

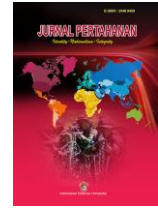


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### **LEARNING FROM PALU: REBUILDING A BETTER CITY IN THE AFTERMATH OF NATURAL DISASTER**

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#### **Abstract**

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Indonesia is the largest archipelagic country located in the ring of fire, which puts it at a high risk of natural disasters. Earthquakes, tsunami, and liquefaction that occurred in Palu in 2018 that resulted in significant material and immaterial losses were some of the examples. The earthquake and tsunami resulted in a total casualty of 1.347 people and caused the loss of access to clean water and electricity, as well as a change in the geographical structure and landscape of the city of Palu. Thus, the purpose of this study is to analyze the implementation of post-disaster rehabilitation and reconstruction in the city of Palu using a qualitative research methodology. In addition to that, this study also discusses the relationship between Palu disaster, human security, and national defense. Qualitative research in a descriptive manner that offers a complete description and analysis regarding Palu disaster was held to answer the research question presented in this paper. The results show that the natural disasters that occurred in Palu in 2018 brought about an impact on people's lives and all aspects of human security. This is because, in each phase of the disaster that occurred, the Government of Indonesia failed to protect the community from the risk of such a disaster. Furthermore, based on the Disaster Risk Reduction criteria, the rehabilitation and reconstruction that have been carried out are relatively adequate. However, non-structural aspects of mitigation, which is one of the important aspects of disaster risk reduction, have not been carried out. Disaster training and simulations so far have only been done once and not regularly, therefore jeopardizing the community's preparedness for future occurrences of natural disasters. Therefore, improvements in disaster management need to be done in Indonesia.

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## INTRODUCTION

Indonesia is an archipelagic country that lies on the ring of fire, an arc of volcanoes, and fault lines in the basin of the Pacific Ocean (Chavez, 2018). Indonesia is prone to disaster. Hence, the question is not about whether the disaster will occur, but rather when it occurs. One of the biggest disasters that happened in Indonesia recently was a powerful earthquake, followed by a tsunami and liquefaction, in Palu. The disaster took place after another massive earthquake in Lombok, West Nusa Tenggara happened. Both disasters took place consecutively in 2018.

Palu is the capital as well as the largest city in Central Sulawesi. It is located at the mouth of a small estuary on the Makassar Strait and is surrounded by hills. The estimated official census in 2019 recorded a population of 3.042.100 people in Central Sulawesi, while approximately 370,000 people live in the city of Palu (Palu Central Bureau of Statistics). Central Sulawesi covers 61.841 km<sup>2</sup> of area, the largest among all provinces in Sulawesi (Palu Central Bureau of Statistics). This province also has the second-largest population on the island after South Sulawesi.

On 28 September 2018, homes throughout Palu were flattened. The powerful earthquake, a series of tsunami waves, destructive flows of mud and soil destroyed several inland areas in Palu. The earthquake was 7,5 magnitude and was followed by a tsunami. The number of casualties in Palu's earthquake and tsunami in Indonesia was said to be as high as 1.347. The disaster completely tore the area apart, access to water and electricity was completely cut off, as well as economic and community activities. The disaster even changed the landscape of Palu.

Palu disaster was a non-military threat that disrupted not only people's lives but also resources (in terms of economy) and infrastructure facilities that served to increase the strength and capability of Indonesia's defense. Disasters, as non-military threats, always put the nation's



**Figure 1.** Palu's Landscape Before and After the Earthquake and Tsunami

*Source:* Indonesia Tsunami: Death Toll Rises to Nearly 1,350, 2018

safety in danger. In the case of Palu, disaster as one of the non-military threats brought about impacts to the economic, socio-cultural, and public safety dimensions. Hence, to restore the economy and community activities in Central Sulawesi, the Government was carrying out rehabilitation and reconstruction to the infrastructure facilities, such as houses, airports, ports, and irrigation systems. Rehabilitation and reconstruction are important efforts in the post-disaster phase, and it had to be conducted in line with the "Build Back Better" approach to enhance the community's resilience to future disasters.

Efforts to build back better Palu through rehabilitation and reconstruction were meant to build Palu in a better way, not merely to rebuild the city based on its existing condition. Post-disaster rehabilitation and reconstruction is a significant period in disaster management where it becomes a window of opportunity for communities and nations (Thurairajah et al., 2008).

It is commonly known that disaster always brings massive impact to the community. Often the impact is especially

much more significant on those who are more vulnerable and the ability to achieve human security was severely reduced and constrained (Mangada & Su, 2019). To ensure the existence of human security means to ensure that the mitigation plan to limit such damage is conducted. It means that preventive measures such as earthquake-resistant buildings, effective and immediate evacuation plans, and careful urban planning. It is necessary because a good disaster risk reduction practice and disaster rehabilitation programs must include all features of human security approaches. Therefore, this paper is aimed at analyzing the extent to which post-disaster reconstruction projects have been carried out, as well as recommendations for future improvements.

