The Capacity Building in the Natural Disaster Management of Thailand

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Abstract—The past two decades, Thailand faced the natural disasters, for instance, Gay typhoon in 1989, tsunami in 2004, and huge flood in 2011. The disaster management in Thailand was improved both structure and mechanism for cope with the natural disaster since 2007. However, the natural disaster management in Thailand has various problems, for examples, cooperation between related an organizations have not unity, inadequate resources, the natural disaster management of public sectors not proactive, people has not awareness the risk of the natural disaster, and communities did not participate in the natural disaster management.

Objective of this study is to find the methods for capacity building in the natural disaster management of Thailand. The concept and information about the capacity building and the natural disaster management of Thailand were reviewed and analyzed by classifying and organizing data. The result found that the methods for capacity building in the natural disaster management of Thailand should be consist of 1) link operation and information in the natural disaster management between nation, province, local and community levels, 2) enhance competency and resources of public sectors which relate to the natural disaster management, 3) establish proactive natural disaster management both planning and implementation, 4) decentralize the natural disaster management to local government organizations, 5) construct public awareness in the natural disaster management to community, 6) support Community Based Disaster Risk Management (CBDRM) seriously, and 7) emphasis on participation in the natural disaster management of all stakeholders.

Keywords—Capacity Building, Community Based Disaster Risk Management, Natural Disaster Management, Thailand.

I. INTRODUCTION

MOST of disasters in the world are natural disasters, for example, flood, earthquake, wildfire, volcanic eruption, tropical cyclone and tsunami [1]. Disasters arising from natural disaster can be divided into three groups. First, hydro-meteorological disasters relate to water and weather which include rainfall, flood, drought, hail, windstorm, and tropical cyclone. Second, geological disasters associate with volcano eruption, tsunami, and earthquake. Third, biological disasters are outbreaks of epidemic diseases, wide infestations, and plant or animal contagion [2]. The natural disasters are calamity to people and property, such as loss of life, injury, and destruction of buildings and communications [3]. In addition, damage to infrastructures, agriculture and livestock, and depress of economic and social.

Thailand is a country which has located in the vulnerable area to natural disaster. The past two decades, Thailand faced various natural disasters, for instance, Gay typhoon in 1989, tsunami in 2004, and huge flood in 2011.

The disaster management in Thailand was improved both structure and mechanism for cope with natural disasters, for example, the Disaster Prevention and Mitigation Act 2007 or DPM Act 2007 which is the key law of disaster management and include most of the disasters such as fire, wind storm, flood, drought, human and animal plague, military air attack, and terrorism [4], and the National Disaster Prevention and Mitigation Plan 2010-2014 which focus on participation of all stakeholders and proactive management.

The DPM Act 2007, under administration of Department of Disaster Prevention and Mitigation (DDPM), Ministry of Interior which is essential organization in cope disaster management of Thailand. Subsequently, formulation the National Disaster Prevention and Mitigation Plan 2010-2014, which focus on participation of all stakeholders and proactive management and emphasis on three major parts; 1) principles of the disaster management, 2) procedures for the disaster response, and 3) security threat and countermeasure procedure in managing both natural disasters and national security issues. Moreover, the National Committee on Disaster Prevention and Mitigation (NCDPM) has been established as a policy making on the disaster management. This Committee is chaired by the Prime Minister and comprised of members from related Ministries and government agencies [5]. The NCDPM has function to formulate the national disaster prevention and mitigation plan, approve the national plan before submitting to the cabinet, integrate the development of disaster prevention and mitigation system among all concerned sectors, give recommendations, consultation, and support to concerned agencies propose regulation on remuneration.

However, disaster management in Thailand has many problems as the following [6]; cooperation between related organizations has not unity, resources (i.e., budget, personnel, and material) for disaster management not adequate, recovery is delayed, area for housing and settlements risk to disaster, and people not awareness of disaster. Moreover, the Department of Disaster Prevention and Mitigation [7] concluded that limitation in management of disaster prevention and mitigation in Thailand as the following; rescue victims are elementary relief approach, not proactive approach, people have a little knowledge and skill in disaster warning, almost of research about disaster management not yet comprehensive disaster cycle, management information system (MIS) of both operation and strategic level have not analysis and synthesis, collaboration and participation are only policy level, but appear implementation problems, and

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inadequate and inefficiency of personnel and material. Furthermore, lack a coordination among stakeholders [8], lack a master for natural disaster management, participation of local and international NGOs, education and knowledge for tsunami, and information management system [9], [10]. In 2011, Thailand confronted with severe flood which appear loss of life and asset in many areas. The example of damage as the following [11]; deaths 657, losses 3, effected 4,039,459 household or 13,425,869 people, entirely damage 2,329 houses, partly damage 96,833 houses, and damage 11.20 million rai (Thai unit equal to 1,600 square meters) agriculture area.

