Community Adaptation in Facing Flood Disasters in Cisadane Riparian Zone, Paledang Village, Central Bogor

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A B S T R A C T

The purpose of this study is to determine the adaptations carried out by people who are in the flood disaster area. This research was conducted in Sempadan Cisadane, Paledang Village, Bogor Tengah, Bogor City. The affected communities adapted using their very minimal knowledge of information and minimal knowledge related to disaster based on the data analysis. However, affected communities can adapt from the experiences they have experienced while living there, starting from seeing signs of catastrophic flooding from natural conditions or objects around their homes, such as electricity poles, and steps at home.

Kata kunci:
Adaptasi
Bencana banjir
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A B S T R A K

Tujuan penelitian ini ialah mengetahui adaptasi yang dilakukan oleh masyarakat yang berada di daerah bencana banjir. Penelitian ini dilakukan di Daerah Sempadan Cisadane Kelurahan Paledang Bogor Tengah Kota Bogor. Berdasarkan analisis data yang dilakukan, masyarakat terdampak melakukan adaptasi dengan menggunakan pengetahuan mereka yang sangat minim akan informasi dan minim akan pengetahuan terkait kebencanaan. Akan tetapi, masyarakat terdampak dapat melakukan adaptasi dari pengalaman yang mereka alami selama bermukim di sana, mulai dari melihat tanda-tanda bencana banjir dari kondisi alam, ataupun dari benda-benda yang ada disekitar rumah mereka, seperti tiang listrik, serta undakan pada rumah.

Introduction

The increasing number of catastrophic events dominated by hydrometeorological disasters such as flood disaster, landslide, hurricane and flash flood (Suprapto, 2011). Flood disaster is a disaster arising from human activity that impacts on surrounding environment such as cutting forest in upstream area, throwing garbage in river, build house in the area around river body, and caused by Overflowing surface water runoff and volume exceeding the irrigation capacity of the drainage system or river Flow system (Oya dalam Prasetyo. 2009).

As with the cities in Indonesia, the city of Bogor faces a problem that is almost similar to other major cities, namely the flood disaster. Bogor City is located at an altitude of > 1000 m. area of each land level in Bogor and Bogor City can be known that Bogor Regency dominated by land height of more than 100 m with an area of 241,925.26 ha (81.91%). Bogor City has a height of 11703.68 ha (100%). Areas with higher elevations are potentially smaller for flooding. Areas with low altitude potentially greater for flooding (Purnama. 2008). The occurrence of flooding can be caused by high rainfall, areas located in the valley, areas located in the river basin as well as the permeability of the soil is very hindered.

Areas that are prone to flood disaster occur in areas crossed by large rivers or tributaries that cross the area, one of which is Cisadane River. The Cisadane River is one of the great rivers in the Tatar Pasundan, Java Island which rises to the Java Sea. The community of Paledang, District Bogor Tengah, Bogor City is one of the community that established a building on the Cisadane River. People of Paledang Sub-district who live in the community of Cisadane often experience a flood disaster that leads to losses in the form of material losses, and the economy is based on information

from Mrs. Nunung Chairman RT 05 RW 06. If viewed from the observation of researchers, people living in the boundary area of Cisadane Kelurahan Paledang City of Bogor Enter into a moderate threat level due to flood events in the last 3 years as much as 3-5 times of occurrence, and generally derived from the runoff of rivers (Mataburu. 2013).

The location of RT. 05 is the Burnt River that rises on the body of Cisadane River. Basically burnt rivers should not be intended to construct buildings. If the burnt of the river was made a settlement it will be able to inflict casualties caused by the widespread water of the river. There are about 100 more citizens Kelurahan Paledang that lives on the Cisadane border. The role of the government here is very large and important because the government and local governments are responsible for the implementation of disaster management (UU No. 24 year 2007). Increased role in the coordination or exchange of information between the local government and the affected community must be good (Muzani, 2014).

The adaptation of the community in the face of flood disaster becomes one of the topics of interesting research if seen from the vulnerability and danger of flood disaster that occurred on the Cisadane River. The act of adaptation to flood disasters could be actions taken to reduce the impact of the disaster on either direct or indirect impacts. Adaptation attempts are also aimed at ensuring that the resources needed for responsiveness in disaster events can be used effectively during disasters and know how to use them (Sutton and Tierney, 2006).

Method

The methods of study used are qualitative methods. The informant in this study is divided into two; Key informant consisting of residents RT 05/06 and RT 01,02/09 Sub District Paledang, as well as supporting informant of the chairman of RT/admin RT 05/06 and 01,02/09. Techniques purpose sampling Used in determining the informant. Data collection techniques are done in the first three ways, observations conducted with the observation of the research site in the area of borders Cisadane Kelurahan paledang Bogor Tengah Kota Bogor, Observation data is done that includes aspects of residential environment that is the environment of the home surroundings, the state of Cisadane River, and the interaction of citizens with the river Cisadane. Secondly, in-depth interviews, conducted in a way question-and-face answer between informers and researchers, and using interview guidelines to the informant. Third, the study of documentation by studying the documents owned by the local apparatus, either in the form of monographic data or the results of research reports related to the site of the researcher.

