

UDC 332

THE ROLE OF PROPERTY TAX POLICIES ON TOURISM AREA DISASTER MITIGATION: A CASE STUDY OF PACITAN REGENCY, INDONESIA

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ABSTRACT

This study aims to determine the government efforts concerning the role of property tax policies on disaster mitigating tourism areas in the Pacitan Regency. Pacitan Regency is the research location selected based on its geographic location, geological and tectonic conditions in which an area with a potential for earthquake and tsunami disasters. In fact, it has a beach beauty that is eagerly sought by both local and international tourists. So, it requires a safe and comfortable infrastructure and accommodations to support the move of the tourist economic sector. The research was conducted using a qualitative approach through interviews, field studies, and supporting data. An assessment of the impact of disasters that occurred, particularly related to the loss and damage to buildings due to the disaster that occurred in late 2017, can be the basis for the government to conduct a review of spatial planning for safe locations to build houses, hotels, and other tourism economic supporting infrastructures. In addition to spatial planning, the imposition of property taxes can also be carried out as an effort to mitigate disasters through the construction of earthquake and tsunami-resistant building structures to avoid loss and damage to building structures.

KEY WORDS

Disaster mitigation, property tax, tourism, economy.

Pacitan Regency is one of 38 regencies/cities in East Java Province which is directly adjacent to Central Java Province and is located on the southern coast of Java. Pacitan is a very attractive area for tourists because of its beautiful beaches. Incomes from tourists are also very helpful in increasing Regional Original Income (PAD). Furthermore, the beach in Pacitan is different from other beaches because there is a karst panorama, which causes the beach in Pacitan to be a cliff beach and has beautiful white sand. The soil condition is also in the form of limestone which causes the soil in this area to always move, particularly if it coincides with high intensity rainy season, which often causes natural disasters, such as earthquakes, floods, and landslides.

The most recent major disaster was the earthquake and tsunami disaster in late 2017. Several beaches in Pacitan were eroded, causing large enough holes filled with water, so some new lakes were formed with a large number of potential new tourist objects. However, resorts, hotels, restaurants and other public infrastructure were severely damaged, so it requires time and money for the recovery process. Several things that can be done as an effort to plan a mitigation (mitigation plan) in the future, among others 1) planning of land management and arrangement of population placement; 2) Strengthening buildings and infrastructure and improve the appropriate design code rule (code); 3) Doing preventive efforts by relocating high activities to safer areas; 4) Protecting from damage by making environmental improvements with the intention of absorbing energy from tsunami waves (for example: by planting mangroves along the coast); 5) Socializing and conducting intensive training for residents in tsunami prone areas; 6) Creating an early warning system along coastal/urban areas prone to tsunamis (Ilyas, 2006).

The tax function as a regularend can be applied in disaster mitigation efforts, by providing tax incentives for residents in disaster-prone areas. Tax incentives can be in the form of property tax incentives provided if the community and tourism economic sector investors build infrastructure with a disaster-resistant concept (earthquake), so that it will

reduce the impact of damage and losses in the event of a natural disaster (Yustisia, [https://news.ddtc.co. en](https://news.ddtc.co.en), 2019). Property taxes that are commonly applied Rural and Urban Land and Building Tax (PBB-P2) and Land and Building Acquisition Fee (BPHTB) which are the third highest Regional Original Income (PAD) for a regency/city on a national scale (after income tax, oil and gas, and mineral and coal), which is 11.29% (DJPK, 2019). Therefore, local governments need to pay more attention to the management of property taxes in their efforts to prevent damage and losses, especially for disaster-prone areas.

Based on this background, the researchers are very interested in examining how the efforts of the Pacitan Regency local government through property tax policies in disaster mitigation in Pacitan Regency, so that potential losses and damage due to the impact of disasters can be reduced. The purpose of this study was to determine whether Pacitan Regency has implemented a property tax policies in disaster mitigation efforts in the tourism area. The contribution that the researcher wants to convey is that this research can be a material for reflection and study for the government in disaster mitigation efforts to protect public, private and community assets through the application of property tax policies, so that if a natural disaster occurs, the losses and impacts caused can be suppressed.

LITERATURE REVIEW

Disaster Risk

Indonesia is a country with high disaster risk. Apart from being surrounded by three active tectonic plates, Indonesia is in the ring of fire. The hydro-meteorological conditions in Indonesia can also trigger disasters such as floods, landslides, drought, tornadoes, and extreme waves. According to the Head of the Center for Data, Information and Public Relations of National Disaster Management Authority (BNPB), the tourism industry is very vulnerable to being disrupted by disasters. The disaster will affect the tourism ecosystem and the achievement of tourism performance targets.