Based on the preliminary data, post-disaster programs in Palu have not been carried out optimally to build back better. These programs should have been implemented with due reference to predetermined targets, therefore protection of individual security can be guaranteed. Moreover, as a country with high vulnerability to natural disasters, Indonesia is yet to implement Disaster Risk Reduction (DRR) measures. The Palu disaster alone indicated the lack of mitigation and early warning system on the imminent threat of the disaster. The Indonesian Government was considered to have been slow in distributing social assistance and relocating homes. This, in turn, has affected some aspects of the human security theory. Distribution of foreign aids from neighboring countries and international donor organizations also had its fair share of challenges when the much-needed donations could not reach the targeted communities. Thus, the research will discuss in great detail the implementation of post-disaster rehabilitation and reconstruction programs in Palu. The novelty aspect of this study in this regard is the discussion of the said rehabilitation and reconstruction programs about human

security and defense, which has never been conducted previously.

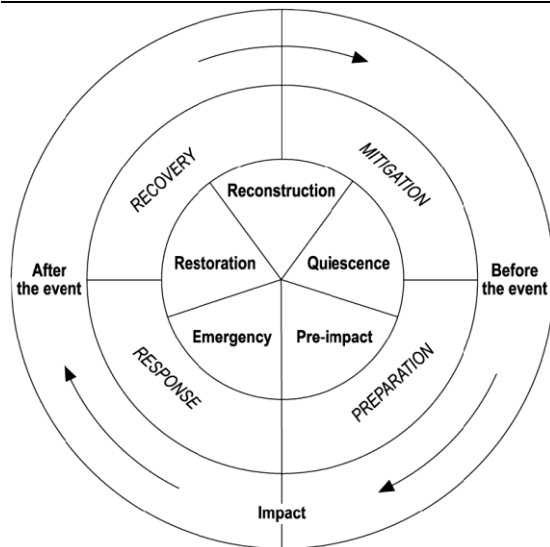
## **METHODS**

To satisfy the objectives of the research, qualitative research in a descriptive manner was held. This method offers a complete description and analysis of the research subject. By definition, qualitative research is an inquiry process of understanding the social or human problem, based on building a complex, holistic picture, formed with words. It is an approach for exploring and understanding the meaning of individuals or groups ascribe to a social problem. This method is primarily exploratory and chosen to uncover trends in thoughts, opinions, and events, as well as to dive deeper into the problem. Hence, the literature study becomes the main source of data to conclude this research.

The hypothesis in this paper was then evaluated by using the data collected from the literature study. Moreover, the problem presented in this paper was further analyzed with DRR theory and Human Security. The evaluation of the implementation of Post-Disaster Rehabilitation activities in Palu, Central Sulawesi in 2018 is the main focus of this paper. Hence, the research question is: how was the implementation of Post-Disaster Rehabilitation activities that happened in Palu conducted?

## **Disaster Risk Reduction Theory**

Comprehensive disaster management is based on 4 (four) components. Those components are (Alexander, 2002), 1) Mitigation, which involves reducing or eliminating the impact of a hazard, 2) Preparedness, this phase involves preparing the community who may be impacted by a disaster or who may be able to help the affected community to minimize their losses, 3) Response, this phase focuses on taking action to reduce the impact of disasters that have occurred or are currently occurring to prevent further loss and suffering, and 4) Recovery, this phase



**Figure 2.** The Disaster Management Cycle  
*Source:* Alexander, 2002

focuses on returning the affected community to their normal lives.

To overcome disaster risk in Indonesia, the Government of Indonesia applies the Disaster Risk Reduction (DRR) framework as an effort to minimize the impact of a disaster. DRR is created by the UN-ISDR (United Nations for the International Strategy for Disaster Reduction). UN-ISDR was created to help nations, organizations, and communities that are "disaster-resilient" by espousing the idea that disaster reduction must be interlinked with development (Coppola, 2015). UN-ISDR focuses on reducing disaster's human, social, economic, and environmental toll. To achieve this goal, UN-ISDR promotes four objects to reach disaster reduction (Coppola, 2015). Increase public awareness regarding risk, vulnerability, and disaster reduction, 2). Enquire commitment from public authorities to implement disaster reduction policies and actions, 3). Stimulate interdisciplinary and intersectoral partnership, and 4). Improve scientific knowledge about disaster reduction.

In 2005, the Hyogo Framework for Action (HFA) was formed by the UN General Assembly to take a more comprehensive and holistic approach to DRR. The HFA was aligned with the Millennium Development Goals (MDGs).

Following Japan's tsunami in 2015, the global community was looking for a way forward in managing global disaster risk and formed Sendai Framework for Disaster Risk Reduction 2015-2030. Sendai Framework for DRR is connected to Sustainable Development Goals (SDGs) which focuses on improving the understanding of disaster risk in all its dimensions of exposure, vulnerability, and hazard characteristics; strengthening of disaster risk governance, including national platforms; accountability for disaster risk management; preparedness to "Build Back Better"; recognition of stakeholders and their roles; mobilization of risk-sensitive investment to avoid the creation of new risk; resilience of health infrastructure, cultural heritage, and work-places; strengthening of international cooperation and global partnership, and risk-informed donor policies and programs, including financial support and loans from international financial institutions (UN-ISDR, 2015).