The aforementioned data implied that Thailand have been lacked of capacity in the natural disaster management, it bring about huge damage and loss to people in Thailand. Therefore, it is interesting and important to study the capacity building in natural disaster management of Thailand by investigation methods for capacity building in the natural disaster management of Thailand. Results of this study will lead to contribution for policy formulation of capacity building in the natural disaster management of Thailand. Therefore, capacity building in the natural disaster management will be concentrated in this study.

II. LITERATURE REVIEW

This study focused on the concept of natural disaster management, the capacity building, the Community Based Disaster Risk Management (CBDRM), and the natural disaster management of Thailand as the following.

A. The Concept of Natural Disaster Management

The definition of disaster is derived from the French word "Desastre" which compound of two words 'des' mean bad and 'aster' mean star. Thus it refers to bad or evil star [12]. The UNISDR [2] defined disaster as "a serious disruption of the functioning of a community or a society involving widespread human, material, or environmental losses, and impacts which exceeds the ability of the affected community to cope using only its own resources." Moreover, disaster is defined as a sudden event, very complex in nature and causing fatality, loss of properties or environment, and causing damage to the local society [13].

The disasters are often described as a result of the combination of the exposure to a hazard, the condition of vulnerability that are present, and insufficient capacity or measure to reduce or cope with the potential negative consequence [2]. The two decades ago, natural disaster increased [14]. These changes are generally accepted as resulting from human actions and development patterns [1]. The disasters happen when a hazard impacts on the vulnerable population and causes damage, casualties and disruption. The disasters impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation [2]. Moreover, disasters are a sudden adverse or unfortunate extreme event which causes

great damage to human, plants, and animals [12]. Therefore, disaster occurs when hazard and vulnerability converge. The trends of disasters are rapidly increasing.

However, the definition of disasters are not yet accepted universally, because of the definition depends on using the term [15], but in general term, typical meaning or effects of disasters tend to be loss of life, loss of livelihood, loss of national economic, injury, destruction of property, disruption of lifestyle, disruption to essential services, damage to national infrastructure and disruption to government systems, sociological and psychological after effects [3]. In addition, it depends on the definition of each country which as a result of policy, law, organization and activity in disaster management of these countries.

The disaster management is not only the management process during the disaster, but it is the management which emphasis on before, during, and after disaster. For instance, [12] concluded activities which related to process of disaster management as the following.

1) Before disaster relate to reduce human and property losses caused by hazard. For instance, fulfillment awareness campaigns, strengthening the weak structures, and preparation of the disaster management plans at household and community level.
2) During disaster relate to activities which ensure damages of victims are minimized. Activities taken under this stage is called as emergency response activities.
3) After disaster relate to activities which response to a disaster with a purpose to achieve early recovery and rehabilitation of affected communities. This stage is called as response and recovery activities.

Moreover, disaster management involves a range of very different systems, such as government, politic, historic, social, economic, finance, and environment [16]. Hence, the definition of disaster management "is an applied science which seeks, by the systematic observation and analysis of disasters, to improve measures relating to prevention, mitigation, preparedness, emergency response, and recovery" [3]. The USAID [2] stated that disaster risk management comprise activities both structural and non-structural measures to prevention, mitigation and, preparedness negative effects of hazards. Moreover, UNDP (1992, cited in USAID, [2]) defined disaster management is "the group of policy and administrative decisions and operational activities which associate with the various steps of a disaster at all levels".

In addition, [1] concluded that complete steps of disaster management process as the following.

1) Mitigation concerned with decreasing or eliminating the possibility or the effect of a hazard.
2) Preparedness concerned with providing people who risk to a disaster with the tools and knowledge to enhance their opportunity of survival and to reduce their life and property losses.
3) Response concerned with action to reduce or eliminate the effect of disaster that currently occurring and order to prevent further both life and property damage.

