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PROBLEMS OF INSURANCE IN THE COMING AGE OF DISASTERS

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Abstract: The existence of disaster insurance in Indonesia is particularly important because the area is prone to disasters, especially for MSMEs. Increasing resistance to hazards from climate change and disasters can benefit greatly from well-designed insurance programs.

The insurance system used must be effective and ideal, which is the basis for the thinking in writing this paper. The purpose of this study analyzes the status, types, and evolution of market-based disaster insurance schemes required in Indonesia by considering that natural disaster insurance is extremely important. Indonesia still do not have coverage options. Where insurance coverage does exist, it is frequently enforced by mandated insurance and credit-linked goods, as well as premium subsidies. It is expected from the findings and creations arise from the paper goal to develop a good, efficient, and ideal natural catastrophe insurance system for the people of Indonesia. It is also hoped that this writing would be effectively put into practice in the future, bringing wealth to those who have been affected by natural disasters. As a result, all tiers of Indonesian society can achieve the common goal of the Indonesian people, which is to achieve community welfare and protection.

Keywords: disaster, insurance, Indonesia.

Introduction

Background

The existence of Indonesian territory at the junction of three active tectonic plates, namely the Indo-Australian Plate in the south, the Eurasian Plate in the north, and the Pacific Plate in the east, makes Indonesia a disaster-prone area geologically. The three plates move and clash,

causing the Indo-Australian Plate to subduct beneath the Eurasian plate, resulting in earthquakes, volcanic routes, and faults or fracture subduction. The Indo-Australian Plate, which advances north with the Eurasian Plate, forms an earthquake path and a succession of active volcanoes along the islands of Sumatra, Java, Bali, and Nusa Tenggara, parallel to the line of the two plates' subduction. Furthermore, the earthquake route runs parallel to the subduction

zone as well as on regional fault lines like the Sumatra/Semangko Fault. In such geological conditions, the prospect of disaster on Indonesian territory appears to be a matter of time. Furthermore, it is accompanied by environmental degradation and irresponsible use of natural resources.

Indonesia is also one of the most disaster-prone countries in the world. Perched on the Pacific “Ring of Fire,” it is home to 76 active volcanoes. An archipelago of tens of thousands of islands spanning 5,100 km from one end to the other, in recent years, tsunamis have pounded the shores of North Sumatra, Sulawesi and West Java. Volcanic eruptions, flooding, and landslides, infrequent events elsewhere, are regular occurrences in Indonesia. With a population of more than 210 million people, Indonesia ranks fourth in the world in terms of population. This worsens the situation for people living in places with the highest population density that are prone to natural disasters. According to preliminary data from January 2016, there were 1,681 catastrophe incidents in Indonesia year 2015, with floods, landslides, and tornadoes dominating disasters (Nugroho, 2016). It may be expected that if a natural disaster strikes in a densely populated area, the losses will be greater, posing issues in disaster management implementation.

In 2021, the Emergency Event Database (EM-DAT) recorded 432 disastrous events related to natural hazards worldwide. Overall, these accounted for 10,492 deaths, affected 101.8 million people and caused approximately 252.1 billion US\$ of economic losses. As a continent, Asia was the most severely impacted, suffering 40% of all disaster events and accounting for 49% of the total number of deaths and 66% of the total number of people affected. Globally, whilst the number of deaths and the number of people affected were below their 20-year averages, 2021 was marked by an increase in the number of disaster events and extensive economic losses. Five of the top ten most economically costly disasters in 2021 occurred in the United States of America and resulted in a total economic cost of 112.5 billion US\$.

In 2021, a total of 432 catastrophic events were recorded, which is considerably higher than the average of 357 annual catastrophic events for 2001-2020. Floods dominated these events, with 223 occurrences, up from an average of 163 annual flood occurrences recorded across the

2001-2020 period. During its monsoon season (June to September), India experienced a series of deadly floods that claimed 1,282 lives. In July, the Henan Flood in China was particularly severe, resulting in 352 deaths, 14.5 million people affected, and a cost of 16.5 billion US\$. In the same month, the Nuristan Floods in Afghanistan resulted in 260 fatalities. In July, the Central European Floods and subsequent landslides resulted in 40 billion US\$ of economic costs in Germany alone and stood as the second most costly disaster.

