

The Development of Risk Culture in Pulau Sebesi, 1883-2018

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Abstract: As a small island, Sebesi is often characterized as vulnerable with its communities isolated and marginalized. The island has been affected by volcanic eruptions, tsunamis, earthquakes, floods, and illegal sand mining. In 2018, the island was again hit by the tsunami, which surprisingly claimed only one victim. History records that this island experienced a catastrophic tsunami caused by the Krakatau eruption in 1883. However, economic interests revived the island through plantation activities, which led to human re-inhabitation in the 1940s. We studied disaster memory, perceptions, and behavior of the Sebesi community to assess risk culture in their hazards environment. In this article, we build on existing understandings of risk culture as a holistic approach in looking at risk, which includes perception, awareness, understanding and memory, behavior and practices in preventing risk or avoiding harm. We used oral history and archival studies to analyses the perceptions of risks and its responses when faced with risk in different contexts. The study revealed that the people of Sebesi Island have created a risk culture as an adaptive effort to address their environmental hazards. Uncovering the memory, perceptions, choices, and responses in Pulau Sebesi elucidates lessons to pursue a resilient development trajectory on the island.

Abstrak: Sebagai sebuah pulau kecil, Sebesi dinilai sebagai pulau yang rentan dengan bahaya alam dengan komunitas yang terisolasi dan termarginalisasi. Pulau ini telah mengalami beragam ancaman bahaya, mulai dari erupsi gunung api Anak Krakatau, tsunami, gempa bumi, banjir, serta pertambangan pasir ilegal. Pada 2018, pulau ini kembali tersapu tsunami namun hanya merenggut satu korban jiwa. Sejarah mencatat bahwa pulau ini telah mengalami kehancuran total akibat tsunami yang disebabkan oleh letusan Krakatau pada 26 dan 27 Agustus 1883. Namun demikian, kepentingan ekonomi telah membuat manusia kembali mendatangi pulau ini dengan membuka pulau menjadi perkebunan. Hal ini mendorong terjadinya repopulasi Pulau Sebesi di tahun 1940-an yang berkembang hingga saat ini. Artikel ini menganalisis memori bencana, persepsi dan perilaku masyarakat Pulau Sebesi dalam memandang risiko dalam lingkungan hidup mereka yang penuh dengan ancaman bahaya. Pada artikel ini, kami menggunakan konsep Budaya Risiko sebagai sebuah pendekatan holistik dalam melihat risiko, yang didalamnya mempertimbangkan persepsi, kesadaran, pemahaman dan memori, perilaku, serta praktik dalam mencegah risiko atau menghindari risiko. Melalui sejarah lisan dan studi arsip, tulisan ini mengkaji persepsi risiko dan respons mereka saat berhadapan dengan risiko. Studi ini menyimpulkan bahwa masyarakat pulau Sebesi telah menciptakan budaya risiko sebagai usaha adaptif untuk tinggal di lingkungan yang berbahaya. Dengan memahami bagaimana ingatan, persepsi, pilihan serta respons masyarakat Sebesi terhadap risiko bencana selanjutnya, telah memberikan pengetahuan bahwa masyarakat Sebesi membangun ketahanannya melalui budaya risiko.

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INTRODUCTION

The Sunda Strait tsunami on December 22, 2018, panicked people around the South Lampung and Banten areas, including those living in Sebesi Island. The island lies only 20 KM or about 10.7 nautical miles from Mount Anak Krakatau, the source of this catastrophic event. Without being preceded by an earthquake, the tsunami hit the Sunda Strait region and claimed more than 400 lives (BBC Indonesia, 2018). Meanwhile, in Sebesi, it took only one victim, a child swept away by the waves. This implies that the people of Sebesi Island may develop a comprehension of their environment.

The Meteorology, Climatology and Geophysics Agency (BMKG), the Center for Volcanology and Geological Hazard Mitigation (PVMBG) and the Volcanological Survey of Indonesia under the Ministry of Energy and Mineral Resources (ESDM) worked together to investigate this event. The PVMBG has detected increased eruption of Anak Krakatau since Friday, December 21, 2018, which was marked by the height of volcanic explosivity reaching 738 meters above sea level. Therefore, the government declared that Anak Krakatau was assigned second-level alert status. Meanwhile, climatologically, the BMKG registered the threat of high tides on December 22, 2018, and issued warnings to the public. According to their investigation, this volcanic eruption triggered landslides on the southwestern slope of 64 hectares at 20:56 WIB (Luthfi et al., 2020; Zengaffinen et al., 2020).

BMKG announced that their sensors located along the Banten and Lampung area detected a variation in the tide height at 21.05 WIB. However, this information was not processed to declare a tsunami early warning because they were not a tectonic signal. After 30 minutes, the BMKG received reports from panicked residents and immediately investigated their sensors. They detected indications of changes in sea level in several areas around Banten and Lampung and concluded it was a tsunami. The Tsunami Warning was finally issued at 22.30 WIB, one hour after the first wave of tsunami hit the coasts of Pandeglang and Tanjung Lesung (CNN Indonesia, 2018).

