance</li> <li>10) Users' pay rule</li> </ol>	Mayor, MTO, MGSO	ASAP
<ul style="list-style-type: none"> <li>Needs to convert open dumpsite to sanitary landfill</li> </ul>	<ul style="list-style-type: none"> <li>Order of Republic Act 9003, 2000</li> <li>To preserve natural environment: air, groundwater, beautification and prevent from insects generation, astray animals breeding, etc</li> </ul>	To develop sanitary landfill <ul style="list-style-type: none"> <li>Suitable and adequate location, size, cell-wise development, design to be studied.</li> <li>External financial source is essential for project implementation.</li> </ul>	DENR, EMB, LGU, (Donor)	Preparation start in 2015 in accordance with the 10 years' SWM Plan



## **Chapter 27 Activities of Economy Sector at Work shop**

### **27.1 SWOT Analysis**

#### **27.1.1 Tacloban Workshop Economy Sector on July 24, 2014**

Having participation of the representative from the Chamber of Commerce and the two officers from City Planning and Development Office with partial participation of the officer from City Agriculture Office, Modified SWOT Analysis was conducted taking Economy Sector in Tacloban as subject with facilitation of the JICA Study Team member.

Based on the Modified SWOT Analysis brief Problem Analysis for analyzing main issue as a top of the pyramid formulated by “Effect-Cause” relationship factors.

The participants committed to prepare a development strategy and scenario based on the analyses by the time of 2nd workshop.

Brief results are the followings:

#### **(1) SWOT Analysis**

##### **1) Ideal Future**

- Develop Tacloban as Central Hub for Trade, Commerce, Service, and Industry in Region 8.
- Promote Tacloban City’s Lite Industrial Zone by the Philippine Chamber of Commerce
- Ideal Regional Fish Port for the Visayas
- AAA Slaughter House of Region 8
- Enhance Tacloban as Tourism Hub
- Modernize Agriculture & Fishery Sector
- Promote integrated farming on short duration crops
- Encourage livestock production
- Restore Tacloban as Next Wave City for Information/ Communication Technology

##### **2) Strength**

- Trading Center for Fish & agricultural Product
- Center of Distribution of Basic/ Prime Commodities
- Airport is here
- Accessibility of land transport from Luzon and Mindanao
- Tourism Hub/ Transit Point to nearby Tourist Spots
- Majority of Hotels/ Tourism Facilities in the Region are in Tacloban
- High Potential Tourism Attractions are in the vicinity
- Socio-cultural Heritage and Historical Landmarks
- Cancabato Bay has potential as Eco-Tourism
- Before Yolanda Tacloban is the biggest supplier of Milkfish in the Region

- Tuna Alley is very near off the coast of Guiuan
- Plenty of surplus container vans
- Fallen Coco Trees (raw material for pulp chip, activated carbon)
- Regional Office of Central Bank in Tacloban
- Enthusiastic Businessmen
- Supportive Government Leaders
- Low Electric Power Rates
- Low minimum wage
- English is widely spoken/ understood
- Tacloban City has 4 Universities

3) Weakness

- Lack of Capital
- All basic/ prime commodities are imported from other Regions
- Marketing of Agricultural/ Fisheries is very weak (buyers connecting to producers)
- Lack of Fish Trading System/ Public Market with Cold Storage
- Lack of AAA Slaughter House
- Low manufacturing industry
- Seaport has very limited operating hours/ accessibility
- Passing San Juanico Strait is too expensive for Cargo/ Passenger Ships
- Weak Telecom & IT Infrastructures
- Political Dynamics
- No Tacloban Chamber of Commerce and Industry
- Passive Attitude of Some People
- Fallen Coco Trees

4) Constraint

- Political Climate
- Afraid to take Risks
- Weather (20 + Typhoons)

(2) **Brief Problem Analysis**

1) Core Issue

- Tacloban is not fully function as Regional Hub.

2) Emanating Issues from Core Issue

- Regional Export is Stagnant
- Intra-Regional Trade is no Thriving

3) Infrastructure Sector Issues for Core Issue

- Inter-Regional Transport Infrastructure (Port and Airport) is Weak

- Limited Road Network and Capacity
  - Lack of Large Hotels & Convention Facilities
  - Weak ICT Infrastructure
- 4) Agriculture and Fishery Sector Issues for Core Issue
- Absence of Food terminals for Agro-Fish Trading
  - No Cold Storage
  - No AAA Slaughterhouse
  - Not Modernized farming/ fishing method used
  - Limited Attractive Local Products (to be identified/ created)
- 5) Industry Sector Issues for Core Issue
- Lack of Processing/ Manufacturing Industries
  - Lack of Areas identified as light industrial zone
- 6) Business Sector Issues for Core Issue
- Majority of Businesses are Micro-Small scale – No Economy of Scale
  - Lack of Affordable Credit
  - Most businessmen are not risk takers
- 7) Background Issues
- More expensive outgoing shipping fees
  - CBD has limited space
  - Lack of Support from National Government
  - Lack of Regional Champion
  - Police force lacks vehicles & 2-way radios

#### **27.1.2 Tanauan Workshop Economy Sector on July 30, 2014**

Having participation of Hon. Mayor and Municipal Agriculture Officer the group session was started from the economy sectors vision setting based on the Municipality's four (4) economic pillars of "Residential Hub", "Commerce and Trade", "Leisure and Tourism", and "Agro-Industrial Products" after the brief explanation of the problem solving planning process. Municipality Side admitted to include "(Safe and Resilient) Suburban Residential and Production Center" as the sector's vision to bridge Municipality's vision of "Delightful Living Community".

Further discussion was conducted to settle a focal issue of the subsequent group session. "Agro-Industrial Products" was selected among the four pillars since it was expected to involve complicated issues comparing to the other three pillars.

Then Modified SWOT Analysis was conducted taking "Agro-Industrial Products" in Tanauan as subject with facilitation of the JICA Study Team member.

Based on the Modified SWOT Analysis brief Problem Analysis for analyzing main issue as a top

of the pyramid formulated by “Effect-Cause” relationship factors.

The participants committed to prepare a development strategy and scenario based on the analyses by the time of 2nd workshop.

Brief results are the followings:

## **(1) SWOT Analysis**

### **1) Ideal Future**

- Productive and Value added Suburban Agro-Industrial Product Center
- Mechanized Rice Production
- Processing Centers (Agri-processing facilities)
- Fish Port, Ice Plant, Cold Storage Facilities
- Feed Mill (Swine & Poultry)

### **2) Strength**

- Existing Rice Field (2,505ha)
- Trained Farmers on Current Technologies
- Existing of Irrigation Facilities
- Existing Coco Farm (1,970ha)
- Intercropping (Corn, Vegetable, Root Crops)
- Processing Technology is Available
- Most Farmers are Combination of rice, coconut, and vegetable farming
- Other Markets are near (Palo ad Tacloban)
- More than 6,000 ha Marine Waters
- Existing MPA (Marine Protected Area)
- Rich in Fishes
- Effective and Efficient FLET (Fishing Law Enforcement Team)
- Existing area for Fish Pen (25ha in brackish water)
- Existing Technology (Bangus: Milkfish Production)
- 40 tons monthly of Bangus produced from 55 fish pens
- Presence of Active SMEs (Small and Medium Enterprises)
- Lechon, Bamboo Craft, Pottery, Food Processing: Banana Chips, Tablea (Cacao), Salted Eggs, Binabol + Native Delicacies
- Handicraft: Bags, Soft Broom
- Presence of Raw Materials
- Coco shells are directly used for grilling Lechon

### **3) Weakness/ Problem**

- Using the traditional farming practice: use of draft animals
- No adopted monitoring system
- Low production

- Low Income
- Rice is mostly for domestic consumption within Municipality
- Insufficient Capital in Production and Farm Inputs
- Illegal Fishing
- No Equipment and Facilities of FLET due to Yolanda damages
- Lacking of fishing gears
- Lack of Capital (Fingerlings and Feeds)
- Attitudinal Problem
- No “Basakan Center” (Marketing Center) and No Processing Center
- Marketing of Product (system) Weak
- No Cold Storage Facility (Fish), No Ice Plant
- No Cold Storage Facility (Veg.)
- Lack of Technical Personnel in Fishery and Livestock
- No Cold Delivery Van (Veg + Fish + Meat)
- Slaughterhouse damaged by Yolanda requires rehabilitation to conform with the “AA” standard
- Lacking Production and Post Production Machinery and Equipment
- Production Machinery & Equipment: Power tiller, rice transplanter
- Post Production Machinery & Equipment: Rice Thresher, Dryer, Ware-hose, Rice mill
- Lack of Financing Capability (financial records not available, cannot produce the necessary collaterals: not eligible as borrower from financial institutions)
- Coconut plantation were damaged
- Cacao plantation needs shading trees
- Lack of supply of eggs
- Lack of Materials for Bamboo Craft
- No feed mill
- No local fish feeds available

4) Constraint

- Weather Condition
- High cost of input (Feeds)
- Competitive Supply of Swine from Davao

**(2) Brief Problem Analysis**

1) Core Issue

- Tanauan is yet to be Productive & Value Added Suburban Agro-Industrial Product Center

2) Direct Issues to Core Issue

- Lack of Mechanized and Advanced Agriculture Production
- Lack of Financial Capability especially in Fishery

- Lack of Marketing Logistic Chain
- Limited High Quality Handicraft
- Limited High Quality Agri-Processed Products

3) Secondary Issues to Core Issue

- Lack of Mechanized and Advanced Agriculture Production
- Insufficient Extension Work
- No Bamboo Plantation No Available Egg Producer in the vicinity
- Lack of Financial Capability especially in Fishery
- Limited organized activities of the fishng sector
- Limited High Quality Agri-Processed Products
- No Agri-Processing Equipment and Machineries

### **27.1.3 Palo Workshop Economy Sector (Agricultural Sector) on July 23, 2014**

The Municipal Agricultural Officer was sole participant for the Economy Sector. Modified SWOT Analysis (to analyze subject group/ entity by the four aspects similar to SWOT analysis. Aspects consist of 1) Strength, 2) Weakness/ Problem, 3) Ideal Future/ Vision instead of Opportunity, and 4) Constraint instead of Threat) was conducted taking Agricultural Sector in Palo as subject with facilitation of the JICA Study Team member.

The participant committed to prepare a development strategy and scenario based on the analysis by the time of 2nd workshop.

Brief results are the followings:

#### **(1) SWOT Analysis**

1) Ideal Future

- High production at lower cost of inputs resulted in increased income of farmers.
- Adding value for higher profitability.

Thereby farmers can send their children to colleges/ universities.

2) Strength

- Having a good source of irrigation water
- Famers classes/ FFS (Technical IEC Program) conducted
- Famers have access to visit FITS (Agric. Technology Resource) Center to update new technology on agriculture
- Famers at younger middle age are vital
- Livelihood programs introduced after “Yolanda” significantly
- Unified Municipal Fishery Ordinance
- Organized ALFARMOC (San Pedro Bay – Leyte Gulf composed of 11 Municipalities) with GIZ support

3) Weakness/ Problem

- Average yield of rice is 4.5 ton/ ha (without seed subsidy paddy farming is not profitable)
- Low productivity
- Not stable farm capital results in selling all rice products to middlemen leaving no rice for own consumption.
- During peak harvesting period, price of palay is lower
- NFA (National Food Authority) buying palay, unit price is higher compared with middlemen while its purchasing demands several requirements like bulk acceptance, delayed payment, etc.
- Most farmers are tenants and leaseholders (authorized by DAR) and less are land owners who actually till their own land
- No fishery processing activities
- Many livelihood programs are temporary
- Fertilizer subsidy is temporary measure

4) Constraints

- High cost of production inputs

#### **27.1.4 Basey Workshop Economy Sector on July 25, 2014**

Having participation of Municipal Treasury Officer, Municipal DRRM Officer, the officer from tourism related section in Municipality, the officer from Municipal Agriculture Office, and some other Municipal officers, Modified SWOT Analysis was conducted taking Economy Sector in Basey as subject with facilitation of the JICA Study Team member after the brief analysis on the damages caused by Yolanda on to the economy sector.

Based on the Modified SWOT Analysis brief Problem Analysis for analyzing main issue as a top of the pyramid formulated by “Effect-Cause” relationship factors.

The participants committed to prepare a development strategy and scenario based on the analyses by the time of 2nd workshop.

Brief results are the followings:

(1) **SWOT Analysis**

1) Ideal Future

- Basey as a Global Major Tourist Destination with a Diversified and Competent Agro-Industry

2) Strength

- Presence of Sohoton Natural Bridge National Park, Balantak, Rawis Cave, Pnhulugan & plenty of cave/ rock formations
- Presence of Marine Reserve Park (400 ha)
- Presence of Golden Rive and other water tributaries

- Presence of Tourism Promotional Materials
- Presence of various handicrafts (Tikog, Rattan Nito, Bamboo, Drift Wood, Nipa)
- Globally known Tikog industry
- Strategically located among Samar Central, Eastern Samar, and Leyte – Near the Regional Hub
- Vast Watershed areas (source of water and irrigation supply)
- Gabi (purple yam) only thrived in Basey
- Production of yellow corn for animal feeding
- More than 3,000 ha irrigable Riceland
- Vast Idle lands for cultivations
- Fully installed and rehabilitated fish cages
- Known worldwide by encounter of Yolanda
- Hardworking & adaptable to extreme situation
- English speaking community
- Presence of accredited people's organization
- Involvement of Private Sector, other than government organizations in Planning and Budgeting Process

### 3) Weakness

- Loss of business capital by Yolanda
- Displaced Commercial Establishment
- Cottage Industry Damaged by Yolanda
- Business and Commercial Establishment were Washed Out
- Absence of Public Market and Bus Terminal
- Damaged Slaughterhouse
- Livestock business was temporarily shut down
- Scattered slaughtering of livestock
- Scattered/ Increased Sidewalk Venders
- Decrease Number of Buss Registrants (New/ Renewal)
- Absence of Tourism Facilities (Hotels, Restaurant, Receiving Areas)
- Poor Record System Management in Tourism Sector
- Lack of infrastructure to support tourism
- Limited Communication Facilities (Cellar phone and internet)
- Less income of Commercial Establishment due to less electricity
- Absence of Feed Mill
- Absence of locally available fish feeds
- Absence of Large Scale Rice Mill
- No technical expertise on Gabi processing (only family cake production)
- Insufficient Irrigation System
- Reduced income of coco farmers (70 – 80%) damaged
- Slash & Burn Farming System on the Protected Areas



- Insufficient livelihood or income opportunities
- Attitudes of some Basaynons

4) Constraint

- Lack of Commodity Supply
- Price increase in basic commodities
- Prone to hazard commercial establishments
- Absence of CLUP
- Lack of Financial Resources
- Flood Prone on some areas
- High cost Agricultural inputs
- Limited local consumer capacity

**(2) Brief Problem Analysis**

1) Core Issue

- Basey is yet to Develop Tourism & Diversified and Competitive Agro-Industry

That is interpreted as:

- Farmers are not profiting with modernized farming/ fishing
- People are not earning well from Tourism related industry

2) Background Issues for Core Issue

- Earn for Today and Never Mind Tomorrow Attitude
- Absence of Investors
- Lack of knowledge/ Public Awareness toward Disaster Preparedness
- Resistance to change
- Lack of financial resources
- Absence of comprehensive master development plan

3) Agro-Fishery Issues for Core Issue

- Lack of Knowledge on Organic Farming
- Absence of Market System (Internal & External)
- Linkage with other LGUs on product development and packaging
- Absence of Public Terminals & Market
- Absence of Infrastructure Support Facilities
- Lack of Knowledge on Adoptable/ Profitable Crops to climate change
- Lack of Native Products Production & Packaging

4) Tourism Sector Issues for Core Issue

- Adequate people for tourism services lacking
- People's knowledge on tourism attraction lacking
- Insufficient capacity on transport facilities

- Poor Standard on Food Handlers & Catering Services
- Absence of linkage to the global community (no web site)
- Absence of standard accommodation establishments
- Dull nightlife in Basey
- Absence of Tourism Packaging and Customer Service

#### **27.1.5 Guiuan Workshop Economy Sector on July 28, 2014**

Having participation of Municipal Treasury Officer, Municipal Agriculture Officer, the officer in charge of tourism and information under Municipality, the officer from Municipal Budget Office, one other Municipal officers, and the officer from BFAR, Modified SWOT Analysis was conducted taking Economy Sector in Guiuan as subject with facilitation of the JICA Study Team member after the brief explanation of the problem solving planning process.