Disaster management is the responsibility of the government and local governments. The National Disaster Management Agency (BNPB) at the central government level and the Regional Disaster Management Agency (BPBD) at the local government level are in charge of disaster management. Accountability for the utilization of the funds received from the State Revenue and Expenditure Budget is one of the BNPB’s obligations that is being highlighted in the disaster management system (APBN). This indicates that the BNPB’s disaster management operations are based on the APBN.

Quoting the words of the Head of the Center for Data, Information and Public Relations of the National Disaster Management Agency, Sutopo Purwo Nugroho at a press conference “*Analysis and Emergency Management of Banjarnegara Landslides and Anticipation of Landslides in Indonesia*”, which was reported in the Tempo daily news conference (Widowati & Purwanto, 2019). He stated that the allocation of funds for disaster management was still less than 1 percent of the total State Revenue and Expenditure Budget (APBN). He added that the additional allocation funds were needed for disaster management.

Global flood disasters in 2021 were the most frequent, 48% more than the historic levels, causing 4,393 deaths, which was more than the death toll from other natural disasters but 35% less than the historical average of flood-related deaths; the direct economic losses caused by storm disasters were the largest, reaching USD 137.7 billion, 133% more than the historical average; there were fewer strong earthquakes and their disaster losses were relatively small; the number of deaths from wildfires decreased, but the population affected rose by 219% and the direct economic losses were 109% higher than the historic levels. Regionally, Asia has seen the

highest frequency of natural disasters in 2021, followed by North America; among all continents, Asia had the largest number of deaths due to disasters, followed by North America; North America has seen the highest economic losses due to disasters, followed by Europe; compared with developed countries, developing countries were more severely affected by natural disasters, mostly floods, storms, and extreme temperatures.

In 2021, deaths from natural disasters in China were at an above-average level in the world, basically consistent with the level of its economic development; the proportion of direct economic losses in GDP was at a lower-middle level, which was largely consistent with the level of its economic development. The flood losses in China were higher than those from other disasters and accounted for a large proportion of the global flood losses.

In 2021, China faced a complicated natural disaster situation, with extreme weather and climate events occurring frequently. The natural disasters mainly included flood, strong wind and hail, drought, typhoon, earthquake, geological disasters and cold wave, while sand and dust storm, forest and grassland fires and marine disasters also hit to varying degrees. On the whole, however, natural disaster situation in China was relatively moderate.

The report analyzes the characteristics of global extreme weather disasters from 2000 to 2021. During this period, annual direct economic losses from extreme disasters in Asia, America, Europe and Africa showed an increasing trend. The frequency of such disasters was far higher in Asia than on other continents, and the total losses in Asia from 2011 to 2021 were twice those of Asia from 2000 to 2010. The report also summarizes the characteristics of global climate, and the major weather and climate events in 2021, coupled with an analysis of the causes of typical major weather and climate events, including rainstorm-induced flood, drought, tropical cyclone, heat wave and wildfire, cold wave and severe convection.

When a disaster strikes, the issue is not only how to respond to the situation, but also how to restore people's lives. It is probable that massive economic losses will result from natural disasters such as deaths, injuries, damage, and the destruction of people's houses. This is also reaffirmed by the Disaster Management Law, which states

that the community has the right to seek compensation to reconstruct their damaged property (Disaster insurance is important but the government hasn't thought about it, n.d.). However, if the obligation for post-disaster management is only based on money in the APBN, the rehabilitation and reconstruction of people's homes will be delayed, extending the suffering of natural disaster victims.

