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GOVERNANCE IN EMERGENCY INFRASTRUCTURE DEVELOPMENT AFTER THE EARTHQUAKE AND TSUNAMI DISASTER IN NORTH LOMBOK REGENCY

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Abstrak

Penelitian ini bertujuan untuk mengetahui bagaimana peran pemerintah dalam tata kelola pembangunan infrastruktur darurat pasca bencana tsunami di Kabupaten Lombok Utara. Jenis penelitian studi kasus dengan pendekatan kualitatif dipilih dengan melibatkan responden Pemerintah Daerah dan BPBD Kabupaten Lombok Utara dengan teknik pengumpulan data in-depth interview dan observasi. Data yang dikumpulkan lalu dianalisis dengan menggunakan model Miles dan Huberman dengan triangulasi data untuk menghindari bias. Hasil penelitian menunjukkan bahwa pemerintah berperan aktif dalam membangun kembali infrastuktur pasca benca gempa bumi di wilayah Kabupaten Lombok Utara berupa pembangunan Rumah Tahan Gempa (RTG) yang terdiri dari 18 jenis bangunan namun yang paling popular adalah Rumah Instan Struktur Baja (RISBA) Plus Plus, Rumah Instan Sehat Tahan Gempa (RISTA), Rumah Instan Struktur Baja (RISBA), Rumah Instan Sederhana Sehat (RISHA), Rumah Instan Konvensional (RIKO), dan Rumah Instan Kayu (RIKA). Upaya tata kelola perlu mendapat dukungan yang terintegrasi antara pusat, daerah, swasta dan masyarakat sipil, Data Terpadu dapat menjadi triger dalam membangun kerjasama dan sinergitas multi pihak, serta Efektivitas koordinasi dan komunikasi dapat menjadi jembatan untuk mempererat dan merawat kerjasama dan sinergitas multi pihak.

Kata Kunci: Pemerintah, Pembangunan Infrastruktur Darurat, Gempa Bumi dan tsunami

Abstract

This study aims to find out how the government's role in the governance of emergency infrastructure development after the tsunami disaster in North Lombok Regency. The type of case study research with a qualitative approach was chosen by involving respondents from the Regional Government and BPBD of North Lombok Regency with in-depth interview and observation data collection techniques. The collected data was then analyzed using the Miles and Huberman model with data triangulation to avoid bias. The results showed that the government played an active role in rebuilding post-earthquake infrastructure in the North Lombok Regency area in the form of the construction of Earthquake Resistant Houses (RTG) consisting of 18 types of buildings but the most popular were Steel Structure Instant Houses (RISBA) Plus

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Plus, Earthquake Resistant Healthy Instant Houses (RISTA), Steel Structure Instant Houses (RISBA), Healthy Simple Instant Houses (RISHA), Conventional Instant House (RIKO), and Wooden Instant House (RIKA). Governance efforts need to receive integrated support between the central, regional, private sector and civil society, Integrated Data can be a triger in building multi-party cooperation and synergy, and the effectiveness of coordination and communication can be a bridge to strengthen and maintain multi-party cooperation and synergy.

Keywords: *government; emergency infrastructure development; earthquake and tsunami*

Introduction

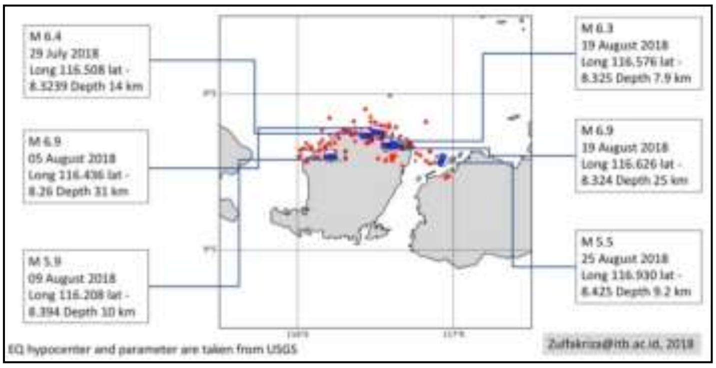
The Indonesian archipelago is an area prone to geological disasters, especially earthquakes and tsunamis because it is located at the confluence of three world plates, namely the Eurasian plate, the Indo-Australian plate and the Pacific Ocean plate. West Nusa Tenggara Province (NTB), which consists of Lombok and Sumbawa Islands, is in a position close to the confluence of the two plates, namely the Indo-Australian Plate in the south and the Eurasian Plate in the north. At the place where the plate meets, known as the subduction zone, there is an impact / friction that can be the source of volcanic eruptions, earthquakes and tsunamis. The history of earthquake disasters in Indonesia indicates that there are many buildings including schools and residential houses that are damaged or destroyed. The last earthquake in Lombok, West Nusa Tenggara and Palu, Central Sulawesi in late 2018 destroyed most of the buildings in the disaster-affected area.

