

The Strategy of Housing Rehabilitation and Reconstruction after 2022 Earthquake in Cianjur, West Java, Indonesia

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Abstract

Monday, November 21st, 2022 at 13.21.10 WIB the Cianjur Regency area was rocked by a tectonic earthquake with a magnitude of M-5.6. The epicenter was located in the source zone of an active fault earthquake which had not been mapped before and it was recently identified that the earthquake was caused by the Cugenang Fault. The earthquake resulted in 335 fatalities, 8 people were missing, and 59,889 houses were damaged. After the emergency response steps were taken, further measures taken were post-disaster rehabilitation and reconstruction activities so that community activities could recover quickly, including the recovery of the housing and settlement sector. Therefore, the Government launched a post-disaster recovery program by providing program and budget support for the rehabilitation and reconstruction of housing and settlements. The purpose of this research is to analyze the strategy for the rehabilitation and reconstruction of the housing and settlement sector affected by the Cianjur earthquake. This research is a qualitative research with a literature study approach where the data comes from books, journals, regulations, documentation and other literature. The results showed that the strategy for the rehabilitation and reconstruction of the housing sector was carried out using two mechanisms, namely 1) stimulant financial assistance for housing repairs carried out in-situ using the community empowerment method and 2) relocating houses affected by disasters which were carried out ex-situ using the contractual method. This research is a qualitative research with a literature study approach where the data comes from books, journals, regulations, documentation and other literature. The results showed that the strategy for the rehabilitation and reconstruction of the housing sector was carried out using two mechanisms, namely 1) stimulant financial assistance for housing repairs carried out in-situ using the community empowerment method and 2) relocating houses affected by disasters which were carried out ex-situ using the contractual method. This research is a qualitative research with a literature study approach where the data comes from books, journals, regulations, documentation and other literature. The results showed that the strategy for the rehabilitation and reconstruction of the housing sector was carried out using two mechanisms, namely 1) stimulant financial assistance for housing repairs carried out in-situ using the community empowerment method and 2) relocating houses affected by disasters which were carried out ex-situ using the contractual method.

Keywords: *TNI Medical Resource Capacity; Biological Threats; Covid-19; National Security*

INTRODUCTION

Monday, November 21 2022 at 13.21.10 (WIB) the Cianjur Regency area was rocked by a tectonic earthquake. The preliminary information from the Meteorology, Climatology and Geophysics Agency (BMKG) analysis shows that this earthquake has a magnitude of M-5.6 and is a type of shallow crustal earthquake triggered by active fault activity in the zone around the Cimandiri Fault System. The epicenter of the earthquake was located at coordinates 6°84'S and 107°05' E, or to be precise, located on land at a depth of 10 km. The epicenter is located in

the source zone of an active fault that has not been identified before. Based on the daily report of the National Disaster Mitigation Agency (BNPB) up to December 13, 2023, the total number of fatalities due to this earthquake was 335 people died, 8 people were missing, 593 people were seriously injured, and 7.134 people were minor injured.

Immediately after the earthquake occurred, the Regent of Cianjur Regency established a disaster emergency response status for 30 days, starting from November 21, 2022 to December 20, 2022. Furthermore, after carrying out emergency response measures, further efforts needed are post-disaster rehabilitation and reconstruction activities. These activities include the rebuilding of community housing and settlements, reconstruction of damaged public infrastructure, and the restoration of the economic, social, health and cross-sectoral sectors with the aim of recovering community activities as soon as possible. To support post-disaster recovery activities, the government carry out a post-disaster rehabilitation and reconstruction program by preparing Post-Disaster Rehabilitation and Reconstruction Action Plan document and budget support.

In carrying out the post-disaster rehabilitation and reconstruction of the housing sector, there are things that need to be considered, including the level of damage, typology of houses (permanent/semi-permanent/non-permanent) in disaster-affected areas, housing locations, building forms, community roles, and supporting facilities in daily life. Specifically, to support the recovery of housing sector after the earthquake in Cianjur, the government conducting two main programs, 1) financial stimulant assistance for housing rehabilitation and 2) housing relocation.

