

## RELOCATION POLICY IN INDONESIA TO ACHIEVE SUSTAINABLE COMMUNITY LIFE: IN REVIEW

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**ABSTRACT:** The occurrence of natural disasters frequently results in the impairment of settlements, thus rendering relocation the optimal course of action. The present study aims to review relocation policies and recovery efforts following the Aceh tsunami, the eruptions of Mount Merapi in Yogyakarta and Mount Sinabung, and the disaster in Central Sulawesi. The research was conducted using a descriptive qualitative approach. The research findings highlight significant challenges in relocation, including the difficulty of securing land that is physically and legally clean and clear. In order to address these issues, land provision was carried out using village land, state land, land with cultivation rights, and the release of production forest areas. The review also indicates that in order to support livelihood sustainability, the government implemented several strategies, including the provision of agricultural land in Sinabung, the utilization of KRB III land as a livelihood source in Yogyakarta, and the facilitation of new job opportunities for the community. This review underscores that the challenges associated with relocation extend beyond the mere procurement of land and the establishment of settlements, encompassing the imperative of restoring community livelihoods. The findings of this study are expected to provide a foundation for the formulation of appropriate relocation policies in the future, ensuring that communities are safe from disasters and able to live more prosperously.

*Keywords: Disaster, Relocation, Life Restoration, Sustainable Society*

### 1. INTRODUCTION

A series of terrible disasters occurred in Indonesia, one of which was the tsunami of Aceh as the biggest disaster in the 21st century, resulting in the death toll in several countries reaching a total of ± 270,000 and 130,000 in Indonesia [1] [2]. The disaster also had an impact on the destruction of settlements, ponds, and land damage reaching 3,000 hectares [2] [3] [4] with a total loss of 42.7 trillion [5]. In addition to the tsunami, another major disaster occurred due to the eruption of Mount Merapi which destroyed residential areas up to 2,856 houses, damaged agricultural land and infrastructure with a total loss of 3.62 trillion, and resulted in 386 fatalities [6]. The ferocity of pyroclastic material due to the eruption also occurred on Mount Sinabung, which 400 years earlier was an inactive volcano [7]. The impact of the Sinabung Eruption since 2010 until now has resulted in the destruction of settlements and agricultural land up to ±33,586 Ha [8] [9]. Another major disaster occurred in 2018 was an earthquake that triggered a tsunami that was followed by liquefaction in Central Sulawesi resulting in the destruction of settlements and changes in land morphology. The disaster resulted in 1,727 victims

in Palu City, 188 people in Sigi, 171 people in Donggala, and 15 people in Parigi Moutong.

Several disasters such as volcanic eruptions, earthquakes, tsunamis, landslides, flood, and liquefaction are disasters that cause more casualties, destroy the economy, [10] and cause far more fatal damage when compared to floods/droughts/hurricanes and other similar disasters [11] [12]. In this context, relocation is the right alternative for areas that have suffered fatal damage and land conditions that do not allow them to be rebuilt [13] [14][15]. The high level of risk that will be felt by the community if settlements are rebuilt in the same location makes the community have no other choice but to move [16] [17] [18].

Although various studies have shown that relocation is not an easy thing to do because moving people has the possibility of changing livelihoods, the environment, as well as social and cultural life which requires the community to adapt [17] [19]. The fact that there is no guarantee for the community life to be sustainably better or at least the same as before after the relocation as well as loss of livelihood/being apart from arable land, limited infrastructure, and the need to adapt to new social/environmental conditions make relocation

policies often rejected [20] [21]. Several studies have shown that relocation can actually lead to prolonged poverty for the community [22] [23]. This is what needs to be mitigated so that the impacts can be prevented so as not to cause new disasters [24] [25] [26].

In an effort to reduce the impact of disasters, especially in the relocation policy, analysis of the physical, socio-economic, and cultural conditions [21] as well as the impacts that may occur a comprehensive study involving community participation is necessary to conduct [27]. Utami [15] mentioned that the selection of locations has an influence on the sustainability of people's lives and livelihoods. This assessment process becomes the basis for formulating mitigation so that after the relocation, the community will have a better life. The economic aspect/sustainability of life should be one of the main considerations for determining the location of relocation [24] [28].

