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Post-flood handling pattern by self-sufficient community in Garut

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Abstract. This study discusses the process of restoring post-flood soil functions with self-sufficient community activities in Garut, West Java, Indonesia. The soil restoration is conducted based on the aspirations of the community. This study used a qualitative approach to obtain natural settings of which many behaviors and events occur during the recovery period. This study also uses institutional theory, because it can guide researchers on institutional structures, regulations and procedures that can have a significant impact on the good of the community. The study finds that performing their functions as elected organizers; they always prioritize the interests of the people in their activities. To achieve that, the managers of the organization, comprehend and collect the aspirations of the community; accommodate and follow up aspirations and complaints; create events together with the society and give moral encouragement to rise from adversity. The study also found many events leading to soil maintenance to prevent future damage.

1. Introduction

Humans are immanent, integrated into the ecosystem process. However, since man is one of nature's component of reason (noosphere), man is distanced from other components while remaining within it as a natural component just like any other natural component [1]. Nature has provided everything for humans but sometimes humans do not preserve nature well so it causes damage and harm to humans instead. Not only the material and physical that loss, but also the social and psychological do the victims suffer. In Japan, along with the modernization, the migration of urban population was very large. In the city center, the air, water, and other environmental factors condition had worsened. The lives of many people became isolated, and many social problems began to emerge. In the rural villages, the decline in population and aging factors continued to deteriorate, and the villagers could no longer maintain the cooperation lifestyle. In rural areas, local wisdom that utilizes the nature was slowly vanishing and so was the ecosystems. Since 1993, 20-30 youths aged 18-40 years had been sent as volunteers in rural areas throughout Japan. In each region, one or two volunteers were dispatched for one year for community revitalization activities selected by the target city. Its activities included forest management assistance, the operation of public facilities, the creation of local agricultural

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specialties, and the development of traditional handicrafts. The project also called on villagers to rediscover their community values and feel confident and proud of them [2].

In India, Field and Kelman's research witnessed that many trees were cut down, so the mutual relation between humans and their environment damaged by such natural disasters as landslide, the loss of water springs, and flood [3]. The same thing happened in Garut regency when the flood hit the urban area of Tarogong on September 20, 2016. The disaster had damaged houses and claimed lives. This disaster has resulted in changes to the lives of surrounding communities. Social life cannot be separated from the influence of nature. In response to the disaster, the surrounding social system will be affected. The same thing is experienced by the people of Kampong Pinggirsari of Village Sukakarya of Tarogong Kidul Subdistrict. Vice Regent of Garut, Helmi Budiman then officially announce "Kampung Bangkit" (The Village Rose) on October 26, 2016 in the village. With this program, the residents were expected to rise soon after the flood. He also planted trees in the village as a symbol of reforestation. It was named "Village Rose" because, after the flood, the community is not slumped on the situation but rise up and have the spirit in life again instead. Although they lived on the riverbanks they were efficient, had the desire to recover and even could become a tourist village.

2. Theoretical framework

Man and nature will always coexist. Here humans always need nature as a counterweight and to meet the needs of their life [4]. The environment itself turns to be in crisis condition and broken everywhere. It brings not only physical environmental crises, such as water, land, air, and climate crises, but also biological and social environmental crises. Again, the root of the problem comes from the environmental damage caused by human behavior to meet the needs of economic life neglecting the environmental balance [5]. Humans always try to satisfy their desire eventually the environment was sacrificed. Various natural disasters have become heartbreaking scenes and that leaves sufferings and losses invaluable. Interestingly in the context of a behavioral organism, such an occurrence does not run individually but is connected to one another, like a system. It is therefore understandable why current environmental issues were also largely determined by the running system within the community itself [4].