The 2018 tsunami may have evoked memories of the 1883 Krakatau tsunami in the Sebesi community. The 135 years had passed since the Eruption of Krakatau in 1883, which may have led people to forget about the calamity. Additionally, the rare occurrences of major disasters from Anak Krakatau have created a sense of ordinary feeling when looking at its volcanic activities. Moreover, the loss of storytelling tradition in passing tales and

stories in Sebesi adds to the fading of this memory (Riskianingrum & Yogaswara, 2022). However, the 2018 tsunami provided a new experience, constructing an awareness that they live next to the source of hazards. This awareness only sometimes leads people to leave the island. They opt to remain on the island. Various reasons were put forward, including concern for their assets in the form of houses and plantations as their source of income. Apparently, the Sebesians people chose to "coexist with Krakatau."

Literature Review

The people living on the island are vulnerable to the dangers caused by the surrounding geographical conditions. Bankoff (2003), inspired by Harry Moore's disaster sub-culture theory in the 1960s, outlined the concept of the Culture of Disasters to explain the history and culture built by a society often hit by disasters or experiences repeated disasters. According to Bankoff, disaster is a consequence of the long history of a region. Therefore, in disaster-prone areas, dealing with disasters is a normal reality followed by the development of several actions to survive in such an environment, which he conceptualized as Cultures of Disaster (Bankoff, 2003). Additionally, Bankoff & Christensen (2016) explains in *'Storm over San Isidro: Repeated Disasters and Civic Community Culture in The Nineteenth-Century Philippines'* that environmental hazards, on the one hand, have led the community living in the area prone to repeated disaster risk. On the other hand, these conditions motivated the community to develop strategies to handle the risks from their past experiences, resulting in risk resilience in the future. Focusing on the condition of San Isidro, Philippines, which was continually struck by storms, has created a resilient community and developed various acts when the storm struck again (Bankoff & Christensen, 2016). Unlike the Philippines, which is repeatedly hit by storms, Sebesi tends to have fewer disasters, where there is a 135-year gap, from 1883 to 2018, for Sebesians to experience another memorable disaster. Hence, these two articles inspire us to analyze how disaster risk is interpreted and responded to by the Sebesians community and its local government.

The study of Lapien (1987) also provides knowledge on the relationship between disaster and social development, mainly in the city of Cilegon after the 1883 Krakatau eruption. In line with the view of Sartono's postulate about the 1888 Banten peasant rebellion, Lapien emphasized that the eruption of Krakatau was the catalyst for the increasing

fanaticism of the Bantenese, which led to resistance to the Dutch. However, this article needs to look at the communities in the archipelago along and around Krakatau, such as Sebuku, Sebesi, Legundi, and others known to have been repopulated. Therefore, this study is a complement to achieve the big picture of the Krakatau eruption's impact on surrounding island communities, mainly Sebesi Island (Lapian, 1987).

Schrikker (2016) in her study entitled "Disaster Management and Colonialism in The Indonesian Archipelago, 1840-1920," (in Bankoff & Christensen, 2016) explains that disaster management in the colonial era was generally *ad-hoc* with minimal action. In response to this, the disaster during the colonial era was characterized by religious elements, intercultural interactions, and cooperation between the authorities, local communities, immigrant communities, and local colonial authorities. However, the need for depiction of local population responses in this article is understandable due to the availability and selection of data based on colonial government reports. This is a space that this study can fill since it is based on oral history due to limited colonial archives on Sebesi Island (Schrikker, 2016 in Bankoff & Christensen, 2016).

METHOD

This article analyses disaster memory and risk culture on Sebesi Island from a historical perspective. As an empirical historical study, the article employs an oral history approach and archival research to examine risk culture. The approach allows us to focus on the common perception built by individuals in Sebesi and connect them with the existing historical context. Due to the rare availability of written sources about Sebesi Island, archival research applied in this paper is mainly based on the newspapers published from 1883 to 2018. Sebesi was only a small island among many islands under the jurisdiction of the colonial government. Hence, it was quite overlooked, and there are not many records about this island. Thus, oral history is an alternative approach to reconstruct how the perception of disasters occurs among the Sebesians.

Oral history is information about past events that are personally reiterated by historical figures, actors, or people who witnessed them. Oral history is a form of creating archival treasures about past events when there is a lack of archives in the form of photos or textual information about these events. To save information on historical events, it is necessary to conduct interviews with narrators who

know how the story goes. The History of the spoken word becomes a powerful tool for analyzing and evaluating the nature of historical memory processes. It means how people interpret the time past, how they relate individual experiences and their social context, how the past becomes part of the present, and how people use oral sources to interpret their lives and the world around them (Erman, 2011). In this study, we conduct the oral history of three key persons, namely a grandchild of the Sebesi Island's owner (75 years old), the grandchild of the 1st chief group who arrived in Sebesi in 1937 (70 years old), and the grandson of Segenom hamlet founder (78 years old). The three key persons were chosen due to their knowledge regarding the history and development of Sebesi Island. Apart from that, by having three versions of historical accounts, it will be possible to cross-check the similarities and differences of each source. Additionally, we also conducted interviews with 60 people in four hamlets during field research, mainly with village elders and village figures for historical accounts, individuals who have been personally affected by disasters, and conducted focus groups consisting of individuals living in both at-risk and safer area, and those who involved in protest against illegal dredging.