RESEARCH METHODS

This research is qualitative research with approach of library research using books, journals, documents and other literature as the main object. This literature study shows readers what is and is not known about a topic to understand the thoughts of research that has been done or to find ideas for further research (Denny and Tewksbury, 2012). For this reason, this study contains reviews, summaries, and the author's thoughts on several reading sources (books, journals, laws and regulations, etc.) related to the topic of post-disaster housing rehabilitation and reconstruction. The data used in this study comes from the results of research that has been conducted and published in both national and international journals, regulations related to rehabilitation and reconstruction as well as various documentation from agencies/institutions involved in the process of housing rehabilitation and reconstruction after the Cianjur earthquake. The analysis in this study uses a descriptive method. The descriptive analysis method provides a clear, objective, systematic, analytical and critical description and explanation of the strategy for housing rehabilitation and reconstruction after the Cianjur earthquake.

RESULT AND DISCUSSION

The government has agreed that the rehabilitation and reconstruction of the disaster-affected housing sector will be carried out through two schemes, namely: 1) assistance and provision of stimulants for housing rehabilitations; and 2) housing relocation. Housing rehabilitation stimulants were given to people whose houses were damaged, either lightly damaged, moderately damaged or heavily damaged but not in the Cugenang Fault zone.

Meanwhile, the relocation of houses is given to people whose homes are in the Cugenang fault zone.

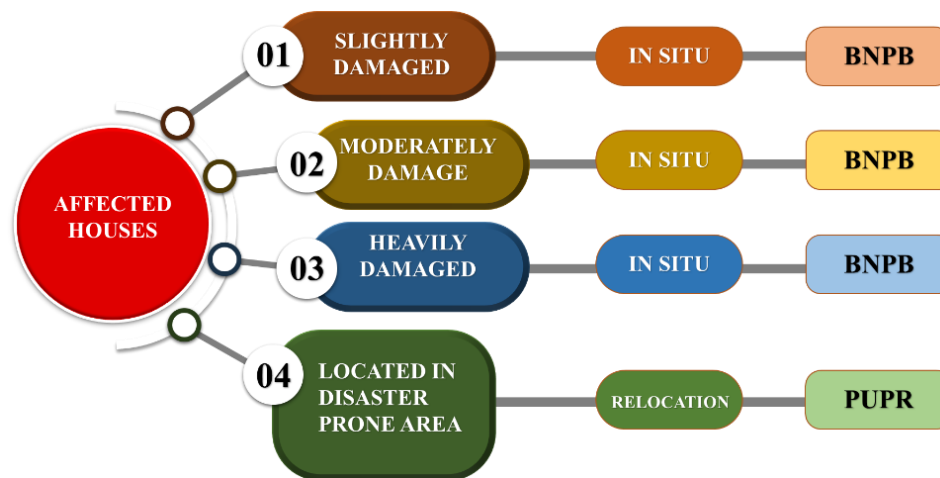


Figure 4.Affected Housing Rehabilitation and Reconstruction Scheme The Cianjur Earthquake

1. Assistance and Providing Stimulants for Home Improvement

The scheme of housing rehabilitation and reconstruction through the provision of stimulants is carried out in-situ for damaged houses which are not located in active faults. The provision of stimulant assistance for housing rehabilitation is carried out according to the intensity of the damaged houses. The Ministry of PUPR (2007) in the Regulation of the Minister of Public Works Number 45/PRT/2007 explains that damage building is the non-functioning of buildings or building components due to depreciation/expiration of the building's life, or due to human activity or natural behavior such as overload, fire, earthquake, or other similar causes. The intensity of damage to buildings can be classified into three levels of damage, namely:

- a. Slightly Damaged
Minor damage is damage mainly to non-structural components, such as roof coverings, ceilings, floor coverings and infill walls.
- b. Moderately Damaged
Moderate damage is damage to some non-structural components, and/or structural components such as roof structures, floors, and others.
- c. Heavily Damaged
Major damage is damage to most of the building components, both structural and non-structural, which after being repaired can still function properly as they should.

The provision of stimulant assistance for housing repairs is facilitated by the BNPB and the funds are sourced from the APBN. The amount of stimulus for lightly damaged houses is 15 million rupiahs, moderately damaged 30 million rupiahs and 60 million rupiahs for heavy damage. The provision of stimulant assistance is carried out through community empowerment accompanied by the Community Assistance Team (TPM). TPM is a collective leadership institution which in essence has the meaning of being a forum for the community to synergize and become a trusted institution belonging to the community, which is recognized by both the community itself and outsiders. TPM has the main task of assisting the community in carrying out housing construction activities and coordinating routinely with Facilitators, Commitment

Making Officers (PPK), etc. Direct stimulant assistance is given to affected communities in the form of building materials so that there is involvement of banks and suppliers of building materials. In this case, the community rebuilt their own house or with the help of builders who did it independently. The disbursement of stimulant assistance is given in two stages, the first stage of disbursement of 40% and the second stage of disbursement of 60% of the total amount of assistance.