Based on the Modified SWOT Analysis brief Problem Analysis for analyzing main issue as a top of the pyramid formulated by “Effect-Cause” relationship factors.

The participants committed to prepare a development strategy and scenario based on the analyses by the time of 2nd workshop.

Brief results are the followings:

##### **(1) SWOT Analysis**

###### **1) Ideal Future**

- Basey as a progressive Municipality with a sustainably managed resource, Producing & Marketing Quality Agro-Fishery Products, empowering the people in the promotion of investment & job opportunities, enhance and develop environmental protection to attain a Safe and quality Life
- Progressive Commercial Businesses
- Market System
- Resilient People
- Sustainable Livelihood
- Safe Place to Live
- Cooperative Constituents
- Healthy People

###### **2) Strength**

- Abundant marine resources
- Tuna Highway Nearby
- Banca Boat Tuna Fishing
- Presence of 1st Class Lapu Lapu
- 1st Class Fishes are Exported
- Presence of Guiuan Marine Fisheries Development Research Center

- Sustained Fish Sanctuaries
- Seaweed Farming (Carrageenan)
- Fishermen/ Farmer Associations
- Farmers are willing to learn technology
- Abundance of Kalamansi
- Geographical (Strategic) Location
- Guiuan Airport (constructed by America Force WW II)
- Existing Dive & Surfing Sites
- White Sandy Beaches
- Pilgrimage Shrine (San Antonio De Padua
- PAGASA Rader (Weather Station)
- Historical Sites: Magellan's Landing Site, U.S. Naval Depot, White Russians Refugee Camp
- Existence of Mining Operation
- Chrome, Nickel, Copper for Mining
- Existence of LGU Owned Waste Disposal Area
- Existing Public Service Support Facilities (Hospital, Schools, Daycare Center)
- Existing Laws: Fishery Code, Investment Incentive Code, Tourism Code, Revenue Code, Coastal Resources Management (CRM) Code

### 3) Weakness/ Problem

- Exportation of 1st Class Fishes/ Marine Products
- Coming/ Entrance of Commercial Fishing Boats
- Middleman Purchases Live Fishes
- Not enough supply of ice locally
- Absence of Cold Storage for Fishes
- Supply of Live Swine/ Hogs from Mindanao
- Local Importation of High Value Vegetables/ Fruits
- Lack of Resources and Finances
- Uncontrolled Price of Product
- Marketing System (Lacking)
- Processing of Kalamansi into Powder is too Expensive
- Processing of Kalamansi concentrate has been found defective after 1month stcking
- Homonhon Island has no processing plant for Cassava
- Lack of Composting facilities for organic farming
- Greenhouse farming is too expensive
- Lack of Technical Skills
- Absence of Training area where farmers are learning technologies
- Unstable Power supply
- Water Source
- Lack of Pumping Stations & Generator Sets for Integrated Water Supply

- Weak Enforcement of Municipal Ordinances
- None Implementation of some Municipal Ordinances
- Poor People Response for Following Laws
- Irresponsible Mining
- Lack of Political Will
- Lack of Knowledge on Proper Waste Management RA 9003

4) Constraint

- Rampant Illegal Fishing Activities
- Poor Compliance of Mining Laws and Regulation
- Informal Settlers
- Climate Change
- Typhoon Belt Area
- Attitude of People Toward Change
- High Cost of Feeds
- Tourist Attractions Destroyed (Yoga Camp, Spectators Site (Surfing Area), U.S. Naval Flag Poles, 16th Century Church, Magellan Landing Site, Hotels (in Calicoan), Pearl Island, PAGASA Radar, Guiuan Terminal
- Lack of equipment & manpower for Proper Disposal of Solid Waste Management

**(2) Brief Problem Analysis**

1) Core Issue

- Quality Agro-Fishery Products have to be Produced & Marketed in Association with Tourism Promotion

2) Direct Issues to Core Issue

- Lack of Investors
- Less Tourists Coming
- Inadequate Logistic and Technology
- Limited Profitable Products/ Services

3) Secondary Issues to Core Issue

- Lack of Invest Promotion
- Limited Highly Tourist Destinations
- Inadequate Tourist Accommodations
- High Production Cost
- High Marketing Cost
- Lack of External Marketing Promotions/ Knowledge of Needs
- Lack of Technical Knowhow

- 4) Tertiary and Background Issues
- Lengthy Travel Time and Costly
  - Un-operational Airport
  - Accessibility - Road Network Problem
  - Unstable Power Supply
  - Financial Constraints

## Chapter 28 Part 3 Annex

### ANNEX 1

#### Proposed Actions by LGUs in Leyte regarding Usage of Hazard Map

<b>Tolosa</b>			
<b>Activity</b>	<b>By whom</b>	<b>By When</b>	<b>How</b>
1. Revise the approved CLUP integrating CCA/DRR backed up with 1:10,000 scale Hazard Maps	CLUP Technical Working Group (TWG)	March-June 2015	Data Gathering/Workshops/Write shops
2. GIS coaching/mentoring	MPDO/GIS	March 2015	Capacity Development / Hands-on training
3. Revisit LDRRMP incorporating 1:10k scale hazard maps	MDRRMC / MDRRMO/GIS	April 2015	Generation of Hazard Maps / write shop (interpretation, analysis)
4. Contingency Planning	MDRRMC/PDRRMC/OCD	May 2015	workshop
5. Conduct forum to MDRRM Council members on the importance and utilization of hazards maps	MPDC/GIS/MDRRMO	June 2015	Interpretation/Analysis
6. Conduct IEC campaign to various groups: BDRRMC/academe/DEPED/Planning Officers and other Institutions	MPDC/GIS/MDRRMO	July - October 2015	Forum - Interactive Interpretation/Analysis Simulations
7. Conduct Map Reading Olympics to students / DRR volunteers (municipal barangay)	MPDC/GIS/MDRRMO	July - October 2015	Interactive Interpretation/Analysis
8. Assessment /Monitoring/Evaluation	MDRRMC/GIS	November 2015	Focus Group Discussion (FGD)/Brgy. Assemblies

<b>DULAG</b>			
<b>ACTIVITY</b>	<b>BY WHOM</b>	<b>WHEN</b>	<b>HOW</b>
1. Review/ Revisit CLUP integrating the 1:10,000 scale hazard maps (using JICA Generated Hazard Maps)	Lead : MPDC Office Sectoral Heads	March- April 2015 (March 29, 2015)	Meeting of CLUP technical working group of the LGU (Needs JICA assistance in the integration)

2. Creation of a permanent MDRRMO position of the LGU	Local Chief Executive (LCE) Sangguiniang Barangay Office HRMO	2 <sup>nd</sup> Quarter of 2015 (April 3, 2015)	Present proposal to LCE and submit to SB for approval
3. Review of LDRRM Plan/ Revision	MDRRMC Focal Person and Council Members	2 <sup>nd</sup> Quarter of 2015 (April 3, 2015)	Workshop/ write shop
4. Conduct IEC to parents of school children on hazards and vulnerabilities	DS/ School Heads/ Teachers	3 <sup>rd</sup> Quarter of 2015 (July 6, 2015)	Meetings and Community Assemblies
5. Identification of areas for evacuation centers and its establishment	Local Chief Executive (LCE) MDRRMC Municipal Assessor	2 <sup>nd</sup> Quarter of 2015 (April 5, 2015)	Negotiation with land owners; Funding support from National Government Agencies (NGA)/ NGO-JICA

PALO			
ACTIVITY	BY WHOM	WHEN	HOW
1. Review/ Revisit CLUP mainstreaming CCA & DRR & integrating the 1:10K scale hazard maps	MPDO	February-December 2015	By the LGU ad through assistance from other agencies/ INGOs
2. Capacity Building on DRRM for children & youth (IEC through video presentations and print media	MDRRMO DEPED	March 2015	Awareness raising among school children through comic designs in coordination with school personnel
3. DRRM goes to Purok level system (making communities resilient to disasters)	MDRRMO Barangay Officials	February-April 2015	-Risk Assessment -Identification of evacuation centers -creation of BDRRMC
4. Creation of Evacuation Transport route and evacuation plan	MDRRMO MPDO DepEd	March 2015	LGU with the help of JICA

TACLOBAN CITY			
ACTIVITY	BY WHOM	WHEN	HOW
1. CLUP revision adapting updated hazard maps and mainstreaming CCA & DRRM	CMO, CPDO, CDRRMC, CHDO	September 2014-February 2015	In partnership with JICA & UN HABITAT
2. Formulating updated Evacuation plans using hazard maps	CDRRMO, DEPED, CHDO, CSWDO	February 2015-March 2015	In coordination with IOM, Catholic Relief Service (CRS), World Vision, Plan International
3. Capacity building for all CDRRMC	CDRRMO	February 5, 2015	In partnership with World Vision as funding agency
4. Construction of Elevated roads along coastal areas in Tacloban City with reference elevation	CDRRMO, CPDO, CEO, City Architecture	June 2015- June 2017	Upon the commitment of JICA

Magsaysay boulevard			
5. Construction of Resilient prototype Build-Back Better evacuation center	CDRRMO, CPDO, CEO, City Architecture	2015 May- 2016 May	Approved commitment worth 60M by UNDP
6. Capacity Assessment of Evacuation Center (EC)	CDRRMO, DEPED, CHDO, CSWDO	Feb 2015	In partnership with IOM

<b>Mac Arthur</b>			
<b>ACTIVITY</b>	<b>BY WHOM</b>	<b>WHEN</b>	<b>HOW</b>
1. Integrate the Hazard map in CLUP	MTWG of CLUP and LDRRMC -LGU Dept. Heads - District Supervisor DEPED - Community Environment and Natural Resources Office (CENRO) COD Mac Arthur Leyte PNP station	March to September	Thru JICA assisted workshop
2. Updating the EC using JICA hazard map	MDRRMC	February 2015- March 2015	Inventory of ECs
3. Introduction of the hazard map to the BDRRMCs	MDRRMC	March 2015	Community assembly
4. Formulation of MDRRM Plan	MDRRMC	March 2015	Series of Workshop
5. Capacity Building for MDRRMC & BDRRMCs	LGU-Partner INGO, OCD NGA's	April-June 2015	Training & workshops
6. Information dissemination the hazard maps to the community	MDRRMC DEPED	April-June 2015	Community Assembly

<b>Tanauan</b>			
<b>ACTIVITY</b>	<b>BY WHOM</b>	<b>WHEN</b>	<b>HOW</b>
1. Review/revisit LDRRM plan integrating the 1:10,000 scale hazard maps	MDRRMO/MDRRMC & Department Heads	February 5, 2015- April 15, 2015	Conduct seminars/ workshops with different partners
2. Educate members of the LDRRMCs of the different hazard maps (storm surge, tsunami, flood, typhoon, earthquake, landslide etc.)	MPDO/MDRRMC	Last week of March 2015	Conduct orientation/ seminars with different partners
3. Down to barangay level and formulation of Incident Meeting Team (IMT) through Incident Command System (ICS)	BDRRMC MDRRMO/OCD	April 2015 (1 <sup>st</sup> week) February 5- April 15, 2015	Conduct orientation/ seminars with different partners
4. Conduct Information Education Communication (IEC) on the importance and	MDRRMO/MPDO/Teachers/ UNICEF	Last week of May 2015	Conduct orientation/ seminars with different partners



utilization of hazard maps to the teachers and School Heads			
5. Conduct DRRM trainings to teachers • Downscaling to students/ pupils	Teachers/ School Administrator	April 5, 2015 SY 2015-2016	Seminar workshop with different partners
6. Review/ revisit CLUP integrating the 1:10,000 scale maps	MPDO CLUP TWG with GIZ/ UNICEF	Sept-December 2015	Seminar workshop with different partners

<b>Javier</b>			
<b>ACTIVITY</b>	<b>BY WHOM</b>	<b>WHEN</b>	<b>HOW</b>
1. Revisit proposed land use plan overlaying of hazard maps produced by JICA (GEOREF)	MPDO	February 5-6, 2015	Focus Group Discussion (FGD) with GIS Expert
2. Compare existing hazard maps with JICA maps	MDRRMC	February 9-13, 2015	FGD
3. Formulate thematic map on evacuation routes	MDRRMO	March 2-15, 2015	FGD
4. Identify school building vulnerable to 3 major hazards	MDRRMO	March 16-20, 2015	FGD, RADAR, RE-DANA
5. Identify low risk, medium & high risk areas - Evacuation Center - Public Buildings - RES, COM & Ind'l	MDRRMO	March 2-31, 2015	FGD- includes Brgy. Official PS, CSOs
6. ETC/ others - Construction of all hazard proof evacuation centers	MDRRMO/MPDO	April 2015	Request funds from generous donors (national & international)

