

# The Potential of Padang Seurahet, Meulaboh, As A Coastal Tourism Destination: A Preliminary Study on An Example of Possibility of Restoring Land After Being Hit by Large Tsunami

Wahyu Budi Setyawan<sup>1</sup>, and Elysa Wulandari<sup>2</sup>

1. Research Center for Oceanography, Indonesian Institute of Sciences (LIPI), Jakarta, Indonesia

2. Department of Architecture and Planning, Faculty of Engineering, University of Syiah Kuala, Indonesia

**Abstract:** We provide an example of possibility of restoring land after being hit by the tsunami. Prior to the 2004 tsunami, the coastal area of Padang Seurahet was a densely populated part of the city of Meulaboh with a problem of coastal erosion. When the tsunami occurred, this area was completely destroyed and the coastal land was eroded. In 2020, after about 16 years since the tsunami, geomorphologically the process of restoring the area has been completed, although the coastal terrain has not returned to the same as it was before the tsunami and the problem of coastal erosion remains. Currently the area is relatively uninhabited, neglected, but at first glance it appears to have good tourism potential as a point of view towards the Indian Ocean region, the bay and the City of Meulaboh. Based on the above problems, this study is important to carry out, to see the opportunities for developing the Padang Seurahet area as a city tourism destination, to revive parts of the former tsunami city area, while still taking disaster mitigation into account. This study was conducted using a phenomenological induction approach, looking at the symptoms of tourism potential from its landscape character, and the qualitative-quantitative mixed analysis method. Study of the potential for developing coastal tourism areas based on basic parameters for the development of coastal tourism activities from the DTRP (Department of Tourism, the Republic of the Philippines) and references from the WTO (World Tourism Organization). The results of the analysis of its coastal landforms now show that the coastal area of Padang Seurahet covering an area of about 20 hectares has good potential to be developed as a beach tourism destination with tourist attractions: (1) natural type with the category of coastal areas and landscapes, (2) sports and recreational types in forms of walking, cycling, exercising and playing on the beach, (3) shopping types such as coffee shops and traditional cakes. Erosion prevention efforts can be planned in such a way by building a coastal defense system that can capture beach sand sediment and can be used for tourism activities. The area's basic infrastructure, such as roads, electricity, fresh water and telecommunications, are easily accessible because Padang Seurahet is close to Meulaboh City. Then, residents of Meulaboh City and the surrounding area are potential visitors to this tourist area. The results of this study are expected to be the initial reference in planning the development of the Padang Seurahet coastal area.

**Key words:** coastal zone, coastal tourism, land restoration, Padang Seurahet, Meulaboh, Meulaboh bay

## 1. Introduction

Physical environmental conditions on the Earth's surface are formed by geomorphological processes that work on the Earth's surface. By understanding the

geomorphological processes that work to form a landform in an area, we can predict the evolution of the area and the growth of its use. This is because the potential of developing the use of an area can be assessed based on the physical condition of the environment or its landform [1].