Based on BNPB data as compiled by the Tempo Editorial Staff (2019), the losses of the tourism sector due to the disaster are as follows.

- a) Mount Merapi erupted in 2010, causing a decrease in the number of tourists at several tourist objects in Yogyakarta and Central Java by almost 50 percent. The eruption of Mount Agung in Bali in 2017 also caused tourists to decrease by 1 million people and the tourism sector loss reached IDR 11 trillion. Likewise, the successive earthquakes in Lombok in 2018 caused a decrease in tourists of up to 100 thousand people and the tourism sector loss reached IDR 1.4 trillion.
- b) Forest and land fires from August to September 2015 caused 13 airports to become inoperable due to short visibility which endangered the flights. Airports must be closed, various international events were postponed. The tourism was severely under pressure. The airline, hotel, restaurant, tour and travel industry, tourist attractions and the economy driven by this sector were also disrupted.
- c) The Sunda Strait's tsunami in late 2018 caused economic losses of up to hundreds of billions in the tourism sector. The domino effect of the disaster is the cancellation of tourist visits up to 10%. Before hit by tsunami, the occupancy rate of hotels and inns in the tourist areas of Anyer, Carita and Tanjung Lesung reached 80-90 percent.

Disaster management is based on the characteristics of the disaster. Natural disasters have two characteristics, namely slow on set and fast on set. For disasters that come slowly (slow on set) such as drought, floods, and volcanic eruptions, some steps can be relatively taken to anticipate them. However, disasters with very fast events (fast on set) such as earthquakes and tsunamis, are relatively difficult to anticipate (Maarif, 2012). On the other hand, according to Maarif (2012), efforts to implement disaster risk management, especially Regional Disaster Management Agency (BPBD), are faced with limited funding, both for pre-disaster, emergency response and post-disaster activities.

Property Tax

Property tax is a tax on the use or ownership and other legal interests in immovable property which is collected periodically to defray public finances (Anggoro, 2019). Property

tax in Indonesia in the form of PBB-P2 and BPHTB are the highest source of local own-source revenue for districts/cities. Yustisia (2019) argues that the significance of PBB-P2 and BPHTB which reaches 13% of district/city's local own-source revenue makes property taxes an important instrument to consider in disaster management efforts, both before and after a disaster for disaster-prone areas in Indonesia.

Yustisia (2019) claims that the concept of taxation on property can be a 'preventive' step in organizations before a disaster (disaster mitigation), such as through offering tax breaks for property built with the concept of 'disaster resistance'. This incentive will be able to deal with greater damage in the future. Furthermore, disaster mitigation efforts can also be carried out through impose a higher tax rate (tax penalty) for property development, both in the form of houses and commercial buildings, in disaster-prone zones. Thus, disasters take the form of casualties and material losses due to damaged buildings in disaster-prone areas. In post-disaster conditions, taxes on property can play an active role in the process of recovery and reconstruction of areas affected by disasters give tax breaks can be an instrument to encourage development so that the economy returns to stability. Thus, natural disasters will govern the budget more flexible to improve state assets. In the long-term, expanding the tax base on property could also support disaster activities in Indonesia.

METHODS OF RESEARCH

The research method used is qualitative with a case study format. This method is used so that the meaning of reality that is captured is truly in accordance with the actual conditions based on the informant's conscious experience. The location of this study is in Pacitan Regency, which is located in East Java Province with an area of 1.389,87 km² (BPS, 2014). Pacitan was chosen to be the research site because of its disaster-prone typology.

The stages in this research include: determining the object of research; literature review; and formulating research boundaries. This study used interview data collection methods to the Head of Regional Revenue Agency, the Head of Regional Disaster Management Agency, and the Head of the Tourism Office in Pacitan Regency. After the interview data is obtained, the data will be described in the form of dialogues between the researcher and the informants and will be written into a research note or by using the diary method (Bugin, 2011). The data will be reduced and triangulated before finally being analyzed by data interpretation. The variable used as research material is the property tax policies for tourist areas in disaster mitigation efforts.