4) Recovery concerned with coming victim back to a regular situation after the effect of disaster.

The aforementioned, author concluded that disasters are situation which expose hazard to human and bring damage to human's life and property. Therefore, related actors, for example, public and private sector, community, and key stakeholders should investigate appropriate patterns for sustainable development and prevention disaster. Moreover, the disaster management should focus on all stages of the disaster management; before, during, and after disaster which will reduce loss of human's life and property from natural disaster.

B. The Concept of Capacity Building

The capacity is defined as competency of individuals, organizations or systems to function effectively, efficiently, and sustainably [17]. Moreover, capacity may consist of physical, institutional, social or economic means as well as skilled personal or collective characteristics such as leadership and management. The capacity also mean respond of individuals and social groups, to cope with, recover from or adapt to, external pressure lay on their livelihoods [18].

Therefore, capacity building is the process which individuals, groups, organizations, institutions, and societies increase their competencies to; 1) perform core functions, solve problems, define and achieve objectives, and 2) understand and cope with their development needs in a broad context and in a sustainable manner [17]. The capacity building in the broad sense is concerned with; 1) human resource development which relate to the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively, 2) organizational development which relate to the elaboration of management structures, processes and procedures, not only within organizations but also the management of relationships between the different organizations and sectors (public, private and community), and 3) institutional and legal framework development which relate to making legal and regulatory changes to enable organizations, institutions and agencies at all level, and in all sectors, to enhance their capacities [17].

Furthermore, UNISDR (n.d. cited in ILO, [19]) defined capacity building in term of disaster risk management that efforts aimed to develop human skills or societal infrastructures within a community or organization needed to reduce the level of risk. In extended understanding, capacity building also includes development of institutional, financial, political, and other resources such as technology. Moreover, capacity building means that on-going evidence-driven process to improve the ability of an individual, team, organization, network, sector or community to create measurable and sustainable results [20].

Sometime, capacity building was used replaceable with institution building, institutional and organizational development, and institutional capacity building [21]. The capacity building has risen to a higher level of prominence since the mid-1990s and has important trends in disaster management thinking, policy, and practice. The capacity building of an institution have to harmonized taking into account areas, such as policy, resource mobilization, and human resources development [21]. Therefore, the crucial feature of capacity building is promoting the ability of individuals, institutions, and systems to manage with change and unexpected challenges.

The capacity building is important for disaster management because of it should involve the development the disaster management system, which comprises of the local, provincial, national, regional, and international levels. The controlling natural hazards are difficult, thus enhancing social capacity to cope with disasters is one of the most effective ways to manage and reduce disaster risks [22]. Enhancing disaster management capacity of the central government alone is insufficient to manage or reduce the damages caused by disasters. Especially, communities are the first organization to respond when a disaster happen. Therefore, enhancing disaster management capacity of the communities and local governments on the ground has been globally recognized as the more effective way to improve disaster management and has been coped with disaster in a timely and effective method [22]. This involves being able to assemble appropriate resources at the local and national levels and ensure a better coordination with key international actors. Moreover, capacity building is expected to cover all process of disaster management, including pre-disaster planning, prevention, mitigation, preparedness, post-disaster, recovery, and reconstruction. Enhancing the capacity to cope with disasters and reduce damages caused by disasters require capacity to take adequate actions in the phases of disaster prevention (mitigation and preparedness), response, and recovery and reconstruction [22].

The capacity building is mostly referred at three levels; individual, organization or community, and institution or system [23]. The capacity building at the individual level is the most fundamental factor, because of it also includes knowledge, skills, value, attitude, health, awareness, and motivation. The capacity building on an individual level requires the development of conditions that allow an individual to participate. The capacity building at the organization level mention to process or mean that will influence an organization's performance which includes human resources (capacities of individuals in the organization), physical resources (facilities, equipment, materials), intellectual resources (organization strategy, strategic planning, management, business know-how, production technology, program management, process management), inter-institutional linkage (network, partnership), incentive and reward systems, and organizational culture and leadership of managers. The capacity building at the organization level will determine how individual capacities are utilized and strengthened. The capacity building at the institution level refer to the environment and conditions necessary for proving capacity at the individual and organizational levels. It also contains systems and frameworks

necessary for the formation or implementation of policies and strategies beyond an individual and organization.

