WATER SUPPLY AFTER THE EARTHQUAKE IN BANGBAYANG VILLAGE, CIANJUR, WEST JAVA

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ABSTRACT

The earthquake in Cianjur had a big impact the life society Cianjur residents. An earthquake with a magnitude of 5.6 on the Richter scale at a depth of 10 km, destroyed buildings in the disaster area. Damage is no exception to clean water facilities and infrastructure. Bangbayang Village is one of the villages that was quite heavily affected. Ninety percent (90%) of the buildings in this location were damaged with level moderate to severe .This program aims to overcome the scarcity of clean water in the refugee area of RT 02 Bangbayang Village and build awareness of clean and healthy living even in refugee camps. The program was carried out in the form of activities, namely in the form of making drilled wells as a source of water supply for residents and education on clean and healthy living. After the implementation of this activity, the community can meet their needs for water supply both for toilets, ablution and cooking. This is important because the health condition of residents is important in an emergency situation and there is no disease transmission due to bad sanitation. Through this activity, the community is greatly assisted and can live an emergency life without clean water constraints.

Keywords: Water Supply, Drilled Wells, Sanitation, Earthquakes

1. INTRODUCTION

The earthquake in Cianjur on Monday, November 21, 2022 with a scale of 5.6 on the Richter scale (SR) is classified as a moderate earthquake. This disaster caused many fatalities, namely 334 fatalities, 539 people were seriously injured, 49 people being treated for victims and damage to buildings ranging from mild to severe levels. During this earthquake, there were 449 evacuation points with a total of 114,683 evacuees (BPBD Jabar, 2022). The damage also destroyed various facilities, including residents' sanitation facilities.

After the post disaster period, the priority intervention that is immediately carried out by both the community and the government is the search and rescue of survivors. provision of medical services, provision of temporary shelters, food and drink. Entering the recovery phase, priority interventions are focused on preventing public health risks. After a natural disaster , it always causes an increase in the people affected by the disaster. This occurs due to the vulnerability of the health system in an area and disruption to the fulfillment of basic needs such as clean water, sanitation, shelter and health services (Salazar et al., 2016). This happened due to the increasing number of affected residents who fled to evacuation centers, resulting in unprepared places and sanitation facilities while the need for them increased significantly. This condition causes a shortage of clean water, open defecation and a huge increase in waste. Diseases such as diarrhea, skin infections, typhoid fever, and hepatitis A are threats to the health of refugees (Ernawati S, 2012). Therefore providing water supply and sanitation facilities is an important step in the short term to prevent outbreaks of infectious diseases, but in the long term to maintain and even improve the health quality of the population affected by the disaster. This program in become one focused in pandemic COVID 19 (Suryani, 2020). Sanitation development in Indonesia refers to Sustainable Development Goals where by 2030 it is targeted to guarantee availability as well sustainable management of clean water and sanitation for all. There is a pandemic Covid-19 makes the clean water and sanitation sector very important in deciding the Covid-19 chain.

Identify The Problem

Based on a preliminary survey to victims of the Cianjur's earthquake disaster conducted by the team, evacuees in Kampung Cipadang Ayam Pelung RW 05, Bangbayang Village, Gekbrong District water supply in the village drainage canal and paddy field water used to meet their needs for bathing, washing and defecating. This can increase environmental pollution and pose a risk of disease transmission and nutritional problems to toddlers and the elderly. Even this water source is constrained when it rains. After the rain, the existing water sources base on experience will a significant increase in turbidity due to the influence of landslides in the upper reaches of the canal and along the village drainage canal. This worsened the sanitation conditions in the refugee camps.

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Solutions

Based on the results of impact mapping and land availability, the activities were focused on 3 points in Cipadang Ayam Pelung Village, Bangbayang Village. As a result of the exploration of the needs of the residents in the evacuation shelters described above. Information is obtained that the priority need is the provision of water supply from a clean source, so that the negative impact of infectious diseases due to lack sanitation can be avoided. In determining the specifications for sanitation facilities for evacuees, the service team considered several aspects, namely: (1) meeting the WHO criteria for a clean source of clean water, namely limiting contact between excreta (feces) and water sources, (2) workability by local personnel, (3) using materials that are easy to obtain and durable, (4) in accordance with local culture, and (5) still used after the emergency response period is over (Iskandar Z, 2021), (Suheri, 2019). Taking into account the design criteria and the geohydrological conditions of the area, the sanitation facilities to be built are in the form of drilled wells (shallow wells) equipped with reservoirs and public faucets. On average, each service area consists of 350 households with an average number of 5 people per family with a per capita water consumption of 90 liters/person/day. Based on these conditions , the estimated demand for clean water at one service target point is:

Water requirement (liters/day) = 350 households x 6 people x 90 liters/person/day

= 157,000 liters/day

Assumsion the reserves of water stored in the reservoir can serve a minimum of 2-3 days, so the requirement of reservoir capacity is at least 600 liters and is equipped with a minimum of 5 public faucets.