RESULTS AND DISCUSSION

Pacitan Regency is one of 38 regencies/cities in East Java Province which is located in the South Southwestern part and directly borders with Central Java Province. Administratively, Pacitan Regency is divided into 12 districts, 5 sub-districts, and 166 villages. Topographically, Pacitan Regency consists of coastal, lowland, and hilly areas, so it contains a lot of potential natural resources in the form of mining materials. However, on the other hand, several problems that arise due to rough topography include limited accessibility, vulnerability to disasters such as floods, landslides and land movement. The economic sectors carried out by the majority of the population of Pacitan Regency are agriculture, estate crops, livestock, forestry, energy and mineral resources, and tourism. In the field of tourism, Pacitan Regency has a lot of tourism potentials, including beach and cave tourism which are very attractive to tourists, both local and international.

Disaster-Prone Areas

Pacitan Regency is an area that is prone to disasters. It is because of the condition of the land it owns is a moving limestone soil. Moreover, the geographic location right on the south coast which is the ring of fire route adds to the potential for even greater disasters. From January to March 2020, data on disaster incidents in Pacitan Regency reached 112 cases, consisting of land subsidence/fracture/erosion, strong winds/tornadoes, landslides, fallen trees, burned houses, collapsed irrigation/overflow of water, and floods.

Table 1 – Disaster Occurrence Data (as of March 5, 2020)

No.	Occurrences	Total
1.	Land subsidence/fracture/erosion	5
2.	Strong winds/tornadoes	26
3.	Landslides and earthquake	71
4.	Fallen trees	6
5.	Burned houses	2
6.	Collapsed irrigation/water overflow	2
7.	Floods	2
Total		122

Source: Processed data, 2020.

According to Table 1 presented above, the most frequent occurrence of disasters are landslides and earthquakes, which reached 71 times in less than three months in early 2020. This shows that the vulnerability of disasters caused by land movement that occurred in Pacitan Regency is very high. The disaster certainly also resulted in damage and losses, especially in terms of infrastructure, houses, hotels and restaurants/food stalls. In 2008, Marine and Fishery Office had built a model house for earthquake and tsunami resistance. The initial design of this house was a two-story house and the first floor was used as a water channel in the event of a tsunami. However, in its development, the first floor was closed with a wall and functioned as a separate room (Probosiwi, 2013). This program did not continue until the floods and landslides occurred in 2017 until now.

In the last ten years in Pacitan Regency, there were floods and landslides which were very devastating and have caused damage and losses, especially in the property and infrastructure sector in 2017. Landslides and floods occurred on November 28th, 2017 were caused by high intensity of rain, that reached 383 mm, which is an anomaly of rain intensity due to Cempaka Tropical Cyclone. According to the statement of the Head of the Disaster Prevention Section of Regional Disaster Management Agency (BPBD), due to the extreme intensity of rain, the Grindulu and Lorog Rivers, which are the largest rivers in Pacitan Regency, could not accommodate the large volume of rainwater, resulting the river flow extended in almost the entire Pacitan Regency. The disaster caused by the Cempaka Tropical Cyclone phenomenon has damaged resident houses, infrastructure, social, economic and other facilities. The worst affected area is located right on the edge of the river boundary which is a basin or low area along the Grindulu and Lorog Rivers. This disaster resulted in 25 people deceased and 16.956 people evacuated. The refugees were spread in designated (centralized) shelter locations and some were spread in their respective family houses (independent).

The most severe damage occurred in the housing sector reached 5.945 units (heavily damaged = 1,596 units, moderately damaged = 1,986 units, lightly damaged = 2,184 units). Most of the damage was minor due to a pool of rubbish from house debris and mud with a height around 50 cm. Meanwhile, for the heavily damaged houses, most of them were located along the riverbank due to the river current. Moreover, the damage to houses that occurred due to landslides was caused by houses that were buried in landslide materials or houses that also collapsed. Damage and losses caused by the impact of the disaster are shared responsibility. It is not only needed assistance from the government, but also assistance from various groups such as social institutions. Provision of funds for post-disaster rehabilitation and reconstruction is carried out by gathering potential sources of available funding, such as the regency and provincial APBDs for the affected areas, the state budget (APBN) and central government ministry/agency budget implementation check list (DIPA) in accordance with their main tasks and functions as well as programs and activities, and funds sourced from the business world and multilateral development organizations.