<b>Abuyog</b>			
<b>ACTIVITY</b>	<b>BY WHOM</b>	<b>WHEN</b>	<b>HOW</b>
1. Early Warning Device	MDRRM, District Supervisors, LGU	April 2015	Include in the 2015 calamity budget
2. Request for construction Evacuation Center	DRRM coordinator, LGU	February 2015	Through Resolution
3. Request for Assessment of school building	Municipal Engineer, DPWH, Division Engineer, Bureau of Fire Protection	February 2015	Letter Request
4. Integration of DRRM in the Curriculum	School Heads, teachers	April-June 2015 onwards	In all subjects; Regular Monitoring; Monitoring of DRRMO of Abuyog
5. Synchronize Drill - Tsunami Drill - Earthquake Drill - Fire Drill	DEPED, PNP, DOH, BFP, AFCCO, TAUSA, VCIT	Quarterly: March 2015 June 2015 September 2015	Set the time and date with the involvement PNP, BFP, Barangay Volunteers

December 2015			
<b>Mayorga</b>			
ACTIVITY	BY WHOM	WHEN	HOW
1. Incorporate hazard maps to CLUP	LGU GIS trained personnel & CLUP-TWG	Ongoing (Target completion: April 2015)	LGU with the assistance of International NGO
2. Educate/ Strengthen MDRRMC regarding hazard maps	MDRRMC/ LCE	Upon completion of CLUP (Start April 2015)	FGD
3. Revisit LDRRM Plan & integration of hazard maps	MDRRMC/ LCE	After MDRRMC Orientation (April 2015)	FGD/ series of workshops
4. Formulation of Contingency Plan	MDRRMC/ LCE	Upon completion of MRDDM Plan (May 2015)	FGD/ series of workshops
5. Conduct IEC & Awareness Raising at the barangay level	MDRRMC/ MDRRMO	Upon completion of MRDDM Plan and contingency plan (July-September 2015)	Trainings/ workshops drills

Source: JICA Study Team

## ANNEX 2

### Result of Questionnaire and Interview with LGUs on DRRMP

<p>LGU's Comments extracted from the questioner partly from interview</p> <p><b>Evacuation Center</b></p> <p>(Before Typhoon Ruby)</p> <ul style="list-style-type: none"> <li>• Tacloban city estimated the number of evacuation center before Yolanda was 73 and the usable evacuation center after Yolanda was 52 including Astro Dome using the hazard map. Among the 52 evacuation centers, there are 5 evacuation centers located within 1 km from the coastal line.</li> <li>• Tacloban city collaborated with large scale commercial facilities and universities to use such for evacuation centers in order to fill gaps. Before the typhoon Ruby, the total number of registered evacuation center was up to 103.</li> <li>• Palo municipality considered the deep inundation depth more than 1<sup>st</sup> floor ceiling in central urban area according to the hazard map. So that the municipality requested the owners of 2<sup>nd</sup> floor houses for the usage as evacuation centers.</li> <li>• Tanauan municipality used school and government buildings, private houses and religious facilities after they checked the structural safety.</li> <li>• Basey and Guiuan municipalities had plans to use caves as evacuation centers. In fact, Guiuan did not use the cave because of the safety issues. Basey identified 3 caves and actually used them as evacuation center, however, they found the lack of basic infrastructure such as water supply, electricity and sanitation as well as the difficult access due to long distance and steep slope route with dense grass.</li> </ul> <p>(After Typhoon Ruby)</p>
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- LGUs have checked the structural safety of evacuation centers and found most of the rehabilitated buildings after typhoon Yolanda were renewed apparently, not strengthened structurally.
- Some confusion was recognized in terms of evacuation. For example, people moved to other evacuation centers which they were not supposed to go, lack of movement (migration) log book, a kind of panic happened when people started to move before the evacuations are open, the people moved to unregistered evacuation center due to lack of information.
- Except for Tacloban city which introduced ID system in 2015, most of the LGUs need to introduce the reliable system to register all evacuee properly to provide registration form and identification of evacuation centers.
- In terms of basic infrastructure for evacuation center, the issues are to how to complete water supply, electricity and sanitation. Tacloban city applies an unit of 1 m<sup>2</sup> per person for the evacuation center capacity.
- Special consideration for the PWD, the children, pregnant woman, the senior citizen has been already made with priority for the entering evacuation center.

### **Transportation method**

(Before Typhoon Ruby)

- Because evacuation centers near the community is lacking and early evacuation from the risk of storm surge is necessary in areas near the shoreline, it is essential to consider the route and distribution of vehicles to transfer evacuees.
- Not only public vehicle but also private owned or community owned vehicle was used to transport evacuees by vehicle. (Public vehicle is lacking and how to transport evacuees is a challenge) In Guiuan, INGO supported the LGU by providing vehicle for transportation. In Guiuan there are many informal residents and among the three transportation route in Guiuan one is arranged for informal area.
- Ambulance was prepared for special purpose such as transferring support needing people.

(After Typhoon Ruby)

- There are issues how to make plan for pick up time and location , and route for the evacuee in advance. Preparation of map to indicate such pick up points is necessary.
- In the case of pre-event evacuation, a limited number of vehicles (2 vehicles for Basey, 3 vehicles for Guiuan in addition to support from private sectors and NGO) were practical. However, in the case of emergency evacuation for Tsunami, more vehicles are needed.

### **Evacuation Planning**

(Before Typhoon Ruby)

- Evacuation was basically finished from one to two days beforehand (Experience of typhoon Yolanda)
- Some LGUs staff have visited each household.
- Each LGU has their own method in terms of evacuation order command system and way for issuing warning message based on their experience in Typhoon Yolanda. During the Ruby, the guide for pre-event evacuation was not so difficult.

- At the time Ruby, people already had have a kind of recognition on risk and hazard so that the evacuation planning and guide for the evacuation were improved.

(After Typhoon Ruby)

- Although evacuation warning was announced in advance, some residents stayed at their house or community.
- Telecommunication network was interrupted during typhoon and it was difficult to make contact and confirm the existence of the residents staying at their house or communities.
- There is no standardized evacuation center based on the experience of typhoon Yolanda. Thus, it is necessary to implement the plan and prepare such evacuation centers in the future.
- Because schools have to restarted classes after the typhoon, it is difficult to accommodate the refugees in schools for a long time. Some managers of school gave priority their relatives.
- Evacuation plan compatible to LGU plans should be made by each barangays by their own.
- Preparation for evacuation had been discussed in all level, besides each LGUs, between each LGU and barangays, and also in the community level with the attendance of each family in the community.
- Currently, evacuation warning is announced by megaphones until just before the typhoon hits the area, rules to determine a signal (certain pattern of bell ring) for evacuation warning is necessary. In Tacloban city, each barangays fly a flag to indicate the degree of emergency for evacuation and precaution level. These activities are done to share information and bread evacuation awareness citywide.
- In Guiuan, because most of the area are islands, radio is the main source of information. On the other hand, in urbanized area like Tacloban, there are many methods to inform evacuation warning such as radio, SMS, SNS, and telephone reflecting the activities in the urban area.
- Considering some evacuee have to remain in the evacuation center for several days after the disaster and the anticipated prolonged evacuation and information sharing, it was necessary to assign leaders in the center in advance.
- In the area of livestock, some farmers did adjustment of production (for example, advance delivery of meat) before the Ruby and some farmers took their livestock to the evacuation centers. So the issue is how to accommodate the livestock in the evacuation center.

Below is the requests and challenges extracted from the discussion and interview additional to the questionnaire survey.

- There are difference in the level of support from the Central government and Provincial government between LGUs.
- It is difficult for each LGUs to take various actions for evacuation by their own and, military and police capacity (time and capacity) should be distributed appropriate (may differ by LGU).
- The effect of typhoon usually is usually cross border and the area effected moves, therefore actions by central government and province should be done in an appropriate timing.
- It is desirable to make evacuation centers in a safe area but because building a facility only for the purpose of evacuation is inefficient, it is required to use existing gymnasium or built a multi-purpose evacuation center that can be used for gymnasium. Plus, when building a new multi-purpose evacuation center, facility such as a kitchen should be made to make it

<p>possible to stay for a while at the evacuation shelter.</p> <ul style="list-style-type: none"> <li>• During typhoon, some shops were pillaged and some LGUs have restricted to sale alcohols three days prior to the arrival of typhoon.</li> <li>• In areas livestock farming is often, proactive activities such as production adjustment (Selling meat before typhoon for example) was done but, some farmers evacuated with their livestock which could not be treated beforehand. Therefor it is a problem where to keep the livestock.</li> <li>• Some LGU have encouraged to distribute relief goods only to the person in the evacuation shelter but in some such area, residents that does not have to evacuate also rushed to the evacuation center for relief goods.</li> <li>• Tacloban city will introduce ID system in 2015 for possible evacuee. The ID card will be issued by family and the card shows the location and name of their evacuation center and family member name with information on the vulnerable extent.</li> <li>• Some LGU have introduced ID system for identity verification. Plus, information about his or her family and “to aid nursing degree” of their own can be checked on the ID card, because many people evacuate with their family.</li> <li>• In evacuation shelter near the border of LGU how to receive evacuees from the neighboring LGUs is one of the problem. Cooperation between LGUs is important for receiving evacuees in emergence but currently there is no rule for the cooperation between LGUs. Because currently it is impossible to identify ID across LGUs it is important to broaden the ID system area and promote mutual cooperation between LGUs.</li> <li>• There was not enough stock of foods and it was depleted in three days and LGU officers was forced to direct evacuees to arrange their food by themselves.</li> <li>• What is the most needed in Tacloban is not better livelihood but creation of jobs. Therefore system and ideas to create job in the concept of Built Back Better is more important than urgent support to compensate the lacking livelihood.</li> <li>• Relocation is desirable for industry and companies that compose a fundamental part in the economy of each LGUs and the province. On the other hand, for companies which is difficult to relocate immediately, structural measures are needed to protect form hazard.</li> <li>• ” Timeline Risk Reduction Action Plan” is not well considered yet, which is a plan to identify who, when and what action should be taken before the arrival of typhoon. Plus it will become important in the future to include provincial and central government in the plan as an actor.</li> </ul>
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### ANNEX 3

#### Health Sector Meetings Minutes

##### 1. Palo DOH

<p>Date: February 11, 2014 2:00 PM Attendees: Ms. Lorna Bonife, Public Health Nurse</p>
<p><b>Issues and Progress</b></p>
<p><b>1. <u>Health Facilities</u></b> Reconstruction of new Main Health Centers and Barangay Health Stations</p>

- There's already a site for this, DOH is the one who will provide the structure and the LGU already put filling materials to the area for preparation. They are just waiting for full implementation from DOH.
- For BHS Naga-Naga, there's already a proposal from Plan International
- For Gacao, it is under DOH

Provision of Service, Equipment and medicines

- INGO (Save the Children and Plan International) provided medicines and equipment (TV, refrigerator and etc.)
- The fund that they got from PhilHealth was used to procure service vehicle

Referral System

- Properly implemented together with PHO

Barangay Health Board (No Action)

- According to the PHN, it depends on the Local Chief Executive (LCE), but it happens once a year only for them.
- For the Magna Carta, it is not enough and not yet fully implemented.

Provision of Motorcycles or bicycles for midwives (Needs support from Mayor)

- The main purpose for this is to have quick and quality response and service of the midwives to different areas in the community. The situation now is that they have to wait for the vehicle to come back, unlike if there will be motorcycles they can respond quickly and arrive at the area in time.
- But this is not yet a priority and still needs support from the LCE.

## **2. Infectious Disease**

- CHTs are mobilized and actively participating in the barangay, but according to the PHN, there's a little jealousy with CHTs and BHWs. With the creation of CHTs under the "Kalusugan Pangkalahatan" (Health for all) program that may end this 2016, CHTs are given higher incentives than the BHWs. There were BHWs that became CHTs, but there are still some who remain BHWs.

Training (For feedback to all health team)

- So far some were already trained, but they have to delineate and give feedback so everyone will be trained with NCD, infectious disease or TB Program
- Long lasting nets distribution is implemented already, they give to patients with dengue or areas that have dengue cases.

## **3. Coordination and Networking with Other Agencies**

- Currently, since the nurse is busy because of the absence of MHO, they haven't started school activities.
- But often times they coordinate with DEPED through the school nurses for the TB programs, mass immunization, and feeding program.

Advocacy Campaign

- They have pending activity for HIV/AIDs and TB in coordination with DECS because their scoop are grass roots children. They would want to disseminate IEC materials.
- As of the moment they still haven't produce IEC materials for dissemination.
- But they instruct the teachers to refer children that shows symptoms of TB to the RHU and that's the time they conduct health teachings.

## **4. Mental Health and Psychosocial Programs**

- So far one of their midwives is attending a modular training organized by DOH called Mental Health Gap Action Program (MHGAP). It's a series of psychosocial training with psychotropic drugs.

- The main purpose of this is for DOH to conduct capacity building and devolution of the responsibility to the RHU up to the grassroots. Because there have been an increase of incidence of mental health in the community, in order to manage these patients in the community the health team in the community must be knowledgeable on the management.
- Also to decrease the incidence of relapse when the patients are in the community already.
- To have continuity of care and maintenance of medications.
- Later on, hopefully all their midwives can undergo this training.
- For the PHN, she just attended mainstreaming of mental health so far.

**Referral**

- At the moment, there is no existing referral system specific for mental health. They follow the referral of ordinary cases as of the moment, but it's important to established system for this.
- During the Pope's visit they gathered all the mentally challenged patients and refer the women to Schistosomiasis hospital and guys are referred to Babatnon. So far, some were already given medication and brought back to their houses for monitoring and follow up.
- They also have to orient the family to care for their relative and guide them to accept the condition. As well as how to give medications.

**5. Training for Primary Healthcare Providers**

- It's highly recommended by the nurse that there should be training for the primary health care workers in the barangay in terms of first aid and health emergency.
- Because at times of disaster the time it takes for the patient to go to the health facility is very precious. If in the barangay their conditions are managed right away there will be less trouble, at the same time it would reduce the burden of the RHU, because during typhoon Yolanda the PHN was the only health personnel that responded to the community for the first few days.
- The PHN already included this in the Health Emergency Response Plan, and according to her she based it on the typhoon Yolanda situation.

**6. Albay Public Safety Emergency Management Office (APSEMO)**

- Palo is a pilot municipality for this activity and they have 1 barangay (Tacuranga because flood prone barangay) that underwent series of trainings for this.
- This February 23-26, they'll be going to Albay for the study visit.
- The PHN doesn't know if in Leyte they are the only municipality under this program.
- Albay is one of the municipalities that developed emergency response because of their active volcano.
- This activity trained the community on preparedness and response.
- Aside from the APSEMO, GIZ trained them with rehabilitation and structure planning.