Studies conducted by previous researchers show that relocation sometimes fails because it only prioritizes physical aspects without considering the sustainability of people's lives [22] [17] [29]. The lack of community involvement in formulating needs in relocation often results in people returning to live in their old settlements [30]. In addition, there were also relocations carried out by ignoring the threat of disasters which resulted in the community having to experience the negative impacts of a disaster again. The complexity of the problems experienced when relocating certainly makes site selection an important matter where all of them must be considered carefully from the physical, social, and cultural aspects as well as the sustainability of community life [22][31][15] [21]). By considering various problems and challenges in relocation, this study aimed to review the relocation policies of the post-tsunami of Aceh, post-eruption of Merapi, post-eruption of Mount Sinabung and post-disaster in Central Sulawesi, Indonesia. Several relocation practices in Indonesia is hoped to a lesson learned to formulate an ideal land provision policy scheme and realize sustainable community life.

## 2. METHODS

This study was conducted using a descriptive qualitative approach to the relocation policy implemented in four cases of major disasters in Indonesia (Tsunami of Aceh, Merapi Eruption Yogyakarta-Central Java, Sinabung Eruption in Karo Regency, and earthquake-tsunami-liquefaction in Central Sulawesi). Data collection was carried out

through a literature review (reports, journals) that discuss the process of providing land and the living conditions of the community after the relocation. To answer the first objective, an analysis was carried out on the land provision policy by describing the condition of the land status, the land provision process, and the policies applied in the relocation process. Meanwhile, to answer the second objective, the analysis was carried out based on the programs/policies implemented in order to support the sustainability of community life and by reviewing studies related to post-relocation sustainability.

## 3. RESULTS AND DISCUSSION

Among various disaster events that have occurred in Indonesia, the most devastating disaster that caused the highest losses is the tsunami of Aceh in 2004 [19] [12]. Several other countries also show that the tsunami is the deadliest disaster considering the quite high number of people living along tsunami-prone coasts [32] [33] [34]. In addition, a tsunami, which occurs very quickly after an earthquake, results in people not having enough time to save themselves. The morphology of some coastal areas in the form of lowland, the limited number of safe buildings for evacuation, the high number of people living on the coast, and the limited early warning system caused the number of tsunami victims in some cases in Indonesia to be very high.

In addition to tsunamis, volcanic eruptions with pyroclastic materials (hot clouds, incandescent lava, hot rock ejection) also caused high casualties. In this case, the mechanism of staying away from disaster-prone areas is one of the safest solutions. The relatively short interval period as a characteristic of Mount Merapi eruption is also a consideration for relocation and land use regulation in Disaster Prone Areas III (KRB III). The high number of people living in KRB III also resulted in a very high number of refugees/communities relocated during the eruption of Mount Merapi and Mount Sinabung.

Relocation is one of the appropriate mitigations when the number of victims and the impact of losses caused by disasters in Indonesia keeps increasing. Mahapatra [17] mentioned that the rehabilitation and reconstruction for settlements, infrastructure, and stimulation of post-disaster life recovery require a very large budget, even greater than for normal development. Data on the impact of damage and resettlement efforts after the tsunami, eruption, earthquake, and liquefaction in Indonesia are presented in Table 1.

Table 1. Resettlement and Post-Disaster Damage

No.	Disaster	Damage/Resettlement/Relocation
1	Tsunami of Aceh	600,000 people homeless 141,000 houses destroyed 130,000 resettlement needs 30,000 families needed to be moved 50,000 Ha of submerged land 700 – 1500 Ha of land required for relocation
2	Mount Merapi Eruption, Yogyakarta	2,856 houses severely damaged 3.62 trillion losses
3	Mount Sinabung Eruption, Karo Regency, North Sumatra	Relocation Phase I: 370 families Relocation Phase II : 1,679 families Relocation Phase III: 892 families
4	Earthquake-Tsunami and Liquefaction of Palu, Donggala, Parigi, and surrounding cities	Resettlement of 7,200 houses

Source: [35]

Table 1 shows that after the disaster, some of the risks that arose were loss of land ownership and settlements. In addition, job losses, marginalization, threats to food security, increased mortality and morbidity, access to shared property and natural resources, and changes in social systems were experienced by affected communities [36].

