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Community based Flood Management & Mitigation in Japan:
A Comparative Study of Myanmar and Japan

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This study "Community based Flood management & mitigation in Japan: A Comparative study of Myanmar and Japan" is an outcome of the research to fulfill the requirement of the Visiting Researcher program of Asian Disaster Reduction Center, Japan. The main objective of the research is to examine the present issues of community based to Flood management& mitigation in Japan. To fulfill the objective I got fullest supports and cooperation from all ADRC researchers. I am very happy for their continuous support to me.

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Chapter 1 RESEARCH BACKGROUND

1.1 Background and Significance

Disaster is defined as "a serious disruption of the functions of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using only its own resources. Each disaster has lasting effects, both to people and property. For instance, floods, fires, landslide, cyclone or typhoon (windstorm) and earthquakes are natural disaster that has affected many individuals and families every year in the world. Disaster preparedness is always vital in disaster management which can reduce the impacts of disasters. In Myanmar, Flood has considered as a regular occurrence disaster so, its mitigation and preparedness has got high concentration in Myanmar, in the same time, the community participation is also considered as an integral part of the flood mitigation and preparedness in Myanmar,.

Community participation in flood preparedness planning and mitigation process is a process of involving all local stakeholders. More local inputs and involvement at the planning stage will create a more responsive participation in flood management. Regarding the flood preparedness planning process, Natural Disaster Management Law of 2013 stated that local community should be involved and to be recognized the main actors. An integrated approach involving many stakeholders can generate additional benefits in flood management and also reduce conflicting interest between the government agencies, stakeholders and promote an endogenous knowledge in disaster management.

It is important not only to promote prevention and mitigation to reduce flood risks attributed to Tsunami, landslide, drought, sediment-related disasters, storm surge disasters, but also to secure sound river/coast ecosystems and water/material cycles. To this end, observational systems should be enhanced, and social structure needs to be changed to be more disaster-resistant, in addition to conventional prevention and mitigation measures. Each citizen needs to be aware that water-related disasters are likely to be intensified and frequent due to climate change and that river and coast environments will be different. It is necessary to build "a strong society adapted to Water-related disasters like water-disaster adaptation society, in which sustainable socio-economic activity and livelihood are possible through an appropriate combination of adaptation and mitigation.

1.2 Myanmar Profile in Short

The Republic of the Union of Myanmar, located between 90°32' N & 28°31' N latitude and 92°10' E & 101°11'E longitude with total area of 676,578 sq. km is the second largest country in South-east Asia. Its north-south length is 2200 km while east-west breadth is 925 km. It is surrounded by China in north and north east, Lao PDR and Thailand in east and southeast, India, Bangladesh in west while Bay of Bengal & Andaman sea in west and south. Myanmar is vulnerable to various types of disasters. Floods, landslides, earthquake, fire and drought are some natural disasters which occur very frequently in Myanmar. In addition, the impacts of climate change have been observed in environment and livelihood of rural people of Myanmar. There has been general realization that communities are the heart and soul of disaster risk management. They can identify their own risks and

vulnerabilities along with capacities and available resources as well as their own needs. In Myanmar, 360 disasters affected 174,358 people and property lost cost (853.39 million Kyats) in the last fiscal year. Myanmar is ASEAN member states agreed to empower the existing ASEAN mechanisms and actions to improve prevention, preparedness and response in a more coordinated manner in line with ASEAN Agreement on Disaster Management and Emergency Response. In Myanmar, the disaster management law has been enacted on 31 July 2013 prioritizing to assist the vulnerable group such as children, the aged, disability and women. The disaster management actions are being taken by linking with Hyogo framework for actions and ASEAN Coordination Centre for Humanitarian Assistance on Disaster management in Jakarta, Indonesia.

1.3 Specific Aims in the Research

The main aim of this study is to study the best practices of community participation in flood preparedness planning and mitigation process in Japan and recommend in the context to Myanmar's position. The followings are the specific aims to achieve the main aim.

- To study best practices of community participation in flood preparedness planning and mitigation process in Japan
- Look at the roles of government organizations and NGOs involvement in flood preparedness planning in Japan
- To get learned from Japan and make recommendation the best practices of flood management into Myanmar

1.4 Desired Field of Research

Flood preparedness and Mitigation requires a realistic and competent planning that improves the response to the effects of a disaster by organizing the delivery of timely and effective rescue, relief and assistance. The policy frameworks have to include community participation in flood preparedness planning that community residents be involved in the decision-making on planning, developing and managing of disaster.

With regard to flood preparedness planning process in Myanmar, there is little or no attention paid to local needs and interest and lack of community participation in planning and implementation. Concerning to flood preparedness planning in Myanmar, there is lack of clear objectives and policy guidelines. Although Myanmar has Natural Disaster Management Law, but there is still need to have creation of specific regulation for flood management. In addition to this, local authorities are not aware for involving local community in flood preparedness planning and mitigation process. To accomplish this study following research activities will be conducted.

- Community participation in flood management planning and mitigation process in Japan
- Relations between government organizations and local community in flood management in Japan
- Flood Preparedness planning system and involvement of the community in Japan
- Field visit and observe community based flood monitoring and control

systems.

- Field visit and observe the early warning system in Japan

1.5 Required Data and Information and Potential Resources

It is true that community participation in flood management planning and mitigation process in Japan is highly commendable. The best practices of community participation in flood preparedness planning in Japan could be replicated in Myanmar. The government and the local community both can be benefited by introducing the best practices of Japan in the area of Disaster Risk Reduction, especially focusing on flood management and mitigation process. After the completion of the research, research findings will be published in the journals. This research finding will be shared in report in the offices, related to disaster management in Myanmar. Series of seminars will also be organized to disseminate research results for wider audiences. In addition, the results will be presented in disaster preparedness workshops at regional level.

1.6 Expected Results

It has been seen in Japan that the community participation is highly commendable and praiseworthy. The best practices of community participation in disaster preparedness planning in Japan could be replicated in Myanmar. The government and the local community both can be benefited by introducing the best practices of Japan in the area of Disaster Risk Reduction.

We all know that Japan has made a significant achievement of mobilization community in the process of flood mitigation process, it has encouraged through

the prefectural and city level disaster management structure, especially creating the Bonsai Community at each and every level, has show the world community for the better management of any kind of devastated disaster, especially earthquake and flood. The learning from the research will be highly beneficial to other community that is in road ahead, like Myanmar. They will get some more benefit of some of the other areas like:

- Overall Disaster Management Mechanism, especially focusing on flood mitigation in Japan
- Flood Management system of Japan
- Public Education Programs on Disaster Risk Reduction
- Community involvement in flood management planning and mitigation process in Japan

1.7 Chapter Plan

Regarding the composition the report, it is divided into 4 chapters. First chapter deals with the research methods base. Second chapter highlights the Myanmar geo-political situation whereas the risk and rank of disaster in Myanmar clarified in subsequent chapter. This chapter deals with the community participation status and position in Myanmar focusing on disaster management and flood mitigation and preparedness with proper national Institutional setup. The chapter three describes about the Japanese practices along with the same patter as of Myanmar. The fourth chapter concludes the comparison between Myanmar and Japan community participation issues with lesson learned and findings.

1.8 Application of the research results

After the completion of the research, research findings will be published in the journals. Series of seminars will also be organized to disseminate research results for wider audiences. In addition, the results will be presented in disaster preparedness workshops at regional level.

- To upgrade and to learn lessons for flood Management of Myanmar
- To improve flood-targeted Early Warning System of the country
- To have better involvement of communities in flood management planning and mitigation process

1.9 Limitation of the Research

This research has limited stock view from the field, it has more concentrated on web-based information, so it might not find the realistic views. The secondary data is the main source and all limitation with secondary data also applies to here. It might lacks the basic or primary data, as the performance level can be derived from the beneficiary level. The report is totally based on the conversations with the designated authorities at different disaster management institutions of Japan, some lecture and classes from experts and some official visit. The web addresses of different disaster management related institution both at Myanmar and Japan, along with the international institutions working in this area are the main source of information and findings that may limit the scope and findings validity.

Chapter 2 DISASTER AND COMMUNITY PARTICIPATION IN MYANMAR

2.1 Myanmar

The estimated population of Myanmar (2011) is 54 million which accounts for 0.74% of world population. The population density is 79 per km^2 and 70 percent of the population reside in rural areas. Sex ratio of total population is 0.989 male per female. Myanmar has tropical climate with three seasons, namely rainy, winter and summer. The rainy season comes with the southwest monsoon, lasting from mid-May to mid-October, followed by the winter from mid-October to mid-February while Summer is from mid-February to mid-May. The average annual rainfall in the coastal regions of the Rakhine and Tanintharyi is in the range of 4000 to 5600 mm, while in Ayeyarwady delta it is approx 3300 mm. The extreme north receives rain between 1800 mm and 2400 mm while hills of the east between 1200 mm and 1400 mm. The central dry zone has rain between 600 and 1400 mm. The average temperature experienced in the delta ranges from 22°C to 32°C, while in the central region is between 20°C and 34°C. The temperature in hilly region is between 16°C and 29°C.

