Incorporating Cultural Attributes

by Yusron Saadi

Incorporating Cultural Attributes into Disaster Risk Reduction-Based Development Plans in Indonesia

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Abstract Frequent occurrences of natural disaster in Indonesia cause major problems in the form of financial losses and social disturbances. Disasters with tremendous impacts disrupt the administration of state and hinder the development processes, mainly because the events require expensive and long recovery process. The issuance of Law No. 24 of 2007 on Disaster Management has triggered a paradigm change in disaster management in Indonesia. The management of disaster which previously tended to be responsive and spontaneous has shifted toward preventive and more focused on disaster preparedness and risk reduction. This law explicitly states the responsibility of the government in the implementation of Disaster Management in the form of disaster risk reduction and it integration to development programs. In addition, in the implementation of Disaster Management the government has the authority in determining disaster management policies in line with national development policies. But it is undeniable that there were many cases where different approaches between government and community emerged and become sensitive issues in dealing with disasters management particularly in disaster risk reduction. In this paper a series of intensive community involvement in the form of focus group discussions has been proposed and should be carried out by government in the preparation of development plans. This includes early round of activities followed by formal round of consultation before a draft document of development plans is prepared. Accommodating local wisdom through this robust community engagement is essential in the governmental strategy preparation process. It is a valuable addition and an effective integration in the action strategies of integrated disaster risk reduction so that an appropriate planning decision including the resulting mitigation plan and disaster-resistant infrastructure accepted by the community can be implemented in the disaster prone areas.

Keywords Disaster management · Disaster risk reduction · Data and geospatial information · Cultural attributes · Disaster-resistant infrastructure

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1 Introduction

Disaster events in Indonesia have a high intensity since this archipelago country is located in disaster-prone areas known as the Ring of Fire. Indonesian National Disaster Management Agency, known as BNPB, revealed that there were 2952 disaster events in Indonesia during 2020 [1]. The number is based on data recorded by BNPB between 1 January 2020 and 31 December 2020 at 3 pm of West Indonesian Time. The vulnerability to the disaster caused Indonesia to be referred to as the Disaster Laboratory. Multiple natural hazards in various regions have contributed to growing awareness that disasters can occur anytime. It is therefore necessary to make adequate efforts to anticipate and to avoid the devastating impacts of the disaster.

A disaster is an event or series of events that threaten and disrupt people's lives and livelihoods, caused either by natural factors and or non-natural factors or human factors resulting in the emergence of fatalities, environmental damage, property losses, and psychological impacts [2]. Disaster management is part of national development, i.e. a series of disaster management activities before, during and after a disaster. In Law No. 24 of 2007 on Disaster Management [2] it is stated that "the implementation of disaster management is a series of efforts which include the determination of development policies that risk the onset of disasters, disaster prevention activities, emergency response and rehabilitation". One of the responsibilities of the government in implementing disaster management is in the form of disaster risk reduction and integration of disaster risk reduction with development programs while the authority of the government in the implementation of disaster management includes the establishment of disaster management policies in line with national development policies [2]. At present there are many government policies or legal products that regulate the implementation of disaster management as stipulated in the Government Working Plan in 2007 which was promulced through Presidential Decree No. 19 of 2006 where disaster mitigation and management has become one of the 9 national development priorities.

It is recognized that the perspective of government is often considered as contradictive to the perspective of people who are affected by disaster and disrupting the recovery process and future mitigation plan. This is where the role of disaster management actors must have competence and a fundamental understanding of the concept of disaster to bridge these differences including readiness in the management of data and geospatial information which is indispensable to minimize losses and accelerate the rehabilitation and reconstruction process in the affected areas.

The impact of disaster on the community is strongly influenced by the level of vulnerability to the threat of such disasters. In order to understand the aspects that make people vulnerable to disasters, factors such as economic, socio-cultural, institutional, political and psychological factors that make up people's lives should be considered. Thus, the vulnerability of disasters is basically socially constructed [3].

According to Setianto [4], when dealing with disasters people used to embrace and adopt the belief of "fatalism" that nothing can be done against disasters, people

must live with disasters and accept disasters as they are. Nowadays, people try to reduce loss of life and property with measurable pre-disaster preparation in line with disaster management. The problem is that academic studies of disasters in Indonesia are still very limited [5] and from the social aspect of disaster, the high frequency of disasters does not necessarily raise interest to conduct studies [6]. Furthermore, Abdullah [5] mentioned that a disaster is always considered as a new experience and something unprecedented. It is considered as something that has not become a collective knowledge and experience so that it has not been integrated in life and social policy.