The validity of the data researcher's calibration technique is done by steps; First, an extension of observation was made to re-examine the findings of researchers meaning the findings of the researchers in check whether the bias or misperceptions of researchers by means of researchers longer were in the field. Secondly, triangulation is data obtained by researchers with interview techniques, then researchers check back by using observation techniques, documentation, as well as questionnaire. Thirdly, referential adequacy is that researchers collect data using drawing tools, and photo cameras.

Data analysis techniques used by researchers are: first, data reduction. Researchers at the time of retrieval of data in the field make written records of what researchers get in the field. This activity researchers do continuously during data collection. Researchers do the data selection so that the data obtained according to the aspects that are researched and not out of the theme to be researched. Furthermore, researchers are concerned with the simplification of the questionnaire that has been conducted by researchers to make inquiries to the informant.

Second, data presentation. At this step researchers try to compile the relevant data so that it becomes an inconclusive and meaningful information. The data presentation is directed for the reduced data

to be organized or arranged in a relationship pattern, making it easier to understand. The presentation of the data researchers do is in the form of narrative descriptions, as well as in the form of tables. The presentation of the data makes it easier for researchers to understand what's happening. In this step, researchers try to compile the relevant data so that the information obtained is concluded and has a certain meaning to answer the problem of researchers

Results and Discussion

If viewed from the knowledge of people living in affected locations, the community is very lacking in knowledge to adapt in the area where they live. Lack of knowledge because they adapted to their buildings using building materials that are not strong and not waterproof. They only employ very minimal knowledge to adapt to their environment. Such minimal knowledge can be caused by the absence of notification on how the adaptation to the building with such environmental conditions. People are affected only by the knowledge of what he can see and what ever did. The affected community knows the signs of flooding only through the natural signs of the surroundings as in the table below.

In table 1 It appears that the signs of people felt affected before the flood disaster is; (1). The clouds are visible in the dark, (2). River water Flow, (3). The river water rises or increases, (4). The river water is smelly, (5). The river water is murky and brown, (6). Visible flow of river carrying material (trees, garbage, twigs). From the signs the community will immediately anticipate the precious goods and their families. These signs form a pattern for signs before the disaster. The pattern became a reference for the affected community to adapt, from the adaptation the affected community will directly conduct mitigation activities.

But the adaptation done by the public is not accompanied by existing technology. That is, people do not see the natural condition that is there using existing technology such as using the weather application to know the latest weather conditions and so on. The pattern for the signs of flooding is still very weak, this weakness can be seen at night where people can not see patterns of signs of catastrophic events. Knowledge that is owned by the people in addition to the signs of flooding is the knowledge related to the cause and time of flooding. Knowledge of it they know from what they get during this flood incident occurred, whether they get from local authorities or from other citizens. For public knowledge regarding the causes and times of flooding can be seen in the following table;

In table 2 can be seen that the flood occurred on the outskirts of the Cisadane River Paledang Village is because of the rain that occurred in the area of Bogor and Mount Gede Pangrango as well as the opening of the water gates in the upstream area of the Cisadane River. The knowledge owned by the communities in which the living is impacted is already very good, by looking at the background of people who are only graduates of SLTA hence the knowledge they get based on their own experiences. This is because the people who live there have been almost 10 years settled and established the building there.

The cause of flooding occurred in the location affected due to the rain occurred in the Bogor area, and the opening of the water door that was in the upper area of the Cisadane River. As we know that the intensity of rain that occurs in Bogor is high that mengakibakan the intensity of the height of the Cisadane River increases in the rainy season, the increasing intensity of Cisadane River can be controlled through the water door In the upstream area of the river. However, the door of the water will add intensity if the water door in the upstream area is opened which causes water to flow very high and heavy to the downstream area. Thus the flowing water that passes through the village Paledang is very large and resulted in flooding in the area. Public knowledge related to signs before the occurrence of the pattern flood is always the same that is visible clouds in the dark areas, heavy river flows, river water Meninggi, river water smelling, the river water is cloudy and visible river flows Carrying tree materials, household waste and tree branches. Things are always natural people in general before the flood disaster.

