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Towards Policy Integration of Disaster Risk, Climate Adaptation, and Development in ASEAN:

A Baseline Assessment

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This NTS Insight attempts to create a baseline assessment of disaster risk reduction (DRR) and climate change adaptation (CCA) policies in ten Southeast Asian countries. More than 50 per cent of global disaster mortality occurred in Southeast Asia between 2004 and 2014, and four ASEAN member states are ranked in the top 10 countries most affected by climate risk between 1996 and 2015. The integration of relevant existing global mechanisms into national and local regulatory systems, and especially into national development plans, is therefore necessary to ensure the development of adaptive and resilience capacities. Although the region has realised the importance of streamlining DRR and CCA policies in development plans, a baseline of such efforts has yet to exist to date. This is the first series of the NTS Insight on a larger climate change and disaster risk study. The next NTS Insight will look into climate risks in ASEAN.

8 November 2013, typhoon Haiyan hit the Philippines. What was left behind was a wounded country with cities such as Tacloban, completely destroyed. *Credit: Flickr / Claudio Accheri*

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Contents

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INTRODUCTION

Effective reduction of losses and risks from natural hazards and climate extremes requires integrated actions at different levels of governance. One of the greatest challenges faced by governments of developing countries today is in creating institutional convergence that integrates global goals emanating from the Sustainable Development Goals (SDGs), the Sendai Framework for Disaster Risk Reduction (SFDRR), Paris Agreement on Climate Change (PACC) and the World Humanitarian Summit. Disaster risk reduction (DRR) and climate change adaptation (CCA) are part of key agendas being considered in all these recent global agreements.

The SFDRR lays down the guiding principles for each state to take on "the primary responsibility to prevent and reduce disaster risk, including through international, regional, sub-regional, transboundary and bilateral cooperation" through four priorities for action. The first priority action is understanding risk which encompasses data collection, risk analysis, risk baseline, regular updates of progress, capacity building, promotion of investment and innovation in risk reduction and dissemination of disaster risk information. The second priority action is strengthening disaster risk governance to manage disaster risk through "mainstreaming and integrating DRR within and across sectors" at different levels, empowering local authorities, coordinating with civil societies, formulating relevant policy, and addressing risk reduction needs. The third priority action is investing in risk reduction for resilience by providing incentives and allocating necessary resources at all levels, promoting public and private mechanisms for risk transfer and insurance, and risk sharing and protection. The fourth priority action is to "enhance disaster preparedness for effective response and "to build back better" in recovery, rehabilitation and reconstruction".

The SFDRR seeks to "substantially increase the number of countries with national and local disaster risk reduction strategies by 2020." It sets the following targets: to reduce global disaster mortality between 2020-2030 compared to 2005-2015 (measured by average per 100,000 reduce the number of affected people globally (measured by average per 100,000) between 2020-2030 compared to 2005-2015,[1] "substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030" and "substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030".[2] While the Sendai Framework has set the grounds for DRR efforts, SDG 2030 has now emerged as new global driving force for risk reduction (See Box 1).

At a regional level, Southeast Asian countries have realised the need to address disaster risk reduction and climate change adaptation in an integrated manner. The Declaration on Institutionalizing the Resilience of ASEAN and its Communities and Peoples to Disasters and Climate Change issued in April 2015 acknowledged the threats posed by climate change and ensuing extreme weather events and called for the mainstreaming of disaster risk reduction and climate change adaptation in overarching development agendas. Multi-sectoral collaborations collaboration in multi-level governance are key to make such integration happen. The ASEAN Committee on Disaster Management (ACDM) has been identified as the focal point for this cooperation.

The ASEAN Vision 2025 on Disaster Management adopted the SFDRR vision by encouraging ASEAN member states to develop new DRR strategies by 2020. The Vision that states that "AADMER (*The Asean Agreement on Disaster Management and Emergency Response*) will need to be linked to the integration efforts under the ASEAN Economic Community" could probably credited for the first systematic attempt to integrate both DRR and CCA into wider development policy in ASEAN.[3] Thus far, comprehensive baseline information on DRR and CCA policies in ASEAN is not yet available.

The overall objective of this paper is to provide a baseline of existing national and local arrangements that incorporate DRR and CCA into development policy processes. This study uses existing secondary sources including formal policy reports, and relevant grey and peer review literature.

RESEARCH FRAMEWORKS AND METHODS

The integration of existing global mechanisms into national and local regulatory systems is necessary to ensure the development of adaptive and resilience capacities. In this light, it is important to understand ASEAN member states' policy and institutional convergence processes aimed at integrating the global goals mandated in the SDGs, the SFDRR, the PACC and commitments from the World Humanitarian Summit. This can be measured from the extent of the mainstreaming of DRR and CCA regional mechanisms into development planning at national and local levels.

There are at least four scenarios for DRR-CCA integration at a policy level. The first one is the most ideal scenario where DRR-CCA policy intersects with global development policy. This scenario suggests that existing development policy has adequately considered both DRR and CCA. At the global level, DRR-CCA integration is observed in the inclusion of disaster risk and climate adaptation into Sustainable Development Goals (See Box 1). This scenario is best illustrated as S1 in Figure 1 where SDGs, the global development agenda, incorporate both the SFDRR and climate change adaptation into a global development agenda. The 2016 World Humanitarian Summit also acknowledged the need for global and national humanitarian communities to invest in DRR-CCA and development in general.[4]

Box 1. SDG 2030 and Disaster Reduction Goals

Goal 1"End poverty in all its forms everywhere" [1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters]

Goal 2 "End hunger, achieve food security and improved nutrition and promote sustainable agriculture" [2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, **that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters** and that progressively improve land and soil quality]

Goal 11 "Make cities and human settlements inclusive, safe, resilient and sustainable" [11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by **disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations]**

[11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, **mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels]**

Scenario 2 (S2, Figure 1) suggests that DRR-CCA policy is integrated albeit being disconnected from the larger development policy context.[5] As observed in the last few years, DRR and CCA communities were largely separated from each other,

and scholarship campaigns to integrate both camps did not occur in the past.[6]

Scenario S3 and Scenario S4 can be found in local and national contexts where each DRR and CCA community separately targets development communities, with the purpose of getting their respective agendas into national budget planning. As a result, a duplication of efforts and investments often occured in a number of cases.

By and large, DRR, CCA and development used to be seen as three distinctly separate sectors. At the global level, this is reflected in the absence of risk reduction and climate adaptation in the Millennium Development Goals. Additionally, climate change communities used to operate as a separate entity from DRR and other development sectors.