As a result, this scientific study focuses on a help-based method to finance the rehabilitation and reconstruction of post-natural catastrophes, which is implemented through natural disaster insurance. Disaster insurance becomes a means of covering losses incurred through disasters and catastrophic events and reducing disasters' severe financial impact on individuals and communities. Insurance is an inextricably linked component of the state's mission to improve the well-being of its citizens. The presence of insurance becomes extremely crucial in supporting the growth or economic progress of a country, both established and emerging countries, in sustainable economic development. Economic growth is attained by creating tranquility in society over the certainty of control over uncertain or unpredictable events in business and life (Simajuntak, 2017). Departing from such an insurance function, it can be integrated into the responsibility for disaster management in the aftermath of a natural disaster, which is not only the responsibility of the government but also involves the community and insurance company organizations. As a result, the mutual aid-based insurance program is projected to protect every household in the community against the danger of natural disasters.

Objectives

In light of the aforementioned context and issues, the following writing goals must be met:

1. To find out the concept of disaster insurance.
2. To find out the importance of disaster insurance in the reconstruction and rehabilitation of natural disasters.

Discussion

The importance of catastrophe insurance is pri

marily emphasized by the writer due to Indonesia's reputation as the world's most disaster-prone nation. Indonesia tops the list of nations for regions vulnerable to tsunamis, landslides, and volcanoes, according to statistics issued by the United Nations Agency for International Disaster Risk Reduction Strategy (UN-ISDR). There were 2,342 natural disasters in Indonesia in 2016, according to the statistics of those events. When compared to the number of disasters in 2015, this indicates an increase of 35%. According to Sutopo Purwo Nugroho, the Director of the BNPB Information and Public Relations Center, this number is the largest since catastrophe occurrences began to be recorded in 2002 (The number of disasters in Indonesia reached a record in 2016, 2016).

This is due to Indonesia's position between three tectonic plates: Indo-Australia, Eurasia, and the Pacific. These three plates are along the path of the "Asia Pacific Ring of Fire," which contains 127 active volcanoes worldwide. As a result, it is apparent that Indonesia's geographical location leaves it vulnerable to natural disasters, making conditions unfavorable for the country. Many victims of natural disasters suffer varied material and immaterial losses as a result of natural disasters that cannot be predicted with precision.

Because of the enormous number of people, the threat of natural disasters will be increasingly concerning. The greater the population, the greater the risk that the state will bear owing to the possibility of natural disasters. When we look at the facts, Indonesia is rated third in the world as the country with the highest population. According to Sutopo Purwo Nugroho, the Head of the National Disaster Management Agency's Center for Data, Information, and Public Relations, in an interview with BBC Indonesia, earthquakes posed a greater threat to Indonesia than floods, which affected at least 1 million people (Indonesia is a disaster-prone country, 2011).

Natural catastrophe insurance for persons living in disaster-prone locations is, of course, critical for mitigating these losses. There is little doubt that insurance, as a risk management method, may contribute to the stages of catastrophe risk mitigation, rehabilitation, and post-disaster reconstruction (Hotbonar & Munawar, 2022). Natural disaster insurance can mitigate all damage caused by large-scale natural occur-

es such as earthquakes, hurricanes, storms, floods, and bush fires. The use of such insurance prioritizes risk management, which is used to give protection against the risk of public loss whose value is unknown (Nasution & Lubis, 2015).

According to the data of the Meteorology, Climatology, and Geophysics Agency (BMKG), the occurrence of disasters has dropped in 2019 compared to prior years. Disaster events peaked in 2017 with as many as 2,869 events, followed by 2,573 events in 2018.

Despite the fact that the intensity dropped, the costs incurred climbed dramatically. According to the detailed impact projections, the cost of replacing irrigation canal damage is the most significant, reaching up to IDR 860 billion, followed by relocation costs reaching IDR 416 billion, the cost of damage to houses reaching IDR 109 billion, damage to agriculture reaching IDR 78 billion, damage to roads reaching IDR 62 billion, and bridges reaching IDR 23 billion.

On a larger scale, the 2005 earthquake and tsunami tragedy in Aceh Province and Nias Island resulted in damages of IDR 42 trillion. Almost the same amount of money was lost in the 2006 Yogyakarta Province earthquake, with an estimated loss of up to Rp35 trillion. Furthermore, a succession of calamities happened in Palu, Sigi, and Donggala in the aftermath of the latest NTB earthquake and tsunami.