2.3 Disasters Profile

Myanmar is exposed to multiple natural hazards which include cyclone, storm surge, floods, fire, forest fire, earthquake, tsunami, drought and landslide. According to 10-year record from 1998-99 to 2008-09, the outbreak of fire is about 71 % and it is the most frequent and highly loss among others. It is found that flood 11 %, storm 10 % and other type of disaster 8 %. The causes of fire are hot

weather, use of unsafe electrical materials and flammable construction materials, and negligence of people. In the central dry zone and upper regions of Myanmar, fires breakout the year round and only in winter and summer in other parts of the country. On average, 120 cases of urban fire occurred annually during the 10 years period with average losses of 1212 million Kyats a year.

Myanmar is a heavy rainfall country. The monsoon period, called the rainy season, is from June to September. The heaviest rainfall is in the mid season (July and August). During this period floods occur almost every year along the Chindwin river at Hkamtee and environs, Ayeyarwady river at Hinthada District and Letpadan, Thanlwin river at Paan District, and Sittaung river at Shwekyin, Madauk area. Myanmar is located to the east of the Bay of Bengal with a long coastline. Tropical cyclones usually form in the Bay of Bengal in pre-monsoon (April-May) and post-monsoon (October-November). Annually, about 10 tropical cyclones and depressions form in the Bay of Bengal and out of them almost five become severe cyclones and cross the coasts of India, Bangladesh and Myanmar. Of these cyclones, 90 percent crossed the Rakhine coast, 7 percent the Ayeyarwady delta coast and the remaining 3 percent crossed the Tanintharyi and Mon coasts.

Myanmar lies in a major earthquake zone known as the Alpine Himalayan Belt. This zone accounts for about 15 percent of world earthquakes and Myanmar is a country in danger of earthquake. Landslides occasionally occur in the northern part of Myanmar such as Chin State, Kachin State and Shan State. These localities are sparsely populated or non- populated hilly regions. Therefore the effect of landslides is negligible. The main causes of landslides are heavy rainfall and

earthquake. Tsunami disaster is very rare in Myanmar and Sumatra earthquake and Indian Ocean Tsunami 2004 was the first tsunami experience of the modern time. Myanmar is also severely impacted by the effects of global climate change with the Climate Risk Index (CRI) of 8.25 being the second after Bangladesh with CRI of 8.0. Cyclone Mala April 2006, Cyclone Nargis May 2008, Cyclone Giri October 2010, Tarley earthquake March 2011(RS 6.8), Pakkoku Flash Flood October 2011 and Thabeikgyin earthquake November 2012 (RS 6.8) were major disasters in Myanmar.

2.4 National Mechanism in Disaster Management

After 2004 Indian Ocean Tsunami, the National Disaster Preparedness Central Committee, the policy formulating body, was formed with the Chairmanship of the Prime Minister. After the new government took over its responsibility in March 2011, the National Disaster Management Agency which was chaired by the Union Minister for Social Welfare, Relief and Resettlement was formed in April 2011. Then, according to changing political structure and demanding disaster situations, the 23-membered National Disaster Preparedness Central Committee has been reformed in May 2013 with the chairmanship of Vice President.

Under the Central Committee, the National Disaster Preparedness Management Working Committee has been formed. The Union Minister for Social Welfare is chairman in the management working committee. The Management Working Committee comprises (9) members. To implement preventive measure, relief and reconstruction tasks sector-wise, ten Sub-committees led by ministers concerned were formed under the Working Committee:

- Sub-committee for Information and Education
- Sub-committee for Emergency Communication
- Sub-committee for Search and Rescue
- Sub-committee for Information of Losses and Emergency Assistance
- Sub-committee for Clearing Ways and Transportation
- Sub-committee for Mitigation and Establishing of Emergency Shelter
- Sub-committee for Health
- Sub-committee for Assessment of Losses
- Sub-committee for Rehabilitation
- Sub-committee for Security

The State/Region Working Committees and District, Townships, Wards/Village-Tracts Working Committees for Disaster Prevention are also organized. National plan for nine potential hazards in Myanmar is in place. Disaster prevention and preparedness plans are developed in all States /Region (Provincial) level. Township level plans are developed in high risk townships.

2.5 Legal Framework for Disaster Management

National Disaster Preparedness Central Committee issued Standing Orders on Natural Disaster Management in 2009. It can be applied as the Standard Operation Procedure for disaster response. The Natural Disaster Management Law was enacted on 31 July 2013. The law is developed to be in line with Hyogo Framework for Action (2005-2015) and to comply with the ASEAN Agreement on Disaster Management and Emergency Response (AADMER). The Law includes the provisions for formation of disaster management bodies and their duties and

responsibilities for all phases of disaster, establishment of disaster management fund at national and Region/State level. The Law also provides the guidance to carry out the measures of disaster risk reduction along with the development plans in the country. Drafting process for the rules and regulations under this law was accomplished and the approval of the parliament is under way.

2.6 Focal Point for Disaster Management

In Myanmar, focal ministry for disaster management is the Ministry of Social Welfare, Relief and Resettlement. It also serves as the secretariat of NDPCC. Under the Ministry, there are two Departments: Social Welfare Department (DSW) and Relief and Resettlement Department (RRD). While DSW is taking the responsibilities to fulfill the social needs of Myanmar citizens, RRD is responsible for conducting Disaster Management activities in accordance with the international norms and standards. RRD is focal point of the ASEAN Committee on Disaster Management (ACDM). Provide emergency assistance for the victims of natural disasters for ensuring immediate relief and Conduct preventive measures to reduce the loss of lives and properties due to disasters are the main Objectives of Relief and Resettlement Department in Myanmar.

Main Tasks of the Department is to implement above objectives of the social protection with the five tasks categorically to provides emergency assistance for the disaster victims, reintegration for the drifters who stranded to oversea countries because of various reasons, the provision of assistance for the Internally Displaced Persons due to insurgency, the provision of assistance to the populations who suffer from famine as a consequence of damage of crops due to abnormal weather or

insect infections and coordinates with the Governmental Departments, UN agencies, International Non- Governmental Organizations, Local Non-Governmental Organizations and Social Organizations for the disaster prevention, preparedness and disaster risk reduction measures.

2.7 Myanmar Action Plan on Disaster Risk Reduction (MAPDRR)

The Myanmar Action Plan on Disaster Risk Reduction (MAPDRR), that provides a framework for multi-stakeholder engagement on disaster risk reduction in the country, was prepared with substantial consultation with various stakeholders. MAPDRR's goal is "to make Myanmar Safer and more Resilient against Natural Hazards, thus Protecting Lives, Livelihood and Development Gains". MAPDRR identifies (65) projects that need to be implemented to meet the Government's commitments to HFA and the ASEAN Agreement on Disaster Management and Emergency Response (AADMER). MAPDRR was launched in 2012, and some projects are under the implementation.

2.8 Cooperation with the Partners

Relief and Resettlement Department has signed Memorandum of Understandings with United Nations Office for the Coordination of Humanitarian Assistance (UNOCHA) and UNHABITAT for cooperation of disaster response and disaster risk reduction. Up to July 2014, there are also ten International Non-Government Organizations are cooperating with RRD through MOU to carry out disaster risk reduction and rural development which can contribute as one of the poverty reduction programs. Being Chair of Disaster Risk Reduction Working Group (DRRWG), RRD is also working with UNDP, co-chair of DRRWG.

2.9 The Disaster Management Training Centre (DMTC)

The government approved establishment of the Disaster Management Training Centre (DMTC) in order to build up the capacity of people implementing disaster management activities. The DMTC will build upon the existing pool of experts within the Relief and Resettlement Department and the existing Disaster Management Course, which has supported capacity development of officials from Government Departments and Social Organizations, since 1977. DMTC will be located in Hinthada Township in Ayeyarwaddy Region. The Ministry of Social Welfare, Relief and Resettlement is now undertaking the three-year plan (2013-2015) for establishment of DMTC. Under Phase 1 (2013-2014), construction of the three main buildings is now underway. The Ministry is collaborating with international and local partners to mobilize the technical and financial resources for human resource and institutional capacity development, for infrastructure development, for the development of Curriculum and procurement of Teaching Aids and networking and partnership with International and Regional Training Institutes and Centers.