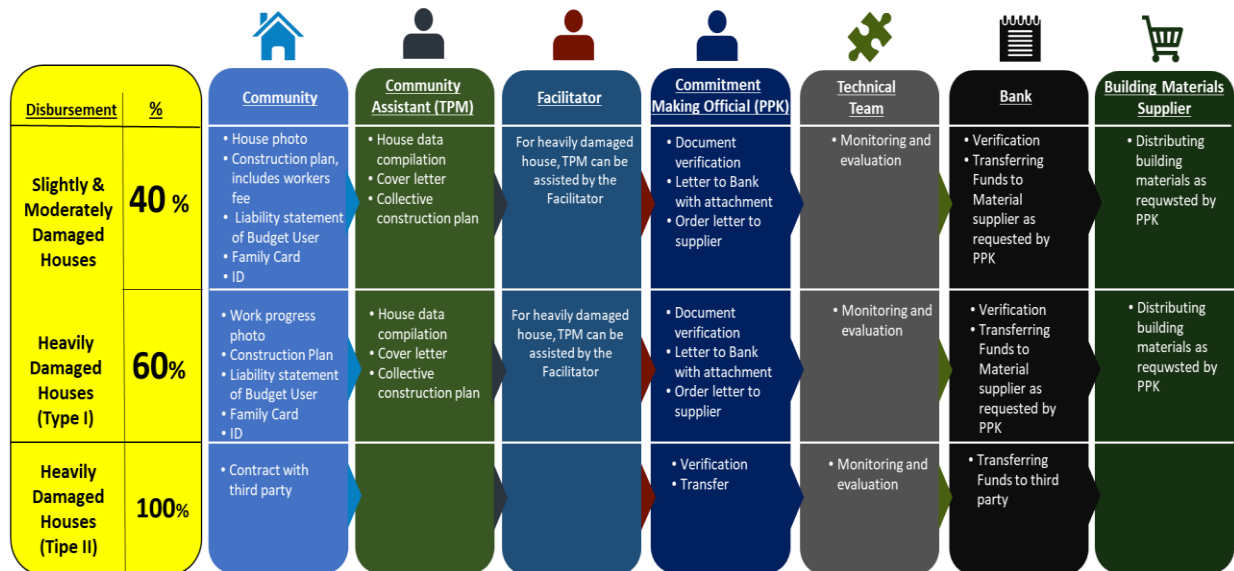


Figure 5. Mechanism for Providing Stimulant Assistance for Home Improvement

2. Housing Relocation

The housing relocation scheme is intended for affected people whose houses located on active fault zones. Relocation program conducted along with the provision of Permanent Housing. Permanent Housing is defined as a place where disaster victims live after living from permanent temporary shelters. Permanent Housing is intended for disaster victims who no longer have a place to live and is intended for those whose residence is included in a disaster prone area which cannot be lived in anymore according to government regulations.

The Permanent Housing construction was conducted by the Government through the Ministry of PUPR together with the Cianjur Regency Government as the party that has the obligation to provide the land for relocation. For this reason, the Cianjur Regency Government has prepared a relocation area in Sirnagalih Village, Cilaku District, covering an area of 2.5 hectares and in Murnisari Village, Mande District, covering an area of 1.9 hectares. Furthermore, based on the direction of the President of the Republic of Indonesia, the relocation location must be safe from hazard so that the BMKG and the Geology Agency have studied the relocation site. The study on the relocation site was carried out using the following parameters:

- Results of the macroseismic survey (direct impact/damage observation and results of aerial photo observations);
- Distribution of aftershock relocation results;
- Distribution of landslide and soil fracture locations; and
- Vs30 measurement results (soil type classification).

