Natural disaster insurance for Indonesia disaster management

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Abstract. Indonesia is a disaster-prone country because its territory is around the Pacific Ring of Fire. The high intensity of the disasters is inversely proportional to the budget provided by the government for disaster management. Based on these conditions, another funding procedure is needed to deal with potential disasters, and insurance is one of the logical choices that can be taken. This research tries to describe and analyze the prospects of natural disaster insurance implementation for Indonesia disaster management and the natural disaster insurance practices in Japan and New Zealand as a comparison. The result of this research found that the number of insurance users, including natural disaster insurance in Indonesia, is only around 2% of the 265 million population of Indonesia as of the end of 2018. Two things cause this condition; the first is the absence of regulations from the government that obligate natural disaster insurance for people who live in the locations that are prone to disasters. The second reason is the lack of literacy and public knowledge related to the benefits of participating in natural disaster insurance. To overcome this, the government should ideally arrange regulations that can force community participation in natural disaster insurance. After that, the government can choose whether to manage the natural disaster insurance itself by creating a particular entity that is professional in managing disasters like in New Zealand or initiate a partnership with private insurance companies. Finally, the government of Indonesia in cooperation with the private sector, must intensify education about the benefits of insurance to the public. This intensification aims to increase public literacy towards insurance which will indirectly have an impact on the increasing number of people who have natural disaster insurance. The increase in public literacy is expected to make the level of community participation in natural disaster insurance to be better as has been achieved in Japan and New Zealand.

Key Words: Indonesia, natural disaster, disaster management, insurance.

Introduction. Indonesia is an archipelago located between four large plates of the world, namely the Eurasian Plate, the Indo-Australian Plate, the Philippine Sea Plate and the Pacific Plate where the plates collide and push each other (Zakaria 2007). Moreover, Indonesia is also known as a country that has many volcanoes. This condition occurs due to the location of Indonesia, which is part of the Pacific Ring of Fire, as illustrated in Figure 1.

The Ring of Fire is an area where earthquakes and volcanic eruptions occur (Masum & Akbar 2019). In this area, there are 425 volcanoes or equal to 75% of the total active volcanoes in the world (Baskoro 2017). Indonesia itself has around 240 volcanoes, of which nearly 70 are still active (Center for Excellence in Disaster Management and Humanitarian Assistance 2015).

Based on the facts above, natural disasters are prevalent events across most parts of Indonesia (Skoufias et al 2017). The Indonesia National Disaster Management Agency (BNPB) released data stating that in 2019 alone there were 1968 (one thousand nine hundred and sixty-eight) natural disaster events and within the last 5 (five) years not less than 14,193 (fourteen thousand one hundred ninety-three) natural disasters that hit Indonesia, including floods, landslides, tidal waves or abrasions, tornados, forest and land fires, earthquakes and volcanic eruptions (BNPB 2019).

The high intensity of the disasters certainly resulted in enormous economic and physical losses. Other problems have also surfaced related to rehabilitation and construction after the disaster, which cost a lot. For example, the earthquake and liquefaction disaster occurred in Palu, Central Sulawesi on September 28, 2018, which caused material losses of Rp. 18.48 Trillion Rupiah (BNPB 2019) and earthquake losses that occurred in Lombok in 2018 which reached 12.15 Trillion Rupiah (BNPB 2019).

This condition, if it occurs continuously, can undoubtedly put significant pressure on government expenditure / APBN (Indonesia Ministry of Finance 2018a). Therefore, given the large number of losses that must be borne by the government, a system that can cope with the risk of disasters should be formed, to reduce the burden on the government. One way that can be done is by risk transfer to the private sector through a natural disaster insurance scheme (Prihanadi 2017).