Flash floods in Garut occurred due to the inharmonious role and function of the system. Within a society, there were people who have social status and role that affect the social environment that is government, private / entrepreneur, and society. Flood disaster in Garut has allegedly violated 3 Acts: the Forestry Act, Environmental Act, and Corruption Act. There were several law violations that caused flash floods in Garut. First, the land conversion of tea plantation into the vegetable farm. Secondly, the construction of artificial swimming pool tourism spot in Darajat of Pasirwangi Subdistrict. Third, the conversion function of protected forest that initially unchanged, but there were people who had interests and wanted to gain profit had converted the area into the vegetable farm. It violated the local regulations of which that in Darajat, the permitted tourism object was natural, and not artificial.

This could happen because there were entrepreneurs that only seek the potential benefits from tourism objects and government officials who permitted the construction of the swimming pool tourism object. The impact of land conversion and the development that is not environmentally safe had resulted in the delayed absorption of rainwater which eventually led to the flash floods. All that happened due to the inharmonious role and function of the system, and finally the victims were the people themselves. However, the undesirable flash floods had triggered various society elements to restore the environment in Garut Regency. They live on riverbanks, and can rise and not slumped after flash floods hit them.

Development issues have two sides that should be aligned. On the one hand, it is considered as an indicator of human progress because humans have had certain systematic efforts to meet economic needs. Meanwhile, on the other hand, environmental sustainability and social development have become important that cannot be ignored. A good environment also produces a strong society. The new awareness that must arise is that development is a process so it should mindfully consider the

environment in the future. There should be a non-dominating relationship between humans and nature. The harmonious relationship between the two must always be noticed and maintained [5]. Therefore, environmentally sustainable development is necessary which holds the principle to meet the present needs without compromising the needs of future generations.

Furthermore, there were two notions of flooding: firstly, the flow of river water that exceeds the normal water level or exceeds the riverbed causing inundation in lowland areas on the riverside. The runoff water flow is increasingly high and flowing over the soil surface which is not usually passed by the water flow. Secondly, flood waves run downstream of the river system that interacts with water level rise in the estuary due to storm [6]. The cause of flooding is mainly due to the reduction of water catchment areas in the upstream. There are two things that reduce the water absorbed into the soil: firstly, the area of permanent buildings that cover the soil surface has increasingly expanded, for example, the conversion of agricultural land into a building or asphalt road. Secondly, the reduction of land cover vegetation, for example, deforestation which eliminated the canopy and tree roots of which the function is to hold the surface water flow and to increase water absorbed into the soil [7].

Flash floods usually occur in river streams with a steep incline. In high and very rapid floods, the height of the water spill can reach 12 meters that it can sweep away the boulders and trees and damage or sweep away anything it passed but it also quickly recedes. Such floods can cause human casualties (due to not having time to evacuate) or large property in a short time [6]. Since the floods causes were more external, the prevention should be coordinated with the water source areas. This coordination is conducted among the district/city governments covered by watersheds and is assisted by the provincial government. The key to this solution is the spatial planning of the watershed areas and integrated flood prevention efforts [7].

3. Research method

The method used in this research was a case study, for it is a specific approach examining the problem more deeply in all levels [8]. This research was to disclose facts in causal, explorative relationships to find out the cause of the problem, and how to solve it, but it is only in depth on one unit of events, which is the post-flood event this particular research. The research technique used is qualitative, as a natural paradigm [9]. That is, a particular tradition in social science that is fundamentally dependent on human observations within its region and relates to such persons in its language and terminology [10]. This research was conducted at the location of flash floods in Garut, where the natural disasters took place which was a very heartbreaking event. So it is interesting to examine the recovery and environmentally sustainable development that the community conducts after the natural disaster occurred.

Primary data collection techniques obtained through observation and in-depth interviews of community leaders, government, private and the community as a subject as well as an object of development [11]. As for the secondary data such as theory, views, research results, books and other archives, this research used documentation and literature study. After the data is collected, the next step is to analyze the data. Data analysis is the process of organizing and sorting data into patterns, categories, and units of basic description so that the theme can emerge and can formulate hypotheses as suggested by the data [12]. The technique used is qualitative data analysis from Miles and Huberman [13] which consists of three activities that occur simultaneously, i.e., data reduction, data presentation, and conclusion drawing or verification.