### 3.1. Land provision for the relocation of disaster affected communities

Relocation in Indonesia should be a lesson for mapping the relocation policy, the role of stakeholders, the condition of the land used, and the effectiveness of its implementation. The mechanism should be evaluated so that the policies implemented are able to realize build back better principles [37]. Massive relocation involving national/international organizations was carried out after the 2004 tsunami of Aceh as the tsunami impacted a very wide area and millions of people; the relocation process became a new experience. This unpreparedness had implications for the less successful relocation and the unsustainability of community life in several areas.

One of the main problems that are often faced in relocation is the provision of land that is in large scale, not problematic, and safe from disasters. In addition, the choice of relocation must also consider the economic sector, namely livelihoods (whether it depends on the agrarian/fishery/natural resource sector). Not to mention that when the relocation is an indigenous community with certain cultural values, the land for relocation, of course, requires special needs.

Based on Law Number 2 of 2012, the process of providing land for relocation can be carried out through land acquisition, the mechanism of controlling and utilizing abandoned land as regulated in Government Regulation Number 20 of 2021, or the use of village land. The following

section describes the process of providing land for the relocation of communities affected by the tsunami of Aceh, Mount Merapi and Mount Sinabung eruptions, and the earthquake-tsunami and liquefaction disasters in Central Sulawesi.

### 2. Relocation of Communities Affected by the Tsunami of Aceh in 2004

After the tsunami of Aceh, the rehabilitation and reconstruction program was carried out on a large scale by involving various international and national institutions [38] including the World Bank, JICA, NGOs, BRR (Rehabilitation and Reconstruction Agency, whose work ended in 2009). The massive impact of the disaster had implications for the extension of the handling of rehabilitation and reconstruction to be continued and handed over to the Ministry of Public Works, Department of Transportation, Ministry of Religion, Ministry of Home Affairs, Ministry of Development of Disadvantaged Regions, and the National Land Agency, coordinated by Bappenas, in consultation with the Provincial Governments of Aceh and Nias Islands, North Sumatra Province.

The rehabilitation and reconstruction program (especially resettlement) of affected communities in Aceh was targeted for five years, from 2004 to 2009 [19]. However, until the end of the period, there were still people living in refugee camps because not all of their housing needs were met. Provision of land for the relocation of affected communities in Aceh in several locations was obtained through land acquisition, which, at that time, was based on Presidential Regulation Number 36 of 2005. This massive community relocation had caused the government as well as national and international NGOs to be quite overwhelmed in meeting the relocation needs. Various land status conditions, people whose livelihoods depend on fisheries, and special customary systems affected the length of the

land provision process.

Land provision in Banda Aceh City was mostly fulfilled by the use of state land. This policy is relatively easier when compared to land acquisition plot by field sourced from proprietary land. The policy of granting land rights status to tsunami-affected communities who no longer owned land were given land and buildings with building rights (HGB) [39], but there were also policies that applied the granting of Property Rights status. The selection of land for relocation in Aceh, apart from paying attention to the level of security, was also influenced by the customs/culture (gampong system) adopted by the community. With this system, the land requirement for each gampong covers an area of at least  $\pm 5,000 \text{ m}^2$  so that it can contain a minimum of 50 to 150 houses. To fulfill this area, the availability of land that was easily obtained was mostly sourced from state land. As stated in the regulation, state land is land that is not attached to a land right. In this context, the land includes free state land that has never been attached to rights or land that has been attached to western rights, or certain land rights that have expired, land whose rights were revoked, or land voluntarily released by the owner [40]. The provision of state land, which was available in a large-scale, was able to meet the needs of settlements and supporting infrastructure. In addition to selecting a location with clear and clean status, the determination of land must also pay attention to the direction of the spatial plan, disaster safety aspect, and the morphology of the area.

Data collection and inventory of relocation recipient communities were set to prioritize people who had lost their land, communities in highly disaster-prone zones, and tenant communities who did not have land to build settlements. The implementation of the relocation was influenced by various factors so that in one program, there was relocation which could be implemented quite quickly and successfully due to the initiation and collaboration between the community-BRR and NGOs, but on the other hand, there were also relocations that were less successful. Some of the relocation practices that did not meet expectations include post-tsunami relocation in Simeleu where most of the families who had been resettled in new places returned to their old locations or found other areas to settle. This happened because at the relocation sites, there were no basic necessities such as electricity and clean water [41]. The relocation carried out in Siti Ambia, Singkil was also not quite successful because the community returned to their original locations because their livelihoods were more developed if they lived in the old locations [30].