Meanwhile, risk culture is a holistic concept in looking at risk, which includes perception, awareness, understanding and memory, behavior and practices in preventing risk or avoiding harm. In line with this, risk culture refers to the entire complex, which includes knowledge, beliefs, arts, morals, laws, customs, and all other capabilities and habits that man acquires as a member of society to assertively respond to risky situations (Becerra et al., 2020).

The paper aims to understand the development of risk culture in Sebesi Island by looking at disaster memory, perceptions, and the role of religion and religious leaders in dealing with past disasters and future calamities. The paper begins with a brief description of the disasters that have struck Sebesi Island through historical evidence and memories of past disasters that the community remembers. Furthermore, it explores the role of religion and religious leaders in framing the disaster's response. As a final point, this article provides an analysis of the Sebesi community, which 'surrendered' their fate to nature in facing environmental hazards and reveals their responses and subsequent life choices.

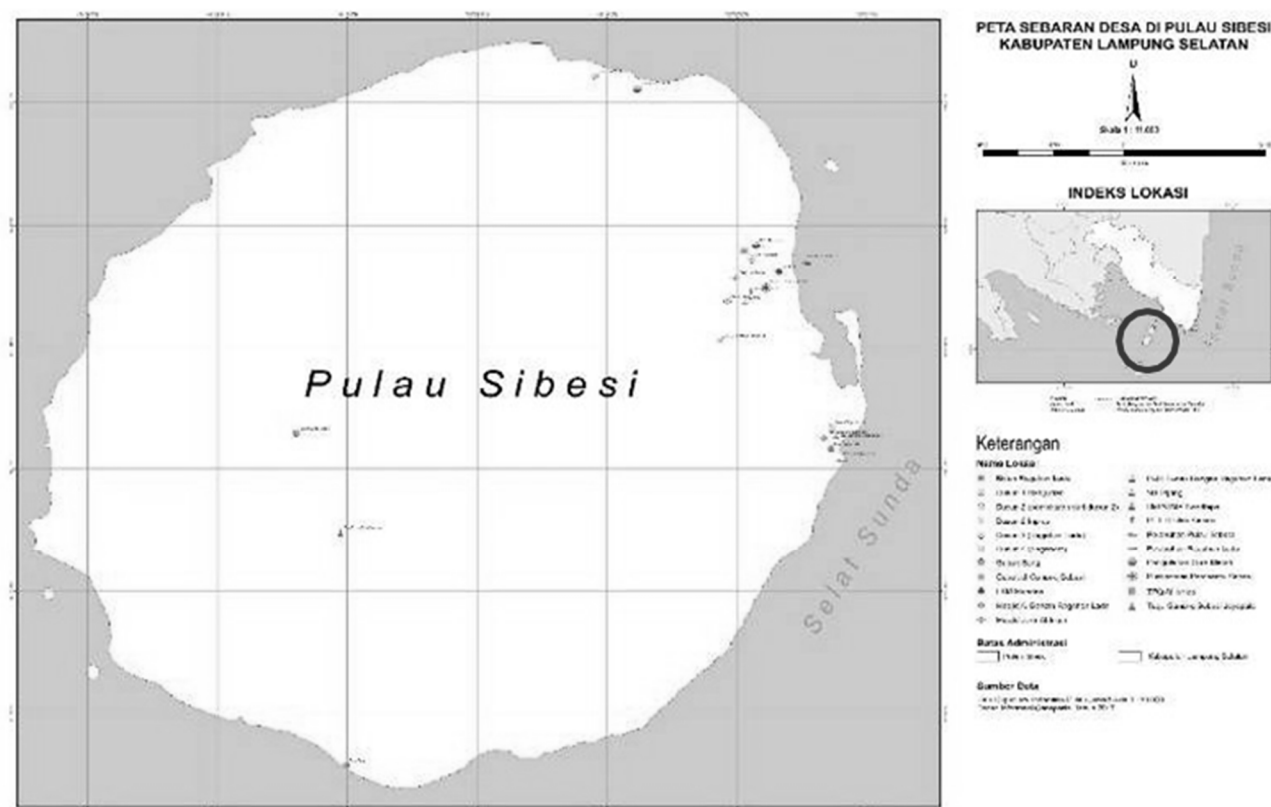


Figure 1. Map of Sebesi (BIG, 2020).

DISASTERS IN SEBESI: A HISTORICAL MEMORY

Sebesi Island is located in Lampung Bay at the position of 05°055'37.43"-05°058'44.48" South Latitude and 105°027'30.50"-105°030'47.54" East Longitude. With an area of 2620 hectares, this island has a variety of topography, ranging from lowlands to hills. The highest hill on Sebesi Island reaches 884 meters above sea level. Lampung Bay and Sebesi Island border Sebesi in the north, the Indian Ocean in the west, the Krakatau Island complex—including Mount Anak Krakatau—in the south, and the Sunda Strait in the east. Based on its administration, Sebesi Island is part of the administrative area of Tejang Village, Rajabasa District, South Lampung Regency. In Tejang Village, there are four hamlets, namely Hamlet I Bangunan, Hamlet II Inpres, Hamlet III Regahan Lada, and Hamlet IV Segenom (Wiryawan et al., 2002).