4. Findings and discussion

Kampong Pinggirsari is one of the villages affected by the flash flood on September 26, 2016. After the flood, the society who became the flood survivors started to build the damaged houses and schools by their own hands. The damaged houses by the flash floods disaster were 15 heavily damaged houses and 13 lightly damaged houses. They did not want to rely on relocation assistance from local governments. Seventeen families in the Kampong became the floods survivors who built houses in locations affected by Garut flood. The flash floods had caused material damage to the citizen's house.

Some houses were severe, moderately, and slightly damaged. Because of the many sympathizers to the victims of the disaster, many elements of society helped the disaster victims to be motivated and recovered as healthy and spirited as before.

4.1 Village Rose Institution

On Friday, October 7, 2016, the pioneer of community groups in Pinggirsari had agreed to establish "Kampung Bangkit" (The Village Rose), an idea to live, rise and not linger after the flash floods. Its initial committee comprised nine people. But in further developments, the management had 17 people [14]. The residents admitted happy about the establishment of Village Rose, for it is initiated to recover their flood-affected areas as soon as possible (Interview with AR, a resident in Kampong Pinggirsari, 6/11/2016). This step received positive appreciation from the government. The government did not prohibit its people to build houses independently, and even the Garut Regency Government assisted in the construction of houses. Residents who inhabit these 17 houses agreed to move to a place they provided (Interview with AK, chairman of RW, 7/5/2017). And the idea of establishing the village rose came to light. As for the continuation, Village Rose had been founded but it was in vacuum due to the disharmony of horizontal society structure, i.e., citizen, and youth (Interview with YAR, the originator of the Village Rose 30/5/2017). The community structure can also be seen vertically which was marked by the upper and lower layers in society. In this case, that is with the local government. In the early formation of Village Rose, coordination with the village government officials was lacking. The neighborhood was also less responsible for anything might happen about Village Rose (Interview with US, the Head of Village Sukakarya, 29/11/2016).

4.2 Trauma Healing

Various ways of recovery post-disaster flash floods in Garut continued to be done. In Kampong Pinggirsari, every wall of the lane was painted with graffiti of various moral messages of Garut Bangkit (Garut Rose). The goal was that victims of disasters, especially children and young people could rise to live, not experiencing trauma, and motivated in maintaining the environment. This activity was an aid and initiative from youth communities, i.e. GCW (Garut City Writer) and Sedut Art Performers. The goal is that victims of disasters could rise to live, and not traumatized, and motivated in protecting the environment. Not only in every wall of the alley, but every devastated house were also painted with interesting writings, so this village was better known by the name of Village Rose. There were writings such as "River Not Trash," "Let's Begin over the River," "Cimanuk Grow," "Cimanuk Casual Face Only," "Village Rose," "Garut Rose," "Do not Trash Waste," and so forth. When many people use the material as a relief aid, they used art to provide healing therapy for flood victims and also as a form of support from young people.

In Kampong Pinggirsari there is a unique museum named "Flash Floods Museum." Three buildings destroyed by the flood standing left. The belongings of the abandoned residents became part of the exhibited museum. Village Rose held a photo exhibition of Cimanuk River portraying Garut back in the old days. The exhibition held on November 12, 2016 was to remind the Cimanuk river flood and to introduce Garut history and culture more broadly and deeply. Cimanuk in Old Days exhibition event was a collaboration between Culture and Tourism Body of Garut, Garut Youth Organization, Garoet Heritage Community and the R.A.A. Adiwidjaja Museum.