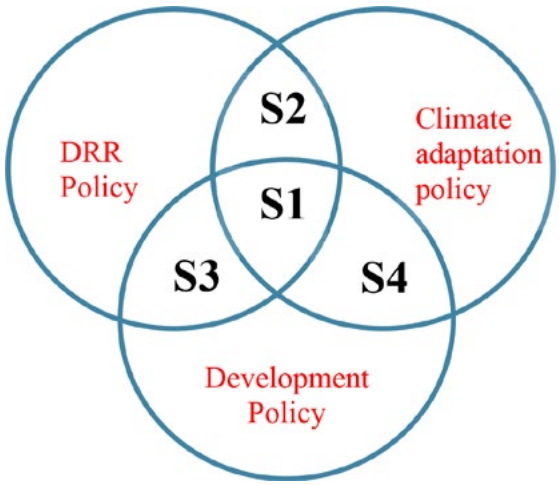

Figure 1. Scenarios of DRR-CCA Policy Integration

Source: Lassa, (Forthcoming)[7]

SOUTHEAST ASIA AS A GLOBAL DISASTER HOTSPOT

The WorldRiskIndex[8] defines risk as a function of exposure to natural hazards and societal vulnerability. Southeast Asia is a hazard prone region (See Figures 2 and 3). The 2014 WorldRiskIndex positions three ASEAN member states in the top 15 countries with the highest risk: the Philippines (2nd), Cambodia (9th) and Brunei Darussalam (12th). The WorldRiskIndex 2016 shows that these three Southeast Asian countries remain in the top 10 global hotspots: the Philippines (3rd), Brunei Darussalam (7th) and Cambodia (9th).[9] The inclusion of Brunei Darussalam in the top 10 most at risk countries, however, is questionable given the fact that Brunei Darussalam is the second richest country in ASEAN with an annual GDP of US$ 78k in PPP per capita (according to IMF's estimate in 2015)[10] and has experienced the least recorded natural hazard events in the world.[11]

According to the Global Climate Risk Index 2017,[12] four ASEAN member states are ranked in the top 10 countries most affected by climate risk between 1996 and 2015: Myanmar (2nd), the Philippines (4th), Vietnam (8th) and Thailand (10th). In the same period, climate-related disaster events have cost Myanmar US$ PPP 1.3 billion or 0.74% losses per unit GDP, the Philippines US$ PPP 2.7 billion or 0.63% losses per unit GDP, and Vietnam and Thailand 0.62% and 1% losses per unit GDP respectively (See Table 1).

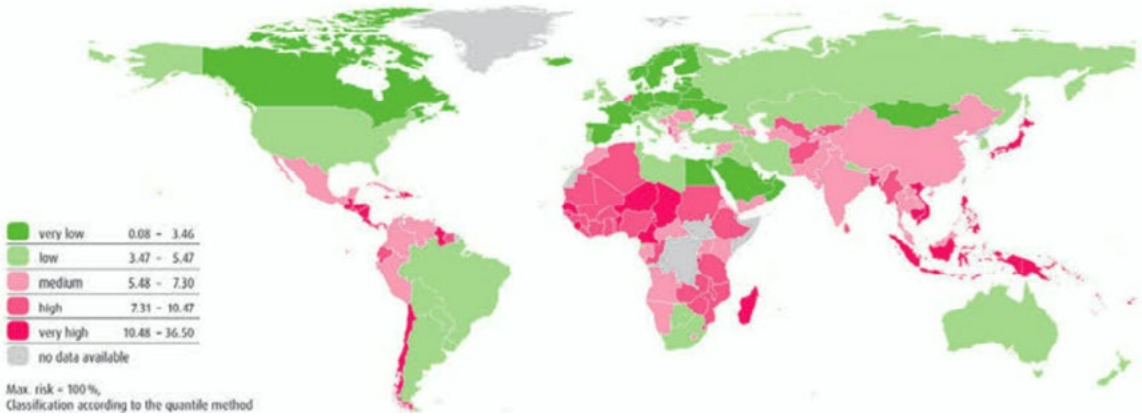

Figure 2. The 2014 WorldRiskIndex based on hazard exposure and vulnerability
Source: Bündnis Entwicklung Hilft and UNU-EHS, WorldRiskReport 2014

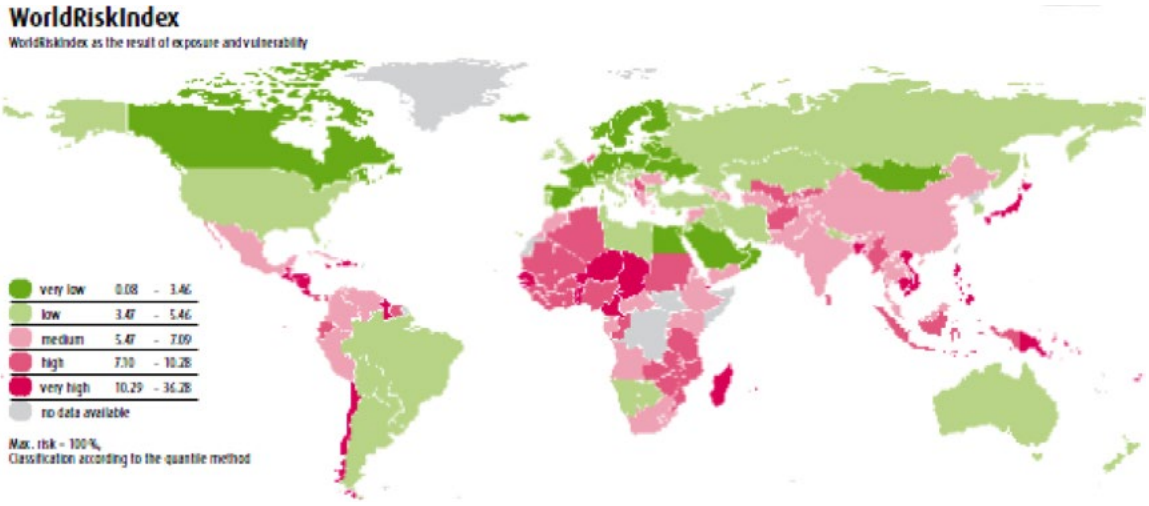

Figure 3. The 2016 WorldRiskIndex based on hazard exposure and vulnerability
Source: Bündnis Entwicklung Hilft and UNU-EHS, WorldRiskReport 2016

The ASEAN Vision 2025 on Disaster Management highlights that more than 50 per cent of global disaster mortality occurred in Southeast Asia between 2004 and 2014. During that period, the region suffered 354,000 out of 700,000 total deaths due to disasters worldwide, US$ 91 billion in total economic loss, about 191 million people being displaced or homeless either temporarily or permanently, and a total of 193 million people being affected. About one in three to four people in the region experienced some type of loss.

