Resilience Development Initiative

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Disaster Preparedness of Star Hotels to Coastal Hazards: Case Study of Sanur, Bali

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Abstract

Tourism activities in coastal areas are exposed to several potential coastal hazards, among others: tsunami, sea level rise and coastal erotion. As one of the main tourism providers in coastal areas, hotel management should be ready to deal with such potential threats. This study aims to assess hotel preparedness to several coastal hazards that pose problems tourism activities. To assess the preparedness, this paper proposes a set of indicators of Preparedness that includes: (1) Hazard Knowledge, (2) Management, Direction and Coordination, (3) Formal and Informal Response Plans and Agreements, (4) Supportive Resources, (5) Life Safety Protection, (6) Property Protection, (7) Emergency Coping and Restoration of Key Functions, (8) Initiation of Recovery, adjusted from general preparedness to disaster taken from literature. This study selects Sanur Area in Bali as the case study since Sanur illustrates one of a popular tourist destinations in Bali, located along the coast. To get the data, we interviewed hotel management in Sanur throuqh semi-structured interviews. Their anwers responses are analyzed using 8 general Preparedness to provide index of Preparedness for selected coastal hazards (tsunami, sea level rise and coastal erotion). This study found that [ISI DENGAN HASIL] Finally, the study puts forward several recommendation to increase hotel preparedness to disasters in coastal areas.

Keywords:

Coastal Hazards; Coastal erotion; Tsunami; Hotel, Preparedness, Tourism

1. Background

Tourism activities in coastal areas are exposed to several potential coastal hazards, among others: tsunami, sea level rise, floods and coastal erosion. Indian Ocean tsunami in 2004 hit several popular tourism destination in South and South East Asia, such as Phuket (Thailand), Sabang (Indonesia) Andaman Islands (Henderson, 2007). In all these countries, the number of victims was about 9,000 tourists (Wikipedia, 2015). Hall et al (2012) suggested the importance of safety in tourism due to growing interests of population on tourism activities. Biggs et al (2012) researched that tourism enterprises should have resilience to tourism to withstand potential hazards. A famous story of 10-year-old British tourist named Tilly Smith shows that tourists have a capacity to deal with disasters. In the wake of climate change hazards, such as sea level rise, flooding that affect coastal areas, Scott et al (2008) argue that tourists are considered to have the greatest capacity to adapt to the risks and opportunities. Nonetheless, the actual adaptive capacity of tourists remains largely unexplored (Gössling et al, 2012). During the earthquake of West Sumatra (2009), a famous Hotel Ambacang were collapsed and caused visitors and staffs got killed.

In global context, tourism sector is getting more important for the world economy. WTTC shows thee significance of travel and tourism in world economy. On their latest annual research, travel & tourism's has been rising to a total of 9.8% of world GDP (US$7.6 trillion) (WTTC, 2015). This sector equals to provide jobs for 277 million people worldwide or about 1 person of 11 jobs on the planet (WTTC, 2015). Similarly, tourism sectors are increasingly important for Indonesia development. In 2010, tourism sector (trade, hotel and restaurant) accounted for the second highest

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labor forces in the country, after agriculture sector. *Nesparnas* (National Tourism Satellite Balance), an annual report prepared by the Central Bureau of Statistics (BPS) since 2000, stated that tourism sector has contributed significantly to open employment opportunities although the number fluctuates. In 2001 the contribution reached 8.57% and in 2004 reached 9.06%. The year 2006 was the worst year, the tourism sector's contribution is only 4.65%, and then improved again be 6.84% in 2008, and 6.87% in 2010.

Bali is no doubt the 1st tourist destination in Indonesia. It can be seen from Denpasar, the Capital of Bali, where the city economy in 2010 has been supported by the dominance of the tertiary sector contributes 74.35%. The largest contribution is from trade, hotels and restaurants sector which its contribution almost 37.41%. The primary sector accounted for 6.75% mainly from agriculture, whereas the secondary sector accounted for 18.89%. Many of these tourist destinations in Bali are located along the coast as it is a famous island based tourisms. If the hotels are at risk of coastal disasters, it is necessary to know the Preparedness of the hotels facing the coastal disaster. In the face of potential disaster, it is important to assess hotel Preparedness so that risk can be minimized. In 2002 and 2005, Bali experienced two large scale bombing threats by terrorists. Subsequent to these two years, the number of international tourists decline. Therefore, safety in tourism areas affect tourist preferences.