Trauma healing is an action to help others reduce and even eliminate psychological disturbances caused by shock or trauma [15]. In addition to material losses, the drift of goods and houses, the impact of the Garut flash floods was trauma, so it was necessary to hold activities to prevent trauma. Trauma healing was very important, seeing many victims experienced it. After the disaster, the flood victims of the Cimanuk River were afraid of water. Even some people were fearful of water. So it needed some trauma healing to quickly re-build the spirit of their life. One of the trauma healing activities was on the entertainment stage. On this entertainment stage, the disaster victims were entertained while singing, playing together to eliminate trauma, reducing the burden of the mind, reviving the life spirit, making the heart calm and more sensitive in addressing the existing situation. It

was hoped the resident will become cheerful again. This activity was held on Saturday November 12, 2016 by G Star FM, Dharma Putra Mandiri Organizer, Garut Student Organization, Garut Natural Disaster Management Agency, Culture and Tourism Office of Garut, Nature Lovers Student of UNIGA and Garut scouts. Besides trauma healing was in entertainment stage, the effort to raise the spirit of the social life was by conducting outdoor activities, inviting flood survivors to perform various entertaining activities, including camping around the riverbanks and playing boats in the river as outdoor therapy activities involving various elements of Scouting and Nature Lovers in Garut (Interview with US, the Head of Village Sukakarya, 29/11/2016).

4.3 Land Conservation

Humans and the environment were not separable entities. So human's responsibility is not to exploit the nature excessively but to regulate the harmony between society and the environment so the ecosystem is not devastated and can work well [5]. Likewise in the recovery process after the flash floods. Sustained development is needed so that people affected by floods will recover as they usually carry out their daily activities and were raised again by the spirit of their lives.

The first attempt at the Village Rose institution to maintain the land by the river is by making a fortress. This begins with the manufacture of the land retaining wall. After that, dikes or stronghold upwards was built, so that people around the river cannot see the river. However, this can keep the land around the river not to erode. Thus it is safe for the people because it can minimize the impact of flooding on the population if there were other flash floods. This is supported by funds from the government both the government of Garut Regency and the central government. Included in the case of the physical maintenance of this land is the land population leveling with paving blocks (Interview with AK, chairman of RW, 7/5/2017).

The condition of the soil affected by floods cannot be directly planted with vegetables as before. Therefore, the community organizes hydroponic planting activities. Then, to socialize, it is also carried out the training and practice of hydroponic planting. Hydroponics is one of the planting methods without using the soil as plant growth media but planted using pots or containers by using water or other materials like pebbles, sand tile fractions, and broken threshold stone and so on as a medium of planting. Hydroponic plants were the cultivation of planting by using water without using soil by emphasizing the fulfillment of nutritional needs for plants, or in the everyday sense of landless farming [16].

The purpose of hydroponic plants is for the visitors to enjoy the beauty of hydroponic plants and also for the residents to use the household vegetables. The advantages of planting through hydroponics were that it does not require a large area of soil to remain productive. Hydroponic plants in Kampong Pinggirsari were placed in 2 places. First, on the riverbanks close to the ruins of the house of which the residents call it the mini-museum of Garut flash floods. Second, along the alley of Kampong pinggirsari at the top. The management is handled by the residents. Initially, the treatment of hydroponic plants was done by YAR, the pioneer of Village Rose, but now he is rarely in Garut, so now the caretaker is KY. There is also assistance from volunteers, namely DD who provide counseling and medicines for maintenance, and so on. In March, hydroponics did not work because there was a tornado that ruined the plant installation site. Nevertheless, the hydroponics program remains running, placed in unproductive places such as rivers and alleys (Interview with AK, chairman of RW, 7/5/2017).

As anticipation against the overflow of water and rivers that is destroying the soil; the residents of Pinggirsari planted trees on the riverbanks. This aims to make the water cannot flow the settlement smoothly, at any time the river overflows. This tree planting itself is an initiative of the people around Kampong Pinggirsari. The cost of purchasing tree seedlings is taken from generous donations. The selected tree is a tree that can produce fruits, like guava tree to be used by local people. The plan of this planting is held every two weeks because there were still many areas of Kampong Pinggirsari that have not been planted with trees, but it all depends on whether or not the benefactors want to help. The Village Rose planted strong trees to care the soil. Also, planting trees on the vacant soil is also

beneficial for future generations. Productive plants were all types of plants that can produce fruits that can be utilized by humans such as mango, avocado, guava, durian, and so on.