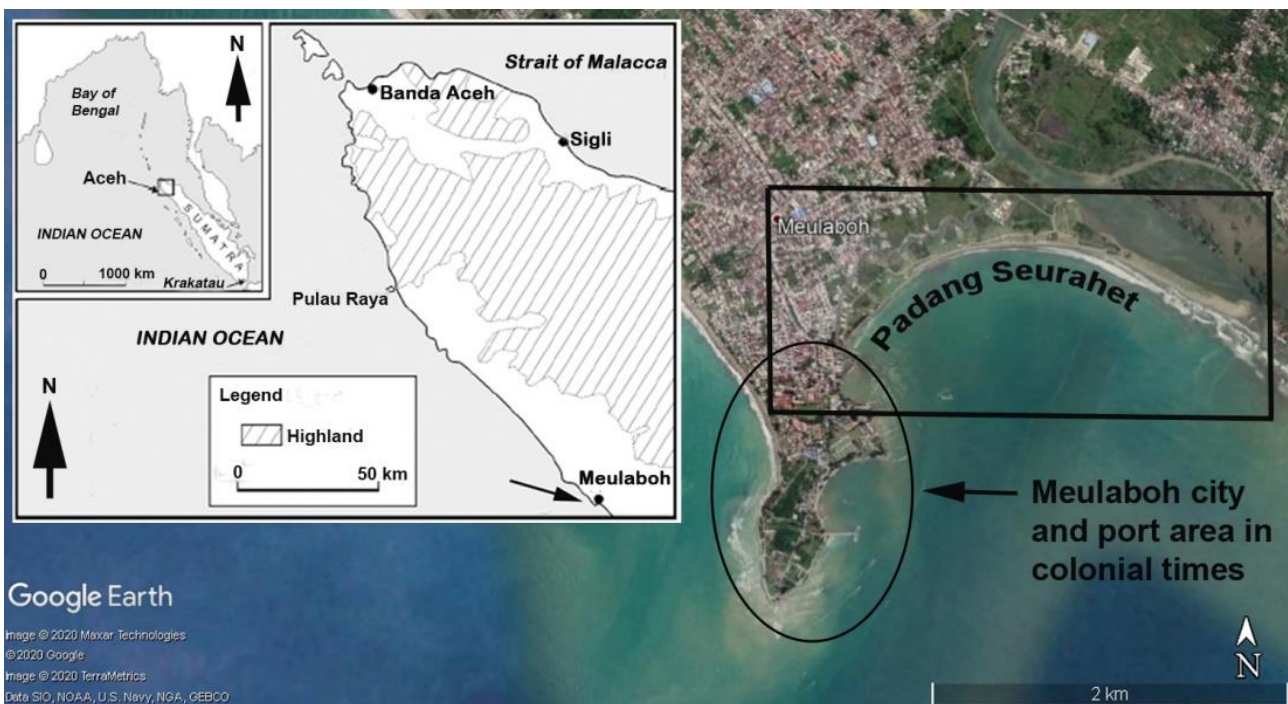
---

**Corresponding author:** Wahyu Budi Setyawan, Ph.D.;  
research area: coastal geomorphology. E-mail:  
wahyubudisetawan@yahoo.com.

The coastal area is a very important area for the countries that have it [2]. Many human activities are located in coastal areas, such as in Indonesia, the national capital and many large cities are located in coastal areas. Several strategic areas such as industrial and tourism areas have developed in coastal areas. At the world level, coastal areas are the target of more than one third of the world's tourists [3].

Padang Seurahet is a coastal area located on the edge of Meulaboh City (Fig. 1). In the history of the city, the Padang Seurahet area is an important part of the development system for Meulaboh Bay coastal area as a sea port area during the Dutch colonial period [4]. In

the regional spatial system, Padang Seurahet is also part of the Krueng (Kr or river or stream) Meureubo river system, which was used by traditional communities in the interior to go to Meulaboh city. This is a common pattern in the estuary-coastal area on the west coast of Aceh [5]. Prior to the tsunami of 26 December 2004, Padang Seurahet was a densely populated coastal area, especially the western part that close to the Fish Landing Port in the Krueng Cangkoi Stream area (Fig. 2). When the tsunami of 26 December 2004 hit Meulaboh, the Padang Seurahet area was also hit by the tsunami and was one of the areas that suffered enormous damage [6] (Fig. 3).