**7. Laboratory Services**

- They still don't have this because their previous Job order medtech already resigned.
- There's still no regular position for this.

**8. Teenage Pregnancy**

- They trained the midwives with adolescent Reproductive health in coordination with the youth organization in Palo to gather the youth and encourage them to join activities, especially, the out of school youths.
- Right now, they are also prioritizing the teenage pregnant mothers to avoid social stigma. They gather them in one room whenever there are checkups separate from the adult mothers. For them to socialize with each other.

<ul style="list-style-type: none"> <li>Unfortunately, they still can't coordinate with the church to advocate for Family Planning, because they are against the use of contraception. They coordinate with them through youth activities only.</li> </ul>	
<p><b>9. <u>Data Management</u></b></p> <ul style="list-style-type: none"> <li>There's already an LGU system that they are currently being trained.</li> <li>PhilHealth also has e-consult and e-prescription system.</li> <li>They are still waiting for the go signal from DOH on what will be their recommendation and plan for the LGUs, but right now all data will be ideally in a database already.</li> <li>For the storage of hard copies, there is still a plan to procure steel cabinets.</li> <li>They would want to establish an IT section that will encode and manage the data and system.</li> </ul>	
<p><b>10. <u>Sanitation</u></b></p> <ul style="list-style-type: none"> <li>Placenta Pit for the birthing facility. She will have to consult DOH the location that is favorable for this, before the new birthing facility is functional.</li> <li>For the guidelines and policy (No action yet), the health workers know the right way, but the household still needs to be taught how's the segregation from household to the landfill</li> <li>Their plan is to have a collaborative meeting for waste disposal regarding segregation.</li> </ul>	
<p><b>11. <u>Family Planning</u></b></p> <ul style="list-style-type: none"> <li>It's for validation by the midwives. Since the established data was lost during typhoon Yolanda, for their monthly reports they only list down the people who just visited recently.</li> <li>Problems encountered:             <ol style="list-style-type: none"> <li>During their Program Implementation Review (PIR) together with the PHO, there were decreased number in their targets even the EPI.                 <ul style="list-style-type: none"> <li>All the programs will be evaluated</li> <li>Action Planning will be done</li> </ul> </li> </ol> </li> </ul>	
<p><b>12. <u>Nutrition</u></b></p> <ul style="list-style-type: none"> <li>As of the moment there was no updated data to see if the malnutrition increased or decreased, because the latest data from MNAO is last August.</li> <li>Unfortunately, there's no proper coordination and documentation that was done for nutrition.</li> <li>But based on the observation of PHN, since there were a lot of assistance that came possibly there was a decreased already.</li> <li>Save the Children was one of the INGO that assisted in the feeding and nutrition in their LGU. They've conducted monitoring and evaluation, they will have to coordinate with them with the data.</li> </ul>	
<b>Problems encountered</b>	<p>Human Resource that leads to more work load that resulted to unimplemented projects and plans.</p> <ul style="list-style-type: none"> <li>There's no regular MDRRO as of the moment, since after typhoon Yolanda they already have 4 MDRRMO, and the current MDRRMO will not be staying for long as well.</li> <li>Just this December, the MHO already retried so all of the responsibility is given the PHN. As of the moment the item is still open.</li> <li>No Medical technologist</li> <li>There still no sanitation officer</li> </ul>
<b>Remarks</b>	<p>There is progress with the efficient response of DOH and other INGOs in terms of rehabilitation and reconstruction of facilities and recovering the health services, but</p>



	<p>one of the main reason for delayed implementation and progress of the plans and projects that the LGU is facing right now, is the lack of regular health personnel. There was no continuity especially with the DRR sector, and health because there's no MHO.</p> <p>In terms of DRRM response, the municipality was included in the APSEMO activity that would help them in organizing a system during disaster response. For health, it is very important that health service will be ideally present in the barangay level. There should be basic first aid and emergency trainings for the primary health care givers to assist the RHU in catering for the community.</p>
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## 2. Basesy DOH

<p>Date: February 11, 2014 10:00 AM Attendee: Ms. Darleen Wong, MNAO</p>
<p><b>Issues and Progress</b></p>
<p><b>1. Health Facilities</b></p> <p>Health Facility Enhancement Program (HFEP) and Repairs</p> <ul style="list-style-type: none"> <li>• The repair that was done for the Barangay Health Stations (BHS) are not disaster resilient, only minor repairs was done all assistance from DOH.</li> <li>• No proposal was done to request for repairs addressed to other INGOs.</li> <li>• There is a budget for renovation of facilities from DOH but due to some back clogs with other projects and necessary paper works to request for the fund, they haven't started proposing for the utilization of the fund yet.</li> </ul> <p>Assistance to medical equipment and medicines</p> <ul style="list-style-type: none"> <li>• As of the moment, they have medicine supply from the LGU and DOH.</li> <li>• Some of the equipment are still stored in the RHU because the facilities are not yet secured for the storage of the equipment.</li> </ul> <p>Outreach Programs</p> <ul style="list-style-type: none"> <li>• Finished with the supplementary feedings</li> <li>• Problems encountered <ul style="list-style-type: none"> <li>○ Prevalence of malnutrition in terms of wasting increased based on latest assessment from 20% to 26%.</li> <li>○ Situation: <ol style="list-style-type: none"> <li>1. They used to assess the nutrition status of children by weight and age only, but when ACF donated height board on all the barangays, they conducted re-assessment by getting the weight, height, and age and the result showed an increase.</li> <li>2. They also found out the accuracy of using height board as assessment tool.</li> </ol> </li> </ul> </li> <li>• Action Plan <ul style="list-style-type: none"> <li>○ They will prioritize barangay with large number of severe wasting and target that for feeding.</li> <li>○ They will conduct health nutrition through "Pabasa sa Nutrition" (Read for Nutrition) or mother's class. <ul style="list-style-type: none"> <li>▪ There will be a change of strategy, because since it's an annual activity the mothers are no longer enthusiastic in participating which result to poor implementation of teachings.</li> <li>▪ This time they will target the teenagers already so they will motivate their parents at the same time integrate teenage pregnancy activities.</li> <li>▪ They would also integrate the lessons through activities to teach them how they can apply it</li> </ul> </li> </ul> </li> </ul>

in schools or in their house.

## **2. Relocated Constituents**

- This is still on-going
- They've encountered problems regarding this because of the lengthy process of asking permission to the lot owners in procuring the land.

Expansion of facilities and establishment of birthing centers

- Since mobilization is still on-going and taking time there are still no decision to have additional facilities or expansion to areas with relocation.
- Brgy. Tingib is a catchment of Brgy. San Antonio. So the existing station there will be turned into birthing center and it is under DOH.
- Mabini has a very inconvenient road network that it is difficult to go there when it's raining.
- Problem encountered: Conflict with land owner (church), there was a resolution that it was donated but they are not sure if the church will honor it.

## **3. Increase Health Service**

Maternity waiting home:

- There was an American society donor through Zuellig foundation that will assist for this facility
- They are just waiting for the implementation first quarter of 2015.
- There's a proposal and resolution and MOA, all the requirements needed was passed already

Main Health Center

- Ideally 1 doctor in every 20,000 population (current population 53,000). If there will be an additional doctor in the municipality it will be better if there will also be an additional main health center.
- They will have to suggest and request an additional doctor under Doctors to the Barrio (DTTB) program of DOH. They have a fund for this but unfortunately DOH can't provide because of the lack of human resource. They said they will prioritized the LGUs that don't have Municipal Health Officers first.

More health human resource

- They have additional open item for a nurse and midwife. The mayor is open to the idea that it's a need to fill in the vacant positions, this quarter hopefully they can hire new personnel.

Incentives for BHW

- This is being implemented already. They pushed the mayor to implement this incentives for the BHWs.
- They give it every quarter. It's usually 100 per month

## **4. Barangay Health Board**

- With the conduct of sessions in the barangay all the issues with BHW's incentives, utilization of health fund (5%) and other health related issues was already addressed to the barangay.
- They've started conducting sessions and so far they've finished 12 already. Hopefully, they can finish everything on last week of February until first week of March.
- Composed of Kagawad on Health, Barangay Captains, BHW, BNS, and CHTs. They are the one's planning together with the midwives.

## **5. Mental Health and Psychosocial Programs**

- Health Emergency Preparedness Response and Recovery Plan (HEPRRP) is being prepared.
- They will incorporate this in their AOP so this program can be implemented and included in the HEPRRP.

Procurement of medicines

- INGOs gave them a supply of Psychotropic drugs
- If the program on mental health is implemented that's the time the LGU will procure as of

now they will use the supply that was donated to them.

**6. Sanitation**

- There is a pledge that Samaritan’s Purse will provide toilets on all the households in Basey without toilet.
- For technology options (toilet designs) LGU would also try to propose if Samaritan’s Purse can provide technical assistance in terms of designs for coastal areas, aside from just provision of toilets. They would also include this in their AOP.
- For the policy regulations, they will impose this if the project is already implemented.

PHATS Training

- Sanitary Inspectors attend trainings but so far no feedback to health sector yet. After the feedback, that’s the time they will mobilize in the barangay.

**7. Mobilization and Coordination**

- CHTs are mobilized already and actively functioning in the community

Coordination and Networking

- They have mass immunization for Schistosomiasis, since they have 14 endemic barangays, they are coordinating with the schools.
- So far there are no problems with coordination with the schools.

**8. Teenage Pregnancy**

- They would integrated reproductive health in the “Pabasa sa Nutrition” activities.
- For high risk pregnancy it’s through a referral system. Whenever there are cases, they would refer it to the RHU, then if not manageable they will refer it to other facilities in Tacloban already.

Strict compliance of Pre and Post-natal check

- Zuellig provided assistance for this by giving 250 php as transportation and communication allowance for pregnant mother’s whenever they will go for checkups.
- When the project ended the number of checkups decreased, so the LGU decided to continue giving allowance for sustainability for a minimal amount of 100 php. Total of 1000 for each person and 400 for ultrasound.

**9. Nutrition**

Fund Utilization

- Problems encountered: The total amount of fund allocated for nutrition is not utilized in the right way, because the LGU allocate a certain percentage to be used to other matters and sector.
  - As an alternative way to gather more fund, they will have to write proposals to the main donors of the INGOs who help them before, for additional funds. This will help them in the travel allowances during trainings, procurement of materials for cooking and other matters to be use in the community.
- The nutrition action plan is for finalization.

**10. Non-communicable disease**

- Their midwives already attended training for this, but there’s still no feedback yet.
- In terms of medicines so far they have steady supply for this.

**11. DRR**

During Typhoon Ruby and Amang

- They verbalized that there are still gaps in terms of preparedness and response.
- They prepared ambulance for transport, but the health personnel was instructed to go home. No one stayed in the facility except for the midwife in the 24 hours birthing center.

	<ul style="list-style-type: none"> <li>○ Moment of panic they were not able to think clearly and assessed their existing capacity in the LGU. They forgot that there's a generator and solar power that they can use.</li> <li>● There was no clear instruction to bring pregnant mothers in the 24 hours birthing center, they just opened it just in case someone would want to be admitted.</li> <li>● There was no proper delegation who will be the emergency team and front liners during calamities.</li> <li>● Even the prepositioning of medicines and mobilizing volunteers are still lacking.</li> <li>● There was also lack of trainings for the health teams, like the midwives they are not trained with basic life support and also some of the nurses. They were invited by ICRC but there was an overlapping of schedule.</li> <li>○ But if the health personnel are trained already, that's the time also they can procure equipment. The mayor is very supportive with such planning, it just need support from the MHO.</li> </ul>
<p><b>Recommendations</b></p>	<ul style="list-style-type: none"> <li>● In terms of emergency response the human resource from the LGUs is not enough to handle big disasters that could cater to the needs of the community.</li> <li>● They said that it's really important to include participation and assistance from civil society organization. Because if there will be big scale calamities that will happen the health team now can't handle everything.</li> <li>● Fund for volunteers should be utilized so they will have effective mobilization and people will be empowered and actively join the teams.</li> </ul>

### 3. Tacloban DOH

<p>Date: February 17, 2014 3:00 PM Attendees: Dr. Sarah Montano and Mr. , Public Health Nurse</p>
<p><b>Issues and Progress</b></p>
<p><b>1. <u>Insufficient Health Service</u></b></p> <ul style="list-style-type: none"> <li>● Right now, they are using funds that was downloaded by UNICEF and PhilHealth. They receive donations from other INGO in terms of equipment.</li> <li>● They also receive medicines from DOH.</li> <li>● Facilities renovations and repaired by DOH-WHO under the quick fix budget and INGOs. They have expanded facilities, but no new construction to other barangay. In terms of resiliency, still it's not disaster resilient.</li> </ul>
<p><b>2. <u>Manpower</u></b></p> <ul style="list-style-type: none"> <li>● Staffing and hiring new personnel are still a problem as of now. One doctor retired already, so they have problem with that, ideally there should be 1 doctor for every 20,000 population, but right now they are dealing 1: 40,000 or more.</li> <li>● Aside from that, before typhoon Yolanda, they used to have doctors that conduct OPD, but now they don't have anymore.</li> <li>● That's the reason they can't operate 24 hours. The birthing facilities in the satellite stations are not yet functional because there are still no equipment available. All of the birthing services are conducted in the Main health center, but it's not open 24 hours.</li> <li>● There are still vacant positions that are not filled.</li> </ul>
<p><b>3. <u>Supply Distribution</u></b></p>