In addition, there was an increase in the disaster mortality rate from 8 (1990-2003) to 61 deaths per 100,000 people (2004-2014). The total affected rate also increased from 28.8k to 33.6k per 100,000 peoples. The damage rate per capita also increased from US$ 4.6k (1990-2003) to US$ 15.9k (2004-2014). This indicates that people and assets in the ASEAN region have been increasingly exposed to disaster risks, with the poor and vulnerable being disproportionately affected. Considering ASEAN's share in global disaster losses, the targets laid out in the SFDRR by 2030 may not be achieved if DRR mechanisms in ASEAN are not properly implemented.

Table 1. ASEAN Climate Risk Index for 1996–2015

CRI Rank [ASEAN]	CRI Rank [Global]	Country	CRI Score	Fatalities (annual average)		Fatalities per 100 000 inhabitants (annual average)		Losses in million US$ (PPP)		Losses per unit GDP in %	
				Average	Rank	Average	Rank	Average	Rank	Average	Rank
9	176	Brunei Darussalam	168.3	0.1	172	0.03	157	0.3	176	0.001	174
5	13	Cambodia	36.5	57.5	40	0.43	39	241.9	51	0.880	25
6	67	Indonesia	70.8	252.3	17	0.11	93	1,902.9	16	0.101	103
7	87	Lao PDR	82.5	5.7	98	0.1	101	75.8	89	0.339	53
8	103	Malaysia	94.0	29.6	60	0.11	94	271.8	50	0.055	133
1	2	Myanmar	14.2	145.9	1	14.71	1	1,300.7	22	0.737	30
2	5	Philippines	21.3	861.6	7	1	18	2,761.5	9	0.628	38
10	178	Singapore	171.8	0.1	172	0	175	2.8	159	0.001	175
3	10	Thailand	34.8	140.0	25	0.22	69	7,574.6	4	1.004	21
4	8	Vietnam	31.3	339.8	13	0.41	42	2,119.4	13	0.621	39

Source: Global Climate Risk Index 2016 by German Watch.

DRR-CCA POLICY INTEGRATION IN ASEAN - A BASELINE ASSESSMENT

BRUNEI'S PROGRESS

Despite the WorldRiskIndex which places Brunei Darussalam at the top 15 most disaster-prone countries in the world, there are extremely limited records on the occurrence of any major natural disasters in Brunei Darussalam except for occasional floods and accompanying landslides. This is in contrast to the frequency of natural disaster events in Indonesia and the Philippines in the last twenty years.

The National Disaster Council is the highest authority in charge of policy and strategy for disaster management. The National Disaster Management Centre (NDMC) operationalises the policy and strategy through planning and implementation. At a tactical level, multiple agencies are involved in actual disaster relief operations.

The 2006 Disaster Management Order is the primary instrument for disaster management. To operationalise it, the NDMC formulated the Strategic National Action Plan (SNAP) for Disaster Risk Reduction and the National Standard Operating Procedures (NaSOP) for Response. While SNAP contains plans to enhance the capacity of government and non-government institutions to reduce disaster risk, NaSOP lays down the procedures to coordinate disaster response operations.

Several agencies such as the Meteorological Services of the Department of Civil Aviation, Ministry of Health, Department of Agriculture and Agrifood, Marine Department, Fisheries Department, Department of Environmental and Recreation, among others, are responsible for early warnings.

In terms of climate change, Brunei Darussalam does not seem to have a dedicated climate policy. Instead, it attempts to address climate-related issues on a sectoral basis including the energy, land transport, and forestry sectors. Brunei Darussalam has also identified other sectors such as biodiversity, coastal and flood protection, health, agriculture, and fisheries for future climate change adaptation plans.[13]

In 2011, Brunei Darussalam National Council on Climate Change was established.[14] The Department of Environment, Parks and Recreation Ministry of Development serves as the national focal point for UNFCCC. The Ministry of Development was in-charge of submitting the Intended Nationally Determined Contribution (INDC) to the UNFCCC in 2015.

Climate change adaptation and disaster risk reduction are not explicitly mentioned in the long term economic development plan Brunei Vision 2035 or *Wawasan 2035*. It is unclear, therefore, if the framework for the integration of climate change adaptation and disaster risk reduction has gained traction in Brunei's national development planning.

CAMBODIA'S PROGRESS

In 2016, Cambodia ranked 13th in the world's most vulnerable countries to both natural hazards and climate risks (Table 1). Its losses accounted for 0.9% of its GDP and its fatality rate was 0.43 per 100,000 inhabitants. This figure is considered high as Indonesia's and Brunei's fatality rates stood at 0.11 and 0.03 respectively. The occurrence of El-Nino is the reason for recurrent climate-related hazards that severely affected thousands of farmers in various provinces in 2015 and 2016.

Cambodia has developed its National Action Plan for Disaster Risk Reduction 2008-2013 as part of its commitment to implement the Hyogo Framework for Action (HFA). The government has recently endorsed the Cambodian National Development Plan 2014-2018 where it has included both climate change and disaster management as key agenda.[15] The Planning document highlighted the objective of the National Climate Change Committee (NCCC) to lead and coordinate national responses to climate change.

At provincial, district, and village levels, the NCDM established the Provincial Committee for Disaster Management (PCDM), District Committee for Disaster Management (DCDM) and the Commune Committee for Disaster Management (CCDM) respectively. As Cambodia is mostly prone to floods and droughts, the Ministry of Water Resources and Meteorology (MOWRAM) and the Provincial Department of Water Resources and Meteorology (PDWRAM) play important roles in reducing such risks through flood and drought infrastructural measures and investments.[16]

International stakeholders together with the Ministry of Environment have recently developed and implemented the National Adaptation Programme of Action to Climate Change (NAPA), aiming at implementing priority actions including health and non-health activities.

The National Climate Change Committee bears the responsibility of coordinating efforts and oversees the implementation of NAPA. Most key adaptation activities have been implemented by NGOs at both national and local levels. The Ministry of Environment (MOE), the National Climate Change Committee, and National Council for Green Growth, have developed the National Climate Change Strategic Plan (2014-2028), and the National Policy on Green Growth Development and National

Strategic Plan on Green Growth Development 2013-2030.[17] Cambodia's National Strategic Development Plan 2014-2018 explicitly acknowledges climate change and disaster management issues.

The progress of DRR-CCA policy drafting and implementation in Cambodia is driven by international cooperation. The national DRR Forum, for example, is co-chaired by the NCDM, UN agencies and INGOs. It serves as a platform for state and non-state actors to discuss and share their agenda on both disaster risk reduction and climate change adaptation.[18] INGOs are indeed playing important roles in improving disaster response in the country. The recent translation of core humanitarian standards from English to Khmer by CHS Alliance is one example of the substantial contributions of INGOs in the Cambodian disaster management system.[19] The roles of indigenous NGOs are to be encouraged in the future.