Planning and funding for post-disaster rehabilitation and reconstruction activities in the residential sector consist of meeting the needs of the housing sub-sector for communities affected by disaster risks, with an estimated total need of IDR 510.875.400.000 for the recovery of 6603 damaged building units, which is obtained from various funding sources, namely APBN, as much as IDR 25.200.000.000 (5%), APBD of Pacitan Regency, which is as

much as IDR 9.450.000.000 (2%), APBD of East Java Province for IDR 65.898.000.000 (13%) and other sources are IDR 410.327.400.000 (81%). Each funding source has a different allocation for recovery.

Funding sourced from APBN is used to meet the needs for flats construction, construction of houses affected by disasters from the Ministry of Public Works and Public Housing, simultaneous support for heavily damaged and moderately damaged houses for community empowerment pattern housing construction, household contents/furniture support, assistance (management consultant, facilitators, and quality assurance), and the provision of environmental infrastructure. The source of funding for the Pacitan Regency APBD is directed at providing housing land, constructing site plans, assisting lightly damaged stimulants, and providing environmental infrastructure, and recovering infrastructure. Other sources of funding are obtained from Corporate Social Responsibility (CSR) and community funds for housing construction, logistical assistance and infrastructure recovery.

As a result of floods and landslides in Pacitan Regency, the damage to the housing subsector was IDR 481.811.850.000 and the loss reached IDR 9.904.500.000. The total damage and losses reached IDR 491.716.350.000. The assessment of losses that occur in the housing sub-sector is the result of costs occurred for cleaning up building trash materials and mud mixed with rainwater, as well as cleaning up house debris. The calculation appears with the assumption that cleaning is carried out by human labor, the cost of local wages and the length of time cleaning. In addition to the budget for cleaning, funding has also increased due to the provision of temporary shelters for residents who had to evacuate.

The impact that is also felt by the community is seen in the infrastructure sector (roads and bridges, water and sanitation, water resources, transportation and energy), the social sector (health, education, religion, and social institutions), the economic sector (trade, cooperatives and Small and Medium Enterprises, industry, and tourism), and cross-sector (government). Indirect impacts caused by disasters are also very influential, including productivity constraints due to damaged or lost assets, such as reduced income potential and increased expenditure for some time after the disaster.

The recovery and reconstruction of the Pacitan area which was affected by the disaster at that time used support from APBN funds that went to APBD. The construction of community houses also receives total support from the central government budget. The houses of residents that are already poor in quality, collapsed and uninhabitable were actually rebuilt so that they became better because of the support from the central government, including the construction of bridges as access roads that have already collapsed. They all were included in the central government budget. APBN funds that have been absorbed are approximately 900 hundred million to 1 billion for recovery due to the impact of the disaster.

Local governments need a long time to recover infrastructure after the disaster in late 2017. The recovery of the houses, approximately 5,945 new houses, was completed at the end of 2019 using APBN funds disbursed from the central government amounting to 130 billion. The funds were divided for each house with the category of heavily damaged and moderately damaged houses. The biggest damage and losses were in the housing sector (property) which reached 43%, followed by the economic sector at 29%, the infrastructure sector at 23%, the social sector at 5%, and cross-sector (1%).

Potential Tsunami

The Regional Government of Pacitan Regency has long collaborated with researchers from Utah University, Professor Ronald Albert Harris (Ron Harris), who conducted a study of the Aceh tsunami two years prior to the disaster occurred in 2004. According to his study, Pacitan Regency is a disaster-prone area and is potentially hit by a tsunami. Minor earthquakes occur frequently and are common things. Historically, there were plate faults on the South Coast that could cause a mega tsunami. According to the Head of Regional Financial and Asset Management Agency (BPKAD), earthquakes always exist, it is just that they are not felt. As the land in Pacitan Regency is a moving plate, it is classified as a disaster-prone area. Based on the research results, small earthquakes that occur have a good impact, because the energy produced by the earth is released gradually. If there is no

small earthquake, it is possible that a large earthquake will immediately emerge, which is more dangerous for Pacitan. This can trigger a tsunami of up to 20 meters.

Disaster Risk Mitigation Strategy

Pacitan District has implemented several disaster risk mitigation practices that have been and are being implemented, namely:

1. Socialization of earthquake and tsunami in schools and communities (APBD Program)

Earthquake and tsunami socialization programs in schools and communities are carried out based on the Regional Government budget ceiling. The target of this program is schools, which consist of students, teachers and education personnel, study groups, and families of students known as the Disaster Safe Education Unit (SPAB) program in Pacitan Regency, totaling 441.024 educational units for early childhood (PAUD), elementary school (SD), junior high school (SMP), senior high school (SMA), vocational high school (SMK), special school (SLB), public learning center (PKBM), studio learning activity (SKB), and course and training institute (LKP).