With less than 3000 hectares, it is categorized as a small island. The significant factors distinguishing a small island from the mainland are its size and remoteness, affecting its vulnerability to natural hazards (Lewis, 2009). Furthermore, economically, the main characteristics of small islands are limited market reach and human and non-human resources; hence, their economic activities are less diversified and closely related to water, such as fisheries, inter-island trade, and tourism (Jędrusik,

2011). These characteristics are met by the Sebesi Island. Its isolated location causes this island to independently sustain its needs through plantation activities, sea-based fisheries, and tourism.

The Krakatau Eruptions

History records that the Sunda Strait is an area full of natural hazards. Mount Krakatau once strongly erupted in 416 AD, resulting in the rupture of Sumatra Island from Java Island. According to geologists, Krakatau Purba is estimated to have a height of about 6000 feet (1828m) and a fully rounded shape. The story of the ancient Krakatau eruption was written in detail by Raden Ngabehi Ranggawarsita, a court poet, in a book called *Pustaka Raja Purwa* (Reid, 2015 in Henley & Schulte Nordholt, 2015). The book describes the eruption of Mount Kapi which was so powerful that it destroyed the northern part of Sunda strait and drowned Mount Rajabasa (Winchester, 2006). If Mount Rajabasa was submerged, the author assumes that Sebesi Island, located only 20KM from the epicenter of the eruption, was also affected (Mochtar, personal communication, 2020).

The eruption of Krakatau was re-recorded in 1680, which was written by three different Europeans, namely Johan Vilhelm Vogel, who first saw evidence of the ruins of the island of Krakatau, a writer named Elias Hesse, and a captain of the ship

Aardenburgh who told of an island that caught fire when his ship passed the strait to Batavia. Many researchers conclude that the area described by the captain was Krakatau Island (Berg, 1904). Krakatau again demonstrated its strength in 1883, which was clearly recorded and reported all over the world thanks to communication advancement at that time. Considering the three eruptions that have occurred, we can expect that they affected its surrounding environment, one of which was Sebesi Island.

After the 1883 eruption, the island became uninhabited. A first visit to the island was made 14 days after the eruption by a colonial official who described the island to be covered by about 6-meter-thick dust and filled with various sizes of pumices along the coast, from as small as pebbles to as large as animals. As far as the eyes can see, it was a stretch of white sand and bones, and it was unclear whether they were animal or human bones (Een Bezoek Aan Krakatau," 1885). On a subsequent visit in May 1884, it was mentioned that the living organisms that began to appear on this island were a few banana trees and grass. This island experienced what Pompeii felt post Mount Vesuvius eruption in 79AD (Soerabaiasch Handelsblad, 22 October 1883; De Standaard, 1883; Sumatra Courant, 1884).

On June 29, 1927, seismic and volcanic activity recurred in the area of the former Krakatau eruption. A rumbling sound and large bubbles rose to the sea's surface. The bubble exploded and released ash and sulfuric gas. The bubbles were an indication that there was an effort to rebuild its new mountain. On January 26, 1928, a pile of ash and solid rock began to emerge from the sea surface in the shape of a thin, curved layer. This was followed by explosive and earthquake activity until 1929 (Winchester, 2006). The pile of solid rock began to grow into a new black plain and continued to expand to form an island. This condition was carefully observed by WA Petroschevsky, a Russian geophysicist from Panjang Island. This emerging landmass was named as 'Child of Krakatau.' This land began to show its stability and solid growth on August 11, 1930 (Winchester, 2006). In response to this condition, the colonial government also supervised the newly rebuilt mountain. A post in Kalian-da was also assigned to monitor the activity of the mountain and send daily information about its surrounding condition to the central government in Buitenzorg from 1928 to 1931 (Arsip Nasional Republik Indonesia (ANRI), 1931).

As a very active mountain, Anak Krakatau continues to grow. On average, the growth of this

mountain is four meters per year. The interval of each eruption was recorded as one to eight years, where Mount Anak Krakatau can erupt one to six times in a year in the form of explosive or effusive eruption. From November 1992 to June 2001, this mountain erupted almost daily, even every 15 minutes. A study concluded that if the increase in height and volume of Mount Anak Krakatau continues to be consistent in 2020, the volume of Mount Anak Krakatau will exceed the volume of Mount Krakatau before the explosion in 1883 (Sutawidjaja, 2006). However, due to the collapse of its flank in 2018, the height of Anak Krakatau was sharply reduced from 333 to 110 Meters above the sea level. Nowadays, the mountain silently grows up to 150-200 meters above sea level (Siswadi, 2021).

A study conducted by Giachetti et al. (2012) regarding the eruption activity of Anak Krakatau concluded that the southwest part of this mountain continues to get steeper and expand, creating a sharp slope. Accordingly, it may collapse or cause a landslide. The collapse could trigger waves as high as about 45 meters and can threaten small islands around the Krakatau complex, including Sebesi Island. These waves were expected to reach the Banten area with a height of 1.5 meters within 35-45 minutes after the collapse. The study is in line with the survey conducted in 1994 about the steepness of the southwest slope area. The condition is also believed to be the reason for the tsunami in 1981, but it did not cause any casualties (Luthfi et al., 2020). This state confirms that Sebesi island retains a high risk in the context of disaster history, not only because of its small island characteristics but also due to the presence of Mount Anak Krakatau nearby.