This study aims to identify the Preparedness of hospitality management as tourism stakeholders to potential coastal disasters in coastal areas with a case study of Sanur Tourism Area in Bali. To address this, the rest of the article will explain methodology to measure hotel Preparedness to disaster and also indicators to be used to measure preparedness. It later describes the results of analysis of hotel preparedness for tsunami, sea level rise and coastal erosion for this research. Later, discussions will be made based on data obtained from the case study. Finally, a set of recommendation are proposed to conclude the article.

2. Methodology & Location

To collect information about hotel characteristic in Sanur Area, we rely on primary data from interviews to the hotel management conducted in April 2014. Primary data were obtained by interviewing hotel representatives (managers, officers, etc), government officials and hotel association (PHRI). This is also strengthened by secondary data on tourism obtained from previous study (World Bank 2013 The observations include disaster threats, such as coastal erotion conditions, hotel building physical condition, the hotel building distance from shore, height of the building from the street, provision of evacuation shelter, etc.

There are a number of tourism service activities, such as hotels, restaurants and merchandise shops in Sanur. The main attraction in Sanur is sunrise in coastal areas, beautiful scenery and resorts. According to data from Denpasar City Tourism Office in 2012, there are 22 five-star hotel, 64 hotels jasmine, and 28 cottages in Sanur area. Most hotels and inns offer easy access to the beach to attract tourists visiting the area. The majority of star hotels are located directly to the coast about 15-30 meters from the coast.

Interview with the hotel management is to obtain information about the Preparedness of the hotel management to coastal disasters. The interview is intended for the hotel's general manager, manager, or parallel position which has the capacity to answer questions related to coastal disasters. Interviews with local government conducted to determine the role of local governments on disaster preparedness coastal hotel management. In addition, interviews with local government also conducted to determine the image of the tourism activities in the coastal area of Sanur and its relation to coastal disasters.

The sampling technique interviews were conducted with a purposive procedure. Purposive procedure is one of the strategies determine the most common informants in qualitative research, which is to determine the group of participants..

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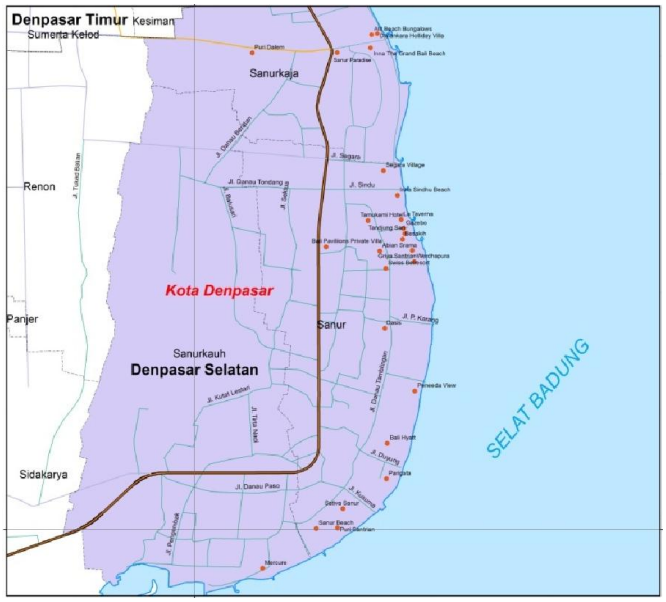

Figure 2 Star Hotels Distribution in Sanur Area
Source: xxx

This study refers to Sutton and Tierney preparedness dimensions as indicators of Preparedness of hotel management to coastal disasters. Coastal disasters in this study including tsunami, coastal erotion, and sea level rise. Not all dimensions of preparedness will be used directly. It will be selected based on the relevance with the dimensions. The preparedness dimensions adapted to the characteristics of each disaster.