**Fig. 1** Location of Meulaboh City and Padang Seurahet.



**Fig. 2** Padang Seurahet before the tsunami of 26 December 2004. Image from Google Earth, dated 18 May 2004.



**Fig. 3** Padang Seurahet (Meulaboh) on 28 December 2004 [7].

In 2020, about 16 years after the tsunami, geomorphologically, the process of restoring the coastal area has been completed, although it has resulted in a coastal land with a slightly different condition than that of the pre-tsunami coastal land (Fig. 4). After the recovery process is complete, the Padang Seurahet coastal area is an open area with no clear utilization plan. Thus, an interesting question to answer is “what can we develop in the coastal area?” This paper provides an overview of the geomorphological conditions of the Padang Seurahet coastal area and its potential as a coastal tourism area. The choice for tourism activities is because tourism activities are one of the drivers of global development which, if properly planned, can provide positive forces that provide benefits, and conversely, if they are poorly planned and managed, they can become a destructive force [3, 8]. Tourism and recreation in coastal areas are the drivers of development in these coastal areas [9]. In Indonesia, Taman Impian Jaya Ancol in Jakarta is an example of the development of a successful coastal tourism area. Coastal development is a complex undertaking. This paper only provides a preliminary overview of the potential development of coastal tourism in Padang Seurahet, an example of possibility of restoring land after being hit by the tsunami.

Indonesia is being hit by the Covid-19 Pandemic. Efforts to prevent the transmission of Covid-19 to individuals include: (1) Managing mental and

psychosocial health by maintaining or increasing positive emotions, positive thoughts, and positive social relationships, and (2) Increasing endurance by implementing a clean and healthy lifestyle such as consuming balanced nutrition, physical activity at least 30 minutes a day, adequate rest including the use of traditional health foods [10]. Coastal tourism activity is a form of outdoor activity. There are many physical activities that can be done when doing tourism on the coastal area, and because the activities are carried out in open areas. So, doing coastal tourism activities by implementing health protocols can be seen as an effort to maintain health. Therefore, efforts to develop coastal tourism areas can be viewed as an effort to maintain the health of community members through outdoor physical activities.

## **2. Materials and Methods**

This study was conducted using a phenomenological inductive approach in a rational empiric manner [11], to see the physical symptoms of the development of an area that has tourism potential based on its geomorphological characteristics.

We used the following data: (1) Data on the physical condition of Meulaboh City or the coastal area of Padang Seurahet before the tsunami on 26 December 2004 obtained from satellite images recorded on 18 May 2004 from Google Earth; (2) Data from field observations on the geomorphological conditions of the Padang Seurahet coast in August 2002; (3) The socio-cultural data of the Meulaboh community and the surrounding area was observed sporadically from 2000 to 2019, and from various sources of information or news [12-15]; (4) Data on the condition of Meulaboh after being hit by the tsunami were obtained from Reuters [7]; (5) Data on the physical condition of Meulaboh City and the coastal area of Padang Seurahet for 2019-2020 were obtained from drone footage published by Harry Scout Picture [16], and sporadic field observations from 2019-2020.

Analysis of the potential development of the Padang



**Fig. 4** Coastline erosion at Padang Seurahet in August 2002. Coastal erosion was damaged seawalls, residential roads and houses. (Photograph: WB Setyawan, Agustus 2002).



Seurahet area as a tourist destination was carried out using a mixed method (quantitative-qualitative). Quantitative analysis was carried out to see the measurable potential of tourism by referring to the standards of the Guide Book for tourism area development from DTRP [17] and from WTO [3]. Qualitative analysis was used to explain this potential in terms of the local context.

DTRP [17] provides three main elements for tourism development planning, namely: (1) attractiveness or tourist attractions — natural, cultural, historical; (2) tourist facilities; and (3) market profiles or visitors.

Meanwhile, WTO [3] notes that, in the Mediterranean region, tourists come to coastal areas to carry out the following activities: (1) activities on the beach — swimming, sunbathing, sports; (2) enjoying and photographing natural landscapes, wild life, flora and fauna; (3) fishing; (4) playing with boat or boating; (5) taking a walk or touring on a motorbike, bicycle, animal riding, or on foot; and (6) look for warm areas. It was also stated that in coastal areas there can be various ecosystems that can be affected by tourism activities, and there can also be various vulnerable conditions such as dunes and sand beaches, coastal wetlands, areas experiencing erosion, and adjacent marine ecosystems. In coastal areas there can also be things that attract tourists such as historical areas, ports, and coastal defense systems to solve the problem of coastal erosion.