Sebesi was re-inhabited due to the development of plantation activities on this island (Riskianingrum & Yogaswara, 2022). An elder from Tejang Village in Sebesi said that based on information from his parents, the island was re-inhabited in the 1930s (Fauzie, 2017). The wave of migration to Sebesi island increased sharply during the 1940s, mostly coming from the Banten and Pandeglang areas. This was partly due to the Japanese occupation and the difficulty of economic life in the Banten area. In line with this, the language and culture developed in Sebesi was Jaseng or Javanese-Serang. The island continues to experience population growth, mainly from Banten, South Lampung, Bugis, Batak and Nusa Tenggara. The latest data records that the population living in Sebesi currently is around 2742 people with more diverse occupations, namely farmers, fishermen, trade, tourism service actors, and government em-

ployees (Firdaus, personal communication, 14 April 2021; Badan Pusat Statistik (BPS), 2019).

Sampurna: A Sinking Ship

According to some people in Sebesi, a disaster is when an event takes many victims and damages their environment. One of the disasters that people still remember was the sinking of the passenger ship 'Sampurna' in 1975. At that time, ships to and from Sebesi were still very rare, with no regular schedule as it is today. It was before Eid al Adha, so when a ship was heading to Sebesi, people flocked to the ship, disregarding their safety. When the journey was approaching Sebesi island, the overloaded ship was hit by the waves and capsized, causing many passengers to drown and approximately 200 people to die. Since there were too many victims while the availability of land grave in Sebesi was limited, most of the graves were filled with more than two bodies. Memories of this calamity are still clearly recorded in the Sebesians' minds, as evidenced by the cemetery complex near the mosque of Tejang village (Mochtar, Hayun, Sati, & Andi, personal communication, 15-18 October 2021)

Flood in Sebesi: Seasonal Disaster

Furthermore, a flood that often comes during the rainy season is also perceived as a disaster by the Sebesi people. Floods began to occur frequently in 1994 and the affected areas are Dusun Bangunan and Dusun Inpress. What causes flooding on this island is the need for an organized and integrated drainage system. In addition, the massive land conversion from forest to plantation has reduced the ability of the soil to absorb rainwater, so water immediately streams down to the sea and causes flooding when it passes the settlement area. Flood events continued to recur until 2019, with greater intensity from 2005 to 2018. In 2019, with assistance from village funds, the local official built an organized and integrated drainage channel between Dusun Inpress and Dusun Bangunan. Since then, the intensity of the flooding has decreased (Firdaus, Busyro, & Mochtar, personal communication, 15-18 October 2021).

Illegal Dredging

The nature exploitation by irresponsible people also threatens Sebesi. Dredging and suctioning of sea sand are two examples. This illegal sea sand mine was not carried out on Sebesi Island or its surroundings, but many were carried out illegally around Anak Krakatau and the surrounding islands. PT EVAL and PT PAL carried out This sand

mining activity around Anak Krakatau from 2014 to 2015 (Hayun, Ahmad Kurtubi, & Tubagus Nawawi, personal communication, 14-18 April 2021). This activity was then stopped because of the resistance from the community. They reported the presence of the barge to the village officer, sub-district, and police. They rejected this activity since they directly felt the impact, mainly in the scarcity of fish in their waters, which, of course, is detrimental to Sebesi fishermen. Furthermore, it resulted in unclear sea water and affected the tourism sector, which is also a support sector for the people in Sebesi.

After several years without any appearance of the illegal barges, in September 2019, PT LIP's barge returned by offering aid to construct a pier and job opportunities for the people of Sebesi. The people of Sebesi reject this. According to them, the trauma caused by the 2018 tsunami has not disappeared. Hence, the return of sand miners is feared to cause landslides in Anak Krakatau, which can cause another tsunami. Therefore, the community mustered their strength to protest against the village office, Rajabasa sub-district, and even the South Lampung DPRD. This effort bore fruit, namely the prohibition of PT PAL from operating on Mount Anak



Figure 2. The demonstration to reject illegal sand mining in front of Tejang pier and in front of village office where mostly involved by women.

Krakatau and its surroundings. The cohesiveness of the Sebesi community has proven to be successful in preserving the environment (Fulistiawan, 2019).

Table 1. List of Anak Krakatau's eruption and other calamities in Sebesi island

No.	Time	Event
1.	October 1722	Strong earthquake in Sunda Strait and its quake was felt up to Jakarta and resulted in high tide
2.	4 May 1851	Two quakes, and the boom sounds were heard from far away in Teluk Betong Lampung. Subsequently, some ships were cracking and water receded for about 0,5 meters, followed by high tide up to 1-1,5 meters
3.	26 and 27 August 1883	Krakatau Eruption led to tsunami as high as 30 meters. The waves and volcanic ashes buried all the Sebesians in Sebesi Island.
4.	January, 1928	The continual eruptions in ex-Krakatau area
5.	19 June 1930	A high tide in Telok Betung area reached up to 1,5 meters followed by small earthquake at about 13.30 that shake Jakarta area
6.	July 1938	Anak Krakatau was again erupted recurrently that reached 800 meters above the sea level
7.	June, 1939	Krakatau once again exploded up to 9000 meters above the sea level
8.	April 1947	Continual eruption of Anak Krakatau followed by thick smoke in a proximate time
9.	11-12 Oct 1952	This explosion was among the largest after 1883. This explosion occurred several times in October with a peak on October 10 and 11, 1952. The news about this explosion was covered by many media
10.	16 Dec 1963	It was reported that small tsunami occurred in Labuan area
11.	1975	The sinking of Sampurna Ship because of passenger overload that claimed 200 lives.
12.	1979	Constant eruption of Anak Krakatau for one year ended by molten lava flow to the southwest areas.
13.	1994-2019	Floods become a routine disaster every rainy season on this island. It was only in 2019 that the flood began to be resolved with the construction of a structured drain-age channel in the two affected hamlets
14.	2014-2015; 2019	Illegal sand mining by PT EVAL and PT LIP. PT LIP tried to mine once more in 2019 but received another rejection from the residents of Sebesi Island
15.	22 Dec 2018	The Sunda Strait tsunami that destroyed several hamlets in Sebesi island

