Japan-ASEAN Science, Technology and Innovation Platform
(JASTIP)
Report of JASTIP-Net Activity

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<table>
<tr><td rowspan="5">1. Research partner</td><td colspan="2">Affiliated Organization</td></tr>
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<tr><td>2. Collaborative research</td><td>Collaborative research theme</td><td>Headquarters
☐ To Develop Operational Linkages and Human Resources among Academic Sector, Government Agencies, and Private Sectors in ASEAN countries and Japan.
☐ To Introduce Various STI Collaborations for Effectively and Efficiently into the Society based on the three joint laboratories' activities.

Energy & Environment Joint Lab
☐ Studies on Rural/Community Renewable Energy.
☐ Development of Renewable Energy Technology adapted to the ASEAN region.
☐ Studies on Energy Policy/Security in the ASEAN region.</td></tr>
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		Bioresources & Biodiversity Lab ☐ Studies on Biodiversity in the ASEAN Region Contributing to the Improvement of Identification, Collection and/or Information. ☐ Sustainable Utilization of Bioresources for Biorefinery, Bioremediation, Wood Construction, Food or Medicine. ☐ Plant Improvement for Agroforestry Systems and Carbon Sequestration Contributing to the Mitigation of and/or Adaptation to Climate Change. **Disaster Prevention Joint Lab** ☑ Innovative Ideas on Disaster Prevention, Mitigation and Recovery Technologies and Policies Peculiar to Each ASEAN Country. ☐ How to Cope with Trans-Boundary Disasters in the ASEAN Region Such as Tsunami, Flood, Drought and Haze. ☐ Understanding and Quantitative Evaluation of Disaster Risks Peculiar to ASEAN Countries.
	Collaborative research title	**Pre-disaster Recovery Planning in ASEAN** **-Evaluation of Recovery Plans in Indonesia, Philippines, and Myanmar-**
	Host core-researcher	Mr. Kensuke OTSUYAMA

3. Members

Name	Mr. Kensuke OTSUYAMA		
Affiliation	Disaster Prevention Research Institute, Kyoto Univ.	Position	Doctoral Student
Name	Mr. Asahi YUDA		
Affiliation	Disaster Prevention Research Institute, Kyoto Univ.	Position	Master Student
Name	Mr. Keisuke SASAOKA		
Affiliation	Disaster Prevention Research Institute, Kyoto Univ.	Position	Master Student

4. Report of activities

1) Research Activities and Major Findings

This research aims to identify challenges for recovery and reconstruction planning in The Association of Southeast Asia Nations (ASEAN) as the region is exposed to high risks of hydrological natural hazards due to metrological and geological factors. The first major finding is that the overview of disaster risk reduction legislative structure in ASEAN shows variety of setting to cope with natural disasters. Table 1 shows the result of the overview. Most of the countries equipped DRR law (or Act) in late 2000s since mega natural disaster such as The Indian Ocean Tsunami and Cyclone Nargis were trigger events for the development of DRR legislations. Philippines, Myanmar and Indonesia experienced high mortality (more than 100 by an event) disasters after setting of legislations, therefore, those countries are selected for case studies to identify the gap of recovery plans and actual implementations (recovery plan for the earthquake in Aceh, Indonesia has not yet published at the time, thus case of Indonesia was excluded).

