

# **Community's Local Knowledge of Flood-Prone Areas in East Java as Disaster-Alert Educational Efforts**

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## **Introduction**

The flood disaster is a natural phenomenon that cannot be separated from the global warming that has swept the world. The disaster is the result of damage that humans do, such as deforestation, soil dredging massively in ecosystem buffer areas and water absorption areas, or mineral exploitation that do not take any consideration into the surrounding environment.

Things became important after a natural disaster is how to respond to the disaster. Reality shows that almost the whole capacity of central and local government is *weak* in solving problems which are caused by the disaster. As the result, the people must prepare toward the loss of the availability of food, shelter, clean water, a healthy sustainable environment, and of course the public service.

A flood annually hit the East Java province and inundated nearly 12 counties and cities. The total material loss in 2009 caused by flood in East Java reached 389 billion IDR (Media Indonesia). The impact is material loss because of crop failure and inundation number of settlements. Various efforts have been made by the government of East Java province and, even, offered to relocate the community in flood-prone areas, but the community rejects it.

Disaster risk reduction activities as mandated by Act 24 of 2007 on Disaster Management asserts that disaster-alert education, both given informally and formally to public, becomes one important factor in disaster risk reduction activities. The strategy for

public education strategy can be given in three main activities, namely mass campaigns and short-term non-formal education, as well as long-term formal education.

Every family has strength / power in facing natural disasters (coping strategy). Family's strength is derived from experience (learning process) acquired from good interaction with their physical and social environment. The community has already had information about signs of natural disasters especially floods, disaster-prone location point and the point of a safe location for salvation, and handled strategy. The information has been socialized from generation to generation through socialization institution (family). Yet, the values, norms and community understanding of such natural phenomena are often less in line with formal institutions which concern to natural disasters. Community participation on the rescue time (emergency response) has potential to be developed. Community participation can not be fully accommodated in disaster prevention management. From the above explanation, therefore, models on how community could have the same perception about natural disasters and its prevention, should be developed.

This research is important to do because (1) in the year of 2009, there were 12 districts / cities in East Java experiencing flood, (2) the total loss due to floods reaches 389 billion, (3) there were 1473 refugees, (4) there is no disaster management agencies exist, (5) spontaneously family's response system toward disaster.

This study will analyze the community's perceptions toward disaster and its prevention management, so that the community will get the same perception about disaster, prevention management before disaster (pre-disaster) and prevention management after disaster (recovery). Therefore, the efforts on improving the social institutions for a better society in managing disaster will be done. This study analyzes the disaster-alert education that has been done in the family and society.

## **Research problem**

The problems that are going to be analyzed in this research are (1) how is the flood-prone areas and their policies of disaster management, (2) how to formulate local knowledge as a model of disaster-alert community education.

## **Discussion**

### **Government policies related to disaster management**

In order to cope with natural disasters, acts of non-natural and social disasters, Indonesian Government on 26 April 2007 published the Disaster Management Act. The publication of this law marks a new era in dealing with disasters. Before, if the previous disaster management centered on the time of the disaster, then today, as written in Article 33, the disaster management focused on the management in three stages: pre-disaster, emergency response and post-disaster. In the pre-disaster phase, activities that can be done including disaster planning, disaster risk reduction, prevention, integration into development planning, disaster risk analysis requirements, implementation and enforcement of spatial planning, education and training, technical standard requirements for disasters management (Article 34).

Furthermore, in order to implement this law, the Government established the National Agency for Disaster Management (BNPB) held by the Minister-level officials (Article 10). It automatically replaces the establishment BNPB National Disaster Coordinating Agency that has overcome the disaster with Unit (SKPD). At the local level, the Local Government Act commissioned establishes Disaster Management Agency (BPBD) with lower-level officials in the Governor (at provincial level) and lower-level officials at the Regent (at district level). Article 83 clearly mandates at least 6 months after the law was created, BNPB must be established, and at least 1 year after the law was

enacted, Government should establish BPBD. BNPB and BPBD composed of supervisors and implementers. Functions and Duties of BPBD BNPB are coordinative in nature, mean that they make coordination at the pre-and post-disaster and perform the function of command during disaster response.

As a continuation of Disaster Management Act, the government established the National Disaster Management through Presidential regulation No. 8 of 2008 on January 26, 2012. Furthermore, according to the Head of Regulation of BNPB No. 3 of 2008 on Guidelines for Establishment BPBD, the Region can establish BPBD.