<ul style="list-style-type: none"> <li>• All the supplies are in the CHO and it will be disseminated to other facilities depending on the catchment population in that facility.</li> </ul>
<p><b>4. <u>Sanitation</u></b></p> <ul style="list-style-type: none"> <li>• They enforce strict compliance to sanitation code for business establishments.</li> <li>• For residential areas, they have advocacy and campaigns.</li> <li>• As of the moment 71% of households are connected to LMWD. For the northern barangay until now there still no connection to that area.</li> <li>• INGOs provided jetmatic pumps to barangays in the northern barangays.</li> <li>• For the resettlement areas, the city is providing daily ration of water with the assistance of INGOs.</li> <li>• The city and INGO conducts WASH activities.</li> </ul>
<p><b>5. <u>Unsafe Deliveries</u></b></p> <ul style="list-style-type: none"> <li>• They've conducted Adolescent RH in coordination with the city population office.</li> <li>• MNCHN are implemented already now that they have a new City Health Officer.</li> </ul>
<p><b>6. <u>Family Planning</u></b></p> <ul style="list-style-type: none"> <li>• They've received FP commodities from different organization like Gender Health for the implants and pills</li> <li>• Family Planning organization of the Philippines conducts trainings and seminars for reproductive health.</li> </ul>
<p><b>7. <u>Congested Cemetery</u></b></p> <ul style="list-style-type: none"> <li>• They no longer give permits for new units to be built in the cemetery. There are no plans if it will be transferred but they'll be utilizing the mass grave area for the cemetery.</li> <li>• They are increasing the awareness for cremation, but they don't have a crematorium here in Leyte for the corpse have to be sent to Cebu.</li> <li>• But there are application for crematorium already, DOH just have to look for location.</li> </ul>
<p><b>8. <u>Mental Health</u></b></p> <ul style="list-style-type: none"> <li>• Doctors, nurses, and midwives are all been trained under the MHGAP.</li> <li>• Medicines was also supplied already.</li> <li>• They just have a referral system in the barangay. All the patients will be sent to EVRMC to be examined by psychiatrist and the intervention for maintenance medication will be handled by the CHO</li> <li>• As of now, there are no plans yet for establishing mental health institution, even EVRMC don't receive in-patients with condition. They also refer patients in the Crisis intervention at Schistosomiasis Facility in Palo or in Babatnon</li> </ul>
<p><b>9. <u>CHTs and BHW</u></b></p> <ul style="list-style-type: none"> <li>• Various capacity building of the CHTs have been conducted.</li> <li>• They were mostly trained for case finding to assist the patients in the community.</li> <li>• BHWs have honorarium already and city paid. While the CHTs receive from DOH.</li> <li>• All the primary health care providers are accredited by Philhealth.</li> </ul>
<p><b>10. <u>Resettlement Areas</u></b></p> <ul style="list-style-type: none"> <li>• There are no expansion or additional facilities for the resettlement areas, but if there is a need for additional manpower they will go to the north.</li> <li>• Data management with the people living the resettlement areas are handled by CSWD</li> </ul>
<p><b>11. <u>Disaster Management</u></b></p> <ul style="list-style-type: none"> <li>• Immediate assessment and reporting are done by the primary health care team in the barangay</li> </ul>

<p>right after disaster.</p> <ul style="list-style-type: none"> <li>• Pre-disaster procurement of supplies and medicines.</li> <li>• They deploy people in the evacuation centers and the doctors make assessment in the areas and instruct the pregnant mothers to be confined in the hospital.</li> <li>• After typhoon, they have reporting.</li> </ul>	
<b>Problems encountered</b>	<ul style="list-style-type: none"> <li>• Lack of health care workers.</li> <li>• No existing guideline and policy for INGOs involvement during disasters and calamities as of the moment.</li> </ul>

#### 4. Tanauan DOH

<p>Date: February 17, 2014 2:00 PM Attendees: Dr. Arlene Santo, Municipal Health Officer and Ms. Reynalda Almaden, Public Health Nurse</p>	
<b>Issues and Progress</b>	
<p><b>1. <u>Health Facilities</u></b></p> <ul style="list-style-type: none"> <li>• 95% was already repaired and constructed except the Main Health Center, they will have a ground breaking ceremony on March 5, and it will be rebuilt to a 2 story building with infirmary, funded by Pag-ibig.</li> <li>• The consultations will be transferred to the different BHS while the construction is being done.</li> <li>• Birthing facilities in all the birthing stations will be implemented, but as of the moment it's still in the preparation stage.</li> </ul>	
<p><b>2. <u>Manpower and Referral System</u></b></p> <ul style="list-style-type: none"> <li>• They still need 2 Regular midwives, they were just provided with contractual health workers.</li> </ul> <p>Referral</p> <ul style="list-style-type: none"> <li>• Documentation are not updated</li> <li>• They need to orient the community with the referral system.</li> </ul>	
<p><b>3. <u>Infectious Disease</u></b></p> <ul style="list-style-type: none"> <li>• They have to wait for their RHU to be fully functional before they have fully implementation of the programs.</li> <li>• But in the BHS, they conduct "Usapan Series" (Health Education), with the community regarding Family Planning or some Dengue.</li> </ul>	
<p><b>4. <u>Laboratory</u></b></p> <ul style="list-style-type: none"> <li>• They've receive some donations but still incomplete, they still need centrifuge for blood chemistry.</li> <li>• They will have laboratory in the new Main Health center.</li> <li>• They conduct random blood sugar and sputum examinations</li> </ul>	
<p><b>5. <u>Mental Health Program</u></b></p> <ul style="list-style-type: none"> <li>• Patients are managed in their houses, they will have monthly examinations and injection in the RHU</li> <li>• The MHO, some nurse and midwife attended MHGAP conducted by International Medical Corps (IMC) already.</li> <li>• Another NGO conducted training for BHWs and volunteers regarding case finding. The BHWs that was trained will conduct awareness to the community and explain proper referral</li> </ul>	

<p>to the RHU. Right now, they still haven't talked with the INGO that conducted this, but they would want to know how the program was implemented so they continue what they started. They would tie it up to the MHGAP for monitoring.</p> <ul style="list-style-type: none"> <li>• They also coordinate also Social Welfare, giving the responsibility to contact the relatives of the patient and go with the patient in the hospital if referred.</li> </ul> <p>Mental Health Care Facility</p> <ul style="list-style-type: none"> <li>• Instead of a Mental Health Facility, they prefer Halfway house, they collaborate with DSWD regarding this.</li> <li>• Because whenever they have cases of abuse or children in conflict with the law they don't have a place for them. Before they are brought to the right facilities.</li> <li>• But right now there are still no plans where and how this can be realized.</li> </ul>	
<p><b>6. <u>Teenage Pregnancy and Networking with Other Agencies</u></b></p> <ul style="list-style-type: none"> <li>• They've conduct Adolescent Reproductive Health for high school students.</li> <li>• INGO like Samaritan Pursue, assisted them in the provision of toilets</li> <li>• For their youth-friendly center they used to have it, but Save the Children already pulled out.</li> </ul>	
<p><b>7. <u>Disaster Management</u></b> Preparation</p> <ul style="list-style-type: none"> <li>• First aid equipment</li> <li>• Water treatments</li> <li>• Sanitation</li> <li>• They transfer their birthing facility at the 2<sup>nd</sup> floor of the municipality.</li> </ul>	
<p><b>Problems encountered</b></p>	<ul style="list-style-type: none"> <li>• Plan International conducted a Health Emergency Management Plan orientation. For Tanauan the MHO is still finalizing the plans, her concern is how can they integrate this plans to the DRRMP. MDRRMC haven't revisited their plans yet.</li> <li>• Manpower to assist the RHU during response. They don't have volunteers who are dedicated just to assist health sector during disaster. There are no organized volunteers yet.</li> <li>• No contingency plans were made in the municipality, even anticipating or having the pregnant women in one are, because they don't have facility to cater for them.</li> </ul>

## 5. Guiuan DOH

<p>Date: February 12, 2014 2:00 PM Attendees: Dr. Socorro Flores, Municipal Health Officer</p>	
<p><b>Issues and Progress</b></p>	
<p><b>1. <u>Health Facilities</u></b></p> <ul style="list-style-type: none"> <li>• There are 17 facilities that are under HFEP, some of the facilities was taken over by INGO like Plan International and UNFPA.</li> <li>• The facilities were repaired according to the budget allotted, so not all were totally repaired and disaster resilient.</li> <li>• Out of 60 barangays there's an estimate of 20 barangays that don't have BHS especially in the Poblacion areas, since barangay in the Poblacion are near different health facilities. But at least all the catchments areas already have BHS, the main priority for now are the interior barangays.</li> </ul>	

## 2. Outreach Programs

- Mass immunizations
- In the “Buntis Congress” (Pregnant Mothers), they’ll be changing the strategy, instead of having big groups, they will conduct this in the catchment areas. The output per activity will be the Birth Plan of the mothers.
- Medical missions are not regularly done because the MHO is focused on the RHU. Since the midwives are all trained with IMCI, they will do initial assessment and intervention in the barangay, but if it can’t be managed there, that’s the time they refer it to the RHU.

## 3. Community Health Board

- It was started already, but not all community have been mobilized, so far they have 30 barangays.
- Community Health Board is composed of the ff:
  1. Barangay Captain
  2. Midwife
  3. Kagawad on Health
  4. 1 Barangay Health Worker Representative (BHW)
  5. Barangay Nutrition Scholar (BNS)
- They can expand and include representative from 4Ps recipient and school (School Head)
- No activities yet in the barangay level, but all the activities of the Municipal will be presented to the health board.

## 4. Sanitation

- Advocacies and trainings are ongoing.
- For the trainings, the municipal personnel are finish, they will continue to the barangay.
- They are recipient of UNICEF project of providing 360 toilets to households.
- Beneficiaries have a participation for this, they would provide labor, wall (G.I sheets) and lumber. The other materials and facility is already provided. Big drums are used for septic tanks, pipes, cement, and toilet bowl.

### Design for coastal barangay

- 2 years ago they had an orientation with Sustainable Sanitation, they were presented with sanitation options. Unfortunately, the options were not affordable. They can put toilets in the coastal households, but the problems are the septic tanks not all people living near the coast can afford to put up septic tank in the sea.
- There was a model facility at Barangay Buntog before the typhoon, but it was destroyed already. Hopefully, the barangay will rehabilitate, it was funded by the barangay through their IRA and the household living near that facility is the one responsible with the maintenance. The MHO haven’t checked the status if it’s still functioning.
- They want to grab the assistance from the DSWD and prioritize the barangays that have big population. Since UNICEF, will provide areas that would have a more favorable result of having a zero defecation. For DSWD, they would choose community with big coverage.

## 5. Mobilization

- CHTs are mobilized already and being monitored by the nurses.
- Youth Development Program are not yet organized. They would request Adolescence Reproductive Health program if UNICEF will have to conduct another activity.

## 6. Health Education

- They haven’t started their programs in the schools yet. Because there are school nurses present.
- But before, when there are outbreaks of dengue and other concerns, that’s the time they will go to the schools and if there are immunizations and drug administrations. Sometimes the school will coordinate if they need IECs.



- For nutrition programs, the school have their own activities, for the LGUs they focus on the communities.

#### 7. Resettlement Areas and Relocated Households

- There are 131 household that was transferred to Brgy. Cogon, when the design of the temporary shelters were reviewed, they found out that there are no **toilets**. UNICEF granted 131 toilets for the families in that areas, UNICEF is currently doing close monitoring regarding this, because since the households are counterparts, they have to adjust to the pace of and capacity of the family.
- For the other resettlement area since its permanent houses so there's no problem with the toilet facility.
- In terms of landownership, the LGU procured the land, they have an agreement with the household that they would pay a certain percentage and they are in-charge of improving their houses on their own.
- Originally there should be a birthing station in that area, but there's an existing birthing station in that barangay already, the midwife can't handle both facilities. Also, there's one catchment area that needs it more so there will only be a satellite station in the resettlement area.

#### Policy

- Imposing building policies for houses, commercial establishments and other structures to have toilet facilities.
- Right now, this is not yet strictly implemented because it became a common practice, but hopefully later on there will be strict monitoring for this.

#### 8. Unsafe Pregnancies

##### Waiting home

- The RHU will be renovated and converted to 2 storey building, and on that 2<sup>nd</sup> floor it will transformed into a waiting home.
- Ideally, they plan on constructing a separate structure with complete facilities and garden for the pregnant mothers living in the islands. But they are still waiting for the implementation this year.
- As for referrals there are no problems.

##### Transportation

- They used to have a pump boat, but it was destroyed already.
- The province have already that they can utilize, but for them it's difficult because with the maintenance and availability they don't have a control. Better they have their own.

##### Birthing facility

- There were facilities that was already turned over to them. So far according to the MHO, they've reached their target of number of facilities.
- DOH and UNFPA funded these facilities.

#### 9. Laboratory

- They put this under the UNICEF's fund, they were given a fund and they will be responsible and liable in procuring the equipment.
- They are on their way to being fully equip when it comes to primary care services.
- For routine checkup, under the Philippine Essential Non-Communicable Disease (PHIL PEN) Program of DOH, this is implemented and it's already included in their indicators whenever there are monitoring and evaluation.

#### 10. Mental Health

- For medicines, they still have available supply from WHO.
- For the trainings, some nurses and BHWs are already called for trainings. The trainings are focused more on case finding and advocacy to the community.

<ul style="list-style-type: none"> <li>• They also have patients that are from private institutions that needs maintenance, they are handled by the RHU.</li> </ul>	
<p><b>11. <u>Data Management</u></b></p> <ul style="list-style-type: none"> <li>• There's only 1 person handling the data. Not all health workers are literate when it comes to computers. Even the MHOs have difficulty in doing paper works.</li> <li>• The people that needs to be trained are the regular workers, because the challenge with this is that if casual workers are trained if they resign no one will be left with the responsibility.</li> </ul>	
<p><b>12. <u>Disaster Management</u></b></p> <p>Preparedness (Yolanda and Ruby)</p> <ul style="list-style-type: none"> <li>• Focused on updating data in terms of medicines and equipment, current immunization status, facilities available, sanitary toilets, Physical structure condition and accessibility as well as the health workers' condition and their available resources in the area for immediate response.</li> <li>• They also coordinate with the evacuation centers for the pregnant women, they prioritize them and confine them to the health facilities, especially, if they're near their due date.</li> <li>• Per catchment preparation of medicine and equipment for immediate response</li> </ul> <p>Response (Yolanda situation)</p> <ul style="list-style-type: none"> <li>• The RHU is the first health service that responded, after a couple days manpower from private hospitals and outside help already came in.</li> <li>• They also catered residents of other municipalities like Mercedes and Salcedo.</li> <li>• There's an agreement with all the health facilities on what services they would cater. RHU and BHS serve as a triage unit and caters all OPD cases.</li> <li>• The MHO, handles the logistics and give instructions where to go if outside help already arrives and dispatch people to go to the island.</li> <li>• They transport patients to Cebu if needed further management, through C130</li> </ul>	
<p><b>Problems encountered</b></p>	<ul style="list-style-type: none"> <li>• Manpower, because 1 midwife is handling 5-6 barangays. Plus they are doing duty rotations in the Poblacion area.</li> <li>• As verbalized by MHO, strategically in with their capacity it's better for them to have all the deliveries in the RHU, because there is a doctor present. But because of the distance, it can't be helped that there's a need for the facility, but at the same time their manpower is not enough. Especially, in the Poblacion they only have 1 midwife and they are open 24 hours.</li> <li>• Not qualified for DTTB, because they are considered as 2<sup>nd</sup> class municipality. They really need 1 more MHO because the current MHO doesn't have time to go to the 2<sup>nd</sup> RHU and islands for follow up.</li> <li>• They would have to write a letter again and check with their budget, because the LGU need to provide board and lodging, plus honorarium, so they have to be financially prepared.</li> <li>• For big scale disasters like typhoon Yolanda, everyone is a victim. Where to go, how they can receive help from outside, because of the accessibility going to their municipality that is their challenge right now.</li> <li>• Communication, when there are no networks working it's difficult to contact the health workers.</li> <li>• During typhoon Yolanda, they weren't able to birthing facilities for deliveries anymore. The hospitals were in-charge of deliveries, they set up tents.</li> <li>• No water reserve</li> <li>• Data storage, documentation and backups.</li> </ul>