Based on the above considerations, the sanitation facility in the form of a source of safe clean water to be built has the following specifications: (1) uses a well surface with a foundation that is higher than the surrounding ground level, (2) floors made of cement equipped with channels connected to village drainage or infiltration wells, (3) having a reservoir to maintain the continuity of clean water services, (4) having faucets that are easy to use, (5) using pumps that are easy to maintain, high suction power and low electricity consumption (Musrofa S, 2017) .

2. METHODS

This activity was carried out in several stages, starting from the pre-activity, the preparation administrative and technical aspect, the implementation stage which consisted of development and education the refugee and the final stage. At each stage, the team involved village officials represented by the RT 02/RW 05 administrators as the chosen places, students and the Sahid University team.

2.1 Pre-Activity

In the pre-activity, an initial survey was carried out after the earthquake. At this stage, the team conducted an exploration through interviews with the lead of RW 05, heads of RT 01 and 02 and several affected residents to find out the basic needs of the refugees and observed in the target areas.

2. 2 Preparation Stage

The preparation was carry out this program includes making a proposal to LPPM Sahid University and completing administration to the Ministry of Research, Technology and Higher Education which will provide funds for the implementation of this activity. In addition to administrative preparations, the team carried out technical preparations by coordinating with the community and local parties related to land availability and discussing clean water supply systems and clean water consumption patterns in the targeted areas. Based on the results of discussions and deliberations, the clean water supply system is in the form of drilled wells equipped with a reservoir with a water capacity that can meet the needs of 350 households with an average water consumption of 90 liters/person/day and a public faucet.

2.3 Implementation Stage

The implementation phase of this program includes building clean water infrastructure and educating the public regarding healthy living behavior after a disaster and techniques for caring for and managing water source facilities (Sutrisno, 2021).This stage was fully carried out in the field by the Sahid University Jakarta Community Service team. The process of drilling wells and structure foundations is carried out with the help of skilled workers who have been hired. The team of lecturers prepares facility designs and design calculations in the supply of clean water and conducts education assisted by student teams. Provision of tools in the form of providing clean water facilities with drilled wells with a description of the technology as follows: pump wells are clean water supply facilities in the form of wells made by adding soil to a certain depth so that water is obtained as desired. Drilling wells are usually the depth of the bottom of the well reaching 15-30 meters, and with a pump to pull the water up to the surface. The

description as technology is as follows in figure 1. And conducted the education includes knowledge about the operation of water pumps and clean water installations includes maintenance procedur , repairs so that the equipment provided can be used functioning optimally, and clean and healthy living in an emergency. Training is conducted for whole community. Knowledge about operation pump housewives and children. The educational method used for housewives is in the form of lectures and discussions, while for children the learning method is playing while playing. Educational materials in the form of PHBS (clean and healthy lifestyle) in an emergency.

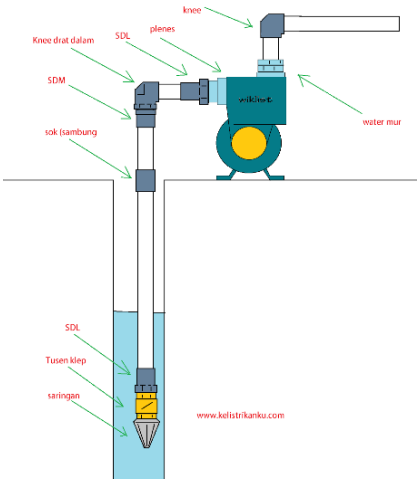

Figure 1 Drilled Well

2.4 Final Stage

This stage is for monitoring the implementation of activities, evaluating the activities that have been carried out and fulfilling the outputs of activities. The evaluation was carried out covering the usefulness of the clean water infrastructure that was built, community knowledge regarding healthy living behaviors and the readiness of the RT team in managing and caring for the facilities that had been built. This stage serves to encourage the sustainability of the facilities that have been built, so that they are not only beneficial after the disaster in the short term but also in the long term to encourage improvement in the environmental health of residents.