Table 1 Sutton dan Tierney Preparedness Indicator

Dimensions of Preparedness	Associated Activities
Hazard Knowledge	Conducting hazard, impact, and vulnerability assessments; Using loss estimation software, scenarios, census data; Understanding potential impacts on facilities, structures, infrastructure, populations; Providing hazard information to diverse stakeholders
Management, Direction and Coordination	Assigning responsibilities; Developing a division of labor and a common vision of response-related roles and responsibilities; Forming preparedness committees, networks; Adopting required and recommended management procedures (e.g., National Incident Management System); Providing training experiences, conducting drills, educating the public
Formal and Informal Response Plans and Agreements	Developing disaster plans, evacuation plans, memoranda of understanding, mutual aid agreements, collaborative partnerships, resource- sharing agreements; Participating in broader and more general planning arrangements (e.g., neighborhood and community preparedness groups, Urban Area Security Initiative regional plans, industry-wide preparedness initiatives)
Supportive Resources	Acquiring equipment and supplies to support response activities; Ensuring coping capacity; Recruiting staff; Identifying previously unrecognized resources; Developing logistics capabilities
Life Safety Protection	Preparing family members, employees, others to take immediate action to prevent death and injury, e.g., through evacuating, sheltering in place, using “safe spaces” within structures, taking emergency actions to lessen disaster impacts on health and safety; Containing secondary threats, e.g. fire following earthquakes
Property Protection	Acting expediently to prevent loss or damage of property; protecting inventories, securing critical records; Ensuring that critical functions can be maintained during disaster; Containing secondary threats

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Dimensions of Preparedness	Associated Activities
Emergency Coping and Restoration of Key Functions	Developing the capacity to improvise and innovate; Developing the ability to be self-sustaining during disasters; Ensuring the capacity to undertake emergency restoration and early recovery measures
Initiation of Recovery	Preparing recovery plans; developing ordinances and other legal measures to be put into place following disasters; Acquiring adequate insurance; Identifying sources of recovery aid

3. Results & Analysis

3.1 Potential Impacts of Coastal Hazards for Hotels in Sanur

Having located in coastal areas, Sanur is prone to several coastal hazards, such as tsunamis, coastal erotion, and sea level rise. In this section we will explain the potential impact of the disaster

Tsunami (caused by earthquake)

Bali Island is located close to the collision zone between the Indo-Australian Plate and the Eurasian Plate. If an earthquake occur near the coasts of Bali, tsunami waves might require only about 30 to 60 minutes to reach Sanur Coasts. According to the records, there have been several tsunamis that occurred in the past, such as Sumba Tsunami (1977) and Banyuwangi Tsunami (1994) (Bali Technical Document Tsunami Hazard Map, 2010).

Sanur coastal areas have the potential tsunami hazard that could threaten the tourism industry in the coastal areas including starred hotels located on the shoreline. The red color on the map indicates the zone of potential tsunami hazard that can be affected by the tsunami with a wave height of between 0.5 and 3 meters. While the color ranges from dark yellow to light indicates the zone the potential of a tsunami hazard if the wave height is more than 3 meters. Tsunami ETA (Estimated Time of Arrival) in Sanur minimum estimated less than 20 minutes up to a maximum of less than 80 minutes (DLR / GTZ 2010).

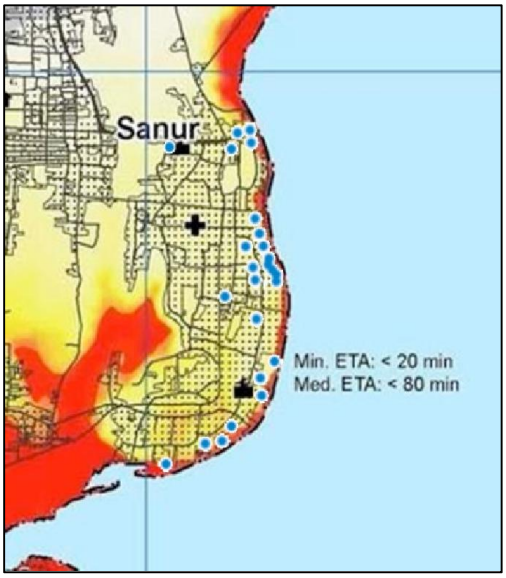

Figure 3 Distribution Map of Star Hotel in Potential Tsunami Innundation in Sanur
Source: xxx

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Coastal Erotion

There is coastal erotion on the beaches in Bali, in particular in the area of Sanur. Reclamation in Serangan Island, especially on the road connecting Serangan Island Denpasar, causes the coastal erotion in the Sanur Beach and Tanjung Benoa Beach.