2.10 Emergency Operation Centre

With the aim to provide the supports for emergency management, response and logistic through information sharing on network and quick decision making, the Ministry of Social Welfare, Relief and Resettlement plans to set up Emergency Operation Centre (EOC). To receive Monitoring/ Watching weather related information and early warnings, to develop research on disasters occurred in Myanmar, to develop the response plans for each type of disaster, to exchange

weather information with local/ international organizations, to make documentation of disaster information, distribute/coordination and to report the news acquired from affected area to the higher levels in emergency situation timely and continuously are major functions of EOCs.

2.11 Myanmar Disaster Loss and Damage Database

The Myanmar Disaster Loss and Damage Database has now been initiated by the Relief and Resettlement Department with the objective to develop national capacities for monitoring and analyzing risks and vulnerabilities to support disaster risk reduction, mitigation, preparedness, response and recovery. The National framework for the database has been finalized and the pilot data collection is now under-way. The database could be linked with the Regional and global networks in the near future.

2.12 Improvement for Early Warning

Department of Meteorology and Hydrology (DMH) generates weather forecast and early warnings for cyclone, storm surge and flood. Color-coded cyclone warning message was started to use in 2009, as an attempt to make early warning message to be user friendly. Once the early warning on disaster is issued by DMH, it is informed to the public through media and TV. In order to improve the quality and accuracy of the weather forecast and early warning, DMH still needs to upgrade the capacity of equipment and tools for weather forecast.

The DMH organizes Monsoon Forum as a mechanism for fostering a closer dialogue between forecast producers and users to enhance the uptake of weather

and climate forecasts for disaster mitigation. The broader goal of the Forum is to build the national capacity to mitigate disaster risks by linking national hydro-meteorological agencies to sectors that are vulnerable to climate risks, notably agriculture, water resources, health, and disaster management.

RRD is also implementing the End-to-End Early Warning system project in collaboration with DMH, General Administrative Department and JICA to enhance the capacity of the Government official and the community. The pilot projects for Ayeyarwaddy and Rakhine have been implementing. UN and NGOs are likewise assisting in the production of IEC materials related to early warning as well as on public awareness. The use mobile phone SMS for early warning is also being explored.

2.13 Tasks to be performed during Floods disasters

The following tasks should be performed during floods.

(a) Report floods immediately to the National Committee for Natural Disaster Management and Inter-Ministerial Coordination Committee for Disaster Management;

(b) Present to the Inter-Ministerial Coordination Committee for Disaster Management and the Sub-Committees concerned and carry out prompt evacuation to predetermined safe areas during floods;

(c) Coordinate with departments, local and international NGOs to carry out emergency relief and advanced rescue operations in flood-affected areas;

(d) Coordinate with departments and NGOs to set up flood-relief camps and provide victims with temporary accommodation, meals, health care and security in real time;

(e) Provide prevention and health care services under the supervision and guidance of the Health Sub-Committee to prevent the outbreak of infectious diseases in flood affected areas;

(f) Work with the ministries concerned to compile lists on the loss of life, animals and property during floods;

(g) Issue press releases through the radio, television, newspapers and journals and organize press conferences periodically to prevent the spread of undesirable rumors during floods;

(h)Work with departments and NGOs for the prompt dissemination to the grassroots levels of the daily news reports issued by the Department of Meteorology and Hydrology during floods;

(i) Obtain expert appraisal of water inflows into the flood-affected areas and organize timely evacuation of people, animals and food supplies from low-lying areas to safe areas;

(j) Organize relief operations during floods, involving members of the fire brigade, Red Cross members and specialists;

(k) Assign security forces led by the Myanmar Police Force to evacuated areas to prevent looting of buildings and property by unscrupulous elements;

(l) Assign flood patrols to rivers, embankments, dams and irrigation ditches to monitor the potential for disaster continuously;

(m) Ensure access to necessary materials, equipment and machinery as well as manpower for emergency construction, reinforcement, repair and raising of embankments;

(n) Arrange for the temporary settlement of flood victims in predetermined shelter camps and provide meals, health care and security services.

2.14 Inclusion of DRR concepts and practices in School curricula and education material

The Ministry of Education (MoE) revised the General Science Subject for lower secondary school curriculum in 2006 and included the study on 'Earth and Space' with lessons on storms. The lower secondary Life Skills subject also covers Flood, Emergencies, Earthquake, Tsunami, Landslides and Fire. The revised upper secondary school curriculum includes a lesson titled 'Earthquake' in Grade 10 English and 'Earth Surface Process' in Grade 11 Geography. At the primary level, a chapter on Caution in Emergencies' is included. A complementary reading material that contains information on 8 disasters is available as a self-study booklet for Grade 5, 6 and 7 students. General Studies Textbook (Level 2) with 'Earthquake', 'Storms', 'Tsunami', and 'Preparedness' topics and a story book 'Be prepared' are available for Non-Formal Education. Recently, RRD along with State / Regional Government and MOE has incorporated Do's and Don't on various natural hazards into the student exercise book provided by the Government.

2.15 Youth Volunteer Network

Government has embarked on DRR Youth Volunteer program providing DRR related Training of Trainers (TOT) for young representatives from Ayeyarwaddy

Region and other regions. Those young volunteer will be serving as a leader of community disaster management committee then to become a change agent who can promote the necessary change in behaviors. It plans to scale up the initiatives.

2.16 Disaster risk reduction (DRR) is a national priority in Myanmar.

We have seen plenty of evidence that the natural disasters have adverse impacts on Social, economic and environmental states of a country. However, the evidences also demonstrate that disasters create opportunities such as in the case of 2008 cyclone Nargis which instigated profound changes especially in humanitarian landscape with the influx of humanitarian funds and the international humanitarian agencies. The disaster also opened up the eyes of the Myanmar people towards risk reduction approaches and their potentialities to defend themselves from future disaster happenings.

With the development of the national framework - Myanmar Action Plan on Disaster Risk Reduction (MAPDRR) - and the establishment of the associated institutional arrangements to oversee the achievement of MAPDRR's goals, DRR,and CBDRR as well have been elevated as a key priority in the national development process. With international partners more than willing to lend a hand in this endeavour, it is imperative that we take advantage of this drive for DRR excellence and strive for wider coverage of DRR and CBDRR initiatives.

2.17 CBDRR Stakeholders in Myanmar

The array of stakeholders involved in CBDRR approach is broad as it needs backings at different level: national, sub-national and local, covering not just DRR

actors but also agencies active in related sectors of development. For successful execution of CBDRR initiatives in Myanmar, this sub-section is devoted solely to study the diverse stakeholders at each level in order to have a good understanding of these important players.

2.18 National Level Stakeholders

Chiefly during the last decade, a considerable number of agencies have been seen actively engaged in DRR functions throughout Myanmar. As the holders of the decision making authorities at the highest level, the involvement of these bodies is critical for CBDRR implementation in the country in terms of political endorsement and official DRR resource allocation. At the national level, the key actors can be divided into two sectors: government and non-government.

The main DRR stakeholders in the government sector are: Ministry of Social Welfare, Relief and Resettlement (MSWRR) – the nodal ministry responsible for the country wide DRR as per the national and ministerial policy and plan on DRR. The Relief and Resettlement Department (RRD), one of the departments under the MSWRR, led the development of Myanmar Action Plan for Disaster Risk Reduction (MAPDRR) and is the DRR technical agency responsible for enhancing necessary knowledge and skills on DRR of government agencies at all level and educate people on matters related to DRR.

National Disaster Management Committee (NDMC) - constituted under the Chairmanship of the Union Minister of Social Welfare, Relief and Resettlement. The Union Minister for Defence and the Union Minister for Home Affairs are the

Vice Chairmen of MDPA. The Deputy Minister for Social Welfare, Relief and Resettlement is the Secretary and the Director General of Relief and Resettlement Department is the Joint Secretary. Myanmar Disaster Management Work Committee (DMWC) - constituted to provide effective disaster management mechanism with the support of 13 sub-committees. Myanmar National Search and Rescue Committee - constituted under the Chairmanship of the Minister for Home Affairs and co-chaired by the Minister for Social Welfare, Relief and Resettlement and the Minister for President Office.

The Deputy Minister for Social Welfare, Relief and Resettlement serves as the Secretary and the Director General for Relief and Resettlement Department is the Joint Secretary. The Committee has 17 members from the line ministries, relevant departments and social organization. Other Support Ministries and Departments - All line ministries and departments within the system of the Union Government of Myanmar have mandates to support DRR within their ministerial operations and, through their membership in NDMC and other related committees, are required to support the national DRR works. Many have actively invested time and efforts in mainstreaming risk reduction measures in their specific fields on their own or in collaboration with non-government organizations (NGOs).The main stakeholders in the non-government sector on national level are: Red Cross Movement - Myanmar Red Cross Society (MRCS), the national chapter of the international Red Cross movement, is the leading practitioner of DRR in Myanmar and the pioneer of the concept of CBDRR since 2000. It is supported mainly by the International Federation of Red Cross and Red Crescent Societies (IFRC) through IFRC country delegation in Yangon both technically and financially. Other Red Cross societies

actively involved in DRR in the country, that are also supporting technically and financially to MRCS' works and they are Australian Red Cross, American Red Cross, Hong Kong Red Cross, Danish Red Cross, Canadian Red Cross and French Red Cross. UN Agencies - Of all the UN agencies working in Myanmar, the most active organizations in the field of DRR are UNDP, UNESCO, UNICEF, UNHABITAT and UNOCHA. NGOs and Civil Society Organizations [CSOs] - There are 100 plus international and local NGOs and civil society organizations actively working in Myanmar in the field of DRR.