The aforementioned, author concluded that capacity building in term of disaster management mean that increasing ability of communities, local, province, and national levels in cope with disasters and reduce damages from disaster.

C. The Concept of Community Based Disaster Risk Management (CBDRM)

The community based disaster risk management or CBDRM is process which community is central of disaster management. The CBDRM approach emphasizes the active involvement of communities in all cycles of disaster risk management. In addition, the CBDRM is process which communities are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities [24]. Moreover, the key elements of CBDRM as the following [25];

– People's participation,
– Priority for the most vulnerable groups, families, and people in the community,
– Risk reduction measures are community,
– Existing coping mechanisms and capacities are recognized,
– The aim is to reduce vulnerabilities by strengthening capacities and the goal is building disaster resilient communities,
– Links disaster risk reduction with development, and
– Outsiders have supporting and facilitating role.

In addition, the CBDRM methodologies do work in communities and need to be continually used as the essential concept in disaster risk reduction program which the key success recommendations as the following [26];

– Ensuring community participation and government linkages, including communications with authorities and disaster management focal points,
– Focusing projects more on sustainable livelihoods and strengthening capacity,
– Mainstreaming disaster risk reduction into national and local development planning rather than lonely projects,
– Accessing more resources and longer funding cycles to enable disaster risk reduction initiatives to be fully integrated into development plans, and
– Addressing food security issues for rural households when constructing disaster risk reduction projects at a community level, as this is a primary concern for most rural households.

The author concluded that the CBDRM's important were enhancement communities initiate planning in the disaster management by themselves, supporting participation of communities for cope with disaster, construction community awareness to the disaster management, and increasing capacity in the disaster management since before, during, and after disaster.

D. The Natural Disaster Management of Thailand

The disaster management system of Thailand has been built in both national and provincial levels in order to develop respond system to the disaster situation. At the national level, Thailand has worked on management for disaster preparedness arrangement through three issues; 1) the legal framework, 2) the responsible agencies and focal points, and 3) the national disaster management structure. Thailand's government restructured related laws and regulations by enacting the Disaster Prevention and Mitigation Act 2007 or DPM Act 2007 and the National Disaster Prevention and Mitigation Plan 2010-2014. Furthermore, Thailand's disaster management system was formulated by focusing on three main parts; 1) principles of disaster management, 2) disaster countermeasure procedure, and 3) security threat and countermeasure procedure in managing both natural disasters and national security issues. Meanwhile, the Department of Disaster Prevention and Mitigation (DDPM), under the Ministry of Interior, has been designated as the national agency for disaster prevention, mitigation, and recovery. Disaster management operations are carried out through its 18 Disaster Prevention and Mitigation Regional Centers nationwide and 75 Disaster Prevention and Mitigation Provincial Officers. Furthermore, concern the institutional arrangement, the National Committee on Disaster Prevention and Mitigation (NCDPM) has been set up and served as a policy making body on disaster management. This Committee is chaired by the Prime Minister and comprised of designated members from related Ministries and government agencies. The Prime Minister has been empowered to command government agencies and local administrative organizations to handle disaster situation [5].

In accordance with, the Disaster Prevention and Mitigation Act 2007 or DPM Act 2007, the governor is designated as director of province for disaster management in province areas. Afterwards, governor appoint committee for formulate mitigation and prevention plan of province which comprise of essential issues such as; provide approach, procedure, and budget for mitigation and prevention continuously, prepare staffs and materials for operation, formulate approach for recovery and rescue after disaster, establish special center for disaster management, formulate action plan of local organization, and plan for coordination with non-profit organization. Furthermore, the local administrator is designated as director of local for disaster management in local area. The local organization is the first public sector which faced with disaster in local level. The director of local must operate prevention and mitigation disaster suddenly.

In addition, the director of local has authorities for instance, command civil servant, local staff, public agents, volunteer, and any person in local area to operate for disaster prevention and mitigation, use building, material, tool, and vehicle of public and private in local area for disaster prevention and mitigation, and assist victims throughout and suddenly.