INDONESIA'S PROGRESS

Indonesia's mid-term national development plan or RPJMN for both 2009-2014 and 2015-2019 have included CCA and DRR as part of development policy priorities. The last development plan also prescribed improved spatial planning, enhanced organisational or institutional mechanisms, and better human resources as the foundation for cities' resilience against climate change and disaster risk.

Indonesia has been making great strides in ensuring the establishment of local disaster management agencies in most districts and cities. Statistics suggests that more than 90 percent of the districts and cities (circa >450) in the country have established Local Disaster Management (DM) Agencies (BPBDs).[20] In the last five years, the central government via the National Agency for Disaster Management (BNPB) has facilitated the development of DM Plans in more than 60 districts and cities (about 15% from the total number) as of 2013.[21]

At present 122 districts and cities in Indonesia have developed their contingency plans for multiple hazards. Efforts to engage communities and DRR stakeholders in contingency planning and disaster emergency response exercises are also increasing. There is a growing number of disaster simulations and exercises conducted in many parts of the country, with the biggest one - the Mentawai Megathrust Tsunami Disaster Exercise - being organized in 2013. It was attended by international partners and 18 neighboring countries.[22]

The BNPB has continuously facilitated the BPBDs and local DRR platforms to promote DRR at the village level. Capacities for response, risk assessment and community-based DRR have also been developed through training and simulation exercises at the district, city and village levels. Capacity to respond to climate-related risks, however, has not been significantly developed at the local level. The next steps for the BNPB include encouraging district governments to help villages develop their DM plans. At the moment, the government aims to develop resilience plans in 5000 out of about 80,000 villages.

The BPBDs are still suffering from a lack of human resources. The country is going to have to professionalise its BPBD officials whose upper echelons do not have basic education in comprehensive disaster management training. Existing post-graduate education programs in less than tens universities cannot fully meet the demand at the national scale.

So far the BNPB has been playing roles in building the capacity of local governments through its certified disaster man-

agement trainings. It is not clear, however, if local governments can co-finance the investment in human resources. As a result, most decision makers still consider DRR as less important compared to post disaster emergencies and post-disaster recovery programs.

LAO PDR'S PROGRESS

Lao PDR's disaster management reform continues to evolve. The newly created National Disaster Management Committee (NDMC), was endorsed by a Decree by the Prime Minister Decree in 2013. Its institutional model is similar to Indonesia's disaster management structure in the 1990s and early 2000s where the Committee coordinates with DM focal points in Line Ministries and the NDMO at sub-national levels. The government claims that the shift from a reactive response to more proactive or preventive approach, including the increasing use of early warning systems, is a significant product of such reforms.[23]

In general, most disaster financing in Lao PDR is still heavily dependent on international funds. However, the 2013 PM Decree on NDMC has allowed the country to create the Disaster Prevention Fund. This means clearer budget allocation for disaster management. In addition, the government has also created a formal mechanism for social and international donations.[24]

For climate change adaptation, at the moment, the Government has access to the United Nations Framework Convention on Climate Change's (UNFCCC's) Global Environment Facility (GEF). The GEF granted multi-million dollars for climate financing in 2013 and 2014. However most of the climate financing was skewed towards mitigation rather than adaptation.[25]

Lao PDR has recently created a Plan of Action for Disaster Risk Reduction and Management in Agriculture (2014 -2016).[26] The implementation of the plan is elusive as it appears to be a long list of actions. However, the fact that Lao PDR has recently endorsed the National Socio-Economic Development Plan III (2016-2020) which targets include "Prepare to cope with the disaster risks and climate change" [Outcome 7.19] and "Reducing the instability of agricultural production caused by the impact of disasters (ensure about markets and prices for the agricultural products)" [Outcome 7.20] is in itself a progress in the right direction. Interestingly, the 2016-2020 Plan also highlights some of the disaster losses that led to poverty during between 2010 and 2015.[27]

MALAYSIA'S PROGRESS

Malaysia's climate change adaptation framework is reflected in its 2010 National Policy in Climate Change. The National Steering Committee on Climate Change (NSCCC) in the Ministry of Natural Resources and Environment is the focal point for the UNFCCC. Malaysia also has the Cabinet Committee on Climate Change. The National Policy calls for climate-proof and climate-resilient development, and envisions the integration of climate change adaptation measures in disaster risk reduction policies, plans, programmes and projects as reflected in its key actions.

Although Malaysia is relatively less vulnerable to natural hazards, it has been facing flood events from time to time. In late 2014, Malaysia experienced her worst ever floods, with an estimated half a million people being affected and damage costs

amounting to RM2.851 billion.[28] To deal with disaster events, Malaysia refers to the National Security Council Directive No. 20 on The Policy and Mechanism on National Disaster and Relief Management as the guiding document. Malaysia's National Security Council is the highest authority in disaster management and disaster risk reduction. It serves as the focal point for the National Platform and Action Plan on Disaster Risk Reduction (myDRR), a forum comprising of government agencies at federal and state levels, non-governmental organisations, international organisations, academic institutions, media and private sector. Among its objectives, MyDRR aims to mainstream DRR in Malaysia's national development agenda. In 2011, the Melaka Declaration on Disaster Risk Reduction, which recognises the increased disaster risks associated with climate change, was adopted.[29]

Similarly, awareness of the need to address climate change and natural disasters simultaneously is reflected in the 11th Malaysia Plan (2016-2020). Under the 'Pursuing Green Growth for Sustainability and Resilience' agenda, strengthening resilience against climate change and natural disasters through the strengthening of disaster risk management, improving flood mitigation and enhancing climate change adaptation are mentioned.[30] While the integration of disaster risk reduction and climate change adaptation is already called for in relevant policies, the institutions remain largely separated from each other.

MYANMAR'S PROGRESS

Having experienced major disasters in different parts of the country, such as cyclone Nargis in 2008, floods in Gwa Township in Rakhine State in 2010, 2014, and 2015, cyclone Mala in Gwa Township, Rakhine State in 2010, Cyclone Giri in KyaukPhu Township in Rakhine state in 2010, and extreme heat days in Mandalay in 2015, among others, Myanmar's disaster management system has been gradually developed.

The 2013 Disaster Management Law and the 2009 Myanmar Action Plan on Disaster Risk Reduction are the main disaster management policy instruments. The National Disaster Preparedness Central Committee (NDPCC) chaired by the Prime Minister is the main body responsible for disaster management in Myanmar. It formulates relevant policies, and devises systems and procedures at national, state/division, district, township, wards, and village levels.[31] The NDPCC has issued the Disaster Risk Reduction, Preparedness, Rehabilitation and Reconstruction Action Plan and a Standing Order. The Myanmar Action Plan on Disaster Risk Reduction (MAPDRR) was developed to specifically operationalise disaster risk reduction policy.