Based on the interviews conducted with the Association of Hotels and Restaurants (PHRI) of Bali, coastal erotion in Sanur is exacerbated the reclamation done by each and individual hotel. If the reclamation is done without design or the correct procedure, it can divert the water flow to other place. As a result, the current destination elsewhere is highly susceptible to erosion or coastal erotion. Therefore, the approach does not solve the entire problem since it only moves the problem to another area..

"One beach front hotel resolves the issues by piling up sands or retaining the wall, yet it causes problems to its neighbors because it diverts the current. Therefore, we (PHRI) made a recommendation to make a grand design as a reference for hotel managements" – PHRI Bali

Development that does not comply with the applicable standards can exacerbate coastal erotion. Coastal erotion causes the shifting shoreline is of course detrimental to the hotel company. Coastal border that has been set by the government seemed to be violated because of the nearby hotels in Sanur coastal areas with eroded shoreline due to coastal erotion. In addition, coastal erotion in the coastal region of Sanur is also aggravated by the destruction of coral reefs which is a natural fortress that serves to protect the coast from erosion hazards.

"Sanur is protected by coral reef. Coral reef was once alive, now half dead. It is caused by pollution." –Segara Village Hotel Director

Coastal erosion in the coastal area of Sanur will continue to occur due to natural factors such as the destruction of coastal protection such as coral reefs, as well as rising sea levels. In addition to natural factors, coastal erosion that occurs is also caused by human factors or artificial, for example reclamation is done without the correct procedure.

Sea Level Rise

Scenarios of sea level rise in the Sanur refer to the previous study of rising sea levels in the area of Lombok, West Nusa Tenggara Province by the Ministry of Environment in 2010. There are four scenarios hazard of sea level rise (Suroso et al., 2010). The scenario used as a reference by assuming the characteristics of weather parameters and marine conditions similar to Bali.

From four scenarios, the two scenarios (scenarios III and IV) are simulated in Sanur Tourism Region in 2100. Scenario III (scenario extreme conditions, La Nina, and storms) have a condition occurs when the extreme conditions in the scenario I plus high tides occur due to La Nina , hurricanes, and cyclones. Under the third scenario in 2100 above sea level rise that occurs is of 4.9 meters. This affects a loss of 8.16 km2 originally Sanur Tourism Region has an area of 21.98 km2 or can be said for 37.12% of the submerged area of Sanur Tourism.

In the fourth scenario that has the extreme conditions in the scenario I and plus high due to the tsunami waves, sea level rise is expected to occur by 7.9 meters. As a result, amounting to 14.21 km2 or by 64.64% of the entire area of Sanur Tourism Regions will be submerged. In addition, Serangan Island located in the south of this region is expected to be completely submerged. Map scenario can be seen through the following picture.

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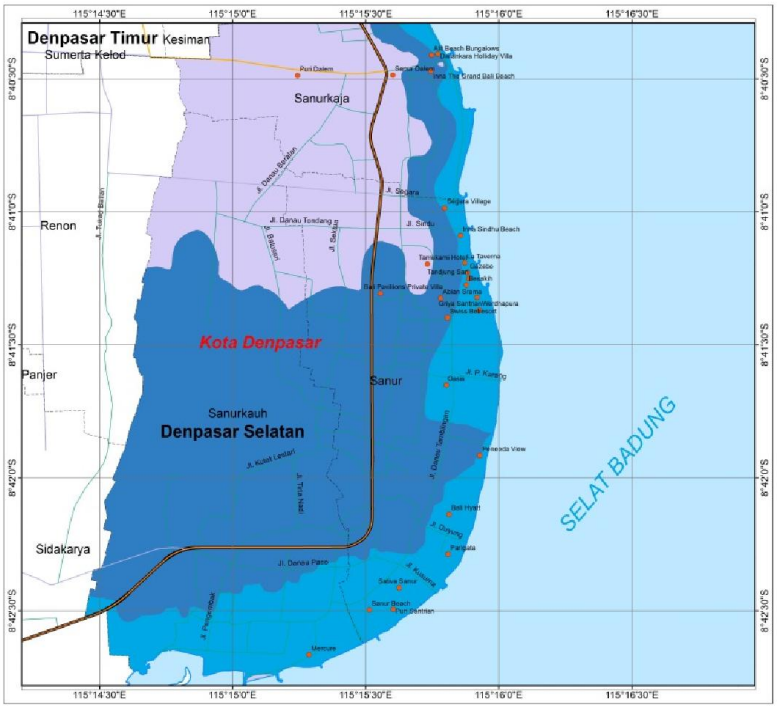