In the DRR framework, recovery and reconstruction provide the opportunity to rebuild beyond a "Build Back Better" framework that gives impacted communities the chance to reduce risk not only from the immediate hazard but from threatening hazards and conditions as well which applies to all sectors, including infrastructure, livelihood, and cross-cutting issues (UN-ISDR, 2015). According to Alam et al., 2013, rehabilitation is ratification and recovery in all public service aspects or society to an adequate level in post-disaster areas by primary for normalization or walks fairly all government aspects and society in post-disaster areas. Reconstruction is rebuilding in all the infrastructures and facilities, the institutions in post-disaster areas, either at the government or society level by growth main target and economic activities, social, cultural, law enforcement development and the primary order and also the rising of community participation all social life aspects in post-disaster areas.

Furthermore, in the recovery phase, there are six general components needed, they are (Coppola, 2015):

- 1) Planning: several different activities may be initiated during the planning period and many of these activities will have begun with disaster response, such as repair and recovery of critical infrastructures, the site selection for temporary housing, hospitals, and schools. During the planning period, planners should consider that planning and rebuilding can occur simultaneously. It means that some rebuilding activities take place before master plans are completed. Other than that, planners should be aware of the urban expansion areas. Planners can speed up the relocation of the community from heavily damaged areas that may be a long time in rebuilding.
- 2) Coordination: during the recovery process, coordination is difficult to achieve but it is vital to accomplish the goals. All representative community groups have to be involved, including business, religious, and civil society organizations, emergency managers, government agencies, and media.
- 3) Information: before implementing recovery planning, disaster managers must have access to accurate and timely damage assessment information to help identify the best strategy for employing available resources and setting action.
- 4) Money and supplies: responsibility for reconstruction costs is divided among various actors. The government is generally responsible for rebuilding public facilities, meanwhile, the private sector is responsible for rebuilding houses and businesses as well as helping to restore overall economic vitality. A country has several options for disaster response funding, such as insurance, government-based emergency relief funds, donations, loans, private development funding, incentives, and tax increases.
- 5) Allocation of relief funds: in most cases,

the government is given international funding in addition to whatever funding it has in reserve or has appropriated. These funds may be disbursed as direct grants or as loans that must be repaid, or sometimes international funds are given to international relief agencies operating in the affected zone.

- 6) Personnel: during the recovery phase, personnel need for cleanup, repair, and development are excessive.

Coordination among stakeholders is vital to the success of the efforts in the rehabilitation and reconstruction phase (Resosudarmo, 2017). The term Build Back Better signifies a recovery process where the physical, psycho-social, and economic environment of a disaster-affected community is improved concurrently during recovery and dependent on stakeholders' operations (Mannakkara & Wilkinson, 2012). In short, disaster risk can be reduced when all elements of the government, non-government, and society jointly make efforts to reduce vulnerability and increase capacity for disaster management (Shalih, 2015).

### **Defense Theory**

In the Law of Indonesia Number 3/2002 on National Defense, the defense is defined as an effort to maintain the sovereignty, territorial integrity, and safety of the nation from threats and interference. Cohesiveness between military and non-military defense is carried out to deal with military, non-military, and hybrid kind of threats (Kementerian Pertahanan Republik Indonesia, 2015). Thus, the issue of defense is not only the domain of the armed forces but also involving all parties. Therefore, the defense is the first thing to find out when trying to know about a country; which means that defense is a form of reality that determines the sovereignty and safety of a nation-state (Tippe, 2016).

The defense can be defined as an autonomous science, that is ontologically, epistemologically, and axiologically fulfilling the requirements. The foundation

of relevant theories and concepts is the main requirement for the development of science, including defense science (Tippe, 2016). From the ontological aspect, a country's needs in maintaining and preserving the sovereignty, territorial integrity, and safety of the nation and its people from various threats are formal objects of the science of defense (Tippe, 2016). In other words, the science of defense is the study of all aspects related to security on a national scale that are inherent in the objectives of national defense (Tippe, 2016).

The science of defense is broader than the art and science of war or the science of war and strategy, but the science of defense is the study of how a country manages its national resources and strength in times of peace, war, and in the aftermath of war (Supriyatno, 2014). This is done to deal with threats from both outside and within the country, in the form of military and non-military threats to territorial integrity, state sovereignty, and national safety in the context of realizing national security. In the Indonesian Defense White Paper, national defense is organized into a universal defense system for the achievement of national goals. The universal defense is essentially a defense system that involves all citizens according to their roles and functions (Kementerian Pertahanan Republik Indonesia, 2015). The Indonesian Defense White Paper also mentions disasters as developments in the strategic environment that must be anticipated by every citizen. Disasters are non-military threats that can interfere with non-military defense, namely citizens, resources, infrastructure that serves to enhance national strength, and capability, and resilience.

### Human Security Theory

Other than DRR and defense theory, when analyzing the impact of a disaster, human security also becomes the perfect approach available. Given the fact that for many people, today's world is an insecure place,

full of threats on many fronts. Violent conflicts, natural disasters, persistent poverty, epidemics, and economic downturns impose hardships and undercut prospects for peace, stability, and sustainable development are only several examples of today's threats. Bear in mind, such crises are complex, they are entailing multiple forms of human insecurity (King & Murray, 2002). When they overlap, they can grow exponentially, spilling into all aspects of people's lives, destroying entire communities, and crossing national borders.