Geographically, Lombok Island and Sumbawa Island, West Nusa Tenggara, are earthquake-prone areas. Included in this is the North Lombok Regency (KLU). The damage caused by the earthquake in North Lombok district in 2018 was quite severe. According to (Supriani, 2009) the redevelopment of settlements in disaster-prone areas must be oriented towards efforts to minimize the impact of losses in the event of an earthquake. Home improvement of disaster victims must refer to the map of earthquake potential, so that building strength standards must be well understood by the community (Prihatmaji, 2013). Building strength standards must refer to the Technical standards of the Ministry of PUPR. This is very logical because many buildings collapsed due to the 2018 earthquake, one of the causes was due to the non-fulfillment of technical rules such as weak structural connections and building quality. This is in accordance with the opinion (Anshari, 2020) which states that so far local residents in building houses often ignore the rules of earthquake-resistant houses.

Based on the KLU Disaster Management Plan document for 2014-2019, KLU has 13 disaster threats, namely floods, flash floods, extreme weather, eruptions of Mount Rinjani, earthquakes, fires, land and forest fires, droughts, tornadoes, landslides, and tsunamis. The disaster that has just been experienced by the residents of West Nusa Tenggara (NTB), especially KLU on July 29, 2018, is an earthquake with a magnitude of 6.4 on the richter scale (SR) with tsunami potential, causing tremendous damage and loss to the affected communities, the most severe of which is in KLU. The earthquake continued on a smaller and larger scale, BMKG recorded 585 aftershocks until 07.00 on

August 5, 2019, 6 of which were with a scale above 5.5. This earthquake was caused by an ascending fault in the KLU area. The distribution of the earthquake can be seen in the Picture 1.

Figure 1
Earthquake Spread in NTB (Large earthquakes 6 times marked by the Blue Circle)

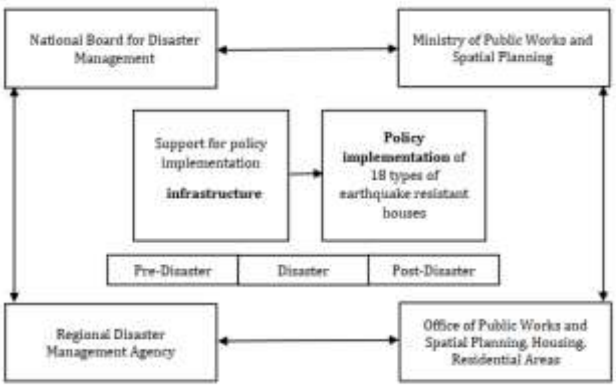


Data from the Center for Disaster Management Operations Control of BPBD NTB Province collected the number of deaths as many as 562 people, injured 1,886 people and displaced as many as 431,365 people. Damage also affected educational facilities and services as many as 978 units, worship facilities 65 units and damaged houses as many as 249,572 units consisting of severely damaged (RB) 82,858 units, Medium Damaged (RS) 45,658 units, and lightly damaged (RR) 123,056 units spread across seven regencies/cities, one of which is in North Lombok Regency. This condition encourages the central government to readily take quick and bold steps by not building huntara (temporary housing) but providing huntap (permanent housing) whose source of financing is from Ready-to-Use Funds (DSP) with the provision of its use regulated in Permenkeu 105 / PMK.05 / 2013 concerning Mechanisms for Implementing Disaster Management Budget with strengthening through Presidential Instruction Number 5 of 2018 concerning the Acceleration of Post-disaster Rehabilitation and Reconstruction Earthquake in NTB Province.