Figure 4 Potential of Sea Level Rise along the Coast of Sanur based on Scenario III and IV in 2100
Source: Analysis, 2015

Based on the above two scenarios, all tourism activities in coastal areas of Sanur will be heavily affected. The coastal ecosystem in Sanur will also be damaged. Thus, it may cause Sanur loss its tourism attractiveness. As a result, many people will loss their jobs and subsequently will impact the economy of Bali significantly. It is also important to mention that the impact of sea level rise will also be experienced by other coastal areas in Bali in different districts, such as Kuta Beach, Lovina Beach, etc.

3.2 The Preparedness of Hotel Management against Tsunami

From the analysis of indicators of preparedness for tsunami, it was found that all of the star hotels have knowledge of the tsunami disaster. All the hotel management is aware of any potential tsunami in Sanur. The hotel management also can distinguish the impact of a tsunami on the environment, infrastructure, and population. Thus, the hotel management knows and understands the tsunami risk. One factor of this knowledge because of the previous catastrophic 2004 Indian Ocean Tsunami that hit Aceh prompted the government to provide information related to the tsunami. Hotel 4 and 5 star have the same ability for each indicator. The hotel management preparedness against tsunami in coastal areas can be seen briefly Sanur through the graph below.

In the management and direction of coordination, 4 and 5 star hotels have tsunami evacuation team, tsunami evacuation procedures, and conduct a tsunami evacuation drill. In addition, 4-star hotel conducts tsunami evacuation training to tourists who stay.

Not all hotels have written tsunami evacuation procedures, especially star hotels 1 and 2. However, most of the hotel management is aware of evacuation routes and tsunami evacuation area closest to the tsunami. This is because the government conducts socialization and training related to tsunami evacuation in Sanur. Not all hotels have the supporting resources in the form of a disaster supply kit for both employees and visitors, equipment to support the tsunami evacuation, or the location of a tsunami evacuation itself. Only 4 and 5 star hotels that have all the indicators of the supporting resources.

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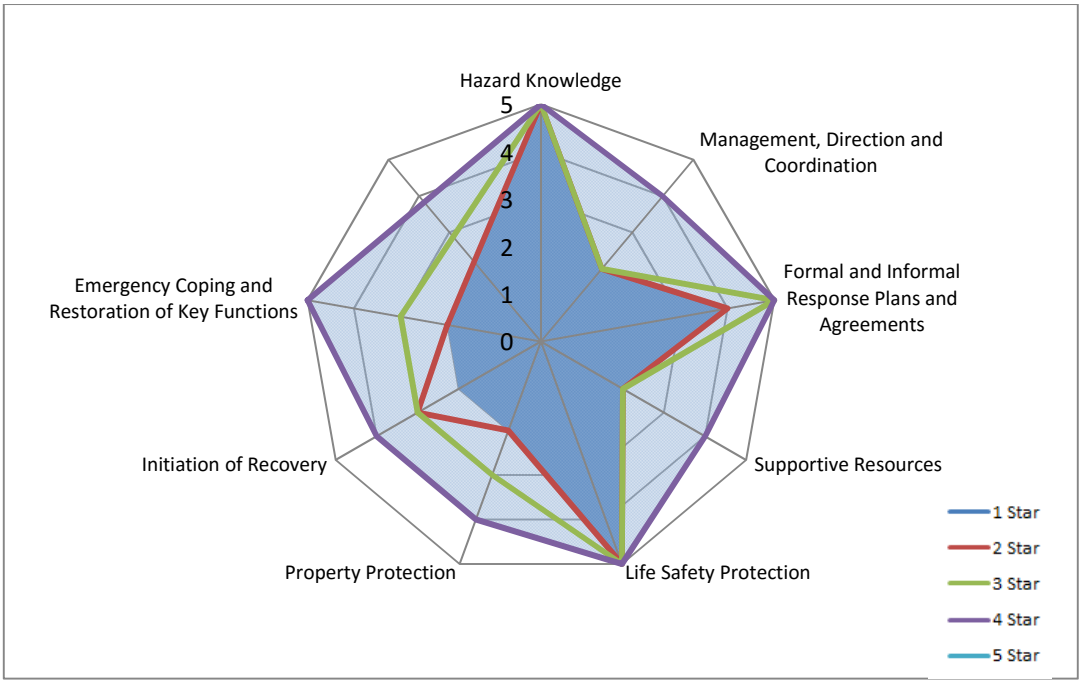