As for climate change, Myanmar already has the 2012 National Adaptation Programme of Action (NAPA) to Climate Change.[32] The document was prepared with the support of the Least Developed Countries Fund (LDCF) and was coordinated by the National Environmental Conservation Committee (NECCC) at the Ministry of Environmental Conservation and Forestry. The Department of Meteorology and Hydrology at the Ministry of Transport and the United Nations Environment Programme were tasked to execute and implement NAPA. Chaired by the Vice President, the NECCC is supported by six committees comprising of different ministries and departments, and has extended influence on state, region, district and township levels.

The Myanmar Climate Change Strategy and Action Plan (MCCSAP) 2016-2030, however, is still in the early stages of development. The drafting of the document is supported by the Myanmar Climate Change Alliance, an initiative by the Global Climate Change Alliance being implemented by the United Nations Human Settlements Programme (UN-Habitat) and the

United Nations Environment Programme (UNEP). In the draft, the integration of climate change in disaster management to strengthen disaster preparedness, risk reduction and recovery initiatives is mentioned.[33]

Myanmar endorsed its National Development Plan 2011-2031 in 2013. The extent of the incorporation of disasters and climate change in the Plan however remains largely unknown. Based on the draft documents of the National Sustainable Development Strategy for Myanmar[34] there is little consideration of disaster risk in the listed outcomes. However, it is interesting to note that Myanmar has planned to deal with climate change in several development sectors.

Typhoon Ketsana (Ondoy) in the Philippines.
Credit: Flickr / Asian Development Bank

PHILIPPINES' PROGRESS

The National Disaster Coordinating Council (NDCC) under the Office of the Civil Defense is the main body in charge of disaster management in the Philippines. The council comprises of representatives from multiple government agencies, and the structure is repeated at regional, provincial, city, municipal and barangay (district) levels. Disaster risk management was supported by Republic Act No. 10121 titled "An Act Strengthening The Philippine Disaster Risk Reduction And Management System, Providing For The National Disaster Risk Reduction And Management Framework And Institutionalizing The National Disaster Risk Reduction And Management Plan, Appropriating Funds Therefor And For Other Purposes" or the Philippine Disaster Risk Reduction and Management Act of 2010. The framework of integrating disaster risk reduction and climate change reduction is explicitly reflected in the Act. Prior to the passing of this Act, the Philippines has already worked on disaster risk reduction through its Strategic National Action Plan on Disaster Risk Reduction that contains 10-year action plans and 18 priority DRR programs and projects.

To operationalise the Act, the National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028 was formulated. The Plan acknowledges the need to align its activities with the Philippine Development Plan, National Climate Change Action Plan, and National Security Policy, and takes into account the targets of national development and climate change action plans in the formulation of the Plan's activities and timelines.[35]

As for climate change, Republic Act No. 9729 titled "An Act Mainstreaming Climate Change into Government Policy Formulations, Establishing the Framework Strategy and Program on Climate Change, Creating for this Purpose the Climate Change Commission, and For Other Purposes", or the Climate Change Act of 2009 was passed to provide the legal basis for climate change measures. Similar to the Disaster Risk Reduction and Management Act, the Climate Change Act also acknowledges the strong linkage between disaster risk reduction and climate change adaptation and the need to integrate the former to the latter.

The Climate Change Commission under the Office of the President was then established and given the task to formulate relevant policies, supervise the implementation of climate change programs, and mainstream the climate change agenda in development plans at national, local, and sectoral levels. The Commission developed the National Framework Strategy

on Climate Change 2010-2022, and further detailed the vision in the National Climate Change Action Plan 2011-2028. The Framework 2011-2018 guides various levels of development planning processes including the formulation of the Medium-term Philippine Development Plans, public investment plans, from the central to village government levels.[36]

The Philippine Development Plan 2011-2016 has indeed addressed climate change and disaster risk issues explicitly. Among its goals, the Plan's Environment and Natural Resource Sector aims to "Enhance Resilience of Natural Systems and Improve Adaptive Capacities of Human Communities to Cope with Environmental Hazards Including Climate-related Risks".[37]

The articulation of climate change adaptation and disaster risk reduction in relevant documents shows that the Philippines is on track to implement them in its national development plan. A dedicated institution tasked to integrate DRR and CCA and to supervise implementation however does not exist.

SINGAPORE'S PROGRESS

In general, DRR planning has been embedded within several planning documents such as the Sustainable Singapore Blue Print 2015 and the Master Plan by Urban Development Authority of Singapore. Singapore has neither dedicated law nor institutions for disaster management. Instead, it relies on the Civil Defence Act 1986, Fire Safety Act 1993, and Civil Defence Shelter Act 1997. Within the Ministry of Home Affairs, the Singapore Civil Defence Force and the Singapore Police Force are the main agencies in charge of disaster management in the country.[38]

Although Singapore is relatively safe from natural hazards thanks to its geographical position, it remains committed to disaster risk management efforts. Singapore perceives DRR as an integral part of its sustainable development vision. In a statement made at the 3rd UN World Conference on Disaster Risk Reduction in March 2015 Singapore demonstrated its awareness of the connection between climate change adaptation, disaster risk reduction, and sustainable development.[39] Disaster risk reduction actions have indeed been incorporated in adaptation measures as reflected in Singapore's 2008 National Climate Change Strategy. Singapore considers flooding, coastal land loss, water resource scarcity, heat stress, higher energy demand, public health impact from resurgence of diseases, and impacts on island and marine biodiversity as potential threats posed by climate change.[40] In view of plausible climate-induced disaster events, Singapore has embarked on adaptation cum disaster risk reduction measures that include, among others, building reclamation projects above the worst case scenario of sea level rise as projected in the IPCC AR4 report, improving drainage infrastructure, and establishing water reclamation facility.

The Inter-Ministerial Committee on Climate Change (IMCCC) sits at the highest level of the institutional structure responsible for addressing climate change-related issues in Singapore, and is supported by the National Climate Change Secretariat (NCCS). Government agencies involved in the workings of the Committee include the Prime Minister's Office, the Ministry of Trade and Industry, the Ministry of Foreign Affairs, the Ministry of National Development, and the Ministry of Environment and Water Resources.[41]

THAILAND'S PROGRESS

Thailand is yet to approach disaster risk management and climate change adaptation from an integrated perspective. Climate change adaptation-related policy and projects are under the purview of the Ministry of Natural Resources and Environment. Within the Ministry, the Office of Natural Resources and Environmental Policy and Planning through the Office of Climate Change Coordination serves as the national focal point for the UNFCC and the Kyoto Protocol. In 2009, the Climate Change Knowledge Management Centre was set up. The Centre is part of the National Science and Technology Development Agency in the Ministry of Science and Technology and is responsible for the collection, analysis and dissemination of climate-related data to the government, private sector and communities.