Post-earthquake mitigation efforts carried out in accelerating the development of prioritized residential areas are fully supported by the availability of 18 earthquake-resistant houses that have been verified by the West Nusa Tenggara Provincial Government which may be an option by earthquake-affected communities who are members of community groups. Therefore, an appropriate post-earthquake mitigation strategy is needed in responding to the conditions of accelerating the physical development of residential houses through a choice of houses that are adjusted to the topology and characteristics of the area. Basically, the State is responsible for protecting the entire Indonesian nation through the implementation of housing and residential areas so that people are able to live and live in decent and affordable houses in healthy, safe, harmonious, and sustainable housing throughout Indonesia. In order for the community to build buildings in accordance with the specified safety standards, the community needs to get assistance. The community needs to get education so that people's behavior in building houses is adjusted to the potential for earthquakes in the future (Rini et al., 2016). One of the goals is to ensure that the houses built are earthquake resistant, so that if the same disaster / incident occurs, it can minimize the number of victims (Ahmad & Widiyansah, 2021).

The basic principles possessed by the Earthquake Resistant House (Ridha, Rahmawaty, & Santoso, 2021) meet the principle of 1) the structure of the building is simple, compact and symmetrical has the ability to withstand greater loads compared to buildings that have more complex structures; 2) building height that does not exceed four times the width of the building with a building plan that should be simple ; 3) light building weight, especially in roof construction, the use of materials such as light brick, mortar, mild steel and reinforced concrete is the right choice. The construction of the roof, in addition to being light, will also make the building structure simple. Buildings that use heavier materials will pose a greater risk during an earthquake. ; 4) built in a monolith, namely an organized unity that forms a single and influential force; and 4) the foundation must be made in hard soil at least 60 to 75 cm deep which is very important in channeling the load down.

Figure 2
Research Framework



Support in the context of implementing infrastructure governance policies after the earthquake and tsunami disaster is carried out through cooperation from the National Disaster Management Agency (BNSP) through the Regional Disaster Management Agency (BPBD), and the Ministry of Public Works and Spatial Planning (PUPR) through the local Public Works and Spatial Planning Office, Housing, Residential Areas.

Research Methods

This research is a case study research with a qualitative approach that aims to explore and understand the meaning in a number of individuals or groups of people who are considered to be derived from social or humanitarian problems (Creswell, 2016). This type of research was chosen because the research focused on strategic efforts in the governance of emergency infrastructure development after the earthquake and tsunami disaster in North Lombok Regency. The speakers involved included the Head of Field I of prevention and preparedness of BPBD North Lombok Regency, representatives of the Secretary of the Sub-district, Village Apparatus, and the surrounding community with a total of 8 respondents. Data collection was carried out through deepth interviews and observations.

Data analysis in qualitative research will take place in conjunction with other parts of qualitative research development, namely data collection and finding writing. The data collected at the data collection stage was then analyzed using the Miles and Huberman model. Data analysis according to Miles and Huberman is carried out continuously until it is complete, so that the data is saturated (Miles and Huberman, 1984). Data validation is the main thing that must be done in qualitative research to prevent research bias and gain a level of trust in a study. In this study, data triangulation was carried out by exploring the truth of information obtained from one respondent to another who was considered to have a different point of view. Photographing a single phenomenon from multiple points of view allows for a reliable level of truth from a study (Flick, 2004), (Rofiah & Bungin, 2021) Methods is implemented to solve problems, including analytical method. The method used to solve the research problems is described in this section.

Results and Discussion

The main authority and responsibility for the implementation of disaster management lies with the central government and the government in synergy with each other. One of the steps taken by the government directly against the tsunami and earthquake disasters in North Lombok Regency is to carry out infrastructure governance through the construction of earthquake-resistant houses. The types of earthquake-resistant houses registered and verified by the West Nusa Tenggara Provincial government are 18 houses, namely:

Table 1
Findings Of Types Of Earthquake-Resistant Houses In North Lombok Regency

No	House Type	Information
1	RISHA	Risha is a pre-cast concrete structural system
2	RICO	Beam, column and sloof structures use reinforced concrete with walls using masonry.
3	RICA	The frame of the structure uses wood with nail joints. The walls use wooden boards.
4	RISBA	The structure of beams, columns and sloofs uses CNP profile steel components with welded joints. The walls use a combination of bricks and calciboard.