Table 2 – Target of Education for Mitigation and Preparedness in Education Units

No.	Type of Education Unit	Total
1.	Students	60.387.140
2.	Teachers and education personnel	3.840.165
3	Study groups	1.851.474
4.	Students' Families	42.972.397
TOTAL		109.051.175

Source: Processed data, 2020.

Based on Table 2, the target number of the SPAB socialization program reached 109.051.175 which is carried out regularly every year. The legal basis for implementing the SPAB program is regulated by Regulation of Minister of Education and Culture (Permendikbud) No. 33 of 2019 and it includes the disaster management mechanism in the education unit which consists of:

- 1) Pre-disaster, including the fulfillment of disaster-safe learning facilities, development of disaster management in education units, and implementation of disaster risk reduction and prevention education integrated into learning activities;
- 2) Emergency management, including activation of educational posts, assessment of impacts and needs, facilitation and management of emergency schools, psychosocial support services; ensuring the level of security and safety of students, teachers, and educational personnel;
- 3) Post-disaster recovery, including re-functioning of all learning facilities and infrastructure (rehabilitation and reconstruction), recovering the learning process, providing psychosocial support and/or trauma recovery.

The disaster management mechanism has been carried out by the Pacitan Regency Government through the Regional Disaster Management Agency (BPBD) and has experienced several challenges, namely weak local government policies that support the implementation of this program, various learning modules and guides, monitoring that is still carried out on an ad hoc basis, training that is still being carried out sporadically, no forums and collaborations between teachers and schools and with other institutions, no funds for running safe schools, and students are still passively involved.

The socialization program was also carried out by involving the community, especially Family Empowerment and Welfare Women (PKK) and Dharma Wanita group known as the "Srikandi Disaster Response" program. Activities carried out by BPBD through this program are in the form of material for preparedness when a disaster occurs. The reason for implementing this program is to prepare, especially for the mothers, to always be ready and alert if a disaster strikes at any time. The keyword that is always conveyed by BPBD is "20 20 20", which means if an earthquake lasts more than 20 seconds, it takes 20 minutes to run away, and run to an altitude of more than 20 meters.

2. Establishment of a Disaster Resilient Village (Destana)

Disaster Resilient Village is an initiation program by the Pacitan Regency Government in carrying out disaster risk mitigation efforts. There were four villages in Pacitan Regency that are given facilities to carry out the Desatana program in Pacitan Regency in 2018, namely Mangunharjo Village, Kedungbendo Village, Karanganyar Village, and Klesem Village. Disaster management through the Desatana program consists of three phases, namely pre-disaster which includes prevention, mitigation and preparedness; in the event of a disaster, including emergency response and logistics; and post-disaster, including rehabilitation and reconciliation, as well as development. In implementing Destana, there are nine stages that must be carried out, namely:

- 1) Basic disaster management - disaster risk reduction through an explanation of the definition of a disaster and its types, and a description of the disaster cycle;
- 2) Participatory disaster risk assessment, through threat assessment (highest threat of floods and landslides), disaster risk assessment, and disaster risk mapping;
- 3) Development of an inclusive early warning system, through monitoring and warning services, dissemination and communication, the ability to respond, and reactivating kentongan (drum made from wood which is struck to sound an alarm) as local wisdom in disaster communication;
- 4) Preparation of evacuation route plans, through planning of evacuation routes, determining Temporary Evacuation Sites (TES) and Final Evacuation Sites (TEA);
- 5) Compilation of village contingency plans, through the preparation of scenarios, determination of policies and strategies, establishment of an emergency response command structure, planning for the field of operations;
- 6) Development of village's disaster risk reduction (PRB) volunteer forums;
- 7) Preparation of disaster management plans through PRB data presentation;
- 8) Volunteer training, through coordination between agencies;
- 9) Landslide field rehearsal

The follow-up plan of the Destana program that will be carried out by the Pacitan Regency Government is in the form of socialization of disaster through the integrated health post (posyandu) program, alert village cadre groups, Qur'an recitation groups, and neighborhood association (RT)/family empowerment and welfare's regular social gathering (arisan); planting trees to maintain water absorption; socialization of Disaster Resilient Village to early childhood through coloring competitions at kindergarten and elementary levels; socialization to community members through arts and local wisdom; and reforestation in landslide prone areas.