Apart from the institutional form to the Regional Center in the flood disaster, the government has also worked with local NGOs, national and international disaster management. For example, Jember Government has worked with JICA (Japan International Cooperation Agency) in the procurement of flood early detection tool. The Indonesian government also cooperates with United Nations concerning the health, food and children's welfare.

Although the central government, through the Disaster Management Act, has mandated the establishment of BPBD but some areas, such as Surabaya and Jember do not have BPBD. Disaster management is the responsibility of the Disaster Implementing Unit (Satlak) or Disaster Coordinating Unit (Satkorlak). In practice, Satlak PB cooperates with the relevant SKPD, for example *Dinsosnakertrans*, Irrigation Office, municipal police, military / police, *Dinkominfo*, Department of Transportation, Department of Agriculture and others. In addition to the central and regional governments, disaster management also involves private sector and public. Some companies, such as Sampoerna, Djarum and other business sectors have been involved since the beginning of the disaster. Satlak PB also cooperates with the victims and public.

Problem that is currently faced related to the formation of BPBD is the lack of qualified human resources to achieve the tasks given by BPBD related to the 3 stages of disaster. One of the BPBD Province staff complained about the lack of software and operational equipment because the Center Government has not laid out the rules. For example, every time there is a disaster, the Pusdaop (Center for Disaster Operations and Control) should manage it, but BPBD of East Java does not have Pusdaop. So that, if there is a disaster, each element just directly build shelters and other action, while they should coordinate to decide who is in charge, who commands and how to command, as stated in the contingency plan. Not all disaster office in East Java has already contingency plans. There should be 400-500 contingency plans to be made according to the new data, but the fact is only a few. Nowadays, from 29 BPBD that have been formed, none of them has a disaster plan and only 8 BPBD have disaster plan.

Another problem is related to the coordination between BPBD and agencies involved in disaster management. Before BPBD was formed, agencies had been accustomed to work without having coordination with BPBD. They have their own duties and functions as well as funds for disaster relief. This condition makes them, sometimes, failed to coordinate with the first BPBD, especially in emergency response. Even, Government of Surabaya City does not have plans to set up BPBD because of PB Satlak is able to do disaster management.

The existence of BPBD with a new paradigm of disaster management has not fully accepted by society. It can be seen from the number of NGOs that have an interest in disaster response is still focusing its activities in the domain of emergency response and have not done much to raise public awareness in the pre-disaster and post-disaster.

## **Some counties experiences in managing the flood**

### ***Sampang Regency***

Floods in Sampang district due to: first, high-intensity rainfall, especially during the rainy season. Second, the condition of the river Kemuning which is winding and turn as well as additional water discharge from pre-line Kemuning river so that the water overflowed into residential areas, third, due to sea rising level, and, fourth the overflow of river from District Kedungdung, Robatal and Coral Penang.

Floods in 13 villages in the district Sampang frequently happen in: Banyumas village, Paseyan Village, Village Stage, Kemuning village, Village Tanggumong, lowland village, the village of Mount Maddah, Pangelen Village, Mountain Village Sekar, Village Rongtengah, Dalpenang Village, Village Polagan, and Village karang dalam. When the floods came, around 5758 216.5 ha of paddy / farm / plantation flooded. The greatest disaster occurred in 10-year cycles, the largest one happened in 1991 and 2001. The last disaster occurred last February 7-8, 2012.

Under Regulation of Sampang district no. 4 of 2010 dated 26 July 2010, the tasks of flood disaster management is delegated to the Regional Disaster Management Agency (BPBD) Sampang. BPBD serves as a coordinator with the other SKPD that have the same tasks; they are *Dinsosnakertrans*, Department of Transportation, the Environment Agency, Army / Police and municipal police.

In the response to this disaster, the Provincial Government has established Tagana (Midshipman Disaster Response), FPBI (Forum Disasters Indonesia) in District Dalpenang and Banyuates and Tangguh Village in District Dalpenang, Sampang. Head of BPBD Sampang said that there is no problem in communication and coordination related to disaster issues in Sampang. To cope with the disaster that could have been predicted,

BPBD Sampang proposed pump house program, shunt, elevation of Kemuning embankment dam and the dam controller. The proposal has been proposed to BNPB (National Disaster Management Agency).