2.19 Sub-national Level Stakeholders

The main stakeholders at the sub-national level are: State/regional, district and township level government authorities - mainly the regional, township and district level disaster preparedness agencies consisting of representatives from relevant line departments (health, education, agriculture, general administration, etc.), administrative authorities, officers serving in the Relief and Resettlement and other related departments under the Ministry of Social Welfare, Relief and Resettlement, regional/ township/district education board and government affiliated mass organizations; Existing Red Cross structures - that include RC Supervisory Committees at sate/regional and district level, as well as Red Cross Executive Committees and the branch members at township level; and NGOs and CSOs - working at sub-national level including the private research and academic institutions.

2.20 Local Level Stakeholders

At the local or community level, the stakeholders can be identified as follows: Manual on Community-Based Disaster Risk Reduction Local authorities – village, ward level administrative bodies, village level disaster preparedness committees or village level equivalent of the MDPA, school authorities and teachers and government affiliated mass organizations; Red Cross branches at the local level made up of Red Cross Volunteers (RCVs) and specialized DRR structures on the ground - e.g., CBDRR multiplier team; NGOs and CSOs working at the grass-root level such as local level organizations; and Community - community leaders, students, local businesses and community member themselves. Their stake in CBDRR is the most meaningful of all as their participation in the process means they are having a say in changing their own fate. Attention is to be given to make sure most vulnerable groups in the community: women, children, aged, physically and mentally challenged and ethnic minorities are also included as stakeholders. Some of the sub-national and local level stakeholders might overlap when implementing a CBDRR intervention depending on the target recipients.

2.21 DRR Working Group

DRR Working Group was constituted under the Early Recovery Cluster during Cyclone Nargis recovery process in 2008. It is made up of various agencies: Government Departments, UN Agencies, INGOs, Red Cross Societies, local NGOs and academic institutions and its membership is open to any organizations working on or with interest in DRR. The DRR Working Group actively engaged and contributed to the Post-Nargis recovery planning on identifying disaster risk reduction issues for consideration and inclusion into recovery and reconstruction planning. The DRR Working Group mandate was later expanded and presently it

serves as a platform for DRR related agencies to participate, share and discuss further development of Myanmar DRR in various aspects through its monthly meetings. The focus thematic areas are:

- Support policy dialogue and strengthening institutions for DRR
- Community-based disaster preparedness and mitigation
- Building DRR knowledge and awareness (disaster research and assessments to inform program development)
- Mainstreaming DRR into other sectors.

The DRR Working Group is currently chaired by UNDP and co-chaired by Action Aid, Myanmar. The Steering Committee under the DRR Working Group with twelve selected members provides secretariat support and guides the activities. The number of members in the steering committee will be reduced to 11 as soon as the DRR WG Strategic Plan 2018 is finalized. Civil Society Forum on DRR Civil Society Forum (CSF) is also in place, at present under the leadership of local NGO, with the intention of further fortifying the DRR coordination mechanism within the non-state setting. It is the result of a partnership between Action Aid, ADPC, Mingalar Myanmar, Myanmar Red Cross Society (MRCS), Save the Children (SC) and United Nations Development Programme (UNDP) in 2009.

The CSF promotes information/ experience sharing and partnership building among DRR related agencies. Due to its newly formed status, its members are still discussing plans on how to expand its membership and to promote DRR to new members. However, CSF is already organizing wider consultations to involve local NGOs and CBOs at township and village levels to advocate for expansion of

community-based disaster risk management (CBDRM) practices in the country. So far three forums have been organized on this issue: 1st Forum on 'Community-Based Disaster Management Institutionalization' in March 2009 and 2nd and 3rd on general DRR issues. Local authorities – village, ward level administrative bodies, village level disaster preparedness committees or village level equivalent of the MDPA, school authorities and teachers and government affiliated mass organizations; Red Cross branches at the local level made up of Red Cross Volunteers (RCVs) and specialized DRR structures on the ground - e.g., CBDRR multiplier team; NGOs and CSOs working at the grass-root level such as local level organizations; and Community - community leaders, students, local businesses and community member themselves. Their stake in CBDRR is the most meaningful of all as their participation in the process means they are having a say in changing their own fate. Attention is to be given to make sure most vulnerable groups in the community: women, children, aged, physically and mentally challenged and ethnic minorities are also included as stakeholders.

CHAPTER 3 DISASTER MANAGEMENT AND COMMUNITY PARTICIPATION IN JAPAN

3.1 Disasters in Japan

Every year there is a great loss of people's lives and property in Japan due to disasters. Up until the second half of 1950s, numerous large-scale typhoons and earthquakes caused extensive damage and thousands of casualties. However, with the progress of society's capabilities to address disasters and the mitigation of vulnerabilities to disasters by developing disaster management systems, promoting national land conservation, improving weather forecasting technologies, and upgrading disaster information communications systems, disaster damage has shown a declining tendency.

3.2 Information and Communications Systems

The development of a quick and accurate communications system is essential for the effective use of disaster early warning information. For this purpose an online, system has been built, linking the JMA with disaster management organizations of the national and local governments and media organizations. Disaster management organizations have also been developing radio communications networks exclusively for disasters: the Central Disaster Management Radio Communications System, which connects national organizations; the Fire Disaster Management Radio Communications System, which connects firefighting organizations across the country; and prefectural and municipal disaster management radio communications systems, which connect local disaster management organizations and residents.

The Cabinet Office has established the Central Disaster Management Radio Communications System to link with designated government organizations, designated public corporations and local disaster management organizations, providing communications by telephone, fax, data transmission, TV conferencing and transmission of pictures of disaster situations from helicopters. Furthermore, to provide backup for terrestrial communications, services such as a satellite mobile-telephone communications system for municipal governments have been launched in 2011.Simultaneous wireless communications systems using outdoor loudspeakers and indoor radio receivers are used to disseminate disaster information to residents. Tsunami and severe weather warnings are widely provided to citizens via TV and radio broadcasts.

3.3 Strom and Flood Countermeasures

3.3.1 Storm and Flood Disaster in Japan

Japan is prone to a variety of water and wind-related disasters including flooding, landslides, tidal waves and storm hazards, owing to meteorological conditions such typhoons and active weather-front systems and geographical conditions such as precipitations terrains and steep rivers, as well as settlement conditions in which many of the cities are built on river plains. One-half of the population of concentrated in possible inundation areas, which account for about 10% of the national land. Although there has been a large reduction in the area inundated by floods owing to soil conservation and flood control projects over many years, the amount of general assets damaged in flooded area has increased in recent years. Additionally, as a long-term trend, three is an increasing tendency of downpours

throughout the country.

3.3.2 Observation System

The Japan Meteorological Agency observes meteorological phenomena that cause storm and flood disaster using the Automated Metrological Data Acquisition System (AMeDAS), which automatically measures rainfall, air temperature and wind direction/speed weather radar, and geostationary meteorological satellites. These are use to announce forecasts and warning to prepare against disasters, as the weather warnings and advisories for individual municipalities began in May 2010. The rainfall and the water and the water levels in rivers are observed by the Ministry of land, Infrastructure, Transport and Tourism and prefectural governments visual observation methods, mechanical observation equipment, and wireless telemeter system that transmits automatically observed data from remote locations. Flood forecasts and water level information are provide utilizing the Internet and mobile phones.

3.3.3 Comprehensive Storm and Flood Countermeasures

In order to reduce damage caused by severe weather disasters, structural measures such as improving rivers, dams and sewage systems, and non-structural measures such as preparing hazard maps and providing disaster information, must be promoted in an integral manner. As non-structural countermeasures, the warning and evacuation systems of the possible inundation areas and landslide prone areas have been developed in accordance with the Flood Control Act and the Act on Promotion of Sediment Disaster Countermeasures for Sediment Disaster Prone Areas. Both laws were amended in 2005 to intensify measures including the

familiarization of hazard maps and the identification of a method to disseminate disaster information to facilities caring for those who require assistance at the time of a disaster like elderly people in the municipal disaster management plans. Based on the Flood Control Act, some 368 rivers subject to flood warning and 1,488 rivers subject to water-level notifications are designated. Of these, inundation risk areas are currently designated and published for 1,768 rivers and streams (as of February 2010). Moreover, municipalities that include such areas are encouraged to prepare and disseminate flood hazard maps. Currently some 1,137 municipalities are doing so (as of February 2010).