Source: Cahyadi, 2019; Kementerian Energi dan Sumber Daya Mineral, 2014; Algemeen Handelsbald, 1952; Bredasche Courant, 1947; De Standaard, 1928; De Sumatra Post, 1939; De Locomotief, 1938; De Telegraaf, 1938; Java Bode, 1952).

While ship sinking, flooding and illegal mining are considered disasters, the case is different with Anak Krakatau volcanic activities before the 2018 tsunami. The eruption of Anak Krakatau before 2018 was considered 'normal' and 'not dangerous.' Every year, this mountain always shows its activities, from emitting thick smoke, spreading the smell of Sulphur and volcanic ash that reaches Sebesi Island, to continuous eruptions resulting in tremor. However, the people of Sebesi consider this to be a child's wriggling in a human child. They tend to be wary if this mountain is calm for a long period. According to them, when Krakatau is calm, it gathers its energy to cause a violent eruption. Therefore, the people of Sebesi feel more secure if Krakatau is active. This is ironic since the volcanism of a mountain is a risk that can cause disaster for humans. However, these beliefs slowly changed when they experienced the 2018 tsunami. Currently, they begin to worry whenever they smell Sulphur

and hear the roaring sound from Krakatau. Hence, they develop mitigation strategies through knowledge of evacuation directions, patrol activities and observations of their surrounding nature.

RISK CULTURE IN SEBESI ISLAND: A PRELIMINARY REVIEW

Risk culture is a representative analysis tool to examine how a community perceives a risk. However, we cannot assume that people who live side by side with risk have a perception or awareness of the threat of danger. Therefore, it is important to consider culture and individual experience when analyzing risk. Thus, each community has its own unique approach to dealing with risk and a strategy for adapting. A risk culture consists of knowledge and experience in identifying and prioritizing what constitutes risk. This ability is needed to measure perceived threat (how risky is something?) and the ability to act (what to do when an event occurs) in

order to scheme forward when conditions are safe. Cultural influence, political involvement, and personal experience with disaster (and/or danger) are the parameters needed to develop a risk culture (Becerra et al., 2020).

The Sebesi community faces risks from Anak Krakatau and its natural environment. Accordingly, risk culture enables us to examine culturally bounded assumptions and conventions that strongly influence them in making sense of risks and hazards and how the Sebesi community considers some ways of dealing with disasters more appropriate than others. To face the disaster risk, prayer and faith remain a common response of the people in Sebesi, although rationally, they are not effective mechanisms in disaster prevention. The view of disaster as 'acts of God' persists in the Sebesi community. Disaster is believed to be a punishment for humans who commit sins. In order to reduce the intensity of disasters, praying, fasting, and charity are considered as possible ways to prevent them from further destruction. In times of crisis, religious narratives have turned into energy for people to revive from catastrophic events (Gerrard & Petley, 2013).

The 2018 tsunami was a milestone for altering public perceptions of Anak Krakatau and legated a disaster memory to the people of Sebesi. This shared memory is important to developing a risk culture in the Sebesi community. Starting with the emergence of disaster risk awareness in Anak Krakatau, the community developed a plan for what to do regarding the threat of danger. An alternative approach to cope with risk is to approach the religious leaders to perform the 'miracle' work to cast away the disasters.

This also befall onto the people of Sebesi. The ustadz, religious leaders, and religious elders provided shelters and resources for people who would ask them to pray to keep their island safe from danger and disaster. One of the most respected religious figures is Mr. Mochtar. Born and raised on Sebesi Island, Mr. Mochtar is highly respected because he was once a village head from 1988 to 2000. Furthermore, Dato Mochtar is considered to have extensive religious knowledge since he studied at a pesantren—an Islamic boarding school—in Cilegon for ten years from 1970 to 1980. Equipped with in-depth religious understanding, he returned to Sebesi in 1981 and served as an elementary school teacher in Sebesi. Since 1981, he actively consolidated religious education and Islamic propagation on the Sebesi island. He mobilized Qur'anic recitations among children, adults, and women, as well as the

mass prayer movement. He also initiated the construction of the Great Mosque in Tejang Village. He also conducted door-to-door religious briefings in order to build Islamic understanding among the Sebesi community. Slowly, he tried to break all forms of traditions, cultures and beliefs that were not in accordance with Islamic teaching. One of the transformations he made was to eliminate the element of entertainment, which usually became an annual event at the *ruwat laut* or (sea offering ceremony) and village *bancakan* (village feast) and replaced them with Qur'anic recitations and Islamic lectures (Hayun, personal communication, 24 April 2021).