Provision of land for the relocation of tsunami victims, apart from being sourced from state land, was also carried out through the land acquisition process. One of them was in the Johan Pahlawan

sub-district where most (17 villages) of the 21 villages suffered severe damage. The land acquisition scheme was carried out through stages as in the usual land acquisition process. Some of the initial stages carried out include the planning, preparation, and location determination stages which were determined through the Decree of the District Head of Aceh Barat Regency. In this relocation scheme, funding was sponsored by the Regional Government, BRR, and partly borne by NGOs (one of which was the Salvation Army). Meanwhile, the construction of houses was sponsored by NGOs (Caritas, Islamic relief, International Organization Migration), ADB, and from the Catholic Relief Service (CRS). Relocation in Aceh was based on Presidential Regulation of the Republic of Indonesia Number 65 of 2006, the policy stated that the affected community was given the status of property rights.

The relocation process after the tsunami of Aceh in 2004 experienced various obstacles because the tsunami did not only hit and damage community settlements, but also resulted in the destruction of mangrove forests as a source of livelihood as well as the loss of ponds and coastal land as a source of life. In this context, the relocation carried out in Aceh did not only focus on rebuilding community settlements, but also providing life restoration and creating new livelihoods [42]. In this case, at the stage of rehabilitation and reconstruction, the government, NGOs, and donor agencies collaborated as an effort to change the lives of people who previously depended on the natural/land sector (fishermen, fish farmers, farmers). Various schemes for providing help/assistance were emphasized on efforts to change jobs in the trade sector, MSMEs, and the service sector [2].

Efforts to restore people's lives, in the implementation, achieved varying degrees of success. Involvement of adat/local leaders as well as the community in determining the need for life restoration, appropriate assistance, marketing assistance, mentoring, and monitoring carried out after the disaster, as stated in [42]'s study, was quite effective in helping the community to recover from the disaster. In addition to the above aspects, the success of life recovery was also influenced by the motivation, social values, and the ability of the community to respond to change and use existing opportunities and assets [43]. The success of site selection for relocation also had an influence in supporting post-tsunami sustainability. Relocation with adequate, complete infrastructure, accessible location, and access to markets/natural resources provide support for the restoration of life. In some jobs, the community cannot be separated from the natural sector (farmers, fishermen, fish farmers), thus determining the location by adjusting the work is an absolute thing to consider [44].

### 3.3. Relocation After Mount Merapi Eruption in 2010

The Merapi eruption in 2010 was a violent eruption which resulted in the death of 277 people in Yogyakarta and 109 people in Central Java, as well as the destruction of 2,346 houses in Yogyakarta and 510 houses in Central Java. The impact of pyroclastic materials also damaged agricultural land and resulted in the death of hundreds of livestock which led to people losing their livelihoods [45]. Mount Merapi, which is located in Yogyakarta and Central Java, has been active since 1900 and has become the most active volcano in Indonesia [46][47]. Eruptions that occur quite often and their impact on settlements and agricultural land [48] have resulted in the government's policy of relocating the community.

The relocation policy in Sleman, Yogyakarta experienced various problems including the delay in the determination of Presidential Decree Number 16 of 2011 concerning the Rehabilitation and Reconstruction Team which was passed in mid-July 2011 so that the implementation of rehabilitation and reconstruction had to be postponed. The delay in reconciliation was also influenced by the rejection of some communities, which until the end of the program, there were three villages that refused, namely Kalitengah Lor, Kalitengah Kidul, and Srunen villages. The community's desire to continue to cultivate and use the land in KRB III also hampered the relocation process [49]. As stipulated through Regent Regulation Number 20 of 2011, KRB III has to be vacated from the use and utilization of residential land. Determination of the location of KRB III which did not involve community participation and the lack of socialization resulted in high resistance to relocation [50] [51].

The relocation mechanism that was implemented after the eruption of Merapi was initially carried out in a top-down mechanism, in which from the process of determining the areas included in KRB III to the relocation planning were regulated and determined by the government. The topdown relocation mechanism, with the aim of clearing the land in KRB III, was rejected and received criticism/input from NGOs/academics/the community. This was what changed the relocation mechanism significantly, from top-down to the mixed mechanism, i.e., top-down and bottom-up. A relocation includes several stages: policy formulation; planning-procurement and preparation of land for relocation; registration and verification of beneficiaries; settlement planning; formation of settler groups; land maturation including the process of clearing/cutting trees/landfilling; plotting; and construction implementation and monitoring.