The activities in Kampong Pinggirsari required the integration of various stakeholders, the need for government intervention, support, and cooperation in the conservation and utilization of resource-based land. The aid was also oriented to growth supporting real ecological, social and economic objectives, as well as considering the interests of future generations.

Besides such main concepts of functionally structural theory as function and balance (equilibrium), there are such other concepts of dysfunction as latent and manifest functions. Here structures or institutions can contribute or hurt the social system [17]. Village Rose Institution had a positive impact on assisting the victims, with the help of all elements of the community. However, Village Rose institution also had aspects of dysfunction such as the hindrances coming from community structure vertically and horizontally.

5. Conclusion

The handling of the post-disaster floods in a kampong of Garut included river bank covering, hydroponic planting, and productive tree planting; social, economic and environmental activities, such as rehabilitation and development of security posts, house painting, trauma healing, rafting trips, creative economy, photography exhibition, and graffiti paintings. Also, the factors driving the success of the handling of the village land after the flood disaster came from the shared feeling of disaster victims, assistance from outside, and the initiative of the youth establishing Village Rose program. Here an organic institution created by the community was very effective in post-disaster recovery. While there were inhibiting factors such as the lack of human resources, the ego of fellow citizens and the slow response of the local government; the restoration of the physical environment of the post-disaster village was done properly so that the land returned, the residents feel safe, and the reforestation started. In general, soil handling had made people affected by floods reduced their trauma.

References

- [1] Pitt D and Samson P R 2012 *The biosphere and noosphere reader: Global environment, society and change* (London and New York: Routledge)
- [2] Tamura M, Onuki M, Sekiyama M, Hara K, Uwasu M, Tsuji N, Ishimura G, Tanaka N, Mori A and Mino T 2018 Developing joint educational programs in sustainability science across different universities: a case study from Japan *Sustainability Science* **13**(3) pp 849-860
- [3] Field J and Kelman I 2018 The impact on disaster governance of the intersection of environmental hazards, border conflict and disaster responses in Ladakh, India *International journal of disaster risk reduction* **31** pp 650-658
- [4] Barrow C J 2006 *Environmental Management for Sustainable Development* (London and New York: Routledge)
- [5] Susilo R K D 2012 *Sosiologi Lingkungan* (Jakarta: Raja Grafindo Persada)
- [6] Harjadi P, Ratag M A, Karnawati D, Rizal S, Surono, Sutardi, Triwibowo, Sigit H, Wasiati A, Yusharmen, Pariatmono, Triutomo S, Widjaja W, 2007 *Pengenalan Karakteristik Bencana Dan Upaya Mitigasinya Di Indonesia* (Jakarta: Direktorat Mitigasi, Lakhar BAKORNAS PB)
- [7] Sadhyohutomo M 2009 *Manajemen Kota Dan Wilayah* (Jakarta: Bumi Aksara)
- [8] Subyantoro A and Suwanto F X 2007 *Metode Dan Teknik Penelitian Sosial* (Yogyakarta: Andi Offset)
- [9] Creswell J W 2010 *Research Design: Pendekatan Kualitatif, Kuantitatif dan Mixed* (Yogyakarta: Pustaka Pelajar)
- [10] Nasution S 1992 *Metode Penelitian Naturalistik Kualitatif* (Bandung: Tarsito)
- [11] Sugiyono 2009 *Metode Penelitian Kuantitatif, Kualitatif dan R&D* (Bandung: Al-Fabeta)
- [12] Moleong L J 1999 *Metodologi Penelitian Kualitatif* (Bandung: Rosda Karya)

- [13] Matthew B. Miles and Huberman A M 1994 *Qualitative Data Analysis: An Expanded Sourcebook* (London and New Delhi: Sage Publications, Inc)
- [14] Anon 2017 Profil Kampung Bangkit
- [15] Anon 2016 Profil Sukakarya Urban Village
- [16] Neolaka A 2008 *Kesadaran Lingkungan* (Jakarta: Rineka Cipta)
- [17] Merton R K 1938 Social structure and anomie *American sociological review* **3**(5) pp 672-682