3. RESULTS AND DISCUSSION

3.1 RESULT

The output of this activity includes:

a. Availability of clean water facilities

This PKM activity will build clean water supply facilities that can be accessed easily with quality that meets clean water quality standards. The clean water facilities built include drilled wells, water towers, reservoirs (Figure 2)(Figure 3) and public faucets. This facility is used by the community to meet the needs of toilets, cooking and ablution.

Figure 2 Facility drilled wells and water tower

Figure 3 Public acces water supply in Bangbayang Village

b. Conducted education

The education provided includes knowledge about the operation of water pumps and clean water installations includes maintenance procedur , repairs so that the equipment provided can be used functioning optimally, and clean and healthy living in an emergency. Training is conducted for whole community, Knowledge about operation pump and maintenance give to man. And object in education in clean and healthy lifestyle focused in housewives and children in figure 4,5. The educational method used for housewives is in the form of lectures and discussions, while for children the learning method is playing while playing. Educational materials in the form of PHBS (clean and healthy lifestyle) in an emergency.

Figure 4 Education clean and healthy lifestyle housewives

Figure 5 Education clean and healthy lifestyle children

3.2 DISCUSSION

The construction of this clean water supply facility has an impact on a shift in the socio-economic aspects. Bangbayang Village, Cipadang Village, is a relatively densely populated rural area. In daily conditions, the community fulfills the need for clean water by utilizing water storage ponds and some of it comes from drilled wells. Most of the people have livelihoods as farmers and daily workers. Bangbayang Village is classified as a

densely populated village. In such conditions the problem becomes very vulnerable. After the earthquake, the impact of damage to sanitation facilities. This worsened the sanitary conditions in the disaster area. Productivity has decreased, the residents' psychology has been disrupted, apart from the disaster, it is also due to poor sanitation conditions, the need for clean water, which is a basic need for residents, cannot be met sufficiently and properly. This program is very beneficial for residents, apart from meeting the basic needs of residents, there are also other indirect benefits both socially and economically. The social and economic impacts that are felt as a result of these activities include:

1) Physical and psychological condition,
   The availability of clean water for the community eases their psychological burden, because while living in the evacuation, they only depend on water from the village drainage, so that their basic needs are not met and this becomes psychological pressure for them.
2) Education and socialization, can be in the form of basic skills and knowledge,
   Educational activities on Clean and Healthy Lifestyles during emergencies have had an impact on increasing residents' knowledge of living a clean and healthy life during evacuation. This increase in knowledge will encourage residents to be able to improve personal and environmental sanitation both during evacuation or after the emergency period is over. Considering that this area is very vulnerable to sanitation problems, due to the relatively low level of education and economic level and the conditions of dense settlements.
3) Social relations, can be done with relatives, family, acquaintances, etc.
   Through this program, the community fills their free time by participating in activities, both drilling wells and educational activities, so that for a moment they relax and interact socially so that it has an impact on increasing social interaction which can encourage harmony and empathy among fellow citizens.
4) Maintaining community productivity.
   This program in the form of building clean water facilities, have an impact on reducing the risk of infectious diseases caused by poor sanitation. A healthy community will encourage them to return to their activities immediately after the earthquake. Bangbayang Village, which is dominated by farmers, with sufficient water sources and can be used easily by the community, encourages the community to be healthy. Residents have started to return to gardening and rice fields, residents' home-based businesses such as trading have begun to move and joint worship activities have been actively carried out with the availability of safe and halal water sources to be used as water for ablution. So that apart from the economy starting to roll in little by little, inner peace is starting to be reawakened with the implementation of joint worship.

4. CONCLUSIONS

The program that have been held in the form of building clean water facilities in the form of drilled wells, water towers and public faucets are very useful for meeting the basic needs of the residents of Bangbayang Village, especially Cipadang Village RT 02/RW 005. The community's clean water needs such as for toilets, cooking and household needs worship, can be fulfilled by these facilities. Fulfillment of these basic needs during evacuation can overcome personal and environmental sanitation problems. This encourages the creation of conditions that are conducive and healthy physically and spiritually for the community. The sustainability of the clean water facilities that have been built, residents have agreed to jointly bear operational costs in the form of electricity costs. And then the facility is under coordinated by RT 002/ RW 005 Bangbayang Village. The education provided about clean and healthy lifestyles encourages the community to improve self and environmental sanitation both during emergency and post-emergency times.

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