**ANNEX 4**  
**Education Sector Meeting Minutes**

**1. Basey DEPED**

<b>Date</b>	January 23, 2015 (10am-11am)
<b>Place</b>	Basey 2 Central School
<b>Participants</b>	Felipe C. Dacut, Basey II District Supervisor Airem C. Cajarop, Basey II central Elementary School Principal Nami Takashi, JICA Consultant
<b>Discussion Points</b>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in September 2014.</p> <p>1. Progress</p> <ul style="list-style-type: none"> <li>• The Division has instructed each elementary school and high school to revise its School Improvement Plan (both one-year and three-year). SIP has components of Access, Governance and Quality, and through this revision DRRM activities will be strengthened as part of the governance component of the plan. The activities include joint revision of contingency plans (including evacuation plans) by Barangay Councils and school teachers and counseling for students.</li> <li>• DEPED, DPWH and Civil Defense jointly conducted an assessment of all schools on structural resilience. All schools reconstructed, including those done by donors, are following the DEPED building code revised after Yolanda.</li> <li>• There are no schools necessary to relocate in Basey 2, but a few schools in Basey 1 including those in NBZ and vulnerable to earthquakes according to the hazard map plan to be relocated. There is no need to construct additional schools/classrooms in the permanent relocation areas for IDPs.</li> <li>• Donors such as Plan International, Norway and DEPED supported psychosocial care for school teachers and students. The modules developed were integrated into the school curriculum.</li> <li>• Prior to Yolanda, only fire and earthquakes were part of school drills, but since then typhoons, landslides and floods have been added.</li> <li>• Through donor support, DRRM was integrated into various subjects such as Mathematics, Health and English, and TOT was conducted.</li> </ul> <p>2. Gaps</p>

	<ul style="list-style-type: none"> <li>• School drills only involve school teachers and students. There is no coordination with communities (that jointly develop contingency plans with schools).</li> <li>• In order to revise school contingency plans, they are waiting for the finalized hazard maps from the MDRRM Office. The Office is currently collecting necessary data from barangays for hazard mapping.</li> </ul> <p>3. The Central Elementary School was identified as an evacuation center before Yolanda, but due to high risks of flooding, it was taken out from the LGU list. The community therefore evacuates to nearby Basey 1 Elementary School or the church. However, they have the issue of under-capacity as an evacuation center.</p> <p>4. Some schools served as evacuation centers were damaged by Typhoon Senyan even though they survived Yolanda.</p>
<b>Remarks</b>	<p>With regard to Basey Distcit 1, one can observe some progress in reconstruction both hardware and software. The gaps, however, include continuously vertical efforts by school and communities on DRRM. Once hazard maps are finalized by the LGU, more horizontal approach should be taken to establish comprehensive DRRM systems at community level (e.g. joint school drills and joint contingency plans by schools and barangay).</p>

## 2. Tacloban DEPED

<b>Date</b>	January 27, 2015 (4pm-5pm)
<b>Place</b>	Tacloban Division Superintendent's Office (San Fernando School)
<b>Participants</b>	Dr. Gorgonio G. Diaz Jr., School Division Superintendent, DepEd Tacloban City Nami Takashi, JICA Consultant Kiarah Florendo, JICA Consultant
<b>Discussion Points</b>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in September 2014.</p> <p>1. Progress</p> <ul style="list-style-type: none"> <li>• 40 elementary schools and 14 high schools were reconstructed/repared by donors such as USAID and UNICEF. DEPED plans to support the remaining schools that have not been funded yet. The newly constructed buildings are all disaster-resilient. Furthermore, those with elevated structures were equipped with ramps for PWD.</li> <li>• UNICEF has supported reconstruction and repair of latrines, hand-washing facilities and water supply systems, but some schools in outskirts still lack access to water.</li> </ul>

- In order to respond to the increasing numbers of students at elementary and high schools in the northern relocation area, it is planned to construct additional 1 classroom for elementary school and 6 classrooms for high school this year. On the other hand, because the new Senior High School System (Grade 11-12) will be introduced in 2016, it is necessary to finalize the plan to build additional infrastructure for relevant high schools.
- DRRM was integrated into new subjects such as Health and Science. Furthermore, orientations on education in emergencies were provided to principals, teachers and students last year.
- DEPED is a member of MDRRMC. The list of evacuation centers was revised after Yolanda and utilized for Ruby.
- While the Alternative Learning System for out-of-school youth targets young people under 15 years old, the new DEPED Program targeting 15-30 years old will start in collaboration with DILG and DTI. It will not only promote education but also employment and entrepreneurship. Donors have not been identified yet.
- All school teachers received training on psychosocial care. NGOs also provided stress debriefings for teachers and students.
- Quarterly school drills will include storm surges and typhoons starting this year.

2. Gaps

- Many schools identified as evacuation centers face under-capacity due to the limited space. Furthermore, schools face issues of discontinued classes during the time of evacuation. The San Fernando School has had evacuees who cannot move into bunkhouses for more than a year. Therefore, it is necessary for schools to establish multi-purpose buildings within the school compound. During Typhoon Ruby, some schools experienced their properties stolen and facilities damaged when the evacuees were leaving.
  - It is necessary to revise DEPED's manual (particularly to emphasize storm surge). Additionally, UNESCO targeted only two elementary and two high schools for the training on evacuation planning and improvement of plans, so it needs to be expanded.
3. After Yolanda, many students started to migrate to other areas in seeking livelihood. Therefore, drop-out rates increased in some schools.
4. It is necessary to strengthen collaboration between schools and barangays. At the moment, barangays and LGU do not have concrete contingency plans. During disaster preparedness, DEPED and Barangay Councils verbally coordinate to use schools as evacuation centers. In order to ensure safe evacuation, it is important for schools to get cooperation of barangays.

<b>Remarks</b>	In Tacloban where a lot of donor support is observed, school reconstruction and psychosocial care have been effectively implemented. Nevertheless, while training and pilot support were provided in the area of DRRM, there is a gap in concrete planning and system development. DEPED that is independent from LGU has worked with LGU and barangays through MDRRMC to strengthen coordination, but more effort is needed for systematic preparedness and response. As some schools used as evacuation centers during Typhoon Ruby experienced thefts, it is crucial to strengthen the linkage between barangays and schools (e.g. through joint drills) from the time of a normal setting.
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### 3. Guiuan DEPED

<b>Date</b>	January 27, 2015 (11am-12pm)
<b>Place</b>	District Supervisor's Office (Cantahay Elementary School)
<b>Participants</b>	Oeria A. Sabulao, Guiuan South District Supervisor Jose L. Opriasa, Cantahay Elementary School Principal Manolo D. Jamora, Taytay Integrated School Principal Nami Takashi, JICA Consultant Kiarah Florendo, JICA Consultant
<b>Discussion Points</b>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in September 2014.</p> <ul style="list-style-type: none"> <li>• While many schools were reconstructed, in Basey South, two elementary schools have yet to be supported and are currently in makeshifts. The schools built by DEPED were not disaster-resilient despite the original design as they were replaced by cheaper materials during the construction. However, those supported by NGOs were closely monitored and of high quality in accordance with the standard.</li> <li>• The school located in NBZ was relocated. Nevertheless, Cougon, which is one of the relocation sites for IDPs, needs to build additional classrooms because of the increased students.</li> <li>• Donor such as UNICEF, Plan and DEPED conducted numerous seminars and briefings on psychosocial care, but they were not training and no manual was provided.</li> <li>• By Plan International's support, DRRM training will be provided to administrators and school teachers next month.</li> </ul>

	<ul style="list-style-type: none"> <li>• For strengthening DRRM, each school is currently revising SIPs.</li> <li>• School drills are conducted on a quarterly basis. For drills such as storm surge, in order to use barangay evacuation centers, schools work closely with barangays including police officers and barangay DRRM officers.</li> <li>• Each school has a contingency plan based on the organization chart, but it has not been revised even after Yolanda.</li> </ul>
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#### 4. Tanauan DEPED

<b>Date</b>	January 28, 2015 (9am-10am)
<b>Place</b>	District Supervisor's Office, Tanauan I Central School
<b>Participants</b>	Evelyn Encina, San Roque Elementary School Principal Lolita P. Legaspi, District Supervisor of Tanauan District I Nami Takashi, JICA Consultant Kiarah Florendo, JICA Consultant
<b>Discussion Points</b>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in September 2014.</p> <ol style="list-style-type: none"> <li>1. Progress <ul style="list-style-type: none"> <li>• Many schools were rehabilitated. However, there are a few schools including San Antonio whose classrooms still need repair/reconstruction. Schools with fewer classrooms are dividing classes into morning and afternoon sessions by grade to continue the regular curriculum.</li> <li>• San Roque School was in NBZ and therefore was moved within the same compound.</li> <li>• Children from relocations sites are commuting to school by tricycles. They are using 4Ps funds. Principals are monitoring their attendance daily.</li> <li>• School feeding programs were supported by the Missionary Sisters and the Korean in selected schools.</li> <li>• RBI (NGO) supported repair of classrooms in I Central School for the SPED program.</li> <li>• The Korean, UNICEF, etc. supported training of psychosocial care for teachers. The teachers subsequently integrated it into their teaching and learning processes including games and singing. However, there is no manual. Some NGOs also conducted stress debriefings in small groups for teachers and students.</li> <li>• DEPED conducted DRRM training for school heads and teachers together with other subjects including GAP, CPD and child protection. District Supervisors,</li> </ul> </li> </ol>

	<p>3 school heads and 1 teacher were trained and it was cascaded to all schools. The training discussed climate change, different calamities and what should be done to reduce the risk. Evacuation centers were identified by hazard map exercise and the list was revised by LGU. DRRM activities were integrated into SIPs as per memorandum issued by DEPED. Schools also have a DRRM Committee composed of a school head, vice Chairman and 3 other members in order to provide quick response during calamities.</p> <p>2. Gaps</p> <ul style="list-style-type: none"> <li>• Schools repaired by DPWH are substandard and not disaster resilient. However, new school buildings constructed by donors such as ADB are safer in accordance with the building standard.</li> <li>• Ensuring access to education in the relocation areas (e.g. Pago and Sacme) is not finalized. In Sacme, it is necessary to add 2 classrooms and increase the number of teachers. DEPED just announced that PAGCOR may fund the construction in cooperation with DPWH.</li> </ul> <p>3. JICA's support to the San Roque Elementary School has yet to start and the Principal is unaware of the schedule. Furthermore, while 2 story building with 12 classrooms was planned to be constructed, the Principal heard the change to 6 classrooms. It is of concern that the original plan will not be pursued, after the school declined all other donor support and the necessary land was secured.</p> <p>4. Issues during Ruby included the lack of privacy at evacuation centers and the lack of space for evacuees to keep their livestock.</p>
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## 5. Palo DEPED

<b>Date</b>	January 28, 2015 (11am-12pm)
<b>Place</b>	Principal's Office at San Joaquin Central School, Palo
<b>Participants</b>	Yolanda P. Gonzaga, Palo II Public School District Supervisor Philip L. Teraza, Palo I Public School District Supervisor Nami Takashi, JICA Consultant Kiarah Florendo, JICA Consultant
<b>Discussion Points</b>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in September 2014.</p> <p>1. Progress</p> <ul style="list-style-type: none"> <li>• In District II, two schools are still in need for reconstruction. Without funds,</li> </ul>



they are still in TLS. In District I, all necessary reconstruction has been supported but some are in need for repair. Those built by USAID, NGCP and DEPED are disaster resilient. None of them have ramps.

- Psychosocial sessions were provided to teachers, parents and students in groups by UNICEF, Regional DEPED, etc. Training was also conducted for selected teachers with some materials and it was cascaded to all schools with monitoring support of donors. As a result, psychosocial aspects were integrated into classes.
- ALS's clientele increased after Yolanda. DEPED is starting a new program to target 15-35 year olds.
- DEPED is supporting 10 out of 12 schools in District I and 8 out of 19 schools in District II (schools with severely malnourished children) for the school feeding program. Malnourished children increased after Yolanda.
- Regional DEPED provided DRRM training for school heads. During PTA, teachers now discuss DRRM for parents.
- Schools coordinate with Barangay through MDRRMC where Barangay officials also participate. For example, DEPED sends a message to protect school properties from being vandalized by assigning one leader for each classroom to monitor the situation or to limit the number of people in each classroom. It is a new effort that did not happen during Yolanda.

## 2. Gaps

- All schools are still considered as evacuation centers after Yolanda. Some of the schools are not functional as evacuation centers but people still evacuated there during Ruby.
- School in Candahug in NBZ needs to move to a safer spot within its compound.
- 80 school children were transferred to the relocation site in San Jose and therefore the school there needs to add classrooms. However, it has not been budgeted yet.
- There is an increased need for 4Ps for the poor to assist their children to go to school, but the number of beneficiaries has not changed.
- There are no evacuation plans or contingency plans at school but they are only available at LGU and barangay levels. However, they are supposed to be newly integrated into the SIP development.
- DRRM has not been integrated into subjects other than Science.
- It is difficult for schools to include budget for DRRM items in MOOE as part of SIP because it is limited to 10% (However it was 5% before Yolanda). They can only purchase first aid kits.