Local knowledge exists in the community flood-prone area is the understanding that when the river flow exceeds the threshold then the public would prepare to deal with flood. When rain falls in the higher regions such as in the area Kedundung, people should be aware because, usually, flood will come in the following day. Regarding to the condition of the houses, the community finally makes their houses position even higher, so that water does not easily fit into the house. Beside, people know when to evacuate or not. Those habits emerged as a spontaneous response in the community because there had been no disaster management education derived from community's customs.

So far, there has not been established social institution for flood disaster management from flood victims. They rely on government aid completely.

### ***Surabaya Municipality***

The flooded area in Surabaya is Benowo, kelurahan sumberejo and kecamatan Pakal, kelurahan Jagir kecamatan Wonorejo. Flood comes from Kali Lamong which is overloaded due to high water levels in Gresik, Jombang and Mojokerto. In addition to these main factors, a river which is full of rubbishes also becomes another factor that can cause flood because it is potential for clogging drains. Therefore, since the Banyu Urip canal was built last year, flood became subsides. The worst flood in Surabaya occurred in Sumberejo in 2010 which resulted in the damage of school building and health center buildings.

In order to control flood in Surabaya, its government has established a Disaster Management Implementation Unit (Satlak PB) by the rule Surabaya's mayor No. 49 of

2011 on Guidelines for Disaster Response. Satlak PB consists of sections that deal with certain matters and they are: Social Assistance Sector coordinated by the Head of Department of Social Welfare, Department of Health coordinated by the Chief Medical Officer, **Division of Rehabilitation and Reconstruction coordinated by the Head of Department of Public Works and Highways and Pematusan**, Communication and Information Sector coordinated by the Head of Communications and Information Technology, Division of Transportation is coordinated by the Head of the Department of Transportation, Shelters and Logistic coordinated by the Head of Social Services, Division of Safety coordinated by the Police Civil Service and Operations sections coordinated by the Head of National Unity, Politics and protection Society.

PB Satlak does its duty since the pre-disaster, in disaster and post-disaster. At the pre-disaster, Satlak disseminates disaster response community (**tough village** socialization) 2 times a year with participants more than 100 persons. In the event, community elders, the RT / RW, PKK and Youth in disaster-prone areas in Surabaya were invited. In addition, infrastructure improvements are also conducted such as embankments, **plengsengan**, river dredging, repairing roads and water sewer. At the time of the disaster, Satlak PB coordinates with the related sections to conduct disaster relief. At post-disaster, Satlak PB does the rehabilitation and reconstruction in cooperation with relevant SKPD.

### ***Bojonegoro Regency***

Flooding in Bojonegoro occurs every year during the rainy season. Worst flood occurs in the village of Leduk Kulon RW 2 RT 5. So great was the flood that the citizen activities have to stop for entire month. The flood came from Bengawan Solo River. In addition, sand mining in the river that can cause erosion.



In order to cope with the flood disaster, Bojonegoro Regional Disaster Management Agency was established based on Regulation No. 11 of 2010. It was established due to regulation about Organization and Administration of other institutions in Bojonegoro. In performing its duties, the Head of BPBD establishes Quick Reaction Force and Search and Rescue Team who served primarily during the disaster.

Besides the efforts made by the government, the community also helped to overcome the problem by working hand in hand to create embankments, river and sewer cleaning. All was done in community service that involves all mass parties. When the flood came, the citizens help each other to prepare boats and evacuate casualties.

### ***Jember Regency***

Floods in Jember happen every year when the volume of rainfall is in high level. The main cause of the flood is the overflow of water from Mayang River which across the region. The geographical position of Jember between mountain valleys is also another factor of becoming flood possibility areas. This condition became worse when deforestation carried out continuously. As a result, floods and landslides become a major threat. Largest flood occurred in 2006 in the district and sub-district of Panji and Rambli Puji. As the result, 108 people died, 399 homes were destroyed and 1,400 hectares of farmland damaged. Areas that regularly experience floods every year is in District of Mayang, Panti and Tempurejo.

To cope with the disaster, the Government of Jember establishes the Regional Disaster Management Agency. In a disaster management especially when the disaster occurred, the government formed disaster coordination and implementation of Disaster Management and Refugees by decree of Bupati No. 63 in 2006. Moreover, the role of the community is also enhanced by involving them in disaster mitigation training. Similarly, in

other areas of disaster management, the government complained about the lack of knowledge and awareness of community participation in disaster relief efforts.