### 3. Results and Discussions

#### 3.1 Padang Seurahet Coastal Area

The coastal area of Padang Seurahet which is part of Meulaboh Bay is coastal lowland physically separated from the mainland of Sumatra Island by Krueng Meureubo and its branch, Krueng Cangkoi. Prior to the tsunami of 26 December 2004, the Padang Seurahet coast could be divided into two distinct segments, namely an erosional segment on the west and a non-erosional segment on the east (Fig. 2). Severe coastal erosion occurred in the erosional segment

several years before the tsunami. The erosion damaged seawalls built along the coast and also residential areas (Fig. 4).

After the tsunami hit Meulaboh, the recovery process took place by a coastal process which is normal wave activity. During the recovery process, seawalls were rebuilt along the erosional segments. The effect of the construction of the seawall was the formation of water bodies confined in the coastal area of Padang Seurahet. For the need to regulate the shipping channel through the Krueng Cangkoi flow, a jetty was built at the mouth of the river. The effect of the construction of the jetty is the presence of sand deposits in the corner between the seawall and the jetty (Fig. 5).

In connection with the physical condition of the Padang Seurahet coastal plain, there are three important things that can be noted from the current condition of the Padang Seurahet coast, namely: (1) The coastal segment which was erosional before the tsunami, after 15 years of the recovery process, still remains as an erosional coastal segment. These coastal condition needs to be handled specifically by building a coastal defense system; (2) There is transport of sediment loads along the Padang Seurahet coast along the erosional segment which is indicated by the presence of new sand deposits around the jetty. This second thing provides an opportunity to overcome the problem of coastal erosion by building a coastal defense system that captures sediment deposits; (3) Physically, the Padang Seurahet coastal plain is an area separated from the mainland of Meulaboh City. The mainland was separated by Krueng Cangkoi from the rest of Meulaboh City (Fig. 5). This condition makes it



**Fig. 5** Padang Seurahet coastal area in July 2019 [16].

easy to manage because there is no need to physically build a fence. This environmental condition is similar to that of Taman Impian Jaya Ancol in Jakarta.

### 3.2 Potential for Development of Coastal Tourism Areas in Padang Seurahet

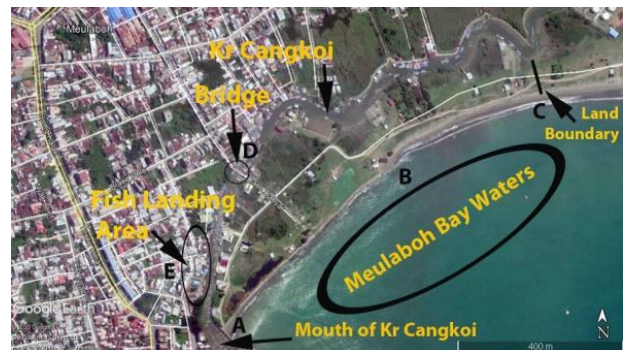
Analysis of the potential for tourism development or coastal tourism in Padang Seurahet is carried out on three main elements, namely: (1) potential tourist attractions, (2) market potential or visitors, and (3) potential facilities. The results of the analysis are summarized in Table 1.