Meanwhile, the flood tragedy that struck Jabodetabek on January 1, 2020, wreaked havoc. According to the Indonesian Retail Entrepreneurs Association (Aprindo), the value of the loss reached 960 billion, based solely on an increase in the number of retail establishments closed due to the flood, not including the future impact.

Unfortunately, the same losses appear to be repeated in practically every big flood event in the capital city. For example, the original flood cycle in 2002 resulted in damages of up to IDR 5.4 trillion, whereas the same flood in 2007 resulted in losses of IDR 5.2 trillion. More considerable damage, ranging from Rp7.5 trillion to Rp18.1 trillion, occurred during the 2013 flood period, increasing the total loss created by the three flood episodes to Rp18.1 trillion.

The rising frequency of coming calamities, as well as numerous forms of epidemics considered to be associated with the present COVID-19

pandemic, assuming they are real evidence of the climate destruction that has occurred. Especially since the Economist Intelligence Unit (EIU) has announced the global Climate Change Resilience Index.

According to the estimates, climate change might cost the global economy up to \$7.9 trillion by 2050. This is owing to the interconnectedness of multiple disasters caused by droughts, floods, crop failures, and other types. Of the weather and climate-dependent economic sectors of Indonesia, manufacturing, agriculture, mining and quarrying have been the most dominant contributors to the national economy. In 2007, these sectors respectively shared 27.4%, 10.8%, and 8.7% to the gross domestic product (Table 2.1). In totality the weather and climate-dependent economic sectors contributed 67.1% to the GDP in the same year. Because of this large contribution, improvements in the NMHS that would reduce the damages due to weather and climate-related disasters will have very significant impacts on the overall economy.

For the 1990 to 2009 period, the country had 129 such disasters causing death to more than 5,000 people and injury to more than 250,000 persons. The disasters also affected more than 10 million individuals and rendered homeless approximately 72,000 persons. In 2009, two consecutive earthquakes also hit the provinces of West Sumatra and Jambi in Indonesia causing widespread damage across the provinces, killing over 1,100 people, destroying livelihoods and disrupting economic activity and social conditions (BNPB, Bappenas, and the Provincial and District/ City Governments of West Sumatra and Jambi and international partners 2009).

The earthquakes also caused landslides that left scores of houses and villages buried and disrupted power and communication in the affected areas. The damage and losses in West Sumatra were estimated at Rp21.6 trillion, equivalent to about US\$2.3 billion while the damage and losses in Jambi were estimated at Rp100 billion.

In terms of type, the available data show that the disasters consist of floods, mass movement wet and wildfires. From 2005 to 2009, there were a total of 37 floods causing death to 1,486 people, 7 mass movement wet causing death to 395 people 2 wildfires causing no death.

This feature of disaster is expected to have a considerable influence on global economic gro-

wth and infrastructural sustainability. According to the index, based on present patterns, the potential for global warming could diminish each country's GDP by roughly 3% in the 2050 decade. The annual estimated socioeconomic damages for 2010-2029 were computed as the average of the annual actual damages for 20 the 1990-2009 period adjusted to inflation taken from the World Development Indicators of the World Bank. The average annual actual socioeconomic damages for the 1990-2009 period was at US\$592 million and in the absence of 2010 data is reflected as the annual estimated damages for that year. For the 1990-2009 period, the total actual damages was US\$11,847 million while for the 2010-2029 period, the total estimated damages was US\$42,164 million.

The most prevalent disasters in terms of economic damages were floods and landslide. From 2005 to 2009, floods caused economic damages of about US\$1,080 million while landslide resulted to economic damages of US\$43 million.

However, the impact will be significantly bigger in developing countries where the African continent's GDP will fall. The highest was 4.7%. Angola is expected to be the most vulnerable, with roughly 6.1% of GDP loss, followed by Nigeria with 5.9% of GDP, Egypt with 5.5% of GDP, Bangladesh with 5.4% of GDP, and Venezuela with 5.1% of GDP.

As a result, meaningful action is required now and in the future to mitigate the potential effect created. Real activities will not suffice if they are carried out in the manner of business as usual (BAU). An additional effort is required to achieve the aim for reducing greenhouse gas (GHG) emissions at a faster rate.