For public knowledge related to the cause of flood disaster, generally the public knows that the flood disaster occurs because of the rain that occurred in the area for a long time and the opening of the water door that is in the upstream area Cisadane River. In the geography of

knowledge related to this disaster should be seen with an angle of view to the environment, this is because it is not a gap that can give harm or negative for human beings and the environment itself. In addition, it is necessary for the absence of inequality that occurs between the human and the environment itself. In this case, it is obvious that the community has been detrimental to the environment by establishing a permanent building on the boundary of the river that has its designation for the water catchment area. Therefore, it is natural that the area is affected if the rainy season is flooded due to establishing a permanent building in the water catchment area.

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Construction at the river boundary location was one of the things that caused flooding to occur at the location. Therefore the Government should provide counseling related to the establishment of buildings on the border of the river to the community. This is because the public knowledge related to the regulation or rule is still very minimal, it is still a homework for the local government as well as the people who live the places affected. Local governments should either educate or provide socialization related to regulations or Government rules that can not establish a corporation building in the water catchment area, but the government should provide Pencerdasan related and balanced with solutions to convince the public to actually move from the dwelling affected by flood disaster.

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Community knowledge is minimal as well as the demands of shelter that is limited to the economic factor that resulted in the communities that live in the affected places choose to survive the affected. This should also be considered by the Government as a policy stakeholder to make the building a safe place but at an affordable price. In some respects the government has a high impact on education, therefore the government must reduce the impact by giving it structurally as well as the supply of safety signs, or tools knowledge other or non-structural means such as workshops, seminars, counseling, etc. to reduce the risk of casualties due to flood disasters.

For the technology should the public be easy to access information related to the development of the disaster or development of climatic conditions. It is necessary so that people can anticipate or make mitigation preparations to avoid the losses they will get from the flood disaster. With the ease of this technology will strengthen the Government or the community in terms of mitigation, the Government should also be easier to exhorting or Malekukan to the community by providing the development of information Climate and weather in the affected areas.

But in this technological facility can be noted also in terms of the demographics of the local people is the average age living there. Because the people living there on average aged 40 years more then the ease in terms of accessing the latest information using technology is slightly hindered. However, the local government has been very good at providing the development of information to affected communities, such as when the rainy season comes the community has been informed through the doorman Cisadane, then when in the upstream area want to open The floodgates of the

people have been told to prepare for the shipment of water and other exhortation information.

Did Peraturan Pemerintah (PP) Nomer 21 tahun 2008, Mitigation is a series of efforts to reduce disaster risk, either through physical development as well as simplification and increased ability to deal with disaster threats. At the research site that coincides on the banks of Cisadane River border Paledang Village, unconsciously the people who live there are already experiencing the adaptation related to disaster is flood. They take early mitigation action through their experience which is every rainy season, and the area will experience flooding. This experience they got from what they had experienced during their stay there. However, this experience is still very vulnerable and prone to the flood disaster itself. They adapted from what they had felt so far, but what they have done so far is still very minimal and prone to the flood disaster itself. They usually take precautions from flood disasters in order not to impact their personal belongings or valuables through the activities in the table below

In table 3 can be seen that the adaptation conducted by the community in the mitigation there are two: first, that is when visible signs of flooding or before the flood and during the flood disaster. For the activities undertaken by the community before the flood is: moving electronic goods to a higher place, informing the neighbor and the head of the neighbor pillars, securing the vehicle to a higher place. For the time of flooding, the activities undertaken by the Community are: Securing Securities (family cards, birth certificates, diplomas, home ownership letters), securing themselves and family members, turning off home electricity. This is done by the affected community as it enters the rainy season. In the pattern of adaptation that communities do in disaster mitigation, communities see the signs of disasters not only from natural conditions however, they see signs they should do mitigation through their residential environment.

The activities they do to do so do not add to the impact of the loss of a larger flood disaster. They do it all because they know that flooding happening in their location can be very large but not so long and when the big flood could be the goods or parts of their house can be carried away by flood flow, therefore They feel more secure if they carry valuables with them as opposed to their store in their homes on the safe part of the flood disaster. Experience and early mitigation actions undertaken by affected communities are structural and non-structural, for more details can be seen in the table below;In table 4 The community performs two actions namely, (1). Structural action and (2). Non-Structural action. For structural action communities build walls with cement, sacks containing sand and brojong rims River Cisadane. For non-structural action the community get the development of information from the chairman of the Neighbor Pillars (RT), Rukun Citizen (RW) and Kelurahan. For structural action The community has been very good because it is follow the latest information developments. This is very important because people know the flood state of flooding that occurs in the area where they live. When they were displaced, when they could go home their household. If the community does not get the latest information then when the public disaster that resides in the border area Cisadane River can be a victim of the flood disaster.

The experience and mitigation of affected communities has been excellent especially in environmental security. This can be seen from how the community has begun to pay attention to the safety of their residence with regard to the conditions and circumstances of their environment, it is supported also with those who have long lived and settled in the affected locations. With the length of their stay and settle there, the experience of the affected community is very good and complex. This experience will increase environmental security and reduce the impact of the flood disaster.