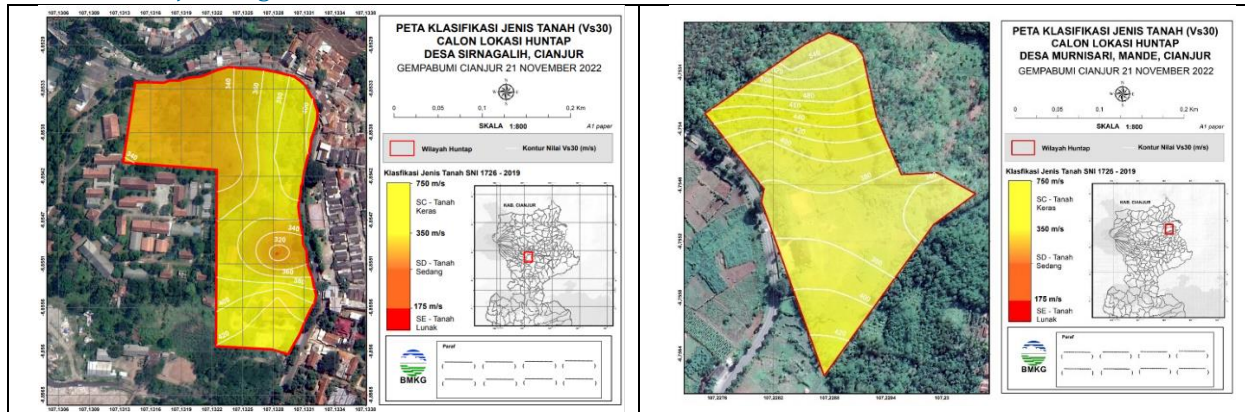


Figure 6. Map of Soil Type Classification of HUNTAPEL Locations in Sirnagalih Village and Murnisari Village

Based on the results of the study by the BMKG and the Geological Agency, it was recommended that the Sirnagalih Village HUNTAPEL location was deemed feasible for housing with earthquake-resistant building construction. This recommendation supported by the following findings: 1) the soil conditions tend to be flat and slightly sloping with a slope of $\pm 5\%$; 2) In general, permanent housing site have Hard Soil (SC) types with a value of 320 – 420 m/s; 3) The straight distance from the epicenter to the planned location is ± 8 km.; 4) Estimated Maximum Ground Acceleration (PGA) Value at surface 260 gals; 5) The intensity of the shock reaches IV-V MMI. ('mild to moderate' shaking). The results of the study for the Murnisari Village permanent housing site recommended that the location is suitable for housing with earthquake-resistant building construction. This recommendation is supported by the findings of several things, including: 1) the soil conditions tend to be flat and slightly sloping with a slope of $\pm 5\%$; 2) in general, permanent housing site have Hard Soil (SC) types with a value of 360 – 540 m/s; 3) The straight distance from the epicenter to the planned location is ± 20 km; 4) Estimated Maximum Ground Acceleration (PGA) Value at surface 111 gals; and 5) The intensity of the shock reaches III-IV MMI ('weak to mild').



Figure 7. Site Plan for HUNTAPEL Development in Sirnagalih Village (left) and Murnisari Village (right). Source: <https://sigi.pu.go.id/gempacianjur/index.html>

Permanent housing construction carried out through contractual methods with service providers. However, taking into account the ongoing emergency response status and referring to the National Public Procurement Agency (LKPP) Regulation Number 13 of 2018, the procurement process of permanent housing construction provider is directly appointed. Permanent housing is built with earthquake resistant house construction using technology of Healthy Simple Instant House (RISHA) type 36 with a lot area of 75 m². A total of 200 units of Sirnagalih Village Huntap have been completed and 151 units of Murnisari Village Huntap. The relocation location has been served by the existing electricity network and clean water network from PDAM Cianjur Regency.



Figure 8. Photo of Permanent Housing in Sirnagalih Village
Source: Documentation of Ministry of Public Works and Housing

CONCLUSION

Post-disaster rehabilitation and reconstruction activities include rebuilding community housing and settlements, reconstruction of community service infrastructure, and recovery of the economic, social, health and cross-sectoral sectors with the aim of recovering community activities immediately. The strategy for the rehabilitation and reconstruction of the housing sector after the earthquake in Cianjur Regency on November 21, 2022 was carried out through two mechanisms, namely 1) stimulant fund assistance for housing rehabilitation and 2) housing relocation.

1. Stimulant fund assistance for housing rehabilitation. This scheme is intended for people whose houses have been damaged, either lightly damaged, moderately damaged or severely damaged but not in the Cugenang Fault zone. House repair assistance was carried out in-situ using the community empowerment method accompanied by the Community Assistance Team (TPM). As for the financing of stimulant assistance for housing repairs, it uses the APBN allocated to the BNPB budget.
2. Housing relocation. This scheme is intended for people whose homes located on the Cugenang fault zone, which is carried out ex-situ using the contractual method. To date, 351 permanent housing units have been built in two villages, namely Sirnagalih Village and Murnisari Village. The permanent housing construction was conducted by the Ministry of Public Works and Housing, while the relocation land was provided by the Cianjur Regency Government. The selection of relocation land has gone through studies and recommendations from the Geology Agency and BMKG.

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