Thailand's progress in crafting its policy responses began with National Strategy on Climate Change (2008-2012) and followed by the Climate Change Master Plan (2012-2050) and National Strategy on Climate Change (2013-2017). The Climate Change Master Plan lays down the framework for cross-sectoral and multi-stakeholder approaches in preparing for and mitigating climate impacts. It recognises the need to mainstream climate change adaptation across various development sectors. Public, private and civil society partnerships, community participation, and Polluter-Pay-Principle form the basis for climate policy implementations within short, medium and long-term planning. Climate change management strategy focuses on three key areas including climate adaptation, reduction of greenhouse gas emission and increase of greenhouse gas sinks, and human resource and institutional capacity building to deal with climate risks.[42]

Disaster management is handled separately from climate change adaptation. The Department of Disaster Prevention and Mitigation (DDPM) established under the Ministry of Interior in 2002 is the primary agency in charge of the execution of disaster management action plans and activities in Thailand. The National Disaster Prevention and Mitigation Committee (NDPMC) chaired by the Prime Minister or designated Deputy Prime Minister is a national level policy-making agency, and it has local equivalent in the Provincial Disaster Prevention and Mitigation Committees and the Bangkok Metropolitan Committee. To assist smooth coordination in multi-sectoral and multi-agency disaster response operations, the NDPMC's Standing Orders on Disaster clearly define the areas of responsibilities and duties of agencies and sectors involved.

The Disaster Prevention and Mitigation Act enacted in 2007 is the main legal umbrella for disaster management. It replaces the Civil Defence Act 1979 and the Fire Prevention and Suppression Act 1999, and it strengthens DDPM's legal status. The National Disaster Prevention and Mitigation Plan (NDMP) 2015 and the Strategic National Action Plan (SNAP) on Disaster Risk Reduction 2010-2019 outline Thailand's disaster risk reduction strategies and plans.

Operationally, command centers are established at both national and local levels, the National Command Headquarters and the Local Command Center respectively. When disaster responses are called for, the command centers will function as the Emergency Operation Centers (EOCs).[43]

Despite the presence of DDPM, the responsibilities of disaster prevention, preparedness, mitigation and response responsibilities remain with the specific agencies and local governments. The Royal Irrigation Department and the Ministry of Agriculture and Cooperatives, for example, play a major role in mitigating climate-induced flood and drought risks through their dam, dyke, and pumping system construction works. Other agencies involved in disaster management include the National

Disaster Warning Centre under the Meteorological Department. Although institutions and the legal umbrella are already in place, coordination among concerned agencies remained a challenge as bureaucratic rivalries hindered a holistic approach to disaster management.[44] As a result, the work on disaster prevention and preparedness were still largely separated from disaster response and relief efforts.

The 11th National Economic and Social Development Plan (2012-2016)[45] recognises the impacts of climate change on natural resources and environmental issues, and calls to increase national, regional and community capacity to adapt to climate change and natural disasters. The Plan explicitly draws a link between preparedness for climate change and related natural disasters with economic development and living standards. Agricultural, energy, environmental, information and technological sectors are some of the sectors identified to have immediate relevance to climate change. The Plan attributes past development practices deemed unsustainable and unbalanced to Thailand's current vulnerability towards climate change. Climate change adaptation and natural disaster preparedness therefore are made an integral of part of national development strategies.

VIETNAM'S PROGRESS

Vietnam is frequently battered by typhoons and floods, and they incur very high losses. Between 2004 and 2015, close to 18 million people were affected and more than US$ 7billion was lost due to typhoons and floods.[46] Due to its susceptibility to natural hazards, Vietnam has long developed a framework and practice for climate change adaptation and disaster management in its national development plans. In 2013, Vietnam passed the Law on Natural Disaster Prevention and Control.

The Viet Nam Sustainable Development Strategy for 2011-2020 indicates the reduction of impacts, climate change adaptation, and prevention of natural disasters.[47] The National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020 and the 2011 National Strategy on Climate Change are the main documents for disaster management and climate change adaptation respectively. The Ministry of Agriculture and Rural Development (MARD) holds the main coordinating responsibility for disaster management while other ministries such as the Ministry of Construction, the Ministry of Planning and Investment and the Ministry of Science and Technology continue to work within their means to contribute to disaster risk reduction. The MARD is also responsible for the execution of the National Strategy for Disaster Prevention, Response and Mitigation to 2020, and all ministries, provinces and cities draft their own action plans to implement the Strategy. As typhoons and floods pose the most serious natural hazards in Vietnam, the Central Committee for Flood and Storm Control (CCFS) was formed, and the structure of the committee is replicated in each sectoral ministry.[48]

Vietnam set up a multi-ministerial National Climate Change Committee under the Prime Minister's Office with the Ministry of Natural Resource and the Environment (MONRE) bearing the main responsibility for climate change actions in Vietnam.[49] The National Target Program (NTP) to Respond to Climate Change lays down climate-related main activities and targets including the vision to integrate such measures within sectoral and local development strategies and plans. Indeed, adapting to climate change and reducing the likelihood of natural disasters occurring is explicitly called for in the national development plan 2016-2020.[50]

While efforts towards mainstreaming policies have been taking place, institutional integration does not seem to follow suit as each sector continues to carry out their respective climate-related initiatives.

DISCUSSION AND CONCLUSION

In ASEAN, regional cooperation for climate change adaptation and disaster risk reduction are mainly forged at the policy level. Unlike the ASEAN Coordinating Centre for humanitarian assistance on disaster management (the AHA Centre) that coordinates disaster response at a regional level, climate change adaptation and disaster risk efforts in the region are not managed by a dedicated regional institution. Instead, collaboration in these areas mostly takes place at the sectoral level and is facilitated by the ASEAN Secretariat, as exemplified in the Declaration on Institutionalizing the Resilience of ASEAN and its Communities and Peoples to Disasters and Climate Change. The ASEAN Environment Division compiles national reports pertaining to environment-related initiatives and monitors their progress.