The people of Sebesi did not anticipate that a terrible disaster would hit their island. During his life on Sebesi Island, Mr. Mochtar (currently 70 years old) never think that he would experience tsunami. For him, Mount Anak Krakatau is another God's creature that coexists peacefully with them. However, Mr. Mochtar realized that the island they occupied had suffered total destruction after the 1883 eruption of Krakatau. He remembered the story told by his dato (grandfather) regarding the enormity of the eruption. Until now, he continues to pass the story of Krakatau calamities to his students during Islamic recitation class. During various religious activities, he spreads the belief that disaster will only come if the people of Sebesi distance themselves from their religion. The fact that the 2018 tsunami caused destruction only in limited areas with only one fatality is claimed by Mr. Mochtar as a blessing due to the faithfulness of the Sebesians to their religion (Mochtar, personal communication, October 2020; February 2021; April 2021; October 2021). Subsequently, many people also believe this view, hence post-tsunami 2018, many became more observant. Due to his actions, Mr. Mochtar can be considered an agent of change who successfully transformed the Sebesi community's culture. His ability is supported by his capacity, such as a son of an important leader in Sebesi, his position as village head from 1988 to 2000, and having more religious knowledge than other Sebesi people.

Some of the ceremonies that used to be applied in the community from the 1980s to the late 1990s were the *ruwat laut* (sea safety ceremony) or the so-called *bancakan*, during which the people ask for welfare and protection from the dangers of the sea. In this celebration, the people contributed together for offering by sacrificing buffalo or several goats whose heads will be dropped in the surrounding sea between Sebesi and Anak Krakatau, and the

meat was cooked and eaten together by all Sebesians people. At this event, puppet shows and *Jaipong* dances were also performed throughout the night until morning. Gradually, this event was abandoned due to the death of elders whose knowledge had not been passed on to their younger generations. Additionally, the emergence of agencies that metamorphosed the existing ceremony into Islamic traditions has further transformed the culture. The newly emerging culture survived to this day, such as *rabu pucuk tolak bala*, namely a prayer together on the last Wednesday in the month of Safar to ask for protection and safety from all harm. Next, there is a traditional event called *prak-prakan*, a feast at the end of the road at 1 Muharram to ask for goodness and prosperity, share, and express gratitude for the year that has passed. The ceremony underwent a slight change, in which the event is now centred on the Sebesi Grand Mosque led by Kyai (elder) or *Ustadz* (Islamic teacher) from Java. The *bancakan* event also underwent significant changes. If in the 1980s to 1990s, *bancakan* was held in collaboration with all hamlets in Sebesi, nowadays it is a more personal occasion, which was limited to family members, classmates, or relatives (Mochtar, Busyro, Hayun, personal communication, 14-16 October 2021).

Spiritual reasons build up the resilience of the people of Sebesi to stay on this island amid the risks. The belief that every human being can die anytime and anywhere, not just because of a disaster, fosters their awareness to survive in Sebesi. Death is a matter of destiny that God has ordained for every human being, either through illness, accident, disaster, or naturally. This view is expressed not only by its older generations but also by productive and younger generations of Sebesi. The faith that death can come anytime is a value rooted in the people of Sebesi. The formation of the value is inseparable from the cultural metamorphosis from tradition to religion. This value acted as a sedative against the sense of vulnerability and powerlessness in facing nature. Furthermore, this value is a form of their resignation, surrender and resilience to continue to live side by side with disaster risk.

Risk Culture developed in the Sebesi community after the Sunda Strait tsunami was due to awareness which formed from shared disaster experiences or collective memory. Together, witnessing the horror of their island being hit by a tsunami raised awareness that they were living in a dangerous environment. After living next to Anak Krakatau for a long period, they never assessed, felt, or considered the mountain as a risk that could bring

disaster. Only after the 2018 tsunami did their values, feelings and assumptions of Anak Krakatau change, resulting in shifting perceptions and behaviour in response to this mountain. Nowadays, many Sebesians tend to pay attention to the sea and their surrounding nature, mainly when Anak Krakatau is eruption, followed by texting each other via *WhatsApp* application. In addition, several new phrases are also commonly mentioned as reminders among Sebesians during its increasing volcanic activities, namely "don't fall into a deep sleep" and "moved to sleep on the terrace when Anak Krakatau was active." In line with this, *Siskamling* or the patrol culture will immediately be active, even without being commanded by the village head, as a form of public awareness to maintain the safety of all residents. However, this will stop as soon as the eruption subsides.

The risk culture in the Sebesi community is manifested in the values and beliefs related to death. Furthermore, the loss of traditional culture related to the sea, such as *ruwat laut*, which metamorphosed into religious-based ceremonies, reveals the dynamics of adaptation to the risks on Sebesi Island. The hazards in their daily lives have been 'tamed' with a value system that continuously inspires them. In line with the concept of risk culture, this value is a coping mechanism for the Sebesi people. The fading of disaster memory in Sebesi prior to 2018 due to the 135 years disaster gap from the last catastrophic eruption of Krakatau in 1883 to the tsunami in 2018, the reality that the current sebesians are migrants, also the lack of preserved oral and written tradition related to the disaster have led the absent of risk culture in Pulau Sebesi. Hence, we assume that risk culture in Sebesi is on its development for its best practice since it all depends on how Sebesians maintain their disaster memories.