2   Disaster and Disaster Management

Disaster Management is a science that studies disasters including all related aspects, especially disaster risk and prevention of the disaster. The cooperation of all parties involved in disaster management is important, therefore there must be equalizing perceptions about disaster and disaster management. This is conducted through an agreed system or rules of play, namely Disaster Management System. The parties involved must carry out comprehensive and continuous work programs or activities in each field. Periodic and momentary responses will lead to failure in the implementation of work programs since disasters will occur repeatedly [7].

Figure 1 shows the disaster management cycle based on the basic format put forward by Carter [8] and has been developed by Setianto [4] according to disaster management needs. This picture describes that if steps or activities have been taken during the Prevention and Mitigation and Preparedness phase and disaster occurs then the Emergency Response phase has started and continued with Post-Emergency phase before returning to the Prevention and Mitigation phase. The Prevention and Mitigation phase is necessary to deal with the possibility of future disasters and should be interpreted as the Prevention and Mitigation phase in the next Disaster Management Cycle.

Natural disaster events are irregular events disrupting normal pattern of life. The irregularity in frequency, location and intensity cause natural disasters are complicated to predict. Prevention, reduction, avoidance and self-recovery activities from disaster impacts require a series of activities, both before, during and after a disaster, referred as natural disaster management or disaster management.

Reflecting on various disasters in the past, disaster management actors must include elements of the government, non-governmental institutions and the community. Apparently, there is increasing recognition of the value of community-led initiatives that facilitate emergency management, risk reduction and community resilience [9]. In order for disaster management to run effectively and efficiently in accordance with the objectives of Law No. 24 of 2007 [2], disaster management actors must be competent and certified [10]. Therefore, the role of Disaster Management Professional Certification Body becomes very important and needs to be empowered. In

Fig. 1 Disaster management cycle (adopted and translated with permission from Setianto [4])

addition, the readiness of data management and geospatial information is very necessary to minimize losses and accelerate the rehabilitation and reconstruction process in the affected areas.

In recent years various parties have prepared disaster risk maps but the lack of standardization in the preparation resulted in the production of various types of disaster risk maps developed by each institution. Setianto [4] stated that fundamental understanding of the concept of disaster becomes a strong basis in mapping disaster risk that can be applied to a Geographic Information Systems (GIS) and presented spatially in the form of Threat Maps, Vulnerability Maps, Capacity Maps and Disaster Risk Maps respectively. Figure 2 describes methods containing stages required to produce a comprehensive Disaster Risk Map in accordance with disaster management objectives.

Figure 2 indicates the importance of data collection. The availability of data is essential and makes considerable contribution to analyzing and diagnosing broad scale and discrete problem. Understanding the larger scale problems mean that inappropriate areas for development can be avoided completely. Detailed data allow the authority to identify the potential hazards that are likely to be encountered.

In developed countries with a broad experience on disaster management, the development plans includes requirements relating to consultation with the community.
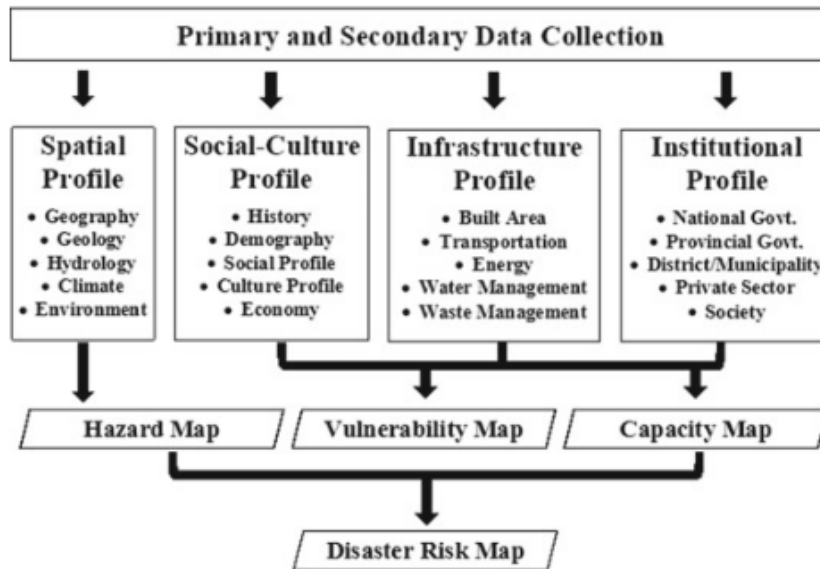
Fig. 2 Risk mapping methods (adopted and translated from StIRRRD [11])