Previously, more than 11,000 scientists from 156 countries agreed to declare the globe to be in a state of climate emergency. They also see a number of potential negative consequences if humans do not adjust their behavior patterns.

If correct, this is not the first time, as around 16,000 scientists from 184 nations participated in a publication in 2017 that believed people and nature were on the wrong road.

A recent report by BioScience, a peer-reviewed scientific publication, backs up that assertion. According to their suggestions, scientists from over 150 countries believe the climate catastrophe is "closely linked to the overconsumption of the rich's lifestyles".

The fact that the APBN/APBD has a big need for disaster money becomes even more problematic when it is learned that several public officials involved in fund administration have been subjected to a hand arrest operation (OTT). As a result, it is critical to begin considering options for disaster insurance schemes in the country in order to promote catastrophe management optimization.

The administration has also launched a dialogue in the 2019 APBN document to further maximize potential non-APBN catastrophe funding sources. Several preliminary steps have been taken, including the piloting of a state property insurance system (BMN), as well as the development of a disaster risk funding framework, a risk transfer scheme, and the introduction of a special funding mechanism for natural disaster management in the APBN.

Several BMNs' insurance coverage vary substantially based on the valuation results and the extent of site risk. For example, the Cibitung Tax Service Office (KPP) has an insurance value of approximately Rp. 8.4 billion, but the Cibinong KPP has an insurance value of Rp. 6.3 billion. North Bekasi KPP totaled IDR 1.5 billion, whereas South Bekasi KPP was IDR 24.9 billion. The Jakarta Type A Customs and Excise Laboratory costs Rp. 9.5 billion.

Several other BMN assets are expected to follow the disaster insurance engagement scheme in 2021. The plan includes assets in nine Ministries/Institutions (K/L), including the Office of the Corruption Eradication Commission (KPK), the National Terrorism Eradication Agency (BNPT), the Agency for the Assessment and Application of Technology (BPPT), the Information and Geospatial Agency (BIG), the Government Goods/Services Procurement Policy Institute (LKPP), the Coordinating Ministry for Human Development and Culture (Kemenko PMK), the Supreme Audit Agency (SAA) (BNPB). Membership will be expanded to 20 K/L in 2021, 40 K/L in 2022, and finally all K/L in 2023, when the disaster insurance system will cover all K/L.

Aside from insurance, the APBN's form of managing special funds for natural catastrophe management can theoretically be achieved in a variety of ways. There is an on-call fund system, as well as the development of a contingency fund. The author is most interested in establishing the Disaster Fund Management Agency

out of all the recommendations (BPKD). BPKD, as another type of Public Service Agency (BLU) that the government can establish, will later be able to collect disaster management money from the APBN/APBD, the private sector, and international funding of any kind.

The funds raised must then be nurtured and managed for all disaster management activities, from upstream to downstream, whether mitigation or post-disaster activities, as well as the procurement of various disaster early warning tools, which are frequently overlooked during the procurement of goods and services.

In terms of human resources (HR), BPKD will eventually be able to integrate aspects of professional personnel with competitive and satisfactory compensation levels, as well as government representation. As a result, the aspect of work professionalism and output performance becomes the most important thing.

With the establishment of BPKD, the government would be able to handle disaster finances more effectively in the future, as well as provide disaster management services in a more responsive and anticipatory manner for various sorts of disasters.

Bambang Sulistianto, Deputy for Reconciliation and Reconstruction at the National Disaster Management Agency (BNPB), stated that disaster insurance is critical, particularly during the rehabilitation and reconstruction phase following the end of the emergency response during a disaster (Wardah, 2017). When a disaster strikes, the issue is not only how to respond to the situation, but also how to restore people's lives. According to the 1945 Constitution of the Republic of Indonesia (UUD NRI 1945), the state has the obligation to safeguard its citizens. It must be protected not only from war, as it was when we were free, but also from all other risks and tragedies. Furthermore, the Disaster Management Law states that the community has the right to get compensation in order to repair their damaged property (Disaster insurance is important but the government hasn't thought about it, n.d.).