Table 2. DRR-CCA-Development Policies Integration in ASEAN

Member States	National development plan	Inclusion of CCA policy and strategy	Inclusion of DRR	Source of verification
Brunei	Brunei Vision 2035	Not clear	Not clear	Brunei Vision 2035
Cambodia	Cambodian National Development Plan 2014-2018	Yes	Yes	RGoC 2014
Indonesia	RPJMN 2015-2019	Yes	No	Gov Report/ UNISDR
Lao PDR	National Socio-Economic Development Plan III 2016-2020	Yes	Yes	GoL-PDR 2016
Malaysia	Malaysia Plan 2016-2020	Yes	Yes	GoM 2016
Myanmar	Myanmar Development Plan 2016/2017-2021/2022	N/A	N/A	In process
Philippines	Philippine Development Plan 2011-2016	Yes	Yes	GoP 2011
Singapore	Several planning documents	Yes	Yes	Various documents (See Section 4.8)
Thailand	National Economic and Social Development Plan 2012-2016	Yes	Yes	UNISDR
Vietnam	Five-Year Plan 2016–20 Sustainable Development Plan 2011-2020	Yes	Yes	World Bank 2016 GoV 2011

At the national level as seen in Table 2, ASEAN member states have generally been aware of the strong linkage between climate change adaptation and disaster risk reduction. In terms of policy instruments, the region is on the right track to main-streaming and integrating the two sectors. Most countries in the region already have a dedicated Law governing disaster management, and action plans for climate change adaptation are largely in place. National development plans in many countries have acknowledged the need to address disaster risk reduction and climate change adaptation simultaneously. Although disaster risk reduction and climate change adaptation have been mainstreamed in national development plans, institutional integration is not yet in the horizon. Maintaining and strengthening cross-sectoral and multi-level collaboration is therefore critical to ensure the effective implementation of integrated disaster risk reduction and climate change adaptation efforts.

The absence of institutional integration notwithstanding, ASEAN member states have made significant strides by considering disaster and climate change issues in their long-term and medium-term national development policies. For example, in Indonesia, the mid-term national development plan or RPJMN for 2015-2019 has prescribed improved spatial planning, enhanced organisational or institutional mechanisms, and better human resources as the foundation for cities' resilience against climate change and disaster risk. In Cambodia, the Cambodian National Development Plan 2014-2015 has paid a lot of attention to both disaster and climate change although the extent of institutional and agenda integration at national and local levels remains unknown.

At least five ASEAN member states have recently developed their mid-term (5-year) development plans, such as Indonesia (2015-2019), Malaysia (2016-2020), Lao PDR (2016-2021), Myanmar (2016/2017-2021/2022) and Vietnam (2016-2021). The others will develop their medium-term development planning policy documents in 2017 (Philippines and Thailand). It is therefore important to observe how well these national development planning documents consider disaster and climate change.

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[1] Compilation of Metadata Received on Indicators for Global Monitoring of the Sustainable Development Goals and Targets, 23 October 2015, http://unstats.un.org/sdgs/files/Metadata%20Compilation%20for%20SDG%20Indicators%2023%20October%202015%20Update.pdf [Last accessed 5 December 2016]

[2] The United Nations Office for Disaster Risk Reduction, Sendai Framework for Disaster Risk Reduction, http://www.unisdr.org/we/coordinate/sendai-framework [Last accessed 19 December 2016]

[3] ASEAN Vision 2025 on Disaster Management http://www.asean.org/storage/2012/05/fa-220416_DM2025_email.pdf [Last accessed 1 December 2016]

[4] One Humanity: Shared Responsibility - Report of the Secretary-General for the World Humanitarian Summit - United Nations General Assembly A/70/709

[5] Schipper, L and Pelling, M. 2006. Disaster risk, climate change and international development: scope for, and challenges to, integration. Disasters 30(I):19-38

[6] Rivera C. Integrating Climate Change Adaptation into Disaster Risk Reduction in Urban Contexts: Perceptions and Practice. PLOS Currents Disasters. 2014 January 15 . Edition 1. doi: 10.1371/currents.dis.7bfa59d37f7f59abc238462d53fbb41f

[7] Lassa, J. (Forthcoming) Tracking Climate Change Adaptation Vision inside the Disaster Management Policy in Indonesia: Legal and Network Approaches

[8] Bündnis Entwicklung Hilft (Alliance Development Works) and United Nations University-Institute for Environment and Human Security (UNU-EHS), 2014, WorldRiskReport 2014, https://i.unu.edu/media/ehs.unu.edu/news/4070/11895.pdf [Last accessed 5 December 2016]

[9] Bündnis Entwicklung Hilft (Alliance Development Works) and United Nations University-Institute for Environment and Human Security (UNU-EHS), 2016, WorldRiskReport 2016 http://collections.unu.edu/view/UNU:5763#viewAttachments [Last accessed 5 December 2016]

[10] World Economic Outlook Database October 2016" https://www.imf.org/external/pubs/ft/weo/2016/02/weodata/index.aspx [Last accessed 30 November 2016]

[11] EM-DAT: The International Disaster Database http://emdat.be/ [Last accessed 13 December 2016]

[12] Kreft, S., Eckstein, D., Dorsch, L. Fischer, L. (2016). Global climate risk index 2016. Who suffers most from extreme weather events? Weather-related loss events in 2014 and 1995 to 2014. Bonn: German Watch. germanwatch.org/de/download/16411.pdf [Last accessed 13 December 2016]

[13] Brunei Darussalam's Intended Nationally Determined Contribution (INDC), 2015, www4.unfccc.int/Submissions/INDC/Published%20Documents/Brunei/1/Brunei%20Darussalam%20INDC_FINAL_30%20November%202015.pdf [Last accessed 21 November 2016]

[14] National Council On Climate Change Set Up With His Majesty's Consent, Knowledge Center on Climate Change, 14 February 2011 http://climatechange.searca.org/index.php/climate-change-news/brunei/460-national-council-on-climate-change-set-up-with-his-majestys-consen [Last accessed 21 November 2016]

[15] Royal Government of Cambodia, 2014, National Strategic Development Plan 2014-2018. Endorsed on 17 July 2014

[16] Nguyen, Shaw and Prabhakar, 2015, "Climate change adaptation and disaster risk reduction in Cambodia" In Climate Change Adaptation and Disaster

Risk Reduction: An Asian Perspective, pp. 59-79.

[17] Royal Government of Cambodia, 2014, National Strategic Development Plan 2014-2018, http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-bangkok/documents/genericdocument/wcms_364549.pdf [Last accessed 28 November 2016]

[18] Report Cambodia's Inputs to the Post-2015 Framework on Disaster Risk Reduction (the Hyogo Framework for Action 2), 2013, www.unisdr.org/files/31995_posthfaconsultationcambodia.pdf [Last accessed 21 December 2016]

[19] See details at CHS Alliance http://www.chsalliance.org/news/latest-news/chs-khmer [Last accessed 29 November 2016]

[20] Pristiyanto 2016. QUO VADIS BPBD? Pujiono Centre, Indonesia [unpublished paper]

[21] BNPB 2015, National progress report on the implementation of the Hyogo Framework for Action (2013-2015) – Government of Indonesia Report to UNISDR

[22] Ibid.