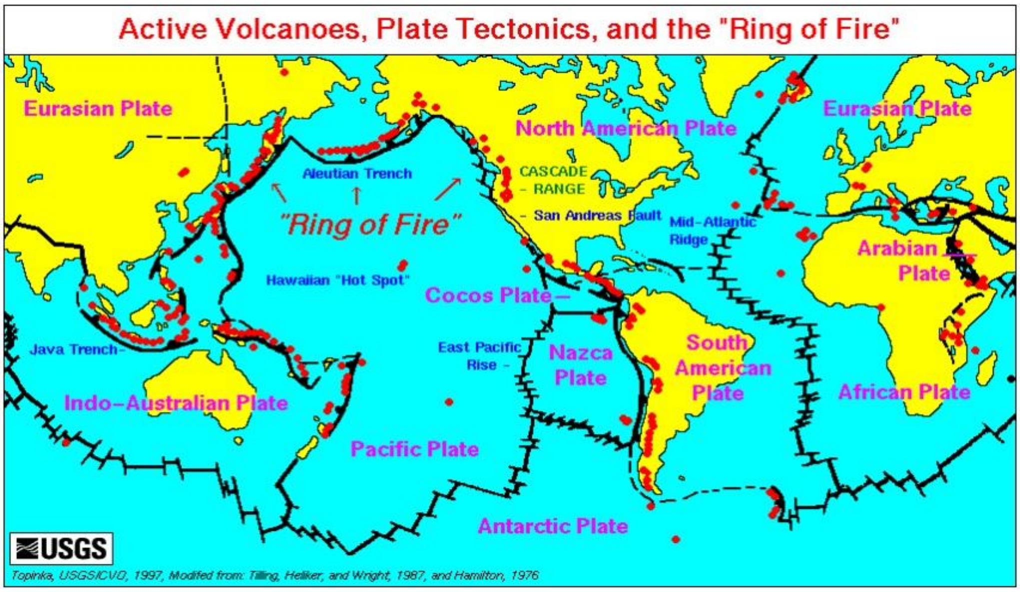

Figure 1. Pacific Ring of Fire area (Map source: United States Geological Survey (USGS) 1997).

Today, various countries, for instance, Japan and New Zealand, have implemented natural disaster insurance as a part of natural disaster mitigation. Based on those facts, it is crucial to examine the prospect of implementing natural disaster insurance in Indonesia since it is prone to natural disasters. Then it is also essential to know the application of natural disaster insurance in Japan and New Zealand and whether it is relevant to be adopted and applied in Indonesia.

Material and Method. The method used in this research is normative juridical research. Qualitative data processing methods are used to understand the problems in this writing. Data processed by this method is secondary data. Secondary data is data obtained from library materials, including official documents, books, research results in the form of reports, diaries, and so on (Soekanto 1986). The data obtained will be explained descriptively by selecting the data in the field so that it describes the actual conditions occurring in the area and presents the data collected through the literature study. After the data is explained descriptively, a conclusion will be drawn with the deductive method of concluding the research results from the general nature to specific matters.

Result and Discussion

Disaster management in Indonesia. Disasters always cause casualties, economic losses, and physical losses. Indonesia is in the list of 35 countries in the world with a high risk of disaster victims due to various types of disasters (Indonesia Ministry of Finance 2018b). The high number of losses is caused by a large number of Indonesians living in disaster-prone areas, the lack of awareness and preparedness of the community for disasters, and the quality of infrastructure both public and non-public that are vulnerable to disasters.

During 2019, 367 people died, 1431 people have suffered injuries, 651,095 people were displaced, 3,666 houses were severely damaged, 44 health facilities were damaged, 27 worship facilities were damaged, and 418 education facilities were damaged by the disaster (BNPB 2018). Meanwhile, in 2018 4,719 people died, 10,417,179 people were displaced, and 117,310 housing units were severely damaged (BNPB 2019).

Moreover, the current legal basis for disaster management in Indonesia is Law Number 24 of 2007 concerning disaster management. Article 5 of that Law states that the Central Government and Regional Governments shall be the responsible officers for the implementation of disaster management. As presented in Figure 2, disaster management consists of three activities, the establishment of development policies that are at risk of disaster, disaster prevention activities, and emergency response and rehabilitation.

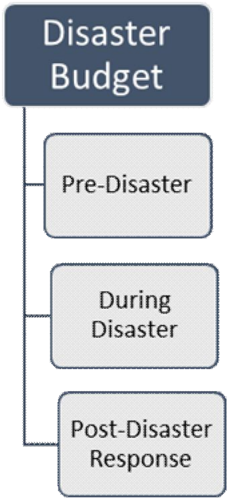

Figure 2. Indonesia Disaster Budget Allocations, Source: Law Number 24 of 2007 concerning Disaster Management, 2007.

The government allocates a disaster budget sourced from the State Budget (APBN) and the Regional Budget (APBD). The funds are used for several activities, namely pre-disaster, during disaster and post-disaster response. Of the three activities, activities that require the highest cost are post-disaster ones that include emergency response and rehabilitation. However, the amount of APBN and APBD funds prepared by the government is not proportional to the number of losses suffered after the disaster.