Table 1. Disaster Risk Reduction Legislative Structure in ASEAN

Level of Risk	Past Disaster	Country (World Risk Report 2014 Rank)	Natural Disaster History (More than 100 casualty since 2000)	Natural Disaster after Legislative Setting	DRR Legislative Structure					
					DRR basic Act	Emergency Response	Basic DRR Plan	Recovery Plan	Pre-disaster Recovery Plan	Coordination with Development Plan
High Risk	**Typhoon Recovery**	**Philippines (2)**	Eruption, 1991	Typhoon, 2013	Republic Act 10211(Disaster Risk Reduction & Management Act) (2009)	National Disaster Response Plan (2014)	The National Disaster Risk Reduction & Management Plan 2011 to 2028(2012)	Yolanda Comprehensive Rehabilitation and Recovery Plan (2014)	N/A	Indicated in Philippines Development Plan 2011-2016
	Flood Recovery	**Myanmar (43)**	Typhoon, 2008	Flood, 2015	Natural Disaster Management Law (2013)	Emergency Response Preparedness Plan (2014)	Myanmar Action Plan on Disaster Risk Reduction (2012)	National Recovery Framework & Plan Flood & Landslide 2015 (2016)	N/A	Not related in National Sustainable Development Strategy for Myanmar (2009)
	Earthquake Recovery	**Indonesia (34)**	Tsunami, 2004	Earthquake 2016	Disaster Management Law (2012)	N/A	National Disaster Management Plan 2010-2014, 2015-2019	N/A	N/A	Indicated in National Development Plan (RPJMN2005-2025)
	Non Experience Mega-disaster since Legislative Setting	Cambodia (9)	Flood, 2011	N/A	Law on Disaster Management (2015)	N/A	National Action Plan and Strategy on Disaster Risk Reduction 2014-2018 (2014)	N/A (There is an Assessment)	N/A	Indicated in National Strategic Development Plan 2014-2018 pp140
		Thailand (90)	Tsunami, 2004 Flood, 2011	N/A	Disaster Prevention and Mitigation Act (2007)	N/A	National Disaster Prevention and Mitigation plan 2010-2014	N/A	N/A	One of Sector Goal in Development Plan
		Vietnam (18)	**Typhoon, 2008**	**N/A**	**Law on Natural Disaster prevention and Control (2013)**	**N/A**	**National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020**	**N/A**	**N/A**	**Indicated in Viet Nam Development Strategy for 2011-2020**
Low Risk	-	Brunei (12)	N/A	N/A	Disaster Management Order (2006)	National Standard Operating Procedures (2016)	Strategic National Action Plan for Disaster Risk Reduction 2012-2025 (2012)	N/A	N/A	One of Security Strategy in Tenth National Development Plan (2012-2017)
	-	Malaysia (88)	N/A	N/A	Policy and Mechanism in the Management of National Disaster and Relief in Malaysia (1997)	N/A	N/A (Only National slope master plan 2009-2023)	N/A	N/A	One of Target in Eleventh Malaysia Plan 2016-2020
	-	Lao (100)	N/A	N/A	N/A (there is a Committee)	N/A	Strategic Plan on Disaster Risk Management in Lao PDR 2020, 2010, and action plan (2003-2005)	N/A	N/A	One of output in Five year National Socio-Economic Development Plan VIII 2016-2020
	-	Singapore (160)	N/A	N/A	N/A(Civil Defense Act)	N/A	N/A	N/A	N/A	Not Indicated in Sustainable Singapore Blueprint 2015

Major finding from case in Philippine is lack of a implementation standard for permanent house attributed from different suppliers. The comparative analysis on housing recovery from Pinatubo eruption in 1991 and typhoon Haiyan in 2013 indicated that supplied permanent houses were modified and customized by house owners. In both events, national and local government supplied public permanent houses for displaced households. Nevertheless these efforts, some residents had already gone back to original place, or owning two houses. One of the root cause is housing planning in resettlement site. Because the supplied core unit house had not enough space, the size and layer have been expanded. To expand the house, extra space between neighboring houses are a crucial point for the core unit houses. Although the standard of the distance between houses are designated as housing guideline in Philippines, actual implementation of supplied houses in affected area in the Typhoon Haiyan observed different manner depending on housing suppliers.