Figure 5 The Preparedness of Hotel Management against Tsunami
Source: Analysis, 2014

The entire hotel management prepares employees, visitors, and others to take action immediately to prevent death and injury through preparing tsunami evacuation route sign to show where to take shelter.

In the indicator of property protection, 4 star hotels and 5 meet up with this indicator. They prepared emergency stuffs, such as foods, medicines, and stored in a tsunami evacuation zone. The second indicator, namely the business plan to take steps early recovery after the tsunami disaster is shared by three other hotels, the 3-star hotel and a 2-star hotel.

To initiate economic recovery if a tsunami hits, 4 and 5 star hotels have better resources by preparing disaster insurance for tsunami and/or all risk insurance. 3 star hotel and below will suffer a lot of losses since they do not have insurance. Overall, Preparedness of recovery indicator by 4 star hotels and 5 star hotels are better than the other.

Figure 6 Star Hotels in Sanur Area

3.3 The Preparedness of Hotel Management against Coastal Erotion

There are five dimensions from Sutton and Tierney (2006) that are suitable in formulating preparedness indicators of hotel management in the coastal area of Sanur against coastal erosion

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disaster. These five indicators are hazard knowledge, formal and informal response plans and agreements, supportive resources, emergency coping and restoration of key functions, and initiation of recovery.

Based on the survey results, all the hotel managements understand the potential impact of coastal erotion against the existing facilities and infrastructure. This is due to coastal erotion in the coastal area of Sanur has happened for a long time so that hotel management can learn this disaster based on their experience.

Some hotels have experienced coastal erotion adaptation by stemming the increasing sea level their hotel side by using simple equipment like putting sacks of sand on the beach which suffered severe coastal erotion so that the sea water is not getting into the hotel building. In formal and informal response plans indicator, 1 star hotel stand in the lowest position (1), followed by 2-3star hotels in the same position (2), and the highest position (4) occupied by 4-5 star hotel..

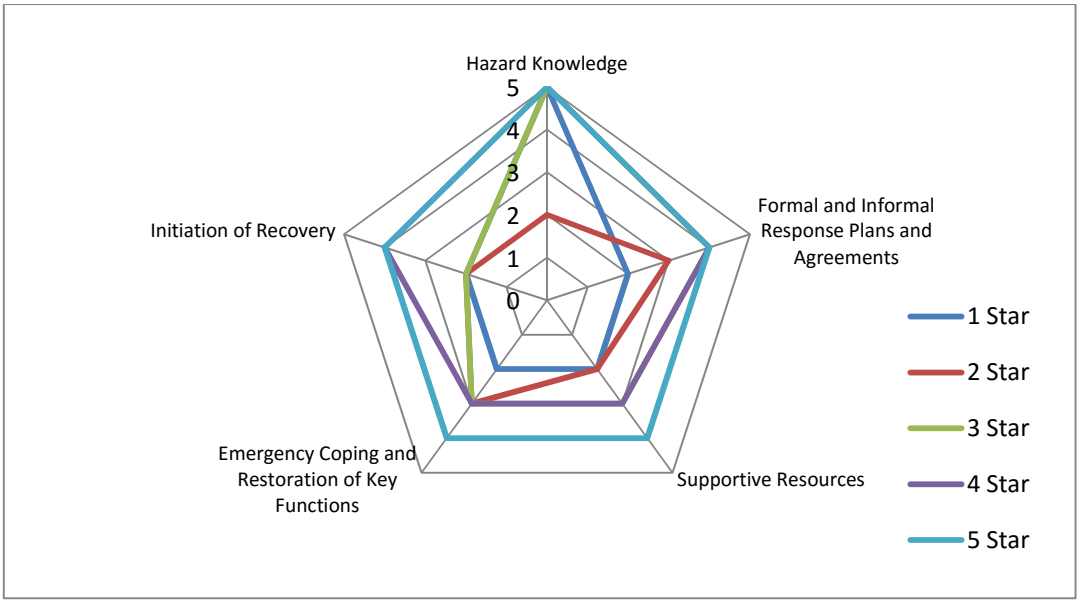

Figure 7 The Preparedness of Hotel Management against Coastal erotion
Source: Analysis, 2014