The average disaster management reserve funds per year (2005-2017) are 3.1 trillion while the average direct economic loss caused by disasters per year (2005-2017) is 22.8 trillion, so there is a financing difference of 19.70 Trillion or 78% (Indonesia Ministry of Finance 2019b). This condition certainly creates great pressure on the state budget.

The disaster management budget sourced from the APBN consists of disaster contingency funds for pre-disaster activities, ready-made funds placed in the BNPB budget for emergency response activities, rehabilitation and reconstruction funds in ministries and grant funds to the Regional Government. However, funds from the state budget and regional budget have several shortcomings, including (Indonesia Ministry of Finance 2018b):

a. APBN has limited capacity, on the other hand, disaster funding needs are higher than the allocated budget;
b. APBN has a rigid characteristic because the disbursement requires technical, procedural, and regulation-limited stages, while disaster funding is immediate.

For this reason, a reformation of disaster funding is needed. The improvement can be carried out by involving third parties, namely insurance financial institutions. With insurance, it can reduce the burden on the government by transferring disaster risk to the insurance institutions.

Natural disaster insurance prospect in Indonesia. Insurance is an agreement between the insurer, in this case, the insurance company with the insured, in this case the insurance participant in which the insurer is willing to take over the risks that may befall the insured in the future for an object and for this action the insurer has the right to receive some money or premium from the insured (Aidi 2016). The legal basis for the insurance agreement in Indonesia can at least be found in the Code of Commercial Law (KUHD) and Law No. 40 of 2014 concerning Insurance.

Natural Disaster Insurance in Indonesia, in its policy, is obliged to follow the standards set by the Indonesian General Insurance Association. The types of natural disasters covered under the standard Indonesian natural disaster policy include earthquakes, volcanic eruptions, and tsunamis.

Natural disaster insurance schemes cover - against a premium - the costs incurred by the insured entity from extreme weather and natural disasters (such as earthquakes or floods). If the event occurs, the insurer refunds a percentage of the costs incurred. Insurance schemes are widely used to increase the resilience of individuals, companies, and public entities to external shocks and reduce their future expenditures in case of a disaster (UNDP 2017).

In Indonesia, natural disaster insurance can be classified as a part of disaster mitigation as stated in Article 1, number 9 of Law Number 24 the Year 2007 concerning Disaster Management. According to Sunarsip et al (2007), although the Disaster Management Law does not explicitly regulate insurance involvement in disaster management, there is a potential for the public, namely the community or households, to have the opportunity to mitigate based on their abilities. Therefore, the public can protect their assets by participating in an insurance program.

Natural disaster insurance can reduce the risk of the insured, and the insurance holder will get compensation, so there is an increase in the ability of the community to deal with disasters. The benefits of natural disaster insurance that is the development program will be protected from the impact of disasters or at least reduce the effects of disasters on accelerated development, can reduce the burden on the state and can help restore the household and social life of people quickly. Therefore, the application of disaster insurance must begin to be realized and applied both by the government and the community.

Based on the discussion above, it can be seen that natural disaster insurance can be an option or even a solution that can be used in Indonesia to mitigate the risk of disaster occurrence. But the reality at this time in Indonesia is that insurance in general and natural disaster insurance, in particular, have not been widely used. The total number of insurance users in Indonesia is only around 2% of the 265 million population of Indonesia as of the end of 2018 (Indonesia Insurance Board 2018). The lack of natural disaster insurance utilization is undoubtedly deplorable, especially for people in areas classified as disaster-prone areas, both those located around active faults that have the potential to be affected by earthquakes and those situated around volcanoes.

There are two essential stakeholders in increasing the utilization of natural disaster insurance to mitigate disaster risk in Indonesia. The first stakeholders is the government, both the central and regional governments, and then the second is the Indonesian people, especially those who live in locations prone to natural disasters.