The implementation of relocation on KRB II land utilizes village treasury land with reference to

Governor Regulation Number 11 of 2012. This mechanism makes it easier for the government to provide the need for large-scale land. As regulated in Governor Regulation Number 11 of 2012, Village Land (TKD) can be used for public purposes, one of which is relocation. In this regulation, it is determined that the government can release TKD through a buying and selling process, in this case the regional/central government buys land from the village treasury. Henceforth, the village can look for/buy a replacement TKD. In this relocation, the government provides legal certainty for settlements with Property Rights status. The community's request to be able to use the land in KRB III was also accommodated by the government by giving the authority to use the land as arable land but not as permanent residence. The policies set by the government by prioritizing the interests and sustainability of people's lives are certainly able to become a post-disaster management *success story*. Although there were some failures at the beginning of the relocation process, it can be said that the relocation implemented after the eruption of Merapi was quite successful in moving people from KRB III to safer areas.

The relocation policy after the 2010 eruption of Merapi in several locations also includes efforts to restore people's lives. Some of the programs include the construction of communal cattle pens along with the assistance of livestock. Some communities were also given capital assistance and mentoring to change professions/have additional side jobs. Type C mining sector (sand/stone) is one of the new jobs; besides that, efforts to develop eco-tourism are also carried out by the community. The abundance of type C minerals produced from the eruption of Merapi and the development of tourism involving the community has implications for the rapid recovery of the economic sector, so that the community could recover quickly and get a better life.

### 3. Relocation After Sinabung Eruption

The Sinabung eruption which has been going on since 2010 is one of the longest eruptions whose end remains unknown. This condition has led to the widespread impact of the eruption which resulted in the destruction of settlements and agricultural land as well as a high number of refugees up to ± 30,000 people [52] [53]. Resident relocation efforts are carried out based on Presidential Decree Number 21 of 2015 where community relocation is categorized into two, namely relocation facilitated by the government carried out in Phase I and independent relocation (in groups) carried out in Phase II and III. In general, the problems that are often faced in this relocation are determining and obtaining land that is in accordance with the economic conditions/livelihoods of the community, safe from disasters,

and in clear and clean condition.

The phase I relocation scheme is intended for people who are very severely affected, namely those in Sukameriah Village (128 families), Simacem Village (130 families), and Bekerah Village (112 families). In an effort to provide land for the community, the government established Siosar Village as a safe place for settlement development. In addition to relocating settlements, this program also includes the restoration of community life through the process of providing agricultural land for affected communities through a borrow-to-use mechanism for production forest areas. By regulation, the mechanism for borrowing and using permanent production forest areas can be carried out with a borrow-to-use status on behalf of the Regent of Karo Regency, especially for agricultural land. The land determined through the Decree of the Minister of Environment and Forestry of the Republic of Indonesia Number SK 271/Menlhk-Stjen/2015 for new arable land covers 416.44 Ha. With this permit, each affected community was given a land of ±0.5 Ha/family. Meanwhile, for residential land, the government provided it through

the status of property rights. This condition could be carried out considering that the release of forest areas has been carried out for Other Use Areas (APL). As an effort to recover residents affected by the Sinabung eruption, apart from being given new arable land, they were also given assistance for land acquisition and management fees of IDR18.000.000,-/family. Efforts to assist and socialize the management of production forest utilization are also provided by the Ministry of Agriculture, including the Technical Guidelines for Land Handling for the Relocation of Sinabung Refugees in Siosar and assistance activities for land management. Provision of land through the status of borrow-to-use forest production and assistance to victims in creating new arable land is one of the breakthroughs, considering that almost all people rely on agriculture/plantation for their livelihood. However, until this study was carried out, some arable lands were still constrained by limited water sources due to the lack of infrastructure. The stages of relocation of the Sinabung community are presented in Table 2.