Before going deeper into the concept of human security, one must first understand what security is. The broad concept of security is elusive and open to many different interpretations, but one of its most noticeable characteristics in international relations theory is identification with national security (UNOCHA, 2009). One of the broadest and the most abstract definitions is summed up succinctly by Arnold Wolfers that security, in an objective sense, measures the absence of threats to acquired values, in a subjective sense, the absence of fear that such values will be attacked (Wolfers, 1952).



**Figure 3.** Human Security Aspects  
*Source:* Akhmady, 2020

In the final report of the United Nations' Commission on Human Security published in 2003, human security is defined as a way



to protect the vital core of all human lives in ways that enhance human freedoms and human fulfillment. Human security means protecting fundamental freedoms, freedoms that are the essence of life. It means protecting people from critical (severe) and pervasive (widespread) threats and situations. It means using processes that build on people's strengths and aspirations. It means creating political, social, environmental, economic, military, and cultural systems that together give people the building blocks of survival, livelihood, and dignity (UNOCHA, 2009).

Enhancing human security in the 21st century is about responding to climate change and disaster risks in ways that do not only reduce vulnerability and conflict, but also create a more equitable, resilient, and sustainable future (O'Brien et al., 2008). During and after emergencies and disasters, 'building resilience' can be far more important as these events affect both human and material resources (Masamine et al., 2011). It is impossible to prevent all new threats resulting from emergencies or disasters from happening, therefore the focus should be on building communities' resilience to such existing and potential threats so that the negative impact on people's lives, livelihoods, and dignity are reduced (Masamine et al., 2011).

## RESULT AND DISCUSSION

### The 2018 Tsunami in Palu

On 28 September 2018, a powerful earthquake struck the island of Sulawesi. The earthquake was then followed by a destructive and deadly tsunami that hit the Bay of Palu. The earthquake's epicenter was located in the mountainous Donggala Regency, approximately 70 km away from Palu. The earthquake was felt as far away as Samarinda in East Kalimantan as well as in Tawau, Malaysia (Vervaeck, 2018). Following the mainshock, a tsunami alert was issued for the nearby Makassar Strait. Afterward, a localized tsunami struck Palu, sweeping shore-lying houses and buildings on its way.

Location wise, Sulawesi lies within the complex zone of interaction among the Australian, Pacific, Philippines, and Sunda Plates (USGS, 2018). Among them, many small microplates are developed. In Palu, there are also several parallel fault strands defining the margins of a pull-apart basin. Each of the strands takes up some of the overall slip (USGS, 2018). A study conducted by the scientist at Bandung Institute of Technology showed that the tsunami that happened in Palu and Donggala was caused by underwater avalanches during the 7.7 scale Richter that rocked the gulf in Donggala and Palu (Vervaeck, 2018). Both areas are indeed prone to a tsunami.

The aftermath record of the disaster's impact showed as many as 2.685 death victims. It spread in Palu City 2.132 victims, Donggala 249 victims, Sigi 289 victims, Parigi Moutong 15 victims (Pemerintah Provinsi Sulawesi Tengah, 2019). The combined effects of the disaster also led to 701 people still missing, 4612 wounded, while another 223.741 people were displaced. Apart from that, the disaster also destroyed buildings and infrastructures (Pemerintah Provinsi Sulawesi Tengah, 2019). The casualties included 68.451 house units, unveiling that 40.085 buildings were mildly damage, 26.122 buildings were sustained medium damage, 30.148 buildings were severely damaged, and 4.050 buildings were declared gone. The damaged buildings were also included 327 houses of worship, 265 schools, 78 office buildings, 362 store units, roads with 168 cracked points, 7

**Table 1.** Disaster's Victims in Numbers

City/ District	Victims	
	Death	Missing
Palu	2.132	531
Donggala	249	54
Sigi	289	116
Parigi	15	0
Moutong		
<b>Total</b>	<b>2.685</b>	<b>701</b>

Source: Pemerintah Provinsi Sulawesi Tengah, 2019

**Table 2.** Disaster's Damage in Numbers

City/ District	Damage			
	Severe	Medium	Mildly	Gone
Palu	9.181	12.717	17.293	3.673
Donggala	7.290	6.099	7.989	75
Sigi	13.144	6.480	10.612	302
Parigi Moutong	533	826	4.191	0
Total	30.148	26.122	40.085	4.050

Source: Pemerintah Provinsi Sulawesi Tengah, 2019

(seven) bridges, and many more (BNPB, 2018).