Whenever a natural disaster strikes, the government always collects funds from the State Budget for restoration and reconstruction. However, the government only has a limited amount of money for it. Despite the fact that Indonesia is no stranger to disasters, the budget for disaster management is still quite small. The APBN allo-

cates under than 0.5% of overall expenditure, or approximately Rp. 7 trillion, for disaster management positions. In fact, the average material loss caused by disasters in Indonesia is approximately Rp. 30 trillion per year. This is confirmed by a report from the United Nations Development Program (UNDP), which claims that disaster damages in Indonesia have surpassed Rp 400 trillion in the last ten years. For example, the government has spent approximately Rp. 1.5 trillion on victims of Mount Sinabung's eruption (Disaster insurance is important but the government hasn't thought about it, n.d.). Kornelius Simanjuntak, Chairman of the Indonesian Insurance Council from 2011 to 2013, has stated that numerous natural catastrophes have damaged at least two million dwelling units in Indonesia (Kertopati, 2017). In 2021, EM-DAT reported 28 earthquakes, in line with the 2001-2020 average of 27 events. However, the number of deaths and people affected by earthquakes, as well as global economic damages, were lower in 2021 than the average for the past 20 years. This is due to the absence of any mega-earthquakes in 2021. Despite this, the 7.2-magnitude earthquake in Haiti, which occurred in August, still ranks top as the deadliest disaster in EM-DAT in 2021, causing 2575 deaths. In addition, the Fukushima Earthquake of February (magnitude 7.1) also appears in the top ten of the costliest disasters in EM-DAT in 2021, causing an estimated 7.7 billion US\$ of economic costs.

Other geophysical hazards (volcanic activity, mass movements) and hydrological hazards (landslides) generally had a low occurrence in 2021 and resulted in relatively lower human and economic losses compared to other disasters types recorded in EM-DAT. Nevertheless, in April, a compound event triggered by a rock and ice avalanche resulted in a deadly mass flow in the Uttarakhand state (Himalaya, India). In addition to causing significant damage to hydro-power infrastructure, the number of people reported dead or missing was approximately 234, making it one of the top ten deadliest events in 2021. The volcanic eruption of the Cumbre Vieja volcano on the Canary Islands lasted from September to December and stands as the costliest lava flow reported in EM-DAT in the last twenty years, with economic losses estimated at 1 billion US\$.

Insurance firms may talk a lot about this. With the availability of catastrophe insurance, the government will not bear the entire expense of reconstruction and rehabilitation in the form of building residences or public amenities (Hotbonar & Munawar, 2022). This is because disaster insurance programs do not have to rely solely on government assistance. According to Kornelius, in a number of nations where disasters occur regularly, such as Japan, Mexico, and Taiwan, some of the risk has been transferred to global capital markets through the formation of catastrophic bonds. According to him, the government's responsibility is restricted to facilitating and providing a legislative framework for the implementation of this national catastrophe insurance (Pernando, 2017).

Because disaster insurance exists, data collecting on damaged assets does not have to take long because it has already been recorded by the insurance provider. These facts are required by insurance carriers in order to calculate the amount of dependents of an asset to be insured (Noor, 2014). Muliaman D Hadad, Chairman of the OJK Board of Commissioners, stated that Japan already has hundreds of years of data from which to assess the probability (Praditya, 2017).

Furthermore, the disbursement of funds will be speedier than the current process (Hakim, 2017). The owners of premiums will receive the claim fee without having to wait for government help money, which cannot be supplied immediately (Praditya, 2017). The earthquake and tsunami tragedy in Sendai, Japan in 2011 was one effective example of disaster insurance. Over 700 thousand people have lost their lives, over 1.4 million have been injured and approximately 23 million have been made homeless as a result of disasters. Overall, more than 1.5 billion people have been affected by disasters in various ways, with women, children and people in vulnerable situations disproportionately affected. The total economic loss was more than \$1.3 trillion. In addition, between 2008 and 2012, 144 million people were displaced by disasters. However, disaster insurance can cover all of these damages (Safaat, 2017). In 2020, the cost of damage caused by natural disasters occurring in Japan amounted to around 708 billion Japanese yen. Since the country is situated along the Ring of Fire, an area where several tectonic plates meet,

it is vulnerable to natural disasters like earthquakes, tsunamis, and volcanic eruptions.