Table 2. Stages, Locations, and Total Relocation of Victims of the Sinabung Eruption

No	Relocation	Location	Total	Land Conditions & Description
1	Phase I	Relocation in Siosar Village for affected residents in Bakerah Village, Simacem Village, Sukameriah Village	370 families	Relocation to Siosar Village and new arable land with the status of borrow-to-use production forest area
2	Phase II	Berastepu, Gamber, Kotatonggal, Gurukinayan	1.682 families	The location was determined independently by the community; agricultural land was with the status of borrow-to-use production forest area
3	Phase III	Sukanalu, Sigarang-garang, Marwal, Lau Kawar	1.038 families	The location was determined independently by the community

Source: [54]; [53])

The high number of residents being relocated is due to the Sinabung eruption expanding to a radius of 5 km; in this case the government has decided that people in that radius has to relocate [55]. The difficulty of obtaining land has resulted in people still living in refugee camps. The independent relocation effort programmed, in its implementation, also encountered obstacles, one of which is that the relocation location is not equipped with facilities or infrastructure. The absence of adequate infrastructure, as stated in Bukvic (2015)'s study, can make the community uncomfortable and make it difficult to quickly recover after a disaster.

#### 4. Relocation After the Earthquake, Tsunami, and Liquefaction in Central Sulawesi

After the multi-disaster (earthquake-tsunami and liquefaction) in Palu, Sigi, and Donggala in 2018, the number of residents who lost their homes and land that was not possible to be rebuilt because it was lost due to the tsunami or deformed due to

liquefaction resulted in a high need for relocation. As part of efforts to reduce disaster risk, the government established the Red Zone based on Central Sulawesi Governor Regulation Number 10 of 2019 concerning Post-Disaster Rehabilitation and Reconstruction Plans. One of the mandates stated that land affected by liquefaction, namely in Petobo, Balaroa, Jono Oge Lolu, and Sibalaya, was not allowed to be designated as a residential area [57]. Besides, as an effort to move and build settlements, at the rehabilitation and reconstruction stage, the government designated areas in Tondo, Duyu, and Talise as relocation locations.

Efforts to provide land for relocating communities were carried out through a process of land acquisition for victims in Palu City and Sigi Regency through the use of land with ex Cultivation Rights (HGU) status. The mechanism used to regulate land that has expired was based on Presidential Regulation Number 10 of 2011, where the land can be designated as abandoned land which

can then be utilized for relocation. The policy for controlling abandoned land for relocation was for land whose period of land rights (HGU) had not expired but part of it was abandoned land. Consequently, the right holder was asked to relinquish their rights to the extent of the need for relocation and, of course, it was adjusted to the Regional Spatial Plan. Furthermore, for land that was still being used according to its designation (not as abandoned land used for relocation), the rights could be submitted and reconsidered by the Ministry of Agrarian Affairs and Spatial Planning/National

Land Agency (ATR/BPN). Land whose rights has been relinquished or expired is handed over to the Ministry of PUPR and BNPB. This step is an effective solution to accelerate the provision of land for resettlement with large-scale land. Until this study was conducted, post-disaster resettlement development had succeeded in building a total of 1,728 houses through the assistance of Buddha Tzu Chi, the AHA Center, and the Association of Indonesian City Governments (Apeksi). Construction was also carried out in Duyu, Tondo-1, and Balaroa villages with a total of 1,968 houses.

Table 3. Post-Disaster Relocation in Palu and Sigi

Disaster	Relocation Land	Territory	Area	Description
Post-Earthquake, Tsunami, and Liquefaction in Palu - Sigi	591.6 Ha	Tondo	150 ha	Ex HGU
		Talise	38.6 Ha	Ex HGU
		Duyu	41 ha	Ex HGU
		Pombawe-Oloboju, Sigi	362 ha	Ex HGU

Source: Ministry of Agrarian and Spatial Planning/National Land Agency, 2021

At this stage, the government, NGOs, and religious institutions were jointly trying to speed up the recovery process for residents through assistance in accelerating resettlement and assistance mechanisms to restore community conditions. Some of the efforts included assistance for micro-enterprise development [58], so that the community could restore their economy [59].

### 5. Relocation and Recovery of Post-Disaster Life in Indonesia

This literature review shows that, as a country prone to multiple disasters, Indonesia faces enormous risks in the event of a disaster. The loss

and destruction of settlements, infrastructure and farmland close to the disaster's epicentre makes relocation the only solution. Findings from this study indicate that the primary factors contributing to relocation failure include the unavailability of land that meets legal and physical requirements, and the difficulty of finding land that is safe from disasters. Another contributing factor is that policies often focus solely on constructing settlements and infrastructure for disaster victims, while overlooking the fundamental issue of how to restore communities' livelihoods. Figure 1 provides an overview of the impacts of disasters and the relocation challenges.