In the supporting resources indicator, 1-3 star hotels are in the lowest position (2), followed by 4-star hotel (3), and the highest score is 5-star hotel with a value of 4. The value of the supporting resources indicator aligned with the level of star hotel because the higher level of star hotel the higher the supporting resources owned by the hotel to reduce the effects of coastal erosion. For example, one of the five-star hotels makes cooperation with the government to create a breakwater to reduce the effects of coastal erosion. This hotel became the only five-star hotel in Sanur which has adequate resources as a solution to reduce coastal erosion.

In the indicator of the emergency coping and restoration of key function, one-star hotel stands in the lowest position (2), two, three, and four-star hotels stand in the second position with a value of 3, and five-star hotels are in the highest position with a value of 4. Some star hotels ever experienced coastal erotion so they already know the actions to take to reduce the impact coastal erotion. Meanwhile, the rest have never experienced a direct impact coastal erotion so the plan they own to reduce the impact of the coastal erotion are not based on the experience or training.

One of the indicators assessed based on the initiation of recovery indicator is the flood insurance or all risk insurance that hotels own to cover any loss caused by disasters such as damage to buildings hotel because of the flood. Based on these aspects, one, two, and three-star hotels have a value of 2, while the four and five-star hotels have a value of 4.

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Overall, the hotel managements in the coastal area of Sanur understand the coastal erosion disaster due to their previous experience, but the disaster response actions undertaken hotels only rely on the government so the hotel management Preparedness to coastal erosion still needs to be improved. The hotel management should have initiative to cooperate with local government to reduce the effects of coastal erosion on the side of their hotel because the majority of the resources owned by the hotels have not supported any coastal erosion mitigation.

Figure 8. Star Hotel in Sanur Area

3.4 The Preparedness of Hotel Management against Sea Level Rise

Not all preparedness dimensions from Sutton and Tierney (2006) suitable for developing indicators of hotel management Preparedness related to sea level rise. so that the indicators used only derived from the five dimensions of preparedness. The indicators used are the hazard knowledge, formal and inormal response plans and agreements, emergency coping and restoration of key functions, and initation of recovery. The 4 and 5 star hotels have the ability above the other star hotels. Here's a comparison for each hotel.

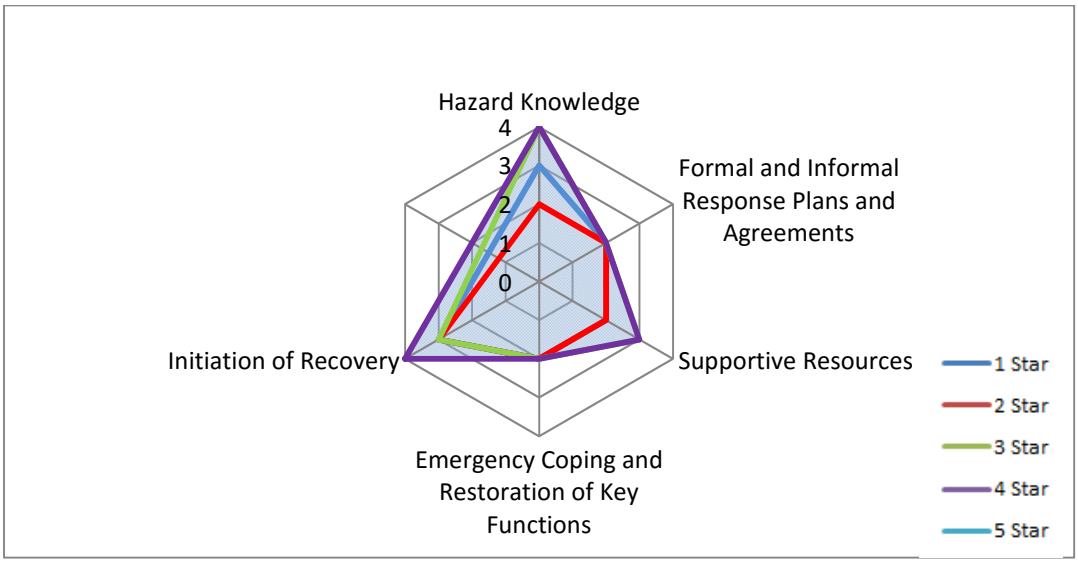

Figure 9 The Preparedness of Hotel Management against Sea Level Rise
Source: Analysis, 2014