It must be reiterated that the primary goal of establishing natural disaster insurance is to lower the level of risk that the community faces in the event of natural catastrophes. Insurance is used to apply it in situations where losses have a probabilistic nature (level of likelihood). Through Aggregation Risk, insurance has the ability to minimize the level of natural catastrophe risk to the community. Aggregation Risk is an insurance concept that refers to the payment of insurance value depending on the quantity of payment that presents challenges in determining who should carry out natural disaster insurance (Sivas, 2016). Related to the National Disaster Risk Finance and Insurance (DRFI) Strategy, Sri Mulyani Indrawati, Indonesia Finance Minister stated at the time, “Throughout the years, the government has relied solely on the state budget to cover the cost of disasters. It poses a risk to the budget allocated for other priority sectors such as education, health, and to programs of subnational governments”. The Minister further conveyed in the preface to a publication on the DRFI published in December 2018, “This strategy will allow the Government to seek financial solutions and innovation for alternative funding to complement the State Budget for disaster financing”.

The World Bank, with support from the Swiss State Secretariat for Economic Affairs (SECO), has closely partnered with the Indonesian government to develop the DRFI strategy and continues to work with the government on its implementation. In January 2021, the World Bank approved a US\$500 million lending operation to support Indonesia’s efforts to build and strengthen its financial response to natural disasters, climate risks, and health-related shocks such as the COVID-19 pandemic. The loan supports the establishment of a Pooling Fund for Disasters, that was legally created in August 2021 through a Presidential Regulation. It will serve as a central mechanism that will help ensure effective and transparent flow of money to relevant government agencies, including faster social assistance payments for victims of disasters, and improve preparedness planning.

In addition, a U.S. \$14 million grant from the Global Risk Financing Facility (GRiF), a multi-donor trust fund managed by the World Bank that helps countries design and implement

financial solutions to manage disasters and climate shocks, is co-financing efforts to help build the government’s technical capacity in managing funds to protect the most vulnerable groups. Another key component of the World Bank’s ongoing collaboration with the Ministry of Finance on DRFI is implementing and scaling up the government’s State Asset Insurance Program. Since its launch in 2019, the insurance program has covered more than 4,300 buildings of 51 ministries as of September 2021.

Work is also underway toward integrating Indonesia’s efforts with the Southeast Asia Disaster Risk Insurance Facility (www.seadrif.org), an initiative of the members of the Association of Southeast Asian Nations (ASEAN) Plus Three (Japan, China, and South Korea), which is supported by the World Bank, and which has identified financial protection of public assets as a priority product. Indonesia is a member of the facility, and similar work is ongoing among neighbors across ASEAN, including the Philippines and Vietnam.

If natural disaster insurance is handled completely by private enterprises, risk aggregation will be unable to cover natural disaster insurance coverage without requiring extremely high premiums. As a result, there is no reasonable disaster cost cover available. As a result, natural disaster insurance cannot be provided entirely by the private sector. Natural catastrophe insurance providers must also include government participation in the form of a subsidy policy.

Because there is no false profit (projected higher profits) from the level of income, the government as an insurance provider is unlikely to face premium concerns through subsidies. The comparatively modest reserve of subsidy expenses with cash from taxes demonstrates the de facto function of taxation in giving support to persons impacted by disasters. Systematically, this is also a traditional government measure to prevent societal problems. Thus, the issue of government-managed natural disaster insurance must be researched further.