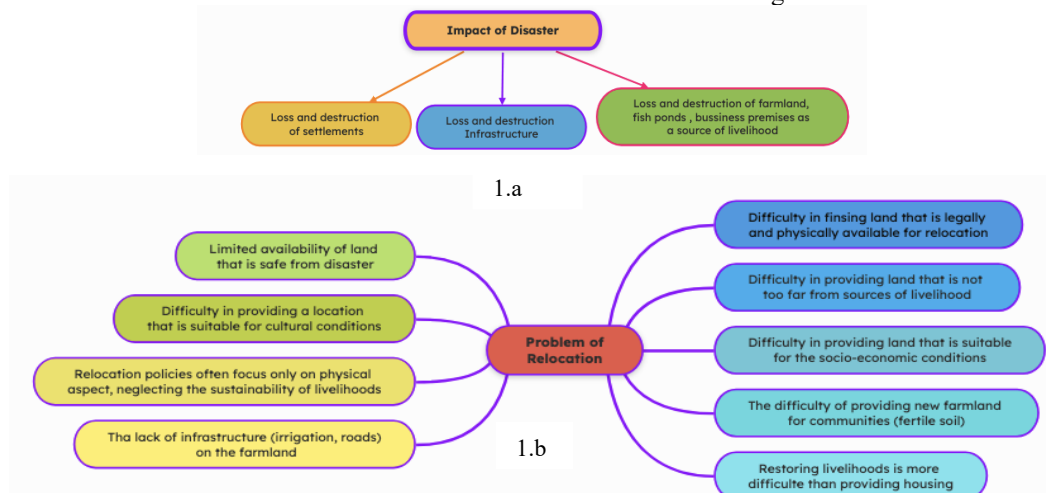


Fig 1 (a) Impact of Disaster (b) Problems of Post-Disaster Relocation

Post-disaster Aceh situation is one of the new milestones in formulating a comprehensive disaster

management scheme. This is also done in various countries where disasters become a new momentum

to organize and improve preparedness in dealing with disasters [60]. The massive impact of disasters has implications for the emergence of concern for international institutions, NGOs, and several countries to provide assistance for relocation as well as to formulate efforts to assist community life recovery and provide new lives/livelihoods for the community [29].

Collaboration between stakeholders in the rehabilitation and reconstruction has influenced the policies and mechanisms implemented in the post-disaster management of the post-tsunami of Aceh in 2004 [43]. The approaches and strategies implemented in the recovery refer to Sustainable Livelihoods Framework (SLF) where human capital, financial capital, physical capital, natural capital, and social capital become important assets in restoring life [22]. In addition to that, social relationships, family ties, community perceptions, and physical/mental health play an important role in life recovery; a similar concept is also applied in the study of [61]. Several priorities required include the need for community involvement in post-disaster management, the importance of including post-disaster life recovery, and the importance of pre-disaster prevention/mitigation/pre-disaster community preparedness.

The post-tsunami relocation policy in Aceh as well as the earthquake-tsunami and liquefaction in Central Sulawesi has quite complicated challenges in terms of determining the location of relocation, especially for people who previously depended on the fishery sector for their livelihood. In this context, the provision of land for relocation should choose a place that is safe from the tsunami, where the location still allows the community to work in the fishery sector. Social ties, customary system, strong culture and economic aspects in both locations, namely in Aceh and Central Sulawesi, have led to high resistance. These elements made the relocation plan at a radius of 500 m from the coastline not being fully realized. The difficulty of obtaining land and the increase in land prices in areas that were not affected by the disaster also caused the community to return to building settlements in the red zone/disaster-prone areas [19].