The government has regulations that open the way to mitigate disaster risk through insurance. In the context of managing State Property, the Minister of Finance, through Regulation of Indonesia Minister of Finance Number 247 / PMK.06 / 2016, allows insurance for State Property (BMN). BMN insurance is carried out with the principles of selective, efficient, effective, and priority by considering the ability of the country's finances. BMN that can be insured is BMNs that are in disaster-prone areas, have a high possibility of damage or loss, have a significant impact on public services if damaged or lost, and support the smooth functioning and functions of government administration. BMN that can be insured are buildings, bridges, motorized land / floating / air transportation, and BMN determined by the Property Manager. The disaster risks that can be borne in BMN insurance cover all the risks of natural disasters. Effective implementation of BMN insurance is expected to take place in 2019 (Indonesia Ministry of

Finance 2019a). Some local governments such as Padang City Government and Semarang City Government have initiated to purchase premiums for Regional Property insurance. The Regional Government of Padang City uses APBD funds to insure Regional Ownership of 4 billion Rupiah from all APBDs owned (Sunarsip et al 2007).

Based on the explanation above, it can be seen and analyzed that there have been efforts from the government to use insurance as means of disaster mitigation. But this is not enough because the scope of that regulation is still limited to the State Property (BMN). Ideally, the government also draws up laws requiring the general public in disaster-prone areas to insure their assets.

From the perspective of the second stakeholder, namely people who live in locations prone to natural disasters, the lack of public interest in using insurance services, especially natural disaster insurance, is caused by the low level of public literacy related to insurance. The Republic of Indonesia Financial Services Authority researched in 2013 that the level of Indonesian society's literacy in insurance was only 11% of the total population (Indonesian Financial Services Authority 2019). This fact is indeed regrettable because Indonesia is a country that should be a potential for the natural disaster insurance market because many of its inhabitants live around disaster-prone areas. This ignorance leads to a lack of understanding of what benefits insurance can provide if there is a risk to property caused by natural disasters.

Therefore, to increase public literacy related to insurance, which later can lead to public awareness for insurance, especially natural disaster insurance, the government needs to intensify education and literacy towards the community related to the benefits of disaster insurance. To realize this, the central government also needs to develop various policies and strengthen collaboration between the central government, regional governments, the private sector, and the community so that natural disaster insurance in Indonesia can genuinely contribute to mitigating disaster risk in Indonesia.

The implementation of natural disaster insurance in other countries

Japan. Japan is a country with a high risk of disasters, especially earthquakes. Therefore, disaster management in Japan is crucial. The Government of Japan has implemented the Disaster Insurance System since 1964 since the Niigata earthquake on June 16, 1964, which claimed substantial losses. Initially, the disaster insurance system was designed for post-disaster management, which was the idea of the Japanese Ministry of Finance to reduce government spending on post-disaster recovery. Since then, disaster insurance began to be actively implemented in 1966 (Sunarsip et al 2007).

Natural disaster insurance in Japan is called Earthquake Insurance. This insurance covers buildings for residential and household goods only. Moreover, this insurance covers all kinds of impacts or damage caused by earthquakes, tsunamis and volcanic eruptions, both in the form of fire, destruction of objects and other related matters. (Japan Ministry of Finance 2019).

The Earthquake Insurance claims are paid out when buildings or household goods have sustained total loss, large half loss, small half loss or partial loss as described below (Japan Ministry of Finance 2019):

a. Buildings:
   (1) Total loss: with damage caused by an earthquake, cases where the amount of damage to major structural parts of the building (foundations, pillars, walls, roofs, etc.) is 50% or over of the market value of the building, or the area of floor space destroyed by fire or washed away is 70% or over of the total floor space of the building;
   (2) Large half loss: with damage caused by an earthquake, cases where the amount of damage to major structural parts of the building (foundations, pillars, walls, roofs, etc.) is 40% or over and less than 50% of the market value of the building, or the area of floor space destroyed by fire or washed away is 50% or over and less than 70% of the total floor space of the building;

(3) Small half loss: with damage caused by an earthquake, cases where the amount of damage to major structural parts of the building (foundations, pillars, walls, roofs, etc.) is 20% or over and less than 40% of the market value of the building, or the area of floor space destroyed by fire or washed away is 20% or over and less than 50% of the total floor space of the building;
(4) Partial loss: with damage caused by an earthquake, cases where the amount of damage to major structural parts of the building (foundations, pillars, walls, roofs, etc.) is 3% or over and less than 20% of the market value of the building, or cases where the building has sustained damage from inundations above floor level or 45 cm above ground level, but the damage does not amount to total loss, large half loss or small half loss.

b. Households goods:
(1) Total loss: with damage caused by an earthquake, cases where the amount of damage to household goods is 80% or over of their market value;
(2) Large half loss: with damage caused by an earthquake, cases where the amount of damage to household goods is 60% or over and less than 80% of their market value;
(3) Small half loss: with damage caused by an earthquake, cases where the amount of damage to household goods is 30% or over and less than 60% of their market value;
(4) Partial loss: with damage caused by an earthquake, cases where the amount of damage to household goods is 10% or over and less than 30% of their market value.