The distinction between different classes of residents in the provision of natural catastrophe insurance is something that the government must consider. Homeowners in flood-prone or fire-prone areas should, by definition, have more insurance coverage than those in low-risk locations. This is, of course, based on the notion that

those who reside in disaster-prone locations will require extra insurance. However, this violates the fundamental ideals of democracy and equality before the law. The damage that occurs can significantly decrease household welfare as well as their poverty status. For instance, the loss of crops results in losses to farmers' income and, in some extreme cases, may lead to famine. The damage to property (such as housing, productive assets, and public facilities), loss of crops, the injury and death of family members, and disabilities caused by disasters, all lead to direct economic losses that can reduce household welfare and expose households to increased poverty as well as reducing economic mobility (Dartanto et al., 2020; Dartanto & Nurkholis, 2013). Natural disasters are also closely associated with girls entering child marriage that may result in adverse effects on women ranging from economic losses to health deterioration (Dewi, 2019). In the same case of natural disasters, there is poverty exposure bias in which poor people are often overexposed to droughts and urban floods (Winsemius et al., 2015).

The relationship between natural disasters and welfare/poverty can be a two-way process: not only do natural disasters increase the incidence of poverty, but poverty can in turn increase households' exposure to natural hazards. A household's vulnerability to natural shocks is determined by several factors (Lopez-Calva & Ortiz-Juarez, 2011): economic structure development stage, social and economic conditions, the availability of coping mechanisms, risk exposure, and the frequency and intensity of disasters. In the case of floods in Pakistan, Kurosaki et al. (2012) found that 1) households that initially had fewer assets and experienced greater flood damage experienced more difficulties recovering from the disaster, and 2) aid recipients did not show higher or lower levels of recovery than non-recipients, especially in terms of housing damage. Elsewhere, a significant increase in poverty in disaster-affected municipalities was found in Mexico (Rodriguez-Oreggia et al., 2012), while in Nicaragua Van den Berg (2010) was unable to find any direct evidence of disaster-induced "poverty traps", although not all households were able to recover from disasters in a similar manner.

Furthermore, the issue of insufficient funding from the state budget and failure to meet risk

recovery targets must be addressed. This problem cannot be remedied just by government funding. Natural disaster insurance requires coordinated collaboration. In order to provide natural catastrophe insurance, a concept involving the government, the public, and the commercial sectors must be implemented (Huxley, 2010).

As a result, according to Lavigne and Thouret (2010), there are two methods for applying natural catastrophe insurance, as follow:

1. *Government as sole insurer*

Approach for implementing government-sponsored insurance programs. The program resembles private insurance but is not directed by insurance principles and is not funded by insurance monies. That is, implementing an insurance program similar to the private sector in which the government provides multiple options for natural catastrophe insurance premiums and the community decides which options to take and how much to pay. This, of course, the public sector must still pay the premium, but the premium is lower because it is subsidized. Natural disaster insurance plans like this have previously been adopted in Spain for all natural disasters, in the United States for flood insurance, and in Turkey for earthquake insurance.

2. *Government as reinsurer*

In this system, insurance is given and determined entirely by the private sector based on the applicant's background and circumstances, with the government providing all money. In providing insurance, the private sector operates as a third party and an extension of the government. Because the private sector determines the natural disaster insurance program, the government will not be found to have breached the equality of every citizen under this system. Such insurance plans have already been adopted in New Zealand, Japan, South Africa, Norway, France, and the United Kingdom (Lavigne & Thouret, 2010).

Conclusion

Given Indonesia's geographical location as a country prone to natural disasters and the fact that Indonesia has the fourth biggest population, the lack of attention to compensation for losses

caused by natural disasters indicates an adverse situation. Problems with catastrophe management techniques exist all throughout the world. When a calamity strikes, the government always collects the state budget for restoration and reconstruction, which frequently has limited funds. As a result, despite Indonesia's familiarity with disasters, all efforts and budgets for disaster management remain inadequate, and the process is not optimal. As a result, many people's losses as a result of natural calamities are irrecoverable.

To overcome the disaster management system, modifications must be made, particularly to the post-disaster rehabilitation and reconstruction process, which is currently ineffective. There is an option to optimize the function of the disaster insurance system, namely making the government the sole insurer, where the government provides pure insurance financing through subsidies, or the government as a reinsurer, where the government and the private sector collaborate to maximize the performance of the insurance system. These procedures must be taken in order to modify the status quo of the system, which is currently not operating optimally.

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