The relocation policy implemented in Aceh can be said to be mostly implemented in a top-down [26] manner. This was because many adat and community leaders died due to the tsunami, the psychological condition of the community that was disturbed, the loss of property and livelihood, and a paralyzed social system, making the relocation less likely to be carried out in a bottom-up manner. In addition, the need for land for urgent relocation was also the reason why the relocation scheme was more appropriate to be implemented in a top-down manner. In this context, the state could use its power in terms of 'the right of the state to control land' as regulated in the 1945 Constitution to accelerate land

provision. Inventory and identification of several state lands that allow for relocation were deployed to provide land quickly. The ease of the process of transferring state land into property rights made this scheme chosen after the tsunami of Aceh, the Sinabung eruption, and Central Sulawesi disasters. In the three relocation cases outside Java, the availability of state land was quite extensive, whereas it was very limited for post-eruption relocations of Merapi in Yogyakarta and Central Java, so that land provision was provided through village treasury lands.

The relocation scheme has undergone changes in its journey to adapt to community dynamics, political conditions, national/international disaster management policies, level of disaster impact, socio-economic conditions, and regional conditions. Several post-disaster areas in Aceh that implemented the top-down policy, in its implementation, had several advantages: the process of providing land could be done quickly and physical development was relatively easier. However, this scheme had several weaknesses: the location and basic needs needed by the community were often not accommodated; there was no sense of ownership because the community was not involved in the process; and the program was not sustainable, resulted in the community leaving the relocation locations and resettling in disaster-prone locations.

As a solution, the mix-method policy (top-down and bottom-up) was selected in several land provision policies including after the Merapi eruption, the Sinabung eruption in the relocation phases II and III, and after the Central Sulawesi disaster. The mix method is an option in relocation, considering that the need for land for urgent relocation can be supported through state power in terms of quick land provision. Meanwhile, the bottom-up policy is carried out in the process of planning and finding relocation locations, determination of space utilization models in relocation, and inventory of needs that support the sustainability of life/creation of employment opportunities for the community. The inclusive policy implemented in relocating the community after the disaster by involving the community is an important part in the restoration of life as mandated in The Sendai Framework for Disaster Risk Reduction 2015 -2030/SFDRR [62].

As stated in [44] study, the mechanism for the restoration of community life as an integral part of rehabilitation and reconstruction in its development is pursued in the study area. Efforts to create new land for arable land (agriculture/plantation) for communities affected by the Sinabung eruption are carried out by the government through a borrow-to-use forest area scheme. Various efforts of assistance, training, equity participation, and market/network openings were also carried out in post-disaster management. Several implementations have shown

that post-disaster management in Indonesia is getting better, where the community is starting to be involved and empowered in the rehabilitation and reconstruction process. However, in its implementation, this effort has not been fully able to realize the life of the affected community in a sustainable manner/tough household, considering that livelihood recovery is influenced by various things. The implementation of life restoration in the study area has emphasized the concepts stated by [63] namely creating a resilient/independent and empowered community so that efforts to recover and the impact of poverty due to disasters can be prevented.

#### 4. CONCLUSIONS

Post-disaster problems that are often faced by the state in relocating affected communities include the difficulty of obtaining large-scale land that is safe from disasters, land that does not have physical or legal problems, and land that supports the community to create a better life. In this context, the state uses its authority in terms of "the right of the state to control land that is used for the greatest prosperity of the people". This effort has been carried out through provision of land by utilizing state land and village treasury land which in the process can be carried out easily, considering the need for relocation should be done quickly, so that the community are not drag on in uncertainty. The recovery of affected communities carried out in the study area was manifested in various policy formulations of mentoring/training, creation of new land, equity participation, and the creation of new jobs and budgetary support/funding from the government/NGOs.

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### Regulations

Government Regulation Number 20 of 2021 concerning Control of Abandoned Areas and Land

Governor Regulation Number 11 of 2012 concerning The Management and Utilization of TKD, in which the release and transfer of land ownership status can be used for several things

Presidential Decree Number 16 of 2011 concerning the Coordinating Team for the Rehabilitation and Reconstruction of the Post-Eruption Disaster of Mount Merapi in the Special Region of Yogyakarta and Central Java Provinces

Presidential Decree Number 21 of 2015 concerning the Task Force for the Acceleration of Relocations of Communities Affected by the Mount Sinabung Eruption in Karo Regency, North Sumatra Province  
Regent Regulation Number 20 of 2011 concerning Disaster-Prone Areas. <https://national.tempo.co/read/55201/total-kerugian-aceh-dan-sumut-approximately-rp-427-trillion>

Regent Regulation Number 27a of 2011 concerning the Mechanism of Permanent Residential Development After the Merapi Volcano Disaster