In 2016, around 30 percent of households already had earthquake insurance. Meanwhile, the value of losses replaced by insurance companies due to the earthquake was around 6-10 million yen or equivalent to Rp785 million-Rp1.3 billion per customer. Besides, from April 2019, 98.2% of Natural Disaster Insurance will be borne by the Japanese Government through the reinsurance scheme. Previously 100% of natural disaster insurance in Japan was carried by the private sector (Koshikawa 2019).

New Zealand. New Zealand is an earthquake country. On average, each year, around 15,000 earthquakes occur, ranging from large to small scale. Two of the major earthquake events in New Zealand were recorded in 1931 and 1942 respectively. The magnitude of the damage and casualties caused by those two earthquakes underlies the founding of the Earthquake and War Damage Commission in 1945. In the course of this journey, the institution changed to State-Owned Entity. Then in 1993, the institution changed its name to the Earthquake Commission (EQC) (Nguyen & Noy 2017).

The Earthquake Commission is a state-owned entity that manages natural disaster insurance. This insurance product, named EQCover, protects residential buildings and personal goods from the risk of damage that may occur due to earthquakes, volcanoes, tsunamis, and other disasters. EQCover insurance is limited to protecting personal or non-commercial property or goods. If the public wants to insure commercial property or assets, they can use insurance products from private insurance companies (Nguyen & Noy 2017).

Participation in EQCover insurance is mandatory for every people who want to apply for a loan for home financing. If they're going to use the loan for home purchases, they are required to have two insurances, namely standard fire insurance and natural disaster insurance or EQCover (Earthquake Commission 2019a).

The existence of government regulations that require people to have natural disaster insurance, namely EQCover and also standard fire insurance, makes approximately 90% of households in New Zealand have this insurance. This condition makes New Zealand the country with the highest natural disaster insurance premiums in the world. The positive impact of the high level of community participation in mini-style disaster insurance can be seen in the 2011 Christchurch earthquake disaster, where almost all damage to homes was covered by insurance (Earthquake Commission 2019b).

Conclusions. Indonesia is geographically prone to disasters because it is located in a Pacific Ring of Fire that is surrounded by faults that cause earthquakes and volcanoes. Disaster management in Indonesia under the mandate of Law Number 24 of 2007 concerning Disaster Management is the responsibility of the central and regional governments. The financing of disaster management comes from the state budget and regional budget. However, there is a large gap between disaster management funds and the need for funds for disaster rehabilitation. As an illustration, the average disaster management reserve funds per year (2005-2017) are 3.1 trillion while the average direct economic loss is caused by disasters per year (2005-2017) is 22.8 trillion, so there is a financing difference of 19.70 trillion or 78%. Reformation of disaster funding is needed to solve that financial gap.

The improvement can be carried out by involving third parties, namely natural disaster insurance. Natural disaster insurance is a form of disaster mitigation. With disaster insurance, it can reduce the risk of the insured, and the insurance holder will get compensation, so there is an increase in the ability of the community to deal with disasters.

Unfortunately, at this time in Indonesia, insurance in general and natural disaster insurance, in particular, have not been widely used. The total number of insurance users in Indonesia is only around 2% of the 265 million population of Indonesia as of the end of 2018. Two things cause this condition, and the first is the absence of regulations from the government that require natural disaster insurance for people who live in disaster-prone locations. The second is due to the lack of literacy and public knowledge related to the benefits of participating in natural disaster insurance.

To overcome this, the government should ideally arrange regulations that can force community participation in natural disaster insurance. After that, the government can choose whether to manage the natural disaster insurance itself by reflecting on the country of New Zealand which forms a particular entity that is professional in managing disaster insurance nature called Earthquake Commission (EQC) or initiate a partnership with private insurance companies.

In addition, the government in cooperation with the private sector must intensify education about the benefits of insurance to the public. This intensification aims to increase public literacy towards insurance which will indirectly have an impact on the increasing number of people who have natural disaster insurance. The increase in public literacy is expected to make the level of community participation in natural disaster insurance to be better as has been achieved in Japan and New Zealand.

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