Data from BNPB (Badan Nasional Penanggulangan Bencana - Indonesian's National Disaster Management Agency) showed that the total loss and damage caused by the disaster worth around Rp 18,48 trillion. The estimated cost to rebuild the disaster-affected area in the rehabilitation and reconstruction phase was more than Rp 20 trillion. The Government, alongside its partners, such as World Bank, UNDP, and other NGOs were focusing the reconstruction phase into two strategies, namely rehabilitation and reconstructions for public services including housing and rehabilitation of the affected community. Data showed from Central Sulawesi Government that around 100.405 houses were damaged and lost as the result of the earthquake, tsunami, and liquefaction. The Government alongside IOs and NGOs are building shelter for the affected communities in the form of emergency shelter (emergency phase) and temporary shelter (transition phase). Fulfilling housing needs had to be integrated with the Wash (Water, Sanitation, and Hygiene) sector. The Wash sector included clean water supply, sanitation, and environmental hygiene. For sanitation itself, it covered latrine/toilet and the communal disposal of household wastewater.

This disaster did not only bring impact on the material aspect but also the psychological aspect of the affected community. To overcome this matter, the Government and NGOs were focusing on giving psychological services like assessment and observation, assistance to a vulnerable population, psychology

mapping, play and learn activities, nutrition supply for children and women, and so on. All activities carried out aim to restore the psychology of both children and parents.

### **The Implementation of Post-Disaster Rehabilitation Activities in Palu**

Disaster management is closely related to the issues of citizens' safety. At a certain scale, disasters can have an impact on national stability and pose a threat to development sustainability. If the disaster management approach is not implemented properly, it will result in the inability to function in all government sectors. Therefore, disaster management needs to be an inseparable part of the problem of national defense. Therefore, in the Indonesian Defense White Paper, natural disasters are categorized as developments in the strategic environment that must be anticipated by each country.

Furthermore, in the Law of the Republic of Indonesia Number 24/2007, article 1 paragraph 1, disaster is defined as an event or series of events that threaten and disrupt people's lives and livelihoods caused by both natural factors and/or non-natural factors as well as human factors, which results in human casualties, environmental damage, losses property, and psychological impact. Based on this definition, the earthquake, tsunami, and liquefaction that occurred in Palu were categorized as an event that disrupted the lives of the people of Palu where this disaster resulted in many casualties and material losses. Thus, the disaster in Palu brought a massive impact on the matter of national defense.

Palu disaster was a non-military threat that disrupted the Supporting Components



of the Indonesian Defense System, which was the lives of the people in Palu. It caused material losses, as well as damage to infrastructures that serve to increase national strength, capability, and resilience. On this matter, non-military threats were essentially the threats caused by the non-military factors that jeopardized the sovereignty, integrity, and safety of the whole nation-state. It carried a broad dimension from ideological, political, economic, socio-cultural, and public safety dimensions. Palu disaster disturbed the safety of the people in Palu, which covered the economic, social, and public safety dimensions. Therefore, Palu disaster had a direct effect on the non-military defense of the state because the aspects in the defense area were disrupted, and to a certain, they no longer functioned. Thus, the concept of defense did not only cover national sovereignty and territorial integrity, but also the safety of the whole nation and human safety from the threat of disaster.

Furthermore, analyzing Palu disaster can also be done from the specific areas in DRR according to Sendai Framework for DRR, the implementation of the post-disaster phase in Palu was:

1) Improving the understanding of disaster risk in all its dimensions of exposure, vulnerability, and hazard characteristics. This focus should be done before a disaster occurs. The community in Palu did not have any knowledge regarding disaster mitigation and preparedness. In addition to that, the local government also did not have any capacity to deal with the disaster, so the emergency response in Palu was not done effectively. Palu used to have local wisdom that provided the community information related to specific areas with a high level of disaster vulnerability. Old villages in Central Sulawesi had various names in the local language of the Kaili Tribe, such as Biromaru which was derived from the word *Biro Na Maru* which meant "reeds in ramps that had been rotten," Jono'oge which meant "a

lot of mud", Bolapapu in Kulawi which meant "village on fire". Those names were reflections of a series of major events in the past so that it became a collective reminder of their grandchildren. Unfortunately, the local knowledge was not passed on, so those locations that in the understanding of the local community were not suitable to be occupied were then built into new residential locations in the era of the 80s. Among these were the Balaroa Perumnas, which was affected by the liquefaction event in the earthquake disaster on 28 September 2018, in which more than 700 homes were lost to the earth.

- 2) Strengthening of disaster risk governance, including national platforms, accountability for disaster risk management. Disaster mitigation policies should pay attention to all actions taken to reduce the impact of disasters and sensitive conditions to minimize greater disasters in the future. Indonesian Government already issued the national platform for disaster risk management, which is the Indonesian Law Number 24/2007 on Disaster Management, and the implementation for disaster risk management is described in more detail in National Medium-Term Development Plan 2020-2024.
- 3) Accountability for disaster risk management. Local government should pay attention to disaster risk management and also implement the platform to the community. Accountability can be used as a means of empowerment and voice for the community and marginalized groups whose houses are at the risk from disasters. To build capacity, partnerships, participatory spaces, and legislative change to build accountability for disaster risk management.
- 4) Preparedness to "Build Back Better". After the 2018 disaster occurred in Palu,