Nevertheless, Thailand's disaster management is still need to be developed and enhanced further due to the increasing dynamic of disaster in the few past years. There are certain

issues that need to improve disaster management, such as the lack of specific standard operating procedure and holistic approach in disaster management in all levels, the shortage of budget and basic equipment, the lack of support in disaster related research and development, the lack of integrated cooperation among concerned agencies, and lack of management according disaster cycle (only focus on response and recovery). In the future, this system should be improved to be functional relevantly and the key to enhance capacity in disaster preparedness and response.

These data imply that Thailand lack of effectiveness disaster management. Therefore, should find methods for better disaster management and adjustment all systems to build and establish capacity in the natural disaster management. The capacity building can adapted for disaster management by enhance awareness and competency of community and local. In addition, capacity building includes development of institution, policy, law, resources, structure, and technology.

III. METHODOLOGY

The author collected data which relate to the capacity building in the natural disaster management of Thailand as:
1) Academic journals, such as Disaster Prevention and Management journal, and Building Disaster Resilience Journal.
2) Books, such as Disaster management: A disaster management's handbook, and Introduction to international disaster management.
3) Country report and public sector organization, such as World Bank, Japan International Cooperation Agency (JICA), Department of Disaster Prevention and Mitigation of Thailand (DDPM), and Office of the National Economic and Social Development Board of Thailand (NESDB).

Afterwards, the author reviewed and analyzed data by data classifying and organizing for investigate the methods of the capacity building in the natural disaster management. The level of capacity building was categorized to three levels.
1) Individual level which focus on construction of awareness, knowledge, and participation in the natural disaster management for people in each community.
2) Organization level which focus on construction strength of community, resources, management system, and decentralization in the natural disaster management.
3) Institution level which focus on construction policy and law which enhance capacity in the natural disaster management and cooperation of all stakeholders.

IV. RESULTS

The author found that the methods for capacity building in the natural disaster management of Thailand should be as:
1) Linkage operation and information in the natural disaster management between nation, province, local and community levels. Example, formulation national policy and law which enhance capacity in the natural disaster management of province, local, and community and establishment disaster warning system from national level to province, local, and community respectively.
2) Enhance competency and resources of public sectors which relate to the natural disaster management. Example, local government organizations which are first public sector face to disasters within community and local. Therefore, staffs of local government organization should to obtain training about the natural disaster management and gain allocation resources adequately for cope with the natural disasters.
3) Establish proactive natural disaster management both planning and implementation. The natural disaster management is not only solving during disasters, but also is planning for preparing, prevention, and recovery. Therefore, the natural disaster management which embraces all stage will lead to capacity in prevention and reducing damages from the natural disasters.
4) Decentralize the natural disaster management to local government organizations. Because of local government organizations are first public sector which face to disasters, hence local government organizations should to obtain authorities completely for administration and management disaster within community and local.
5) Support Community Based Disaster Risk Management (CBDRM) seriously. Communities are important actors in process of the natural disaster management. Therefore, the natural disaster management should to focus on community-based, because of people in communities know that what communities need. The CBDRM's concept contributes to community initiative since preparedness, prevention, response, and recovery for the natural disaster management.
6) Construct public awareness in the natural disaster management to community. Damages from disasters as a result of unawareness of people to the natural disasters and people's lifestyle risk to disasters, such as locate house adjacent to river, and not evacuate before disasters. Therefore, public sectors should to construct awareness of natural disasters by containing curriculum about natural disaster management into education system and community which will lead to more capacity in the natural disaster management in the future.
7) Emphasis on participation in the natural disaster management of all stakeholders. The capacity building should not to fragment, but should to link and cooperate between all actors; people, community, local government organization, public sector, and private sector. The participation is critical factor for sustainable cooperation in the natural disaster management.

V. CONCLUSION

The capacity building in the natural disaster management is critical important for prevention and reducing loss from the natural disasters, because of the capacity building is method which enhance competency of people, public sector, and all stakeholders for cope with the natural disaster, through

establish awareness, education, participation, training, providing resources adequately, proactive disaster management, community-based management, and law which support capacity in disaster management. These methods contribute to holistic capacity building and decreasing impacts of the natural disaster by minimizing loss of life and properties which are desired outcomes for natural disaster management in the future. Moreover, these outcomes will be benefit for policy formulation in natural disaster management of public sectors.

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