3.3.4 Storm and Flood Damage in Japan

Japan is a bow-shaped archipelago filled with steep mountain ranges. When cold winds blow in from Siberia in winter, the warm current flowing up the eastern coast from the south brings heavy snowfalls to the Sea of Japan side of the country. Among the seasonal problems that result every year are falls by people removing snow from their roofs, avalanches, and obstruction of traffic and city functions due to snow accumulation. In the winter of 2005–06, ferocious winds brought tremendous snowfalls to every part of the Sea of Japan coastline. Many people were injured from falls as they cleared snow from their roofs, while others were pinned by snow falling from rooftops or even by collapsing roofs. The death toll reached 152 the second-worst total for snow-related deaths since the end of World War II. Fatal accidents continued in subsequent years, with 47 people perishing in the winter of 2006–07, 21 in 2007–08 and 56 in 2008–09.

3.4 Risk Assessment

Flood risk is a product of the probability of occurrence of a flood hazard; the vulnerability of individuals, society, and the environment despite flood mitigation from a broad variety of measures implemented to dampen flood consequences through preparation, response, recovery and mitigation; and the consequences that result from the mitigated hazard event. Our understanding of flood risk is affected by our ability to identify and assess these hazards, vulnerabilities, and consequences; our ability to manage flood risk is enabled by our ability to coordinate our policies and actions with numerous partners across the risk management lifecycle to address these hazards, vulnerabilities and consequences. Flood risk management integrates and synchronizes programs designed to reduce flood risk, either in advance of or over a series of event cycles. Because of large-scale consequences (damage, fatalities, and disruption), especially of more extreme or more widespread floods, national governments in all four countries have assumed key roles in flood risk management, especially regarding setting objectives, prioritization of budget and emergency operations. Although the structure differs among the four nations, in all cases regional and local authorities, private parties, and the public have complementary roles. Risk assessment may need to be performed at different scales. While acknowledging differences in scale among the four countries considered, Section 2.1 considers the national level and Section.

3.5 DISASTER MANAGEMENT SYSTEM OF JAPAN

Overview of Disaster Management Planning in Japan can be visualized in different ways as it can be seen in doing three levels, namely,

3.5.1 National Level: Basic Disaster Management Plan - This plan is a basis for disaster reduction activities and is prepared by the Central Disaster Management Council based on the Disaster Countermeasures Basic Act, 1961. The Basic Disaster Management Plan states comprehensive and long-term disaster reduction issues such as disaster management related systems, disaster reduction projects, early and appropriate disaster recovery and rehabilitation, as well as scientific and technical research. The first Basic DMP was prepared in 1963 and subsequently revised several times. The plan was revised entirely in 1995 based on the experiences of the Great Hanshin-Awaji Earthquake. It now consists of various plans for each type of disaster, where tangible countermeasures to be taken by each stakeholder such as the national and local governments, public corporations and other entities are described for easy reference according to the disaster phases of prevention and preparedness, emergency response, as well as recovery and rehabilitation. Changes were effected in the plan in December, 2011 based on the recommendations from the Central Disaster Management Council's technical committee for reviewing earthquake and tsunami measures based on the lessons from the GEJET. The plan, it has been decided, shall be continuously revised in future in order to reflect further policy development based on the GEJET and other disasters.

3.5.2 Department/Organizational Level: Disaster Management Operation Plan – Disaster Management Operation Plan: This is a plan made by each designated government organization and designated public corporation based on the Basic Disaster Management Plan.

3.5.3 Prefectural/Local Level: Local Disaster Management Plan: This is a plan made by each prefectural and municipal disaster management council, subject to local

circumstances and based on the Basic Disaster Management Plan.

The plans at all levels have been prepared and regularly revised and updated incorporating the lessons learnt and changes made in the Basic DMP prepared at the national level. DMP is the main document which is referred to for disaster management and emergency response.

Figure (1) Outline of the disaster management system in Japan

3.6 Catchment-Based Regional Flood Management Planning, the Case of the Tsurumi River Basin (Japan)

The Tsurumi River, located between metropolitan Tokyo and Yokohama, is 43 km in total mainstream length and 235km in catchment area. The downstream area is managed by the national government and the others by such local governments as

Tokyo, Kanagawa prefecture and also Yokohama City. Since the river is located between the large cities of Tokyo and Yokohama, development along the river has progressed rapidly since 1960s. In the areas along the river, the rate of urbanized area and the population were about 10% and about 450,000 in 1958. Both numbers increased to about 85% and about 1,880,000 respectively until 2004. This rapid urbanization lowered the rainwater retention and retarding functions in the catchment area. Instead of permeating the soil, rainwater began to flow into the river. This increased the risks of flood damage. Therefore, in 1981, the "Tsurumi River Area Improvement Project" was worked out as the first case to introduce comprehensive flood control measures in Japan. The project was to upgrade flood safety rapidly and to maintain and strengthen the retention and retarding functions along the river.

In the project, assumed runoff discharge to the river is allocated to river channels and catchment areas and appropriate measures are applied to both of them. Measures to river channels were to be implemented by river management authorities and those to catchment areas were to be done by municipalities and private developers. To cope with changes of land use due to the unexpectedly fast progress of urbanization, the project was revised to the "New Tsunami River Area Improvement Project" in 1989. However, new subjects surfaced: 1) insufficient river, sewage and catchment facilities to prevent flooding, 2) discrepancies between the predicted and the actual land use, 3) deterioration of retarding function, reclamation of existing flood control reservoirs because of the unclear legal position of runoff control facilities, and 4) occurrence of new type of flood damage such as flooding of basement spaces by localized torrential downpour. In 2004, the

"Act on Countermeasures against Flood Damage of Specified Rivers Running across Cities" was put in force to take comprehensive measures against flood damage along urban rivers.

The Act was intended for a new legal system for more viable implementation of comprehensive measures. It prescribes the development of catchment flood management plan, the construction of rainwater storage and infiltration facilities by river management authorities, the enforcement of regulation to catchment area to control runoff, designation of urban flood prone areas, etc. Based on this Act, the Tsurumi River was designated as a specific urban river in 2005. This designation prompted river management authorities, sewage management authorities, and local public entities take concerted measures against flood damage. In 2008, the "Tsurumi River Area Flood Control Plan" was worked out to promote flood control measures together by the above competent authorities and also local residents. Based on this plan, measures are being strongly promoted.

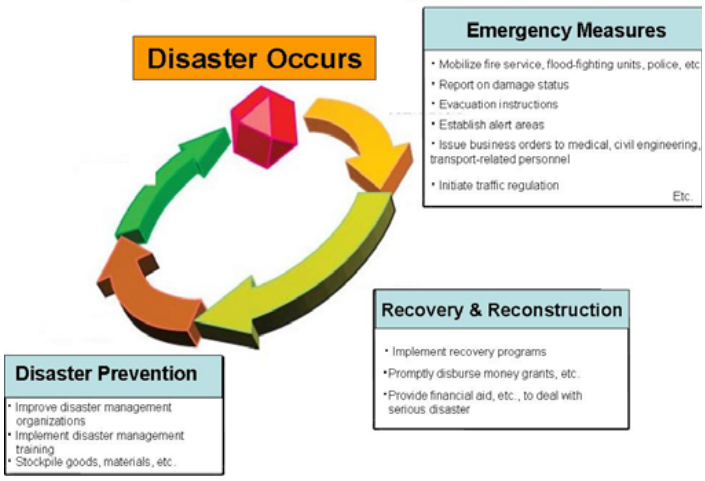
3.7 The Disaster Management System of Japan

The great Ise-Bay typhoon of 1959, which caused 5,000 or more casualties, occasioned efforts to systematize Japan's disaster countermeasures in general and to facilitate disaster management administration that would be both comprehensive and systematic. The Disaster Countermeasures Basic Act was enacted in 1962 for this purpose. This law provides the basic foundation for the formulation of disaster management measures in Japan. By means of this and related laws, disaster management in this country is carried out at every stage of disaster prevention,

emergency response to disaster, and recovery and reconstruction following disaster (Figure 1).