5	RCI	Sloof uses cast concrete. The connection between the planes of the frame using iron with a welding system. The walls use cast concrete.
6	DOMUS	The main frame uses U-channel steel with bolted joints. The walls use lightweight bricks covered with instant cement.
7	RISBARI	The main frame uses mild steel with bolted joints. Walls using fiber cement board
8	RITA	The main pole structure uses Hollow Iron with a spring as the support for the main pole. The wall frame uses aluminum. Wall covering using calciboard for the inside and smartwood plank for the outside
9	KUMAC	Work on walls, roofs, doors and windows using sandwich panels. Columns and beams use CNP profiles with bolted joints.
10	RISTA	Work on walls, roofs, doors and windows using sandwich panels. Columns and beams using CNP profiles with bolted joints
11	BALE LESTARI	The frame of the main pole structure uses Double Galvanized Hollow Iron. The wall uses HMR board with bolted joints.
12	RAPI	The construction system uses a precast concrete structure by means of bolted joints with double plate rings. The walls use lightweight concrete panels.
13	MESRA	The wall frame uses a mild steel canal with drilling bolt joints and transport bolts. Walls using polyurethane foam coated panels with drilling bolt joints
14	RAISA	The column and beam structure uses galvanized hollow iron with a connecting system using

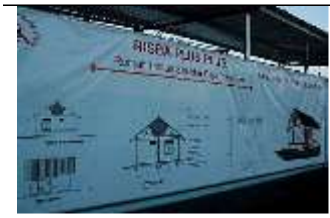
		bolts and plate joints. Walls using calciboard.
15	RISDA	The RISDA structure uses UNP Profile Steel with welded joints. Walls using concrete panels
16	RAKITA	The structure of beams and columns uses steel with bolted joints. The wall uses EPS-based sandwich panels with bolted joints.
17	FOREST	The main frame uses double UNP. Wall using EPS sandwich panels with wall panel mounts using UNP
18	CONWOOD	There is no frame of the structure. The wall uses a conwood board that is connected with an elbow iron between the conwood walls and tightened with bolts.

These houses are designs used by the community and the government in the rebuilding of earthquake-resistant houses in the KLU area. Funds provided by the government to people whose houses are heavily damaged are required to use one of the building concepts. One form of government policy to build earthquake disaster preparedness. Based on the zoning results of earthquake-prone areas in north Lombok district, it can be adjusted to the existing earthquake-resistant house structure. In their qualifications, 18 types of RTG have the same structural concept, which refers to earthquake-resistant housing standards, but in physical aspects or regional characteristics vary. Therefore, it is necessary to have direction in determining the RTG in accordance with zoning based on physical aspects or characteristics of the area.

To analyze zoning based on the typology of earthquake disaster areas seen from the physical aspect, data supporting the physical condition of the land such as rock types, geological structures, slopes and soil steadiness are needed (Suprojo, Rosyidi, & Pinuji, 2021), (Ridha et al., 2021).

In general, the types of buildings that are widely erected by the community consist of RISBA PLUS-PLUS, RISBA, RISTA, RISHA, RIKO, and RIKA because they have a simpler building structure. The following are the results of documentation of several types of houses that were successfully observed by researchers.

Figure 3
Earthquake Resistant Houses in North Lombok Regency


RISBA PLUS-PLUS


RISTA


RISBA


RISHA


RIKO


RIKA

The provision of assistance was widely received from various circles, especially the government. This is in line with the statement of the citizen "Mr. H" as follows:

"A lot of help is coming in for home improvement,.For self-redevelopment, only 60-70 cm for new bricks are slung with lightweight materials, but mostly calciboard. And the fastest thing to do is indeed this RIKO, Conventional instant house because of the iron he is. Because if RIKA, a wooden instant house, the wood is difficult for him. There is another RISA that uses panel panels, there is RISBA, mild steel. If Risa is a little afraid of us, she is a panel of connected panels, she said it has been used in Aceh and Jogja, but the people here still refuse because they see that the connection is afraid of cracking. Including at my school, there was help from the media group using RISA, if I look at the construction, there are many connections, if it breaks, how about it, collapse all this. I discussed from the motongin, he said when I asked him about his resilience, he said he didn't know because they were only implementers in the field, I told them to change the iron just like RIKO, mild steel above"

For the repair and rebuilding of houses of earthquake victims, the central government through the National Disaster Management Agency has transferred ready-to-use funds amounting to Rp 6,370 trillion for 243,744 households in two stages according to needs based on the results of the Main Inspectorate review. In the process, the distribution of phase I stimulant assistance funds from BPBD to the community amounted to IDR 5.664 trillion, used for 214,325 households, while phase II amounted to IDR 559.415 billion for 17,937 families. So that the total distribution of stimulant funds for phases I and II is IDR 6,225 trillion for 232,262 households. Based on this distribution, there is still a balance in bpbd regencies/cities amounting to IDR 146.583 billion, with details of phase I amounting to IDR 143.623 billion and phase II of IDR 2.960 billion.