Another finding from case in Myanmar is that recovery strategies among villages reflect different approaches: adaption to floods or dependence on protection measures (dykes). The research field has severely affected flood and inundation induced by cyclone in southern part of Myanmar. The inundation was occurred due to the dykes which across the area dividing villages inside and outside, and government intervention for reconstruction planning or relocation strategy was not conducted. People in unprotected villages are not willing to transfer or relocate, because their houses have been elevated in order to adapt to the annual event. On the other hand, houses in protected villages do not elevated. The limitations of each strategy are identified. Elevating the bamboo structure housing has limitations to its adaptation, because the strength of the bamboo pillar cannot endure above a certain point. As an alternate solution, timber houses have durability for higher elevation more than 2 feet. Therefore, some households have been retrofitted with elevated floors to cope with severe flooding. However, relatively poor households cannot use this option, because bamboo structured houses are more affordable than the timber ones.

Figure.1 shows the result of correlation between floor height and average income in protected and unprotected villages. Timber house in unprotected village has relatively positive correlated, although other groups such as bamboo house and timber house in protected village are not correlated. Therefore, socio-economic background limits the recovery strategies in unprotected villages, and it is observed that people in protected area has to rely on the dyke as the floor height is quite lower than unprotected.

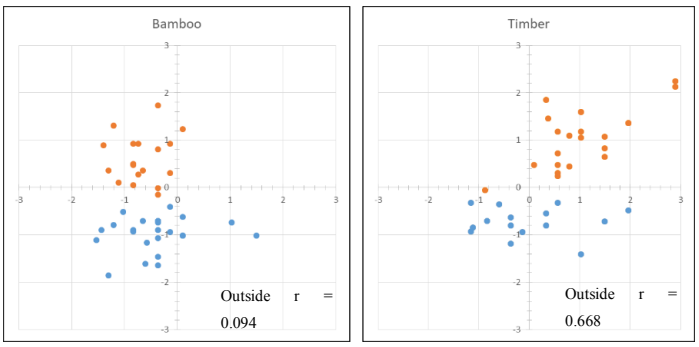

Figure 1. Correlation between Floor Height and Ave. Income in Timber and Bamboo House

2) Academic and Social Implications towards Achieving the SDGs

Based on the research outputs above, the difference between cases in Philippines and Myanmar is government (or stakeholders) intervention for housing recovery. Philippines is moving ahead with national recovery and reconstruction planning, though implementation of control housing supplier has several challenges. On the other hand, it is observed that government intervention and planning for reconstruction is weak in village level. The research implies that the limitation for those inside the dyke is the capacity of the dyke itself. If the flood waters overflow, villagers may lose their houses as well as their livelihoods, regardless of socioeconomic status. Therefore, there is a high potential that the next flood event will have devastating consequences on the protected areas as well.

These outputs links to goal #13 in SDGs (Take urgent action to combat climate change and its impacts) particularly the first target[1]. To deal with intensified natural disaster induced by climate change, adaptive strategy and planning before disaster hits is highly required, and this research contribute to show the case studies of recovery in ASEAN.

5. List of publications

N/A

6. List of oral presentations

i. Kensuke OTSUYAMA, and Norio MAKI. Pre-disaster recovery planning in ASEAN-Evaluation of recovery plans in Indonesia, Philippines, and Myanmar. 3rd JASTIP Symposium-ASEAN-Japan STI Collaboration for SDGs-. Bangkok, Thailand, 5 February, 2017

ii. Kensuke OTSUYAMA, and Norio MAKI. Challenge to pre-disaster recovery planning in ASEAN-A perspective on resettlement projects in the Philippines. International Workshop

[1] SDGs, goal #13, first target: *Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries* http://www.un.org/sustainabledevelopment/climate-change-2/

toward Building Regional Platform for Disaster Risk Reduction in Asia, Kuala Lumpur, Malaysia, 2-3rd May, 2017.

iii. Kensuke OTSUYAMA, and Norio MAKI. Adaptive strategies for community recovery and identification of pre-disaster activities: A case study in Hinthada, Ayeyarwady Region, Myanmar. UNESCO-JASTIP Joint Symposium on Intra-regional Water Security and Disaster Management. The 3rd Symposium on JASTIP Disaster Prevention International Cooperation Research. Metro Manila, Philippines, 15-16 November, 2017