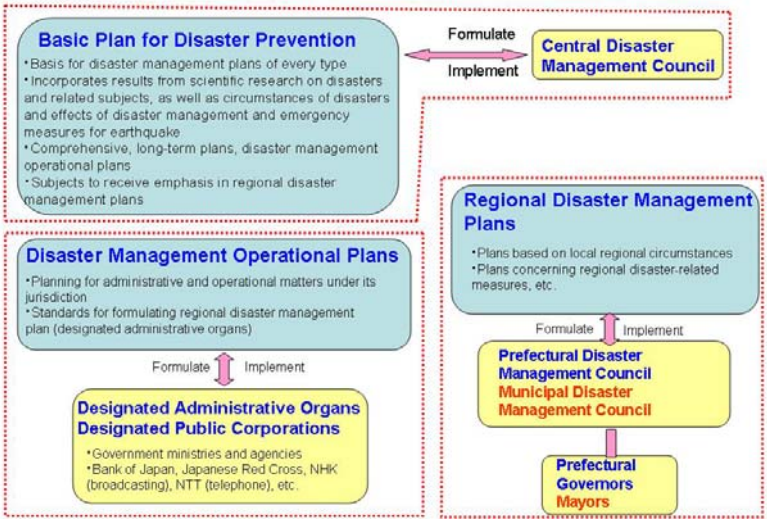
The Basic Plan for Disaster Prevention is the master plan in the area of disaster management, and it is created by the Central Disaster Management Council in accordance with the Disaster Countermeasures Basic Act. This master plan presents the basic guidelines for establishment of the disaster management system, promotion of disaster management projects, development of faster and more appropriate disaster recovery, assignment of priorities in disaster management operation plans and regional disaster management plans, and so on. The master plan provides a basis whereby every ministry and agency as well as disaster management-related organizations such as the Bank of Japan and Japan Broadcasting Corporation (NHK) create their disaster management operation plans, whereby local governments create regional disaster management plans, and whereby all these bodies implement their disaster management countermeasures (Figure 2)

Figure 1. The Disaster Management Cycle



Among other things, the law provides for improvement of disaster management facilities to provide against the possibility of earthquake, which could strike anywhere in the country.

Figure 2. Disaster Management Planning System

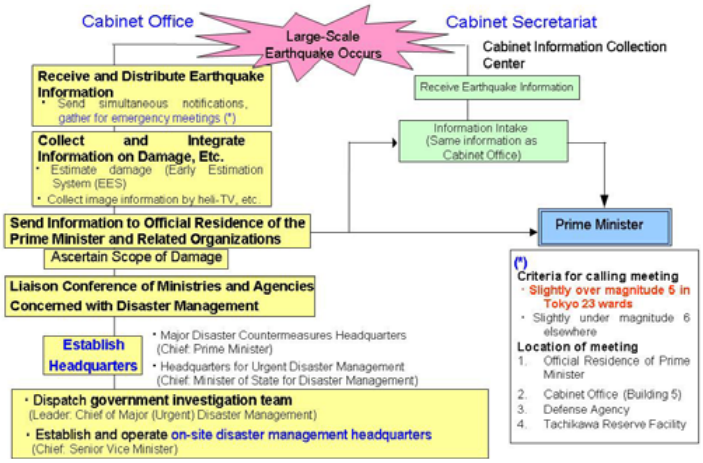


An initial response system to operate when a large-scale disaster occurs was set in February 1995. This provides for the chiefs of bureau and other officials from the ministries and agencies concerned to gather for emergency meetings in the official residence of the Prime Minister and integrate information. A 24-hour system for the collection of information was improved in 1996 when the Cabinet Information Collection Center was established (Figure 3).

3.8 Building and Site Flood Mitigation Strategies

Ideally, the best approach to flood risk mitigation is to simply not build in a flood zone or occupy an existing structure in a flood-prone area. Certainly, this may be easier said than done. At a minimum, you want to select a site at least two feet above the 500-year flood1 elevation. You may want to determine if access routes to the site (e.g., highways, railroads, marine terminals) are at least two feet above the 500-year flood elevation as well. When choosing a site, consider the effects a flood may have on site egress, utilities (water, gas and electrical) and communication systems. If the area is protected by levees and/or other man-made flood control devices, ensure that they are properly designed, maintained and operated. If the site selection process leaves you with no alternative other than to use a location prone to flooding, you may want to consider elevating the site by building up land levels so they are least two feet above the 500-year flood elevation.

Figure 3. Government Emergency Response When Disaster Occurs



This may require a civil or structural engineer familiar with flood-related design and land or soil conditions. Since the topography of the land is being changed, storm water runoff and terrain management is needed to ensure that a greater hazard is not being created. Another engineering approach regarding flood mitigation is to elevate the existing buildings and equipment and/or incorporate flood mitigation strategies into the original design. We will examine structures first

and then utility systems.

3.9 Community Participation in Disaster Risk Reduction in Japan

Involvement of Community and local involvement can be seen as Japan has many experiences about natural disasters most frequently in the world. There is gained the knowledge and developed the skills of responding and preparing for disasters through its past experiences. Also "Community –based disaster Management" has drawn people's attention in the field of disaster management. It is necessary to engage local government and community in disaster risk mitigation. If local stakeholders are not engaged in the disaster risk mitigation design, implementation and management of disaster risk reduction then the resulting policies, strategies and plans have limited chance to suit with the local conditions. Similarly, if local community and organizations are not considered as stakeholders in the management of facilities and infrastructure then there is little chance to be implemented. For example, if local community is not involved in post disaster situation in Great Hanshin-Awaji Earthquake, Kobe, Japan in 1995 smooth recovery and reconstruction of the total area would not have been possible. Cost of disaster risk reduction can be reduced to a great extent if the local community is involved in decision making process with reconstruction and rebuilding and mobilization of local resources, capabilities, knowledge and expertise. The potentiality of the community is proven great at the time of disaster. Engagement of local community contributes to building social capital, raises awareness of disaster risk and strengthens local capacities to address a wide range of development Issue. The community based disaster management two epoch-making turning points for disaster reduction in modern Japan.

3.10 Awareness building

Sustaining people's awareness for floods is a critical point for organizing community activities. However, it is not easy because the awareness diminishes as time passes even though people are aware of flood risks just after major floods. Sustainability of community participation largely depends on awareness of community members. The "Ubiquitous Flood Sign" in downtowns for the purpose of people's awareness about floods, such as traces of flooding, the evacuation routes and destination camps started in Japan (below Figure 4) . The "Flooding" sign can shows traces of either historical flooding or projected flooding like 100-year flood. These marks were registered in Japan Industrial Standards (JIS) and seek possibility to apply them in global scale. The signs include standardized marks so that travelers or foreigners can also understand easily. This standardizing effort itself is challenging but can contribute to enhancing community participation.

The broader the signs acknowledged, the more motivated community activities become. Most people do not always have so Organizing Community Participation for Flood Management – A Tool for Integrated Flood Management Version 1.0 7 WMO/GWP Associated Programme on Flood Management much incentive to participate community activities, but watching and identifying flood risks in daily lives can facilitate them to participate.

Figure 4. Standardized marks for flooding and examples in Japan

 Flooding Sign  Evacuation Sign

Historical Flood (Toyooka, Japan) Projected Flood (Tokyo, Japan)

3.11 Flash floods, Mud flows and land slides

A flash flood is a rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within six hours of the causative event. However, the actual time threshold may vary. Sediment disasters, such as mud flows and landslides, often associated with such flash floods are defined as the phenomena that cause damage through a large-scale movement of soil and rock. They are caused by combination of natural (topography, geology, vegetation, rainfall, earthquake, volcanic activity)

and man-made (groundwater depletion, deforestation) factors. They result from relatively short, intense rainfall or failure of man-made structures, etc., and are particularly common in mountainous areas and desert regions.

They present potential threat in any area where the terrain is steep, surface runoff rates are high, streams flow in narrow canyons and severe thunderstorms prevail. The only way to prepare for them is to be aware of the weather events that initiate them and pay attention when there is exceptionally heavy rainfall warning. Community activities can be seen mostly at early warning collaborated with weather forecasts and people's capacity building. The flood contest for school at the Klodzko County in Poland is one of the examples of educating children, and also adults through children. Similar to flash floods, education and training by local community along with warning and evacuation system play a crucial role for mudflows and landslides.

3.12 Participation in Community-based Disaster Preparedness Activities

Factors has to be considered to increase the intention to participate in community-based disaster preparedness activities in Japan, where there are many natural disasters, the role of preventing disasters is partly delegated to fire-fighting organizations, flood-fighting organizations, and other community-based organizations. However, the abilities to prevent disasters in local communities are declining due to an increase in nuclear families, a decline in conventional communities, an increase in elderly people living alone, and other factors. To swiftly carry out relief activities in local communities at the initial stages after the occurrence of disasters, it is necessary to carry out community-based disaster

preparedness activities on a habitual basis. In addition, it is also necessary for not only administrative bodies but also residents in local communities to participate in disaster preparedness activities, and residents need to cooperate with administrative bodies. It is desired that not only administrative bodies but also residents in local communities come up with community-based disaster-preparedness measures by themselves, which are reflected in administrative plans. To achieve this, it is necessary for more members of residents to participate in community-based disaster preparedness activities. Through past researches, it was revealed that past experience of disasters, demographic characteristics, including level of income, type of residence, and educational level, feeling of control against disasters and anxieties, which are individual characteristics, and other factors 128 T. Motoyoshi are related to disaster preparedness actions.