Development plans, often referred to as strategic plans, are prepared by local councils with input from the community [12]. As such, any type of strategic plan produced by local council must consider the avoidance or mitigation of natural disasters.

3 Cultural Attributes in Disaster-Oriented Development Plans

The existence of Law No. 24 of 2007 on Disaster Management [2] shows that development policy in Indonesia that was previously less disaster-minded slowly but surely began to change. Previously disaster management tended to be responsive and spontaneous. Now disaster management has started to move towards preventive and more focused on disaster preparedness and risk reduction. Disaster risk reduction is one of a series of disaster management activities that take place in conditions before disasters occur (pre-disaster).

At a time when the role of the government is demanded more in disaster risk reduction, there are often differences in definitions and attitude towards disasters between the government and the community alike. The government's perspective in disaster management is often perceived the opposite way by the community in the location of disasters. Research conducted on one of the villages on the southwest slope of Mount Merapi in Central Java Province shows that there is a difference in perception between the government and the community on the threat of volcanic eruptions [6]. The government has been in a long persuasion to transmigrate villagers to one of the islands in Indonesia but the element of rejection appear within the community who decided to stay put on the slope of the volcano and adjusting themselves to

the dangers based on local knowledge systems in the form of direct monitoring and story-telling of hereditary myths about volcanic activities. From economic aspect, when government set the exclusion zone as preparedness measures for volcanic hazard, the community often sees it as controversial. Recent study in other continent severely affected by a prolonged volcanic eruption suggests that the governmental decision to extent the exclusion zone because of volcano increasing activity met with large disagreement, particularly from people who lost income during the period of extension [13].

In the case of an earthquake in West Sumatra Province, research by Effendi [14] showed that local people believe natural disasters are not a symptom of nature. The indigenous Minangkabau view and impose natural hazards as well as all natural symptoms as natural or normal as possible within the framework of their diverse cultural cosmology. Some people view earthquakes as entirely natural events that are scientifically understandable but others view the hazard as divine interference with human life so that they can only be understood in religious discourse as a test or punishment [6].

The results of the above research show that socio-cultural diversity in Indonesia affects the perceptions toward natural disasters, the impacts or victims caused, and post-disaster management. Understanding the cultural system will help the government in trying to find answers of why a community acts on a particular pattern of natural disasters as well as their impacts. By exploring this potential, it is expected that the community will be capable to independently manage pre-disaster, emergency response, rehabilitation and reconstruction process.

The government should not feel right on its own and ignore the values and norms within the community in the form of indigenous knowledge that speaks of natural events and the potential consequences. Various efforts in the form of technocracy and partnerships with stakeholders provide opportunities for people to live better and not become victims in the event of a disaster. Technocratic actions supported by local wisdom will confirm that community development in the framework of mitigation and social development is based on high cohesion [6]. In the framework of adoption of local wisdom, mitigation that maintains harmony and local cultural-based will be adaptive and can be transformed into a modern mitigation system through partnerships with governments and non-governmental organizations to produce a more effective and successful mitigation systems. This will strengthen the mitigation strategies already attached to the community.

In planning infrastructure development, the government should accommodate local wisdom in the community. In addition, knowledge of the history of disasters obtained from local community will greatly help the development actors in planning the right infrastructure. The results based on theoretical calculation may not be suitable for different region and produce an over-estimated or under-estimated result. Marking flood water level, for instance, has been recognized for a long period of time. The evidence of flood levels with the year of occurrences can be seen in a wall or any surviving infrastructure.

The practice of engraving the flood level on tablets of stone, set in gardens or house walls seem to have started more than three centuries ago [15]. In more simple fashion

Fig. 3 Flood level-marking based on personal information (Courtesy of West Lombok public works and housing office, 2017)

the determination of flood elevation plans in the planning of river embankments pay attention to traces of flooding based on hereditary experience of the surrounding community (see Fig. 3).