"Alhamdulillah, there have been 1,700 people selected, there are 50 thousand that are heavily damaged, we have also received the account, but we do not receive money,

directly in kind, we can manage it ourselves or hand it over to a third party. Alhamdulillah, people have started to normalize, have been doing activities. God willing, children know if there is an earthquake, what should it be".

Implementation of disaster victims' home improvement stimulant assistance – the government has established the use of community-based self-management schemes whose provisions are regulated in the Implementation Guidelines and Technical Guidelines as guidelines so that their implementation is in accordance with applicable regulations – transparent and accountable. Some of the things that are of more concern in this effort involving the community are: 1) Community empowerment of earthquake-resistant houses can be internalized from the beginning. This is to dismiss the formation of community groups and the election of administrators not instantly at the direction of the head of the hamlet or village head, but to be elected democratically and partispively; 2) Good governance of community groups affects the empowerment and spirit of mutual cooperation. Residents of "Mr T" who were involved in the construction of earthquake-resistant houses stated the following:

"Technically, we don't have any expertise in development, so we're working with those with capacity. Need central help as well. For redevelopment should consult the PU, the majority use wood. Indeed, originally the regulations in Gili were not allowed to be concrete, but the development became a lot of wild concrete buildings. All of us do together and work together".

In this reconstruction and rehabilitation process, it is expected to produce buildings that are resistant to earthquakes and other disasters in the future, so that a disaster mitigation approach is needed in the reconstruction and rehabilitation process and restore the stability of the community and existing social spaces so that various supporting buildings and facilities are needed that are readjusted to the conditions of the area or regional zone (Nizar, 2022), (Tsampras & Sause, 2022). The indicator of successful development lies in the government's ability to provide optimal quantity and quality of services (Zhou, Shao, Cao, & Lui, 2021). In addition, the maintenance of public infrastructure and facilities is time to involve the full participation of the community as an effort to provide a high sense of belonging and responsibility, but of course it must be regulated in a clear and transparent scheme so as not to cause the impression of being out of hand from the local government.

Synergy of thinking and acting is the key to success in the governance of post-disaster infrastructure development. Synergy between the central government, local governments, the private sector, and civil society must always be sought to achieve effective and efficient development (Donati & General, 2022). Disaster management is not only an obligation of the government, but must involve all components of society. Community participation is a cycle to give freedom to the community to be able to take care of various problems and contribute to overcoming disasters. This can be the main key to effectiveness in future disaster management efforts. Therefore, synergy means the mixing of components that can create the desired results (Pereira & Alho, 2020), (Krisnawati, 2021). Cooperation between the government and the community when facing disasters is needed so that the implementation of disaster management can be carried out in a systematic, organized and complete way.

Contributions from various parties can make an integrated force to achieve the main goal. When each party can contribute well, it will facilitate the process of achieving the desired goals. Contributions are also needed to form synergies between the central government, local governments, the private sector, and the community in tackling disasters.

Conclusion

Based on the results and discussion of the research, it can be concluded that the government has played a very important role in taking follow-up steps after the earthquake and tsunami disaster through infrastructure governance for the construction of Earthquake Resistant Houses for the community. Completing earthquake-resistant houses with community empowerment schemes requires sensitivity and a common way of thinking and acting. This is a manifestation of the spirit of mutual cooperation and the goal is that empowerment is carried out. Some synergies that need to be maintained and continue to be consolidated, including: (a) Synergy of the parties in this case, the government (Central, provincial, Regency/city, District, Village/Kelurahan) multi-sectoral (civil, TNI/Polri, BPKP, PU, Perkim, Finance, banking, Dukcapil, and others); Private (applicators, players, etc.); and Civil society (survivors, facilitators, NGOs, journalists, etc.) has gone well. (b) Integrated Data can be a triger in building multi-party cooperation and synergy. (c) The effectiveness of coordination and communication can be a bridge to strengthen and maintain multi-party cooperation and synergy.

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