Mitigation activities are set out in the Constitution no 24 years 2007 which reads: A series of efforts to reduce disaster risk, both through physical development and awareness and improvement of the ability to deal with disaster threats. However, communities get the knowledge of this mitigation they get from their experience during the stay the allocated is impacted. This mitigation experience can be seen in their buildings, as well as their series of activities when floods come to their area.

Indeed, the flood that occurred in the place affected almost in the rainy season, but the flood disaster did not last long but only briefly. However,

the impact caused by the flood disaster is so great. This is due to the flooding affected by the on site has considerable intensity and the flood carries materials such as timber chunks, branches of trees, and household goods such as mattresses, plywood, and others. In the last 10 years it has been 3 times had a huge flood in the disaster, until the house one citizens carried away by the flood. Seeing the condition of the Dilokais affected environment as such, the environment security that there is the affected area should be safe for the communities that live the allocated is affected.

Environmental security in the point of view to the Geography was created by the community that would later affect the community. If people care about the environment, people will get environmental security. In this case the society that resides on the banks of the Cisadane River border Paledang Village has been doing environmental care such as service work, do not waste garbage and so forth. Community experiences related to mitigation and adaptation have been done by them from the last 10 years even before they have been adapted. This adaptation was done by looking at their neighborhood which is very prone to flood disaster.

Experience and structural mitigation action, the community builds the wall with cement, sand-filled sack and installed Brojong wire rims River Cisadane. For Non-structural community in the form of information development from local apparatus. Where the development of this information is required for disaster affected communities, because if the absence of information development could be a follow-up disaster.

Experience in this matter is the experience of community related to the flood disaster as well as mitigation measures like what they do. Thus, from what researchers have gained from the results of interviews and observations obtained that in general the Community experience and the mitigation that they do during the flood disaster there are two namely when visible signs of flooding and During a flood disaster. For when visible signs of disaster flooding the community always move their electronic goods to a higher or safe place, then inform the neighbor and chairman of the RT and secure the vehicle to the higher place . Then, in the event of flood disaster, the community always do the secure letters, secure themselves and family members and turn off the electricity of the house. It's all they've always done when the rainy season has come. People affected generally always see the signs of flooding the flood of objects that exist around them either through the pole or on the steps that are in their home, such things that make Communities can survive in affected locations.

From the knowledge and experience gained by the affected community is all done from what they have experienced so far, what they have experienced so far is done so that there is no big loss. However, there is still a loss suffered by the affected community and the losses are very diverse, this is due to the location of the house which differs in its height and is also determined from the distance between the house and the Cisadane River. However, the losses are experienced according to when the flood disaster occurs.

The community suffered losses in the form of electronic goods (TV, refrigerator), home doors, cracked walls, windows, cookware, and toiletries. For immaterial losses in the form of communities exposed to diseases such as uric acid, diarrhea, asthma. The losses suffered by the community affected to the material is quite severe because by looking at the economic condition of affected communities that are in the lower middle scale then the losses suffered by them are very heavy. Coupled with immaterial losses that require them to break and buy medicines because of the medications caused by the illness suffered post-disaster they do not get from local government or government officials Local.

Knowledge and experience that is owned by the community is also an impact on the adaptation conducted by the community related adaptation to the building. From the damage they experienced during catastrophic events, the community formed an adaptation that they always did when their home became the impact of the flood disaster. Adaptations to their residential buildings can be seen from five factors, namely building maintenance, rehabilitation on building, renovation of building, reconstruction of building and building restoration. These five factors are always communities to do when their homes become the impact of the flood disaster. However, the five factors are still very weak because of the lack of knowledge and experience that is owned by the affected community. The affected

community only made improvements to the building with the knowledge and experience they did each of their homes became the impact of the flood disaster.

Conclusion

Based on the results of the research on the adaptation of the community in the face of flood disaster on the boundary Cisadane village Paledang Bogor Central Bogor, the community has a very minimal knowledge adaptation. However, it is supported by their experience while residing at an affected location by looking at the signs that are happening around them before the disaster occurs. Signs or symptoms that they see that is, visible clouds in the upstream dark areas of the river, heavy streams of water, river water rises or increases, the river water is smelly, the river water is cloudy and visible river flow carries the material (Trees, garbage, twigs).

When looking at these signs or symptoms, the mitigation of the community is to transfer electronic goods to a higher place, inform the neighbor and the head of the neighbor's pillars, securing the vehicle Higher place. When the flood saw the signs or symptoms of flood altitude from their home, they saw the height of the water from the stairs or the steps they made in front of the house, as well as through the electricity poles around the house Their. By looking at the signs or symptoms, the community has made the mitigation of securing securities (family cards, birth certificates, diplomas, home ownership letters), securing themselves and family members and turning off Home electricity.

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