### ***Disaster-alert Education***

Education in Greek language means pedagogical sense. It is a knowledge used for guiding children. The Romans saw education as Educare, which means creates and guides the action that implement potential matters that is already exist in early life. In the Javanese language, education means process, changes the psyche, grow feelings, thoughts, wishes and change the child's personality. Indonesian dictionary says that education comes from the basic tuition (educational) that maintains and provides training on the character and intelligence of the mind. Education means the process of changing attitudes and code of conduct a person or group of people in maturing people's mind through teaching and training, the working process and ways to educate.

Stages of disaster management consist of three; pre-disaster, emergency response in-disaster and post-disaster. In the pre-disaster stage, a number of activities are done such as vulnerability and risk mapping and disaster evacuation, counseling, budget preparation and others. At the stage of emergency response, activities such as observing disaster areas quickly, determining the status of emergency states, and others, are conducted. At post-disaster stage, rehabilitation and reconstruction of physical, mental and spiritual recovery of victims and others are well conducted.

Handling the aftermath is also important than the disaster-management itself. Neglecting the post-disaster problems is potentially creating the causes of social illness that can disrupt the stability of social life. For those people who become poor in sudden and cannot establish their life again has a high possibility to commit criminal acts, or be exposed to traumatic on psychological disorders after disaster. Therefore, looting and theft becomes a common thing that happens although they are still in disaster condition.

Moreover, many victims who get depression and stress are vulnerable to commit suicide because they cannot endure the suffering. Loosing of family members and belongings, sometimes, can cause some people to lose their spirit of life. Therefore, social endurance to continue living with a sense of optimism after the disaster is something to be fight with.

Empowering the potential improvement, confidence and opportunities building, have encouraged the improvement of social problem-solving skills in order to enjoy a decent life and play a role in social development. In the other side, the definition of family is institution, the smallest social unit consisting of husband and wife, or husband and wife and son, or father and son, or mother and child.

Community organizing is one of potential or ability strengthening forms. Organizing is an attempt to establish a working group in order to empower the community and facilitate the planning and implementation activities. This organization is responsible for all activities undertaken. Member of organizations are selected from the families of the victims of disasters who attended the board and the elements meeting, and the selection is in accordance with the collective agreement and adapted to the prevailing and agreed organizational structure.

These organization or work group consists of family elements and community official. The members of such groups are expected to be significant in the empowerment of the family in order to enhance community alert in facing disasters.

The task of these work groups is to manage information (obtained from the improved understanding and motivation) in the implementation of family's activities. They are fully trusted to plan activities (planning), provide activities assessment that is being carried out (monitoring), and measure the final assessment of the results achieved (Evaluating).

Each steps in the scheduled activities is assigned as the responsibility of work groups toward the community, institutions (Family Trustees (Village Chief / Chief of), and agency sectors. Therefore, society at large can (1) provide an assessment on the benefits of the activities carried out by family (2) determinate participation activities in coaching family.

In order to build the ability of communities and administrators, training and workshops can be conducted, so that, a high possibility to results achieved during the training, directly, has real value in the implementation of activities.

The concept of local wisdom is rooted from knowledge and local or traditional governance (Bruce Mitchell et al, 2003). Local communities, traditional or indigenous can be found everywhere on every continent and even in many countries. The definition of indigenous and local are quite varied according to Durning (1992). There are five elements namely: (1) the descendants of indigenous people of a region which was then inhabited by a outside group that is stronger, (2) a group of people who have the language, traditions, culture and religion that is different from the dominant group, (3) they always associated with some types of economic conditions, (4) descendants of hunters, nomadic, shifting cultivators, and (5) community with social relations which more concern to group, decision making through agreements and resource management groups.

Community involvement in economic and social development basically has to be started from the bottom that is through good citizen-based forums such as forums administrative of RT, RW, village consultation and forums that are succeeded in institutional and community (Community Based Organization / CBOs) such as study groups, group of *yasinan / tahlilan* , a group of farmers, ranchers, etc. merchants and so on (Suparjan: 2003: 48). This effort is done by utilizing the forums not only as a mean to

socialize, study or social gathering, but also can be used to discuss various issues that are going on in people's lives as well as disaster alert educational efforts.

## **Conclusion**

The community local knowledge is still partial in nature and requires disaster-alert education efforts formulated from the local knowledge so that such disaster can be coped with. The disaster-alert education can be carried out in the flood-prone areas by informal education through a number of local community forums such as youth organizations, social gathering, and other social organizations. Such education is expected to minimize risks and prevent disasters.

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