- the local government along with National Agency for Disaster Management (BNPB) provided disaster preparedness training for the community in Palu, Sigi, and Donggala as an effort in implementing non-structural mitigation. However, this training was only given once in 2019 and there is no continuity in the future. Meanwhile, in implementing structural mitigation in Palu, the local government along with BNPB and other stakeholders, such as NGO and the Indonesian Armed Forces built many schools, temporary housing, permanent housing, Wash (Water, Sanitation, and Hygiene), permanent latrine, and distributed water tank to the households. Disaster mitigation should be done before a disaster occurs. These efforts were supposed to be done to prepare the community in Palu to become a disaster-resilient community.
- 5) Recognition of stakeholders and their roles. To optimize disaster management in Palu, three main actors must be involved. They were the government, business sectors, and community known as the triple helix. Those stakeholders carried out their responsibilities to optimize emergency response in Palu. The roles of the government in disaster management were as follows:
- a. BNPB along with Indonesia's Search and Rescue Team (Basarnas) conducted search and rescue activities under the coordination of Basarnas, supported by Indonesian Armed Forces and Indonesian Police, Ministry of Public Work and Infrastructure, Ministry of Health, Ministry of Social Services, Indonesia Red Cross, and other NGOs with a concentration of search and rescue activities including the areas affected by liquefaction of Balaroa, Petobo, and Jonooge as well as the western coastal area of Palu City and Donggala which was a tsunami-affected area (BNPB, 2018).
  - b. Basic needs fulfillment services for the affected community in 4 (fours) affected districts or cities, through the distribution of basic needs assistance in the next 7 days and 20 days and the needs of temporary shelters with the target of providing refugee tents of 44,906 units, the establishment of 42 public kitchen units, 48,267 public bathing, washing, and toilet facilities, and 9,737 water reservoirs (BNPB, 2018).
  - c. Local governments needed to pay attention to the service of health needs for the affected community. BNPB coordinated with the Ministry of Health as the coordinator in the field of health by sending health volunteers consisting of specialist doctors, general practitioners, nurses, midwives, pharmacists, psychologists, health workers, and non-health workers. Health services are also carried out by air which is carried out with the Indonesian Armed forces targeting the isolated areas in the Sigi and Donggala districts as well as the support from the Indonesian Navy (BNPB, 2018: 71).
  - d. Educational services conducted with teaching and learning activities carried out on October 8, 2018, through the movement back to school by providing teaching and learning tents coordinated by the Local Department of Education (BNPB, 2018).
  - e. Energy services efforts to restore energy supply in disaster-affected areas have been carried out since the first week during an emergency and the second week of the disaster by repairing and operating 15 gas stations in Palu City, 1 gas station in Sigi, and 2 gas stations in Donggala and bringing in 100 gas stations from various regions in Sulawesi. To restore electricity supply, PT PLN with PLN volunteers from all over Indonesia carried out a 100%

recovery of the operation of 7 main substations and 2,049 distribution stations with the priority to maintain electricity distribution for public services.

Meanwhile, the role of the community in emergency response in Palu was to build temporary and permanent housing, for example, MDMC (Muhammadiyah Disaster Management Centre). MDMC conducted school construction, housing construction, temporary shelter construction in collaboration with CRS (Catholic Relief Services) for 454 units of shelter. Value for the construction of 1 unit of the shelter was around Rp 11 million with a size of 3.6 x 4.8 meters. MDMC also conducted permanent construction of as many as 71 latrines, 10 units of water tank distribution. Business actors also took responsibility for emergency response in Palu, one of which is PT Waskita Beton Precast Tbk (WSBP). PT WSBP donated Rp 100 million to the affected community.

- 6) Mobilization of risk-sensitive investment to avoid the creation of new risk, as well as the resilience of health infrastructure, cultural heritage, and workplaces. Lesson learned from the 2018 Palu disaster, the local government had not delivered any policy to invest in risk-sensitive infrastructure. Therefore, structural mitigation in risk-sensitive infrastructure could not be conducted and disaster management in Palu could not be held effectively in the future if such a disaster happened again.
- 7) Strengthening international cooperation and global partnership, and risk-informed donor policies and programs, including financial support and loans from international financial institutions. Palu disaster in 2018 was not defined as a national disaster, therefore it brought impacts on the ease of assisting by the international agencies. However, international agencies continued to provide disaster assistance. Some

international agencies that provided disaster assistance are Catholic Relief Services (CRS), Department of Foreign Affairs and Trade (DFAT), Direct Relief International (DRI), The Asia Foundation (TAF), Wonbuddism, Hilfswerkder Evangelischen Kirchen Schweiz (HEKS) Solidarsuisse, dan Global Peace Mission (GPM) Malaysia.

As for the activities in the recovery phase, there are six general components needed. They are (BNPB, 2018):

#### 1) Planning

Several different activities may be initiated during the planning period and many of these activities already had begun with the response, such as repair and recovery of critical infrastructure, the site selection for temporary housing, hospitals, and schools. Based on this theory, the local government was planning the construction of residential development to be carried out in three locations namely Duyu, Pombewe, and Talise. These areas were chosen by the Ministry of Public Work and Infrastructure based on the fact that these areas were not prone to disaster. Therefore, this activity was in line with the first component in the recovery phase where the planning for relocation of community dwellings must be based on areas or regions with a low risk of even zero disasters so the permanent housing could be used permanently by the community.