In contrast to Sebesi, Japan, which is also in disaster-prone areas, has developed and maintained its risk culture for a long period due to its geographical conditions. The *Bosai* culture, translated as culture of prevention, is rooted in most Japanese minds. "Bosai" is a Japanese word meaning disaster prevention and mitigation. Although Japan was exposed to frequent natural hazards, it is known that the victims were fewer and the destruction also lesser compared to another country with the same disaster occurred. This is due to their long hard work in all stages of disaster management, ranging from early warning, response, recovery and reconstruction, but mainly on the issue of preparedness. One Japanese proverb related to disasters says that

“saigai wa wasureta koro ni yatte kuru,” or disasters occur when people do not expect them. Hence, for the Japanese, preparedness is the most important issue to face the disaster (Pastrana-Huguet et al., 2022)

Japan strengthens its memory of disasters by transmitting it from one generation to the next since it considers this part of preparedness and disaster mitigation. Looking at most cases in Japan, collective memory plays an important role in how fast society can recover from disasters since the Japanese have spiritual strength from various past disasters. Although memorizing not merely creates a high level of awareness or enables community resilience, it proved effective in building a better understanding of their surrounding environments. In the case of Tohoku earthquake and tsunami on March 11, 2011, the history recorded that the area was several times impacted by tsunami, namely the Jogan tsunami in 899, the Keicho Tsunami in 1611, the Meiji Sanriku tsunami in 1896, the Showa Sanriku tsunami in 1933, Chilean tsunami in 1960, and Tohoku tsunami in 2011. In response to these, the ruling authorities during each period tried to remind their people about these catastrophic disasters by building memorial stones often accompanied by messages that were not to forget the event and a description of evacuation routes during past tsunamis. Some memorial stones in this area are the Meiji memorial stone (1896), The Showa Sanriku memorial stone (1933), and the Chilean tsunami (1960). Additionally, shrines were also built along the Tohoku East Coast, referred to as safe areas; both tsunami evacuation areas and sacred places were miraculously spared from the destruction of tsunamis and other hazards (Pisa, 2024).

Shared memories of disasters were a significant factor in shaping a risk culture. The memory of disaster may be preserved as a form of memorialization efforts. Nevertheless, communicating past disasters through sharing experiences, storytelling, lullabies, and other things has been proven to strengthen society's understanding of their surrounding environments. However, remembering does not necessarily create resilient society, but this helped society maintain a high awareness level. From Japan, we learned that the existence of disaster heritage, and the habit of transmitting disaster experience and knowledge, leads to an adaptive community for future disasters. This emphasizes that the risk culture is not only alive but also develop and preserved by local residents and received support from the government through various disaster reduction programs. Hence, risk culture has

ingrained in Japanese society. In the meantime, the Sebesi community is still underway to develop their risk culture.

CONCLUSION

Inhabiting a small island with limited resources located next to Mount Anak Krakatau renders the Sebesi people vulnerable to disasters. However, they are reluctant to move from the island as they have been living there since the 1930s. The perception of disaster in Sebesi communities generally has something in common, namely an event that damages their environment; hence, it is detrimental, endangers humans, and claims lives. Uniquely, the existence of Anak Krakatau is not considered a hazard. Their knowledge on the 'behavior' of this mountain constructed after decades of living nearby. In addition, the revenues from tourism activities, mainly for visiting Anak Krakatau, generate a sense of gratitude for the mountain. The Sebesians adjusted their view on Anak Krakatau only after the Sunda Strait 2018. Currently, they tend to perceive the presence of Anak Krakatau as a risk, which can precede disaster.

The 2018 tsunami constructed shared memories of disaster among the Sebesians. This shared memory functions as a reminder, thus encouraging observance and preparedness for their environment. The response of the Sebesi community in a crisis was to turn to their religion. They sought comfort from religious leaders who were considered capable of repelling danger through their prayers. For Sebesi people, religious leaders play important role to form public faith. Being an ardent soul is believed to be an impediment to recurring disasters.

Referring to the concept of risk culture, the acceptance of the Sebesi people shows the nature of 'fatalism' in which they perceive nature and the environment as unpredictable and can move in all directions, sometimes calm and peaceful. Still, some others can be fierce or unstable. Fatalists try to control nature through non-scientific processes and believe that danger can neither be predicted nor controlled. Fatalists act and react ad hoc to exogenous disasters, with destiny being the key to blame (Parrado, 2020).

The role of religious leaders in commencing a cultural metamorphosis in the Sebesi and in the political structure of the community, as well as personal experience of the 2018 tsunami, resulted in a shared memory. Additionally, the public awareness to pay attention to the volcanic activities, common knowledge of evacuation routes, and collective in-

terest in observing their surrounding environment imply the formation of a risk culture on this island. It is affirmed that all the parameters required for the development of a risk culture are available in the Sebesi community. Hence, the research supports the idea that risk culture approach meets the need to understand risk perceptions, assessment, and behavior of Sebesi community in perceiving the reality of their environment. Accordingly, the local government can develop accurate strategies for dealing with risk in cooperation with the local community based on their unique characteristics.

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