[23] Lao People's Democratic Republic National progress report on the implementation of the Hyogo Framework for Action (2013-2015), 9 January 2015

[24] Ibid.

[25] Development Finance for the 8th National Socio-Economic Development Plan and the Sustainable Development Goals in Lao PDR, Funded by UNDP http://www.asia-pacific.undp.org/content/dam/rbap/docs/meetTheSDGs/Laos%20PDR%20DFA%20-%20Development%20Finance%20for%20the%208th%20Nat%20Socio-Economic%20Dev%20Plan%20and%20the%20SDGs.pdf [Last accessed 29 November 2016]

[26] Government of Lao PDR, 2014, Plan of Action for Disaster Risk Reduction and Management in Agriculture, Ministry of Agriculture and Forestry, http://www.fao.org/3/a-at540e.pdf [Last accessed 29 November 2016]

[27] Lao People's Democratic Republic, Ministry of Planning and Investment, 2015, Five Year National Socio-Economic Development Plan VIII (2016-2020) http://rightslinklao.org/wp-content/uploads/downloads/2016/03/Draft_8th_NSEDP_2016-20.pdf [Last accessed 30 November 2016]

[28] Official Statement by H.E. Tan Sri Muhyiddin Mohd Yassin, at the Third United Nations World Conference on Disaster Risk Reduction, 2015, http://www.preventionweb.net/files/globalplatform/ministerialstatementmalaysiafinalre.pdf [Last accessed 21 December 2016]

[29] Datuk Mohamed Thajudeen Abdul Wahab, National Security Council, 2011, Integrating Climate Change Adaptation and Disaster Risk Reduction, http://www.ukm.my/seadpri/wp-content/uploads/2011/11/Paper-1-NSCCA_MKN.pdf [Last accessed 6 December 2016]

[30] Economic Planning Unit, Prime Minister's Department, Eleventh Malaysia Plan 2016-2020, http://rmk11.epu.gov.my/index.php/en/ [Last accessed 6 December 2016]

[31] Department of Relief and Resettlement and Asian Disaster Preparedness Center, 2009, Institutional Arrangements for Disaster Management in Myanmar, http://www.preventionweb.net/files/14637_14637Binding1.pdf [Last accessed 6 December 2016]

[32] Myanmar's National Adaptation Programme of Action (NAPA) to Climate Change, 2012, http://unfccc.int/resource/docs/napa/mmr01.pdf [Last accessed 6 December 2016]

[33] Ministry of Natural Resources and Environmental Conservation (MoNREC), the Republic of Union of Myanmar, 2016, Final Draft of Myanmar Climate Change Strategy and Action Plan (MCCSAP) 2016-2030, http://myanmarccalliance.org/mcca/wp-content/uploads/2016/07/MCCA-Strategy_ActionPlan_11July2016V1.pdf [Last accessed 6 December 2016]

[34] NCEA and MoF, 2009, National Sustainable Development Strategy for Myanmar. http://faolex.fao.org/docs/pdf/mya152933.pdf [Last accessed 30 November 2016]

[35] National Disaster Risk Reduction and Management Plan (NDRRMP) 2011□2028 http://www.ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf [Last accessed 24 November 2016]

[36] Office of the President of the Philippines Malacanang, Climate Change Commission, National Framework Strategy on Climate Change http://www.neda.gov.ph/wp-content/uploads/2013/10/nfscc_sgd.pdf [Last accessed 26 November 2016]

[37] Philippine Development Plan 2011-2016, Conservation, Protection & Rehabilitation of the Environment & Natural Resources http://www.neda.gov.ph/wp-content/uploads/2013/09/CHAPTER-10.pdf [Last accessed 26 November 2016]

[38] Republic of Singapore, 1999, Country Report on Disaster Reduction Measures, http://www.adrc.asia/countryreport/SGP/SGPeng98/#_Toc449866871 [Last accessed 6 December 2016]

[39] Shanmugam, K., 2015, Singapore: Statement made at the Third UN World Conference on Disaster Risk Reduction (WCDRR), http://www.preventionweb.net/english/professional/policies/v.php?id=44011 [Last accessed 6 December 2016]

[40] Singapore's National Climate Change Strategy, 2008, https://www.elaw.org/system/files/Singapore_Full_Version.pdf [Last accessed 22 November 2016]

[41] National Climate Change Secretariat, Inter-Ministerial Committee on Climate Change, https://www.nccs.gov.sg/about-nccs/inter-ministerial-committee-climate-change [Last accessed 22 November 2016]

[42] Nirawan Pipitsombat, The Office of Climate Change Coordination, The Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment, Thailand Climate Policy: Perspectives beyond 2012, http://eeas.europa.eu/delegations/thailand/documents/thailande_eu_coop/environment_energy/onep_climate_policy_en.pdf [Last accessed 6 December 2016]

[43] Rujira Chariyaphan, Department of Disaster Prevention and Mitigation (DDPM), Ministry of Interior, Thailand's Country Profile, 2012, http://www.adrc.asia/countryreport/THA/2012/THA_CR2012B.pdf [Last accessed 6 December 2016]

[44] Louis Lebel, Phimphakan Lebel, Rajesh Daniel, 2015, "Chapter 17 Water Insecurities and Climate Change Adaptation in Thailand" in Climate Change Adaptation and Disaster Risk Reduction: An Asian Perspective. Published online: 10 March 2015; pp. 349-372

[45] National Economic and Social Development Board of Office of the Prime Minister, 2011, The Eleventh National Economic and Social Development Plan (2012-2016), Bangkok http://www.nesdb.go.th/nesdb_en/ewt_dl_link.php?nid=3786 [Last accessed 12 November 2016]

[46] The International Disasters Database (EM-DAT) http://www.emdat.be/ [Last accessed 28 November 2016]

[47] Viet Nam Sustainable Development Strategy for 2011-2020 http://www.chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails?categoryId=30&articleId=10050825 [Last accessed 21 December 2016]

[48] Huy Nguyen, Rajib Shaw, 2010, Chapter 18 Climate change adaptation and disaster risk reduction in Vietnam" In Shaw, Pulhin and Pareira eds, Climate Change Adaptation and Disaster Risk Reduction: An Asian Perspective, pp. 373-391

[49] Le Minh Nhat, April 2015, National Strategies on Integrating Climate Change Adaptation, http://www.slideshare.net/napcentral/nap-expo-2015-session-vii-ii-national-strategies-on-integrating-climate-change-adaptation-vietnam [Last accessed 28 November 2016]

[50] National Assembly of Viet Nam, Resolution on Five-year Socio-economic Development Plan 2016-2020, http://www.chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails?categoryId=30&articleId=10057712 [Last accessed 28 November 2016]

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