#### 2) Coordination component

During the recovery process, coordination was difficult to achieve but it was vital to accomplish the goals. The recovery phase in Palu was under the coordination of the Ministry of Public Work and Infrastructure, and supported by BNPB, Indonesia's Meteorological, Climatological, and Geophysical Agency (BMKG), Indonesian Armed Forces, Indonesian Police, and local government. Other than that, the recovery phase was also supported by local and international agencies such as

ACT (Aksi Cepat Tanggap), Walhi (Wahana Lingkungan Hidup), MDMC, Catholic Relief Services (CRS), Department of Foreign Affairs and Trade (DFAT), Direct Relief International (DRI), The Asia Foundation (TAF), Wonbuddism, Hilfswerkder Evangelischen Kirchen Schweiz (HEKS) Solidarsuisse, dan Global Peace Mission (GPM) Malaysia.

### 3) Information

Before implementing the recovery planning, BNPB as the coordinator of disaster management had spread the information to the related stakeholders regarding the planning and strategy to overcome the impact of disaster occurred.

### 4) Money and supplies

The responsibility for reconstruction costs was divided between various actors. The government was generally responsible for rebuilding public facilities, meanwhile, the private sectors were rebuilding houses and businesses and helping to restore overall economic vitality. The amount of money given to assist disaster management for the affected communities was Rp 50 million for severely damaged houses, Rp 25 million for medium damaged houses, and Rp 10 million for mildly damaged houses. The government allocated Rp 4,84 trillion from the on-call budget for BNPB.

### 5) Allocation of relief funds

In most cases, the government was given international funding in addition to whatever funding it had in reserve or had appropriated. The local government received the relief funds were: Palu City, which was worth Rp 820 billion, Sigi District which was worth Rp 568 billion, Donggala District which was worth Rp 516 billion, and Parigi Moutong District which was worth of 66 billion rupiahs.

### 6) Personnel

During the recovery phase, personnel needed for the cleanup, repair, and development were excessive and came

from various backgrounds, such as BNPB, BMKG, Indonesian Armed Forces, Indonesian Police, local agencies, and international agencies.

DRR implementation in Palu was not done effectively because several aspects of DRR were not achieved, for example, the non-structural mitigation which had not been implemented to minimize the impact of the disaster in the future. But overall, the post-disaster phase in Palu had been done by six general components in the disaster recovery phase.

In addition to that, protecting human beings in the face of adversity is also a must. Therefore, in line with the Sendai Framework, the perspective of human security must be considered in post-disaster rehabilitation and recovery program. The 2014 UNDP (United Nations Development Programme) on Human Development Report emphasized the need to sustain human progress, reduce vulnerability, and build resilience by further highlighted the need for human security to achieve human development (Cazabat, n.d.). Disasters can disrupt communities' human development and these setbacks are often inevitable. Disasters can also expose communities, especially those in the lower lever, to risk which will cause damage with a slower chance of recovery (Cazabat, n.d.).

As mentioned earlier, human security is defined as a way to protect the vital core of all human lives in ways that enhance human freedoms and human fulfillment. It also means protecting fundamental freedoms, freedoms that are the essence of life. It means protecting people from critical and pervasive threats and situations. It means using processes that build on people's strengths and aspirations. It means creating political, social, environmental, economic, military, and cultural systems that together give people the building blocks of survival, livelihood, and dignity (UNOCHA, 2009). Human security also means the absence of fear that such values will be attacked (Wolfers, 1952).

Disaster always brings massive impact

to the community. Often the impact is especially much more significant on those who are more vulnerable. To ensure the existence of human security means to ensure that the mitigation plan to limit such damage is conducted. It means that preventive measures such as earthquake-resistant buildings, effective and immediate evacuation plans, and careful urban planning. It is necessary because a good disaster risk reduction practice and disaster rehabilitation programs must include all features of human security approaches.

Disasters, especially natural disasters, can be very difficult to predict and fully prepare for. In addition to that, natural disasters also have far-reaching consequences for the safety and wellbeing of the affected individuals and communities. Disasters also tend to exacerbate pre-existing problems and inequalities. The vulnerable parts of communities are often disproportionately affected. When the tsunami and earthquake happened in Palu, it took everyone by surprise. The local government was not prepared to face disaster on that massive scale.

The disaster had claimed 4,340 lives. Almost half of the fatalities, namely 2,141, occurred in Palu, which was most affected by the earthquakes and tsunami, while 289 people died in Sigi regency, 212 in Donggala Regency, and 15 in Parigi Moutong regency. As many as 667 people had been declared missing, while another 1,016 bodies were unidentifiable. There were survivors and until January 2019, some survivors still lived in the shelters (Sangadji, 2019). Survivors had to stay even longer in shelters when they were supposed to move to temporary housing. There were many different problems in the shelters, including the uneven distribution of supplies and a lack of clean water, which triggered conflict not only among survivors but also with volunteers (Wolfers, 1952).