In certain infrastructures such as reservoirs, operation and maintenance are based on standard operating procedure (SOP) that has been prepared. Other anticipation measures that Operational and Maintenance Officers must be equipped with knowledge of the Emergency Preparedness Plan (EPP) including warning systems and activities to increase public awareness of possible hazards [16]. It is important that the SOP and EPP accommodate the environmental consideration and the involvement of the community in deciding if the risk is acceptable for their particular area.

Countries with advanced knowledge in disaster management, prepare the development planning based on the need for reducing risk and emergency management plans. Experiences show that Indonesian are familiar with discrete hazardous events such as annual flooding and forest fires as well as ongoing adversity resulting from disasters. Adaptive strategies have been developed to ensure community wellbeing. These strategies may works well for small-scale disasters but the community requires a more effective strategy to anticipate larger-scale disasters. Effective strategies are perceived by community as a key component in ensuring well organized emergency management response. Government officials as disaster management actors are required to be in the forefront in implementing effective strategies and the community are eagerly expecting their part.

A schematic concept has been proposed to be applied in Indonesia within the context of disaster risk reduction. Figure 4 shows that consultation with the community is an important aspect in the process of preparing development plan. It should begin with engaging communities to allow them to forward opinion based on experience and local knowledge. During the early round of the processes, the community

Fig. 4 Conceptualization of incorporating cultural attributes into development plans

has the opportunity to incorporate traditional knowledge, values and practices into disaster related development plans. The community can persuade government that the community perspective in disaster management and recovery initiatives are relevant to the government plan.

Under early round of the process, a large amount of information collection occurs. The relevant existing knowledge may have to be reviewed and the gaps with the existing information gathered by government may need to be identified. Once the required information has been obtained, the process continues to formal round of consultation with the involvement of the experts. The consequences of development planning associated with natural hazards require specialist reports. During this formal round of consultation, constraints and limitation have been taken into account in the preparation of development plans. The end result is the development plans which incorporate the risks of development associated with natural disasters in a manner that is aligned with the expectation of the community. In the event that developments are considered in areas subject to natural disasters, the primary focus is on the likelihood of the event with consideration of the potential consequences.

Disaster risk-based approach allow for a holistic consideration of both the consequences and the likelihood of a disaster, thereby allowing the government to make robust planning decision regarding natural disasters and future development. Development planning accompanied by a pre-event recovery planning [17], for example in the form of licensing and approval related to potential disasters, and also considers a "development moratorium" in which development decisions are halted for a certain time limit as well as zoning for evacuation infrastructure. For disaster risk reduction, land administration planning must be made in such a way, disaster risk-based and accommodate cultural attributes. It is an inevitable that the regional development planning should incorporate traditional knowledge, values and practices to address disaster-related risk.

4   Conclusions

Traditionally the planning approach for addressing natural disaster has been based on the likelihood of the occurrence of an event and disaster risk reduction have always been focused on the government. Recent developments require the need to increase community involvement in activities related to disaster risk reduction.

Based on the above description, some conclusions can be drawn as follows:

1. High frequency of disasters in Indonesia has led to the establishment of Law Number 24/2007 on Disaster Management as well as triggering a paradigm change in disaster management from responsive and spontaneous approaches to a preventive and more focused on preparedness and disaster risk reduction.
2. The existence of socio-cultural diversity in Indonesia which causes multi perceptions on natural disasters, the level of impacts or the number of casualties, and post-disaster management requires government to understand such cultural system in order to obtain information about community responses toward certain pattern of natural disasters along with their impacts.
3. Disaster management actors must be competent and certified, have a fundamental understanding of the concept of disaster risk reduction including readiness in the management of data and geospatial information that is indispensable to minimize losses and accelerate the rehabilitation and reconstruction process in the affected areas.
4. In the implementation of disaster risk reduction and infrastructure development planning, the government should accommodate local wisdom in the form of traditional attributes and values within the community including the absorption of information about the history of disasters from indigenous people.
5. It is important that there is a robust community engagement and communication process to enable community and the government to reach an agreement on risk acceptability as well as mitigation option. Consultation with the community is a key aspect in the process of preparing strategies for disaster risk reduction. A concept of development planning related to disaster risk reduction should take into account the risks of development associated with natural hazards.

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