The hotel management in the coastal area of Sanur already knows about the potential rise in sea level. But However, they do not consider sea level rise as climate change risks in the near future plans and will only respond when the a high tide occurs. Therefore, their actions are more responsive rather than proactive (preparedness). Yet, Hotels in Sanur coastal area do not have an understanding of the potential risks from sea level rise, and the potential impact of sea level rise on coastal area of Sanur.

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The hotel management also does not have a long-term plan in the event of sea level riseand do not have the resources, as well as a business plan. However, all types of hotels have a low ability on emergency and restoration of key function and formal and informal response plan and agreements.

4. Conclusion

This paper shows that Sanur coastal areas are prone to several coastal hazards, among others: tsunami, coastal erotioncoastal erosion and sea level rise. As argued earlier, it is therefore important to have hotel Preparedness to disasters. Sanur coastal area is prone to tsunamis because of the region lies close to the collision zone between the Indo-Australian Plate and the Eurasian Plate. The coastal area of Sanur is also prone to coastal erotions which makes the erosion of the beach and make the shoreline more advanced. In addition, the coastal area of Sanur is also vulnerable to the impact of sea level rise that although it will be felt in the long term, but can have serious consequences for the economy of this region. Third coastal disasters have a negative impact on the five-star hotel located on the beach of Sanur.

This study shows that hotel Preparedness to disasters are still limited to several indicators, such as .

Eight dimensions of preparedness and Tierney Sutton (2006) designed to assess the preparedness of hotel management in the coastal area of Sanur. The eighth dimension are knowledge of disaster, management, direction and coordination, formal and informal plan disaster response, support resources, protection of property, life safety protection, ability to cope with emergencies, restoration of conditions, as well as the initiation of recovery.

Based on the analysis, preparedness of hotel management in Sanur is considered to fall into category of low - intermediate. In general, 4 and 5 star hotels are relatively above the other types of star hotels for three types of coastal hazards. Three star hotels have an intermediate preparedness and the hotels 1 and 2 have low ability.

Comparatively, preparedness to tsunami is relatively better than preparedness to sea level rise and coastal erotion. This is also inline with government intervention on tsunami mitigation in Bali. As said earlier, previous large scale Tsunami that hit Aceh has become a tipping point to increase awareness on tsunami all over Indonesia. Among all indicators, the highest indicators are on hazard knowledge across all hazards. This is clear where all hazards, either can be observed (coastal erotion and sea level rise) and be alerted by previous tsunami disaster in other place of Indonesia. The wWeakest indicators are on initiation of recovery, supportive resources and management, direction and coordination. Only 4-5 star hotels that have better initiation of recovery since they already purchased insurance for all risk. Other types of hotel have much lower preparedness in this indicator. Supportive resources are stronger on 4-5 star hotels since they allocate some tools, equipment and measures to deal with, while other types of hotel do not. On management, direction and coordination, 4-5 star hotels have had clear Standard Operating Procedure (SOP) on what to do, while others do not.

This paper provides recommends four recommendations several things to improve hotel Ppreparedness to disasters as follows. First, increasing awareness of hotel management to all type of potential hazards in Sanur. Particularly this is for 1-3 star hotels where many indicators are still weak. For example, purchasing insurance will make a better ability to recover should any disaster occurs. Second, local government needs to work together with hotel owners on immediate mitigation measures, particularly on coastal erotion and sea level rise since actions should be done in collaborative manner. Currently, some hotels still conduct their actions individually. Third, hotels need to increase tools and equipments so that tourists can be better inform if any disaster happens. Finally, together with hotel and restaurant association (PHRI), local goverments need to have a grand design in dealing with potential coastal hazards in Sanur.

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