The previous Minister of Home Affairs, Tjahjo Kumolo, stated that the citizen of Palu could take staple food from the

minimarket network also contributed to the conflict during the disaster response in Palu (Utama, 2018). Instead of taking only the staple food they needed, many then looted the stores and malls which created chaos. Such an event would not take place had the local and central government responded quickly to the disaster. Some survivors were displaying signs of trauma after experiencing the earthquakes and tsunami. The affected population urgently needed search and rescue, medical care, food, clean water, shelter, and means to contact their families as well as other psychosocial support (Hongkong Red Cross, 2018).

For comparison, the disaster in Lombok which happened one month before Palu disaster also brought a massive impact on the community. A 6.6 Richter scale earthquake that hit Lombok had claimed 564 lives (BNPB, 2018). Disaster response conducted by the government was considered slow because the government's focus had shifted to Palu disaster. Furthermore, the post-disaster response in Lombok had failed due to the complexity of the bureaucratic process that caused slow recovery of the residential sector, communities' dissatisfaction in the data collection categories of minor, moderate, and severe damage, as well the lack of community involvement in the recovery process is also a problem in the rehabilitation and reconstruction process during the disaster in Lombok.

The government's slow post-disaster response had failed to deliver the very basic human needs, not to mention maintaining the human security aspects of the people affected by the disaster. Therefore, in terms of human security, the government needed to improve its way to handle disasters. Because, indeed, we cannot avert all-natural disasters. However, our preparation for, and responses to the human impacts of the disaster can and must be improved. Because during Palu disaster, there were many rooms for improvement so the human security aspects could also be fulfilled. For the people who suffered from the disaster, a

fast response to reduce their suffering was much needed. Thereby reducing the grave consequences of natural disasters for human safety and wellbeing should be done in line with the principles of human security.

## **CONCLUSIONS, RECOMMENDATION, AND LIMITATION**

### **Conclusion**

Based on the Palu disaster analysis, a disaster was an event that disrupted human life and impacts all aspects of human security. This was because in all phases of the disaster, from pre-disaster to post-disaster, both the local and central government failed to protect the community. Even during the post-disaster phase, conflicts occurred among victims, and to a certain extent, the conflict was also involving volunteers which is common in the post-disaster area. It also happened in several other disaster areas, such as Karo Regency and Pidie Jaya Regency. However, the conflict that happened after the disaster in both areas did not escalate as it did in Palu. The statement from the previous Minister of Home Affairs, Tjahjo Kumolo, that the citizen of Palu could take staple food from the minimarket network also contributed to the conflict escalation during the disaster response in Palu. Instead of taking only the staple food they needed, many then looted the stores and malls which created bigger chaos. Such an event would not take place had the local and central government responded quickly to the disaster. Therefore, the aspect of human security was not met due to the government's slow response which could lead to national security instability.

Palu disaster that happened in 2018 also disrupted the dimension of the country's non-military defense. The aspects which were strongly hit by the disaster were social, economic, and community safety aspects. These three aspects were the supporting components in the implementation of national defense. Six

components included in DRR Theory had been carried out by the government during Palu disaster in a proper manner. However, the non-structural aspects of mitigation and preparedness that were also the components of the implementation of DRR were not carried out properly. Training and simulations provided by the Government for the citizen of Palu were only given once. Training and simulations which were included such as Field Training Exercise (FTX) alongside BMKG, BNPB, and local government, Tabletop Exercise (TTX) in 2012. The training was not given continuously. Thus, when the said disaster happened 6 years after the training was conducted, the citizen of Palu did not have any recollection of the training and what steps needed to be taken to save their lives during the disaster. Therefore, the implementation of DRR in Palu in terms of community preparedness and knowledge still had to be improved.

### **Recommendation**

For those reasons, several recommendations must be considered to manage disaster better. They are:

1. Provide continuous training to improve the ability in disaster preparedness for the people of Palu. Disaster Risk Reduction has to involve the local community with their local wisdom. Palu also has its local wisdom, they are *Balumba Bose* and *Balumba Latollu*, which consecutively mean high wave after an earthquake and seek for a way out to survive.
2. Build a better tsunami early warning system and resilient infrastructures against earthquakes and tsunami.
3. Mobilize and engage the community's resilience for their protection by making sure that the community knows the existing and potential threats so that the negative impact on their lives, livelihoods, and dignity is reduced.
4. Local government and disaster Management agency has to have its Contingency Plan, particularly the



disaster-prone areas. BPBD (Badan Penanggulangan Bencana Daerah – Indonesian's Local Disaster Management Agency) has to have their Contingency Plan and have enough budget to conduct training and simulations which are planned in the Contingency Plan.

### Limitation

This paper analyzed the evaluation of the implementation of Post-Disaster Rehabilitation activities that happened in Palu, Central Sulawesi in 2018. In addition to that, this paper also explained briefly the condition in Palu before the disaster, during the disaster, as well as the current condition in the area after the Post-Disaster Rehabilitation program was implemented. Based on the above analysis, a disaster was an event that disrupted human life and impacts all aspects of human security. This was because in all phases of the disaster, from pre-disaster to post-disaster, the government failed to protect the community. Even during the post-disaster phase, conflicts occurred among victims, and to a certain extent, the conflict was also involving volunteers. The aspect of human security was not met due to the government's slow response. It could lead to widespread national security instability.

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