<b>Remarks</b>	<p>The recovery of school infrastructure is observed in Palo as well as initial efforts to strengthen DRRM including coordination with barangays and awareness raising. However, urgent tasks are to strengthen school preparedness particularly to update and apply the list of evacuation centers and ensure access to education for relocated people. The gap may be a consequence of the weak MDRRM Office. While DEPED's linkages with LGU and barangays have improved since Yolanda, more systematic coordination needs to be in place.</p>
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## ANNEX 5

### Social Welfare Sector Meeting Minutes

#### 1. Palo MSWD

<b>Date</b>	January 22, 2015 (9am-10:15am)
<b>Place</b>	Palo MSWD Office
<b>Participants</b>	Rosalina R. Balderas, Social Worker, Palo MSWD Yumiko Tanaka, JICA Senior Expert Nami Takashi, JICA Consultant Armi Peregrino, JICA Consultant
<b>Discussion Points</b>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in September 2014.</p> <p>1. Progress</p> <ul style="list-style-type: none"> <li>• Completed the construction of a semi-permanent Women-Friendly Space (WFS).</li> <li>• As of October 2014, 21 out of 38 Daycare Centers have been reconstructed/ repaired, mainly by donors. All the remaining centers are planned to be supported by Save the Children.</li> <li>• UNICEF plans to conduct training for Daycare Workers on DRRM.</li> <li>• Pension beneficiaries have increased from 136 in 2013 and 202 in 2014 to 450 in 2015. While those older than 77 years old were eligible, DSWD changed the policy to above 65 years old in order to cover broader population of senior citizens (however priority will be given to older people).</li> <li>• Starting February, it is planned to combine and reactivate Barangay Council for the Protection of Children (BCPC) and Violence against Women and Children (VAWC) Desk to deal with both child protection and VAWC in all barangays. UNICEF will support training for them.</li> <li>• Joint activities are planned with the Culture and Arts Office as part of psychosocial support for children. Furthermore, WFS's psychosocial counseling by female volunteers is continuing and has recently expanded to neighboring barangays through outreach.</li> </ul> <p>2. Gaps</p> <ul style="list-style-type: none"> <li>• Construction of houses in relocation sites is in progress, but it is yet to be assessed on the need for building additional Daycare Centers for the newly established</li> </ul>

	<p>communities.</p> <ul style="list-style-type: none"> <li>• It is mandatory by law for LGU to establish a PWD Office, but the budget is not yet secured. However, it is being discussed at LGU and the Mayor is supportive.</li> <li>• Senior Citizens Associations were established in all barangays. It is now necessary to work with the Associations as well as the Day Center for Senior Citizens to increase capacity of DRRM among senior citizens.</li> <li>• The number of social workers remains the same (2) and has not increased yet. However, Regional DSWD is supporting 2 additional Social Development Workers/Social Welfare Assistants and UNICEF is supporting 2 additional SDW. Nevertheless, since the UNICEF funding is only until May this year, the subsequent gap is anticipated.</li> <li>• MSWD plans to reactivate PWD Associations in all barangays by February. Subsequently, it is necessary to work also with Senior Citizens Associations to increase the capacity of the PWD Associations/Desks including DRRM capacity building, securing access to recovery and reconstruction support, advocating for utilization of 1% IRA by Barangay Councils for PWD and Senior Citizens.</li> <li>• Effort is needed to strengthen GBV the referral mechanism through BCPC and VAWC Desks.</li> </ul> <p>3. Gender and Development (GAD) Plan was developed and approved by Palo LGU for 2015 to implement activities for GAD.</p> <p>4. Among 75 families who qualified for relocation so far, 36 are female-headed households. Given the high demand for relocation, LGU is planning to expand the relocation plan.</p> <p>5. During Ruby, it was well recognized and implemented by barangays to prioritize women, children, PWD and senior citizens for evacuation as per DRRM Policy revised after Yolanda. While inter-sectoral coordination is functional through MDRRMC, there is no clear contingency and evacuation plans. As a result, the issue of under-capacity of evacuation centers was still observed. It is therefore necessary to strengthen the systematic preparedness.</p>
<p><b>Remarks</b></p>	<ul style="list-style-type: none"> <li>• While many donors are phasing out, certain level of recovery is observed. However, some of the present gaps for LGU include the lack of access to social welfare services in relocation sites and the lack of manpower of MSWD.</li> <li>• Strengthening the DRRM system mentioned above is a priority issue that has not been effectively supported by donors. MSWD is expected to take a leadership role in order to strengthen the linkage between DRRM Office and the overall social sector as a multi-sectoral effort. Ms. Rosalina verbally agreed to play the role. Because the Palo DRRM Officer was recently replaced, MSWD's support would be</li> </ul>

	particularly important. MSWD should be proactively involved in LGU's planning and implementation processes including DRRM planning and evacuation planning to ensure full participation of vulnerable people.
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## 2. Basey MSWD

<b>Date</b>	January 23, 2015 (11:30am-12:15pm)
<b>Place</b>	Basey MSWD Office
<b>Participants</b>	Ms. Jesma C. Colandog, Social Worker, Basey MSWD Nami Takashi, JICA Consultant
<b>Discussion Points</b>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in September 2014.</p> <ol style="list-style-type: none"> <li>1. Progress <ul style="list-style-type: none"> <li>• As part of community-level response to GBV, Municipal Local Government Operation Officers of the Department of Interior and Local Government conducted GBV referral orientations for all Barangay Council officials last year. It is planned this year to revitalize VAWC Desks and provide Daycare Workers with training on VAW and Child Protection.</li> <li>• Because the lists of PWD and solo parents were lost by Yolanda, the MSWD is currently collecting necessary data to reproduce the lists.</li> <li>• Through support by donors such as Food for the Hungry, Plan International and TDI, some of the barangays (central Basey) reactivated BCPC. The rest of the barangays are also planning to reactivate them within this year. The BCPC members will be provided with orientations and training.</li> <li>• In order to establish a PWD Desk at MSWD, the request has been sent to Regional DSWD to support necessary desks, chairs, etc. Because PWD Associations in barangays are active, MSWD wants to work closely with them on recovery and reconstruction assistance for PWD upon establishment of the Desk.</li> </ul> </li> <li>2. Gaps <ul style="list-style-type: none"> <li>• There is no plan to relocate Daycare Centers located in NBZ due to the lack of land and budget. Furthermore, more than half of the Daycare Centers damaged by Yolanda (in total 62 Daycare Centers were affected) and need reconstruction have yet to receive funds. The budget for 2015 is limited to activities related to regular development issues. Those Daycare Centers that haven't been repaired/reconstructed are operating using plastic sheets or the space at the Barangay Halls.</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>• Because of the lack of plot of land, there is no plan to construct an MSWD Office. Therefore, MSWD has not been able to protect privacy when conducting counseling for survivors of domestic violence. Sometimes they use Basey Police’s Woman and Child Protection Desk which has a separate space.</li> <li>• (Regarding vocational training for women and young people at Manpower Training Center) MTC needs to be relocated from NBZ, but it hasn’t been done due to the lack of land.</li> <li>• It is necessary to strengthen DRRM capacity of senior citizens through Senior Citizens Associations. It would be effective to increase their knowledge about DRRM through their quarterly cluster meetings together with OSCA.</li> <li>• The Annual Investment Plan is the only plan for MSWD this year. A Gender and Development Plan was not developed. The predecessor of MSWD was trained on GAD and therefore developed the plans annually, but there is no capacity in the present MSWD.</li> <li>• Basey MDRRMC is functional, but it is necessary to strengthen the system and capacity. As MSWD, it is not difficult to coordinate with other social sector departments including health and education through MDRRMC.</li> </ul>
<p><b>Remarks</b></p>	<p>The Basey MSWD is relatively weak in capacity. Because Basey has also received limited donor support comparing to other LGUs, their recovery and reconstruction is not progressed as expected. The 2015 plans seem focused on routine development activities. It is necessary for MSWD to request the Mayor’s Office for additional budget by explaining the status of unfunded activities that are of priority, such as reconstruction of Daycare Centers. The LGU support will still be limited due to the overall lack of funds and land. Nevertheless, MSWD needs backing and advice to facilitate more proactive efforts and leadership on recovery and reconstruction including for the overall social sector.</p>

### 3. Guiuan MSWD

<p><b>Date</b></p>	<p>January 27, 2015 (1pm-1:45pm)</p>
<p><b>Place</b></p>	<p>Guiuan MSWD Office</p>
<p><b>Participants</b></p>	<p>Ana L. Gacita, Social Welfare Officer 1 Nami Takashi, JICA Consultant Kiarah Florendo, JICA Consultant</p>
<p><b>Discussion Points</b></p>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in</p>

September 2014.

1. Progress

- Daycare centers were reconstructed by donors such as Plan, Consuelo Foundation and JICA. Five Daycare Centers need relocation from NBZ, but the new sites have not been secured. Furthermore, five Daycare Centers that have not received funds for repair and reconstruction are operating in makeshifts. The Day Center for senior citizens has been repaired.
- The two JICA-supported Daycare Centers finished the construction and have been handed over to the LGU. There was no activity on DRRM capacity building at the Daycare Centers.
- The WFS is located in Cougon, which is a relocation site for IDPs. Plan International is planning to construct a semi-permanent WFS there. Through LGU and Plan's support, the present WFS is only implementing awareness-raising activities on women's rights, VAW, etc. through volunteers. The livelihood training for women is provided by TESDA at the Day Center for senior citizens, etc. There is no microfinance program for women's livelihood.
- DRRM training was conducted in all barangays for barangay officials and Daycare Workers. The training discussed the concept of DRRM and identified evacuation centers, but the actual planning exercise was not included.
- UNICEF supported MSWD to higher one additional Social Worker and two additional Social Welfare Assistants. Once the support expires, LGU can only cover one Social Welfare Assistant.
- UNDP and Consuelo Foundation have supported livelihood activities for IDPs including women.

2. Gaps

- There is a high demand to establish a shelter for abused and abandoned children. In this regard, MSWD is currently requesting support from the LGU and Regional DSWD. LGU has provided some funds but it is not sufficient. Moreover, promotion of adoption and alternative care of children was only done for interested 25 parents and Daycare Workers in an orientation. Since Yolanda, Children in Conflict with Law have increased and it is urgently needed to address various issues of children.
- Senior Citizens Associations in barangays are active, but because the OSCA Chairman post is currently vacant, capacity building of senior citizens on DRRM in collaboration with OSCA has not been implemented (the new Chairman will be selected on February 14<sup>th</sup> at the General Assembly).
- The number of pension beneficiaries remains the same for 2015 and it is still targeting above 77 years old. There was a microfinance program targeting 10

	<p>senior citizens prior to Yolanda, but it is not planned to be revitalized.</p> <ul style="list-style-type: none"> <li>• 140 households that lived in the Tent City have relocated themselves to Cougon. Other relocation sites have not secured enough land. Those IDPs who have not been able to relocate (fishermen and vendors that used to live in NBZ) are currently living in makeshifts in Barangay 6 and 7 and Hollywood.</li> <li>• Since Yolanda, coordination at MDRRMC has improved. During Ruby, after the announcement of PAGASA, MDRRMC was convened and discussed preparedness, prepositioning of food and evacuation. Evacuation Centers were assessed in advance and the list of evacuation centers was revised and utilized. Barangay Captains from geo-hazardous areas also participated in the meetings and were instructed to prioritize the evacuation of vulnerable people. MSWD coordinated with the police and fire department to provide necessary means of transportation for evacuation. As a result, there was no chaos like Yolanda.</li> </ul>
<p><b>Remarks</b></p>	<ul style="list-style-type: none"> <li>• Better utilization of WFS is suggested. Awareness-raising alone has a limited impact, and it is necessary to diversify the purpose of WFS by strengthening the function as a GBV referral and using the venue for livelihood support. Furthermore, just like Palo, the WFS should not only target the community members in the relocation site but in a long run should also expand the beneficiaries to other communities such as through outreach.</li> <li>• Because Senior Citizens Associations are active, MSWD should work with them as an entry point to strengthen DRRM capacity of senior citizens and effectively involve them in the overall community DRRM activities.</li> <li>• Using the Daycare Centers supported by JICA’s QIPs, barangay’s DRRM capacity should be strengthened. The Daycare Centers can serve as a space to bring together the existing community resources such as Daycare Workers, BCPC, Senior Citizens Associations etc. and create a disaster-resilient community model.</li> </ul>

#### 4. Tacloban CSWD

<p><b>Date</b></p>	<p>January 28, 2015 (1pm-2pm)</p>
<p><b>Place</b></p>	<p>Tacloban CSWDO</p>
<p><b>Participants</b></p>	<p>Dr. Gloria Fabregas, CSWD Head-in-charge Nami Takashi, JICA Consultant Kiarah Florendo, JICA Consultant</p>
<p><b>Discussion</b></p>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in September 2014.</p>



<b>Points</b>	<p>1. Progress</p> <ul style="list-style-type: none"> <li>• Established facilities include 1 permanent WFS (by UNFPA) in the northern resettlement area, PWD Affairs Office, 2 mobile CFS (by UNICEF) for barangays without daycare service and 5 temporary CFS in tents. It is planned to establish 5 permanent CFS including in the northern resettlement area by UNICEF.</li> <li>• CSWDO was reconstructed. Partitions will be installed for private counselling.</li> <li>• All Daycare Centers were rehabilitated. There were minimal damages by Ruby.</li> <li>• Community volunteers including women and youth in several barangays have been trained on DRRM including early warning system, evacuation and camp management. Community drills were also conducted.</li> <li>• OSCA plans to conduct training on DRRM for Senior Citizens Associations.</li> <li>• Reactivation of BCPC and VAWC Desks (combined) has started by training for BCPC members by social workers. It is aimed to strengthen referral mechanisms for VAWC. Currently, there are only a few consultants hired as lawyers and a part time psychiatrist.</li> <li>• Local Council for Protection of Children (LCPC), City Interagency Council Against Trafficking (CIACAT), GAD and City Peace and Order meet quarterly to discuss issues such as trafficking, CICL and substance abuse.</li> <li>• TESDA and Comprehensive Livelihood and Entrepreneurial Program provide skills training particularly for IDPs in bunkhouses. The Sustainable Livelihood Program provides women’s groups with seed money for livelihood activities. Senior citizens, urban poor, survivors of violence, vendors and transport groups are the target. 10 million PHP was allocated by national government for 2015.</li> <li>• 14,433 houses will be built in resettlement areas by 2016. It is planned to provide health, social welfare and education services there (e.g. daycare centers, CFS, WFS and hospital) but they have not been funded yet.</li> </ul> <p>2. Gaps</p> <ul style="list-style-type: none"> <li>• No funding to establish a CICL holding center and an additional Day Center for senior citizens and to rehabilitate OSCA and Day Center for senior citizens. ICT Center in CSWDO has not been repaired to resume computer literacy classes for OSY.</li> <li>• The City hired two additional nurses for mental health service and one youth coordinator after Yolanda. However, they are consultants and there is no plan to increase the number of social workers (currently 16).</li> <li>• There is an improved response plan by LGU but preparedness is still weak. There is no contingency plan.</li> </ul>
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	<ol style="list-style-type: none"> <li>3. The CLUP revision is scheduled to be finalized by March this year.</li> <li>4. At the time of Ruby, evacuation was done more smoothly and the repositioning was done a week before. During Yolanda, because prepositioned goods were wiped out, they didn't have enough for relief. For Ruby, while public transportation was provided for evacuation, it was not enough. Cluster response worked well with the leadership of LGU unlike Yolanda when coordination was weak and there were a lot of duplications.</li> <li>5. CSWD currently works as a social sector convener including for health, education, housing and livelihood areas for recovery and reconstruction.</li> </ol>
<p><b>Remarks</b></p>	<ul style="list-style-type: none"> <li>• As the CLUP revision is progressed in Tacloban, the input from the previous JICA workshop should be updated to incorporate the appropriate analysis. In this process, one of the priorities is to ensure allocation of funding for establishment of social services in the northern resettlement as an additional infrastructure requirement.</li> <li>• Tacloban CSWD should showcase its work on GBV response by strengthening its referral mechanism at city level. WCPU in EVMRC needs to be further equipped particularly in the areas of psychiatry and law to function as a one stop shop for survivors.</li> <li>• Despite the improvement in multi-cluster response at city level through DRRMC, preparedness remains as a gap. Contingency planning is one urgent task in order to ensure the sustainable DRRM system.</li> </ul>