However, many of these researches focused on disaster preparedness actions for households, and community-based disaster preparedness activities were studied only on a supplemental basis. Among these researches, examined disaster preparedness activities in local societies, including fund-raising campaigns, petitions to administrative bodies, and solidarity movements in local communities, and revealed that evaluations of possibilities to control flood disasters or coping styles are factors that affect participation in community-based disaster preparedness activities. However, there have been almost no findings on the level of intention to participate in community-based disaster preparedness activities among flood-fighting organizations, independent disaster preparedness organizations, and other organizations in Japan. As a result, factors to determine the intention to participate in community-based disaster preparedness activities are

also studied through surveys covering residents in local areas that have a high level of weakness towards flood disasters.

Many of the past studies on disaster preparedness regarded disasters as stress events and treated disaster preparedness actions as measures to deal with such events. However, community-based disaster preparedness activities by independent disaster preparedness organizations, flood-fighting organizations, and other organizations can be regarded as voluntary activities in local societies. As a result, among the researches dealing with relationships between attitudes and actions, this research project carries out studies by using the theory of reasoned action, which is pointed out to be highly persuasive regarding voluntary actions, as the basic framework.

3.13 Review on Japanese Assistance of Community-Based Management for Flood Disaster

It is widely recognized that a community plays a crucial role in managing natural disaster risks. Hyogo Declaration adopted at the World Conference on Disaster Management in 2005 stresses that strengthening community level capacities is needed to reduce disaster risks. Japan International Cooperation Agency, a major implementing agency for Japanese official development assistance, is shifting its approach in disaster management from engineering-oriented approaches to comprehensive ones including community-based disaster management (CBDM).However, the development assistant methods of CBDM have not been established. This is because JICA has limited experiences of CBDM projects, and has not conducted the holistic research works of CBDM.

ADRC Visiting Researcher
2014 Term A (August – November 2014)

This study aims to propose the practical methods of development assistance for CBDM through reviewing JICA projects from a capacity development point of view. Capacity development is regarded as the ongoing process of enhancing the problem-solving abilities of developing countries by taking into account all the factors at the individual, organizational, and societal levels. The community is described as the "main actor", which plays key roles in disaster management. Other organizations around the community, such as governmental agencies, local governments, and non-governmental organizations, are described as "supporting actors" to the communities. JICA supports to develop the capacities of the communities as well as supporting actors.

The study reviews projects for management of flood and sediment disasters in Nepal, flood early waning in Morocco, disaster management in Caribbean countries, and development of cyclone shelters in Bangladesh, and management of volcanic sediment disasters in Indonesia. Various lessons were learned from these projects. Firstly, at a project designing stage, the capacities of organizations concerned should be assessed. During projects, flexible implementation is needed to respond to unpredicted factors. Secondly, a wide range of concerned organizations should be involved in the projects. Collaborative activities between targeted communities and these organizations are effective in achieving project objectives. Thirdly, focusing on the communities is required for activities in the field. End-to-end systems for early warning and evacuation should be established from observation until evacuation so that communities can utilize warning information for their evacuation. Hazard maps should be produced through

participatory approaches for communities to understand their risks and assets. Communication mechanism should be established between experts and the communities for mutual understanding. Based on these lessons learned, the study further recommends methods to design the projects, to secure sustainability of activities, to take interactive risk communication between governments and communities, and to utilize technology and experience in Japan for the project activities. Finally, the study discusses remaining issues to be resolved and they are how to formulate projects that contribute to community development, how to include livelihood activities in projects, how to examine the projects from social capital prospective, and how to manage knowledge of CBDM.

3.14 Response to natural disasters

The Asian region including Japan is one of the most affected regions by natural disasters. Damages caused by natural disasters around the world greatly hinder sustainable development, and it is important to protect people against possible damages and strengthen their ability and preparedness to withstand natural disasters. As emergency response, the Government of Japan, in cooperation with JICA (Japan International Cooperation Agency), dispatches Japan Disaster Relief team and deliver emergency relief goods. One or combined assistance of them is offered depending on the scale of natural disasters and the needs. As Japan has extensive knowledge on disaster reduction based on its own experiences from domestic natural disasters, it will continue to lead international efforts for disaster reduction. In concrete terms, the Government of Japan, in cooperation with UNISDR, promotes further implementation of Hyogo Framework for Action and intends to host the 3rd World Conference on Disaster Reduction in 2015. It also

cooperates with developing countries for mainstreaming of disaster reduction in development plan and community-based disaster reduction efforts.

Natural disasters cause tremendous losses every year in many parts of the world. The Asian region is most prone to natural disasters; a majority of disaster-affected people in the world are concentrated in this region. Japan is no exception; it suffered unprecedented damage due to the earthquake and tsunami in the Great East Japan Earthquake. Damage caused by natural disasters disrupts development outcomes, impedes sustainable development, and hinders human security in developing countries. That the poor are most vulnerable to such disasters makes it all the more important to protect them from such hazards, strengthen their preparedness, and build their capacity to cope with them. The Government of Japan places the highest value on timely and effective delivery of humanitarian assistance that meets the needs of people affected by a natural disaster. Specifically, it works with the JICA (Japan International Cooperation Agency) to dispatch the Japan Disaster Relief Team to save lives and deliver emergency relief supplies in a timely manner. An optimal combination of these and other forms of assistance is sought for effective and flexible emergency assistance.

Efforts in normal times to be made by Japan – a country that has experienced numerous disasters and strengthened its preparedness against earthquakes and other disasters in both physical and non-physical aspects – include making good use of its extensive knowledge gained and valuable lessons learned from the Great East Japan Earthquake and other disasters in redoubling its efforts to strengthen its preparedness framework, as well as continuing to support international efforts for disaster reduction while sharing such knowledge and lessons with the international

community that offered warm support for Japan after the disaster. In concrete terms, the Government of Japan will work with UNISDR to promote further implementation of the Hyogo Framework for Action 2005-2015, the only global strategy on disaster reduction. It will also collaborate with UN organizations and countries concerned to host the third UN World Conference on Disaster Reduction, aimed at reviewing progress in the implementation of the framework and discussing a global disaster reduction strategy beyond 2015. Japan will also support self-help efforts by developing countries in minimizing damage by natural disasters under the Initiative for Disaster Reduction through ODA, which sets out Japan's basic policy in this field. To that end, Japan will provide a wide range of assistance at different levels. This will include support in introducing a focus on disaster reduction in development programs and projects, making buildings more quake-resistant, and raising awareness at the community level.

3.15 BOKOMI

BOKOMIs are community based - elementary school district based disaster prevention organizations. Since 1995, based on the lessons learned from the Great East Hanshin-Awaji Earthquake, all of the districts of Kobe city – 191 districts have established BOKOMIs. To establish BOKOMI, firstly, it is discussed and decided on by local government organizations including the local city office and the local fire station, together with leader of 33 local residents associations, women's associations, elderly associations, voluntary fire corps and etc. The equipment and materials needed for the activities are provided by the local government and storehouses installed in local parks, in preparation for emergencies. Schools in Japan also serve as evacuation sites during emergencies. In normal times BOKOMI conducts various emergency drill programs such as on how to use the provided equipment and materials (for ex. Water fire extinguishers, powder fire extinguishers), rescue drills, evacuation drills, information transmission drills, flood control drills and etc. In addition, BOKOMI also conduct welfare activities (such as keeping in touch with and holding lunch gatherings for the elderly people who live alone) as an effort to cover both community welfare activities and community disaster prevention activities.

3.16 INTERNATIONAL EMERGENCY RESPONSE by JAPAN DISASTER RELIEF TEAM (JDR)

In the case large-scale disaster in foreign countries JDR join emergency relief operations upon the request of the government of the disaster-affected country to the Ministry of Foreign Affairs of Japan. Dispatch is carried out by JICA based on Disaster Relief Team Law within the framework of its Disaster Relief Program. To

facilitate the rapid and reliable supply of the large-volume of relief items, reserve supplies must be procured and appropriately stockpiled in advance at locations as close as possible to disaster areas. Accordingly, JICA has warehouses in four locations worldwide, namely Germany (Frankfurt), Singapore, the United States (Miami) and South Africa (Johannesburg). Eight priority goods are stockpiled at these four locations—tents, sleeping pads, plastic sheeting (tarpaulins), blankets, portable water containers (plastic jerry cans), water tanks, water purifiers and electric generators. In cases where other types of supplies are required, JICA takes emergency action, including procurement in affected or neighboring countries. When requested, emergency medical supplies are procured from the United Nations Children's Fund (UNICEF) Supply Division in Denmark or the International Dispensary Association (IDA) in the Netherlands and are rapidly shipped to affected countries. There are four types of JDR teams. One or more types of the teams are dispatched as appropriate.