3. Boundary Management and Addition of Beach Greenbelt

The construction of the Pacitan greenbelt was originally a work program of the Ministry of Marine Affairs in 2007. The construction of the greenbelt stretches along the southern coast of Pacitan which aimed to prevent sea waves that could potentially become a tsunami. Currently, greenbelt management is carried out under Pacitan Regency Fisheries and Marine Office. The greenbelt planting continues to be expanded. Apart from functioning as a wave barrier, greenbelt can also make the beach cooler and shady, so it can attract tourists.

Property Tax

Local Government has applied property tax for Regional Original Income (PAD) of Pacitan Regency. Property tax applied in Pacitan Regency includes Rural and Urban Land and Building Tax (PBB-P2) and Fees for Acquiring Land and Building Rights (BPHTB). PBB-P2 is periodic tax collection in a period of a tax year on all ownership, control and / or use of land and / or buildings that are controlled, and / or used by private persons or entities, except for areas used for plantation business activities, forestry and mining. The Regional Government of Pacitan Regency determines the Sales Value of Tax Objects (NJOP) as the Basis for Imposing Taxes. The amount of PBB-P2 tariff with a NJOP amount of less than or equal to IDR 1,000,000,000.00 (one billion rupiah) is set at 0.105%. Meanwhile, the NJOP amount above Rp. 1,000,000,000.00 (one billion rupiah) is set at 0.225%.

Another property tax applied in Pacitan Regency is BPHTB. BPHTB is tax collection on acquire and and / or building rights by private persons or entities. The Regional Government of Pacitan Regency determines the Tax Object Acquisition Value (NPOP) as the Basis for

Imposing Taxes. BPHTB in Pacitan Regency is subject to a rate of 5%. Property tax contributed from PBB-P2 and BPHTB reached 18.3 billion in 2018 and increased to 19.3 billion in 2019. This property tax is the largest contribution to the Regional Original Income (PAD) of Pacitan Regency. Property tax contributions enable local governments to better manage disaster risk and be more independent in restoring their areas when a disaster occurs. Unfortunately, the concept of disaster management through the use of property tax has not been thought of by the Regional Government of Pacitan Regency. This can be seen by the property tax policies has not been implemented that has been directed by the local government to cope with disasters and overcome the impact of disasters in disaster-prone areas of Pacitan Regency. There is no regional government policy to tighten development requirements in areas that are potentially disaster-prone, particularly in coastal areas.

CONCLUSION

Pacitan Regency is one of 38 Regencies/Cities in East Java Province which is directly adjacent to Central Java Province and is located on the southern coast of Java. Pacitan Regency has a lot of tourism potential, including beach and cave tourism which are very attractive to tourists, both domestic and international tourists. However, the geographical location in the plate fault area makes this area prone to disasters and has the potential to experience a mega tsunami earthquake. At the end of 2017, Pacitan Regency was hit by flash floods which brought a lot of material and non-material losses. This requires a policy from the local government in order that when a similar disaster occurs, losses can be suppressed to a minimum.

The mitigation efforts that have been and are being carried out by Pacitan Regency are the socialization of earthquakes and tsunamis in schools and communities, including the involvement of family empowerment and welfare (PKK) in the Srikandi Disaster Response program. In addition, there is the establishment of a Disaster Resilient Village (Destana) and border management and the addition of a beach greenbelt. However, these mitigation efforts are deemed imperfect without mitigation efforts through property tax policies. Many buildings are found around the coast which are overly at risk of being affected by disasters. To limit this problem, local government efforts are required to tighten development requirements in high-risk areas, especially in coastal areas. In this condition, the role of property tax can be used. Property taxes can be used as disaster management measures such as tax relief policies (tax incentives) on disaster-resistant construction or higher taxes for development in disaster-prone areas. Thus, the cost of damage due to disasters, risk of casualties, and material loss due to damaged buildings in disaster-prone coastal areas can be reduced. In addition, the property tax revenue can restore the condition of the post-disaster area more quickly.

As a development effort, opinion polls are needed among policy makers, academics, and other stakeholders to carry out the property tax policies. In addition, a more detailed analysis is needed about the scheme and constraints in implementing property tax policies. The consideration between the amount of collection fees, the ease and possibility of collection, and the cost of compliance with the amount of taxes can be collected requires further research.

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