## 5. Tanauan MSWD

<p><b>Date</b></p>	<p>January 30, 2015 (9am-10am)</p>
<p><b>Place</b></p>	<p>Leyte Park Hotel</p>
<p><b>Participants</b></p>	<p>Ms. Marina, Social Worker, Tanauan MSWD Nami Takashi, JICA Consultant Kiarah Florendo, JICA Consultant</p>
<p><b>Discussion Points</b></p>	<p>The following were the comments from the interviewees with regard to the status of the plans for recovery and reconstruction and DRRM based on the matrix developed in September 2014.</p> <ol style="list-style-type: none"> <li>1. Progress <ul style="list-style-type: none"> <li>• All Daycare Centers were repaired and 2 Daycare Centers were relocated from NBZ. The Regional Rehabilitation Center for Children and Youth is being rehabilitated.</li> <li>• A semi-permanent WFS was established in Canramos where the tent city was.</li> </ul> </li> </ol>

At the WFS, skills training for women (e.g. processing) is supported by DSWD. It also serves as a VAWC Center for municipal level which conducts initial interviews for survivors and determines the next action. Family development sessions are conducted for 4Ps parents and seminars on gender sensitivity and women's forum are scheduled to be organized. There are 7 volunteers at WFS who also conduct outreach to other barangays. These volunteers were funded by UNFPA last year but Regional DSWD and LGU plan to provide budget this year to continue the activities.

- Regarding the resettlement plan, 97 families have moved there while more than 400 families are still awaiting. Other sites are undergoing construction.
- The construction of 3 additional Daycare Centers is included in the resettlement plan.
- Displaced women are included in the alternative livelihood training including vegetable production by the Agriculture Office.
- Regarding the reactivation of VAWC Desks, an NGO provided equipment to 2-3 barangay VAWC Desks with computers and necessary furniture to ensure more accessible records. In the Tanauan GAD Plan 2015 (5% of municipal IRA) developed by GAD Council (municipal departments providing basic social services including health, agriculture and education), seminars for VAWC Desk teams are planned.
- Youth groups such as SPAWN are actively participating in DRRM activities.
- TESDA has supported skills training (e.g. baking) for senior citizens through OSCA.
- The eligibility for the pension system has changed (65 and above). The number of beneficiaries in Tanauan increased in 2015 to 240 from 96 in 2014.
- Under the Bottoms Up Budget (BUB), it is planned to conduct training for home-based volunteers on sign language as currently there is only 1 volunteer.
- NGOs including COSE are regularly conducting medical missions for senior citizens and PWD in selected barangays (expanded after Yolanda but slowed down). LGU also plans to conduct vaccination for senior citizens this quarter.

## 2. Gaps

- No plan to relocate OSCA to a safer area.
- No office for PWD but it will be part of the proposal to the BUB at DILG.
- No recruitment of a psychiatrist at the new main health center.
- OSCA is a member of MDRRMC. However, OSCA has not integrated DRRM in its plan.
- No plan to increase social workers (currently 2). However, UNICEF has funded 1 social worker and 1 social welfare assistant for six months. It is

	<p>difficult for LGU to take over the budget after expiration of the funds.</p> <p>3. More systematic preparedness was observed for Ruby through MDRRMC. MSWD was in charge of the relief and rehabilitation committee and prepositioned necessary items. It coordinated with barangays. The rescue team ensured vulnerable people were prioritized for evacuation. However, the lack of equipment for rescue activities was observed.</p>
<b>Remarks</b>	<ul style="list-style-type: none"><li>• WFS in Tanauan is serving as a venue to provide effective services to women. It is recommendable to showcase the effort through close monitoring and evaluation and LGU should replicate it in other areas of Tanauan as well in other LGUs.</li><li>• More involvement of OSCA should be promoted for effective DRRM at community level.</li></ul>

## ANNEX 6

### Solid Waste Management Sector Meeting Minutes

#### 1. Tacloban

<b>Date</b>	9:15 – 10:00, February 18, 2015	
<b>Place</b>	CENRO office	
<b>Participants</b>	Mr. Bong Hijada, head of CENRO Noboru Osakabe, JICA Consultant	
	<b>Policies and timeframe concluded in the WS</b>	<b>Progress confirmed at the interview</b>
1. To update and review the 10 years' SWM Plan	2015-2016	Updating works of the old Plan 2007-2017 will start from 2015.
2. To develop a new sanitary landfill (Priority Issue)	Conceptualization on going Construction in 2015	<ul style="list-style-type: none"> <li>The land, 5 HAs, has been already acquired.</li> <li>Technical plan will be submitted to the Council soon.</li> <li>WB will finance P.3billion (90% of grant and 10% of loan), among which P.117.7million for 1 HA of sanitary landfill development and P.98million for equipment and facilities.</li> <li>Within the land, an energy generation system with waste incineration and waste water treatment system will be installed under the operation and management of the private sectors.</li> </ul>
3. To promote recycling system	Implementation starts in 2015	Will start as planned
4. To promote campaigns to make the stakeholders understand the reasons: for revenue enhancement especially by collecting SWM Fees	ASAP	No aggressive campaigns were held, but the council approved the ordinance to increase the fee as much as 200% from this year.
<b>Remarks</b>	<ul style="list-style-type: none"> <li>The EMB sent the LGU a notice in October 2014 requesting the review and update of the existing Plan.</li> <li>According to the EMB, the existing Plan (2007-2017) was submitted to the EMB last year and has not yet been approved by the National SWM Commission.</li> <li>However, it is deeply impressed that every policy is in progress and worked positively.</li> </ul>	

## 2. Palo

<b>Date</b>	10:30 – 11:30, February 16, 2015	
<b>Place</b>	SWMO office	
<b>Participants</b>	Melvin C. Millar, SWMO of General Service Office Noboru Osakabe, JICA Consultant	
<b>Policies and timeframe concluded in the WS</b>		<b>Progress confirmed at the interview</b>
1. To formulate the 10-years' SWM Plan (Priority Issue)	Preparation:2014-2015	<ul style="list-style-type: none"> <li>• SWMO requested to formulate the team to Planning Office just after WS in September</li> <li>• The EMB visited the Mayor in January 2015, promised to support the formulation and asked to submit in October.</li> </ul>
2. To study the development of new sanitary landfill	Up to the joint discussion with adjacent LGUs in 2015	<ul style="list-style-type: none"> <li>• The LGU purchased the land for SLF in late 2014, 5 ha 4km from the existing dumping site in the same barangay</li> <li>• So, probably no more necessity for the joint discussion</li> </ul>
3. To promote the recycling system	Implementation starts in 2015	<ul style="list-style-type: none"> <li>• Not yet, but understood the importance</li> <li>• 18 MRFs existing in barangays have not refurbished.</li> <li>• Waste banks involving schools did not function as expected, and have not determined whether re-start or not.</li> </ul>
4. To estimate SWM cost and disclose every year by creating the technical working group	Annually from 2015	<ul style="list-style-type: none"> <li>• The working group not created yet.</li> <li>• In cooperation with the budget dept., the SWM cost P/ton (category-wisely: manpower, fuel, materials and other miscellaneous) will be grasped from 2014 financial year when the working group is created.</li> </ul>
<b>Remarks</b>	<ul style="list-style-type: none"> <li>• The EMB sent the LGU a notice requesting the update of the old Plan.</li> <li>• The SWMO wishes to tackle aggressively the key issues discussed in the WS as a whole.</li> <li>• The formulation of the priority issue will start soon because the EMB compelled to submit it in October. At first, the WACS will be implemented in March 2015 under the EMB support.</li> </ul>	

### 3. Tanauan



<b>Date</b>	15:30 – 16:15, February 13, 2015	
<b>Place</b>	Department of Agriculture, Tanauan	
<b>Participants</b>	Mr. Niceforo Liberato, Head of Municipality Agriculture Noboru Osakabe, JICA Consultant Naoyuki Minami, JICA Consultant	
	<b>Policies and timeframe concluded in the WS</b>	<b>Progress confirmed at the interview</b>
1. To formulate the 10-years' SWM Plan (Priority Issue)	1. Preparation starts in October 2014, particularly for waste amount and characterization survey (Priority Subject)  2. The plan is finalized in the middle of 2015	1. To collect the basic data for formulation of the Plan, the waste analysis and characterization survey (WACS) will <u>start from March 2015 supported by the EMB</u> , sampling 60 households (HH): 20 of low income HH, 20 of middle income HH and 20 of high income HH.  2. The plan should be formulated and submitted to the EMB <u>by the end of October 2015</u> that was compelled by the EMB.
2. To study the development of new sanitary landfill	1. Study 2015 2. Development 2016-2020 3. Work toward development in association with the adjacent LGUs	1. Same as left 3. The problem is financial resources that must be resolved before implementation. 2. Not yet. Up to the Mayor's behavior.
3 Immediate rehabilitate composting facilities and expand	1. Rehabilitation 2014 2. Expansion 2015	GPBP (grass participatory budget process) of MA fund especially for composting is approved and <u>waiting for release</u>
4 To promote the recycling system in entire LGU	2015 - 2024	Not yet, but understood the importance
5 SWM costing	To create the technical working group in 2015	Not yet
6 To minimize the gap between SWM expenditures and revenues	To promote campaigns to make the stakeholders understand the reasons periodically from 2015	Not yet
<b>Remarks</b>	<ul style="list-style-type: none"> <li>• The EMB sent the LGU a notice in October 2014 requesting the Plan ASAP.</li> <li>• Mr. Niceforo is very busy person involved also with agro-fishery projects as well as environmental issues.</li> <li>• Nevertheless, the priority issue "to formulate the 10-years' SWM plan", is aggressively tackled.</li> <li>• It is remarkable that the EMB will support to formulate it.</li> </ul>	

#### 4. Guiuan

<b>Date</b>	13:00 – 15:00, February 17, 2015	
<b>Place</b>	GSO office	
<b>Participants</b>	Mr. Rizalde Salamida, SWMO of General Service Office Eng. Enrico Censon, Project Engineer Ramon Sacay, Municipal consultant for SWM Noboru Osakabe, JICA Consultant	
<b>Policies and timeframe concluded in the WS</b>		<b>Progress confirmed at the interview</b>
1. To formulate the 10-years' SWM Plan (Priority Issue)	Preparation: 2015 Implementation: 2015-2024	<ul style="list-style-type: none"> <li>• Updated the old one in November (But WACS has not done properly.)</li> <li>• Upon approval of the Council, to be submitted to the EMB in March end</li> </ul>
2. To form technical team for estimation of SWM cost	Update every year along with the annual budget preparation schedule	Cost estimate has already done: 2.7 million Pesos in 2015
3. To promote campaigns to collect SMF fee from HH	ASAP	The revised ordinance, creating the article of the fee (20 Peso/year), has been drafted and will be submitted to the Council.
4. To develop sanitary landfill	Preparation start in 2015	The KOIKA will finance 90% of capital costs in 2015 including the existing dumping site closure.
<b>Remarks</b>	<ul style="list-style-type: none"> <li>• The EMB sent the LGU a notice in October 2014 requesting the update of the Plan ASAP.</li> <li>• The LGU is tackling aggressively the all key issues discussed in the WS.</li> <li>• It is noted that the LGU, envisaging reducing the garbage, has started segregation at source. <ul style="list-style-type: none"> <li>✓ The LGU has formed a team in November 2014.</li> <li>✓ The team has started aggressive campaign and dissemination activities in the various barangays and resettlement areas.</li> <li>✓ The community collects the recyclable and degradable materials separately.</li> <li>✓ The barangays without the SWM service of LGU have learned to dig holes and bury the degradable garbage.</li> </ul> </li> </ul>	



## 5. Basey

<b>Date</b>	14:30 – 15:30, February 19, 2015	
<b>Place</b>	ENRO office	
<b>Participants</b>	Mr. Nicanor Cabunag, SWMO of General Service Office Noboru Osakabe, JICA Consultant	
<b>Policies and Ttmeframe concluded in the WS</b>		<b>Progress confirmed at the interview</b>
1. To formulate the 10-years' SWM Plan (Priority Issue)	Preparation:2014 Implementation: 2015-2024	<ul style="list-style-type: none"> <li>• Drafting the plan has already started in January supported by the EMB and will be completed in March.</li> <li>• The old WACS is updated in November 2014 supported by UNDP.</li> </ul>
2. To develop sanitary landfill	Implementation starts in 2014 according to the proposal of UNDP	<p>The existing dumping site is under improvement works (see the photos below).</p> <ul style="list-style-type: none"> <li>✓ Widening the access road</li> <li>✓ Digging 1 HA</li> <li>✓ Installing leachate pipes and ponds</li> <li>✓ Reconstructing MRF</li> </ul>
3. To promote the recycling system	Implementation starts in 2015	<ul style="list-style-type: none"> <li>• The recycle rate is set at 70% by the UNDP</li> <li>• So, the IEC should come into aggressive action to attain the target.</li> </ul>
4. To estimate SWM cost	Update every year along with the annual budget preparation	Estimated for the first time: 1.1 million in 2013 and 1.5 million in 2014
5. To collect SWM Fee from households	ASAP by promoting campaigns to make the stakeholders understand the reasons	The household fee is regulated in the ordinance; now is only to implement it.
<b>Remarks</b>	<ul style="list-style-type: none"> <li>• The EMB sent the LGU a notice in October 2014 requesting the formulation of the Plan by March 2015.</li> <li>• Upon the request, the LGU has started it and is envisaging finalizing in March supported by the EMB and the UNDP.</li> <li>• It is remarkable that, supported also by the UNDP, the existing dump site is being improved from December 2014 and the new sanitary landfill will be developed in the adjacent area.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Newly-Dug Dump Site</p> </div> <div style="text-align: center;">  <p>Leachate Pipe and Pond</p> </div> </div>	