Dispatch Team	Composition	Activity	Duration
Search and Rescue Team 	National Police, Fire and Disaster Management, Coast Guard, MOFA, JICA,	Search and rescue victims trapped in collapsed structures	Approx 7 to 10 days
Medical Team 	Doctors, nurses, pharmacists Team head (MOFA) Team Coordinator (JICA)	Urgent medical assistance including patient treatment	Approx 2 weeks
Expert Team 	Experts provided from 14 related Ministries of Japan	Technical advice or guidance on disaster prevention and damage mitigation based on an assessment of the situation.	Approx 2 weeks
Self-Defense Force Unit 	Ground, Maritime, Air Self-Defense forces 50-1000 persons depends on number of dispatched team	Search and rescue, medical assistance (including disease control) Air and sea transport and water supply	Approx 2 weeks to 2 months

3.17 Disaster Prevention Day Drills for FY2014

The annual comprehensive disaster prevention drills for 2014 were held on September 1, Japan's National Disaster Prevention Day. Prime Minister Shinzo Abe took part in the drills together with all Cabinet members. This year, the drills were conducted based on a scenario in which a Tokyo Inland Earthquake occurred at 7:10 a.m., with a magnitude of 7.3, a maximum seismic intensity of 7, and its epicenter in Tokyo's 23 wards. As part of the drills, the Prime Minister walked to the assembling point at the Prime Minister's Office, and held the first meeting of the Emergency Disaster Response Headquarters and an extraordinary Cabinet meeting. Afterwards, the Prime Minister held a press

conference to explain the overview of the earthquake and the status of the Government's response, and to give a message to the people. Then, the Prime Minister led a government inspection team to the venue in Sagamihara City, Kanagawa Prefecture where the joint disaster prevention drills were being conducted by the nine municipalities in the Kanto region. At the civilian drill area, the Prime Minister observed a food distribution drill, an emergency relief drill using slings, and an emergency relief drill using an AED, among others. Lastly, the Prime Minister said in his address at the closing ceremony of the drills, “It is of great significance that disaster prevention day drills of this magnitude were held today with the participation of approximately 140 organizations and 10,000 people, including the local people of Sagamihara City and Kanagawa Prefecture, as well as the police, the fire department, the Japan Coast Guard, the Self-Defense Forces, TEC-FORCE, DMAT, and members of the private sector. Many people voluntarily and wholeheartedly participated in today’s drills, including approximately 1,700 elementary and junior high school students, on which the future of Japan rests, and approximately 900 people from the voluntary disaster prevention organizations that are central to regional disaster prevention. It is important that each and every person stands ready and prepares against disasters in order for everyone to protect their own lives.

Delivering an address during joint disaster prevention drills by the nine municipalities in the Kanto region

Carrying out an emergency relief drill using an AED

CHAPTER. 4 FINDING AND CONCLUSION

4.1 Finding and Conclusion

Both Myanmar and Japan is the most vulnerable to disasters, including those caused by climate change – from floods to droughts, earthquakes and tsunamis. In fact, over the last three decades, this region accounted for a staggering 85 per cent of deaths due to natural disasters. The disaster management has high importance in these two country, for this the community participation is inherit part of this management.

Myanmar is pursuing a four wave's reform process; the political, economic and administrative reform and development of private sector, aiming to achieve political stability and economic development. The development partners and the international community welcome these changes and join in hands with the government. Accordingly, there is much potential for international assistance as well as foreign investment flowing into the development sectors. These will inevitably result to increase investments in infrastructure and rapid urbanization that encourages rural to urban migration. Meanwhile, if improvements in the development sectors do not integrate disaster risk reduction, they could exacerbate existing disaster risk and create new forms of disaster risk. Building disaster resilience in Myanmar becomes more important than ever, to safe lives of Myanmar people, to protect investment and to ensure the sustainability of development gains.

Under such circumstances, rules and regulations under the Disaster Management

Law needs to be enacted and then should be applied effectively. Other existing laws in the country that relates to the issues of emergency management, i.e. visa approval, tax exemption, communication law, deployment procedures and data sharing system need to be amended in order to be compatible with regional agreement AADMER. Early warning systems need to be upgraded in order to issue more accurate and area-specific warnings. Human resource development in the area of disaster management is also an important factor while advocacy measures for local government on disaster management and capacity building for local government staffs becomes an important one.

The community participation process is very important for the formation and strengthening of Community disaster response organization or community disaster management volunteer's team is the key to mobilizing communities for sustainable disaster risk reduction. The community volunteers, disaster management committee, and disaster response organization are the necessary interface or the channel for outsiders such as NGOs or government agencies to assist/support the community at-large. The community groups and organizations are essential in sustaining the risk reduction process for the community to meet intended aims and targets in CBDM, as visualized a shift from Risk to Resilience Community.

There are no specific approach at different levels of community participation in disaster management but the approach of bottom-up have found very impressive. The top-down approach as a result of the community participation mechanism in the past years that not only partly obstacle but also need the more time for fully applying the CBDRM approach. However, those principles and mottos have

strengthened the responsibility of relevant stakeholders. On the other hand, those have mobilized traditional experience, resources and partly ensure the sustainability and effectiveness of disaster management activities. Based on the research observation, it has found that community process and participation builds confidence, pride that they are able to make a difference and capabilities to pursue disaster mitigation and preparedness and bigger development responsibilities at the local level. This leads to empowerment too. Community involvement in risk assessment and risk reduction planning leads to ownership, commitment and individual and concerted actions in disaster mitigation, including resource mobilization. Trusting and supporting the capacity building process results in a wide range of appropriate and do-able mitigation solutions are important for Community Based Disaster Management process, as it is cost effective, self-help and sustainable as well.

The general objective of community participation is to save lives and damage to properties, by helping communities work to decrease their vulnerability and increase their capacity to reduce the impact of floods. Participation of community members and related stakeholders in flood management is essential in sustaining the flood risk reduction process for the community to meet intended aims and targets. Organizing community participation does not seek perfect implementation at the outset. It is expected that each community will gradually build up flood-resilient activities through continual efforts. To develop and establish general plans and measures, continual efforts are required such as in the business continuity. A continual effort is a business management technique that is already incorporated in quality control, environmental management, and information security. Participatory

planning for improvement and regular implementation for improvement should be noted for sustainable community base activities.

Community participation is fundamental and essential for each stage of the flood management, that is, preparedness for, response to and recovery from. They can seek to maximize the benefits through the related development activities within the river basin as a whole. Natural factors that affect the way community perceives and responds to flood risks can be described in terms of their magnitude (scale, duration, intensity) and frequency of the flood hazards. Socio-economic factors, in terms of poverty, livelihood profile, cultural beliefs, status of weaker social groups and rights of minority and ethnic groups, influence communities' willingness to participate. Community participation in flood risk assessment as well as in planning and implementation of risk management measures is a key to success of flood risk management plans.

Community activities can be successfully used at every step in flood management; in preparedness: community activities works for building consensus and collaborating with other development activities, in response: the accumulation of individual activities expects synergy effects on group advantages and in recovery: the cooperation among various stakeholders will be enhanced by participation of community. Community participation for flood management can be organized through community's needs, effectiveness and efficiency, and practicable implementation. Strategic approaches to organizing community participation comprise of three perspectives: resource maximization through integrated use of local knowledge, effective participatory process with clear understanding of each

stakeholder's expected role and degree of involvement, and the motivation through socio-economic incentives.

Organizing community participation can adapted from six step of Integrate Flood Management basin planning (process design, risk assessment, problem analysis, setting goals, draft an action plan, and implementation. Organizing community participation is gradually built to seek flood-resilient community through continual efforts. To develop and establish general plans and measures, continual and sustainable efforts are required. There is no single approach to organize community participation for flood management. Further continual accumulation of many cases can only facilitate them.

Observing the system of, it has found the effectiveness of involving communities in disaster preparedness and mitigation. However, local communities cannot reduce all vulnerabilities on their own. While communities have built on local coping strategies and capacities to reduce some vulnerabilities, many necessary structural mitigation measures involve big capital outlay. More important, vulnerability is also a complex web of conditions, factors, and processes, which can only be reduced through complementary and concerted action among multiple-stakeholders from various disciplines and levels of the disaster management and development planning system.

Abbreviation

ADRC	Asian Disaster Reduction Center
ASEAN	Association of South East Asian Nations
AADMER	ASEAN Agreement on Disaster Management and Emergency Response
CBDM	Community-Based Disaster Management
DM	Disaster Management
DRR	Disaster Risk Management
MAPDRR	Myanmar Action Plan for Disaster Risk Reduction
MDPA	Myanmar Preparedness Agency
TOT	Training of Trainers
VR	Visiting Researcher

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