**Table 1 Results of potential analysis of Padang Seurahet coastal tourism development.**

No	Main Elements	Forms of Activities/Markets/Facilities
1	Tourism Attraction Potential	Perform activities on coastal area Enjoying and photographing natural or city landscapes. Boating Walking around Shoppings
2	Markets or Visitors Potential	Residents of the Meulaboh city Residents from neighboring districts Sporadic visitors from afar
3	Facilities Potential	Meulaboh city road network Open land that has not been built yet Coastline Telecommunication Electricity Fresh water

#### 3.2.1 Tourist Attractions Potential

Based on its physical condition and location on the coastal zone, the coastal area of Padang Seurahet has the potential to be developed as a coastal tourism area. The area that can be managed is a coastal plain of about 20 hectares or 200,000 m<sup>2</sup> in an elongated shape with a length of about 980 m with the widest part having a width of about 250 m (Fig. 6). With its current physical condition, coastal tourism activities that may be carried out or developed quickly are (1) activities on the coastal area such as exercise — gymnastics, jogging, running, walking; (2) enjoying and photographing natural landscapes or cities — views of the sea, port and the city of Meulaboh; (3) boating — fish landing port (TPI) facilities or small jetty are available at Krueng Cangko; (4) taking a walk or bicycle; (5) shopping — a traditional coffee and cake shop. To increase tourist attractions, the development of a coastal defense system that can capture sand deposits (Fig. 7) such as “T” shaped groynes, artificial headlands, detached breakwaters can be immediately developed [18, 19] in Segment AB (Fig. 6), and a children’s playground, walking path along the coast can be constructed (Fig. 8).



**Fig. 6 Potential for tourism activities in the coastal area of Padang Seurahet.** Kr Cangko became the natural boundary of the land. The only bridge on the river makes it easier to control visitors. The TPI area provides fish for shopping tourism activities and boats for boating. Pedestrian paths can be made around the land, especially in segment A-B. Segment B-C is for playing activities on the beach sand. On the empty land in the middle can be made a park or a place for play or sport.



**Fig. 7 Examples of detached breakwaters being used to protect beaches in tourist areas [18].**





**Fig. 8** Example of a pedestrian path along the coast combined with a coastal defense system at Coastal Marblehead, Massachusetts, United States. One of the many ways to use coastal resources [20].

### 3.2.2 Market or Visitor Potential

Padang Seurahet coastal area is part of Meulaboh City (Fig. 9). Thus, it can be expected that the residents of Meulaboh City are the main visitors to the tourist area. In addition, visitors can also be expected to come from cities around Meulaboh which are from Aceh Jaya Regency and Nagan Raya Regency. Based on data from BPS [21], the population of the three districts that are very likely to use Padang Seurahet tourism facilities is around 470,299 people with the following details: residents of West Aceh Regency (including Meulaboh) 210,113 people; Aceh Jaya District 92,892 inhabitants; and Kabupaen Nagan Raya 167,294 people.



**Fig. 9** Potential visitors to the Padang Seurahet coastal area. The main visitors to the area are residents of Meulaboh City. From the area a distance of about 1 hour is expected from Calang, Alue Bilie and Blang Pidie; from a distance of about 4 hours drive is Banda Aceh and Tapaktuan.

In terms of socio-culture, the people in the three districts have a high sense of togetherness, because prior to 2002 the three districts were in one district, namely West Aceh district known as Bumi Teuku Umar Johan Pahlawan. In daily life, generally people on the west coast of Aceh, especially the city of Meulaboh, often visit the coastal area, enjoy the sunset, play kites using the potential of the sea breeze, or sit on

the coast. If the East Wind Season and the waves from the Indian Ocean are relatively calm, the local people play and bathe in the sea a lot. On the weekends, many residents visit the beach, and at certain times such as before the fasting month of Ramadan, many people visit the coastal zone (Fig. 10).

Potential visitors apart from Meulaboh City and its neighboring districts are visitors from further afield



A. Ujung Karang 2009 [12].



B. Ujung Karang 2017 [13].



C. Ujung Karang 2018 [14].



D. Ujung Karang 2019 [15].

**Fig. 10** Various forms of tourism activities in the Ujung Karang coastal area, Meulaboh. A: playing on the beach; B: bathing in coastal waters; C: shopping for food on the coast D: enjoy the marine view.

who travel to Meulaboh City or stop over in Meulaboh City. They are like people on an official trip to Meulaboh, visiting relatives in Meulaboh, or just stopping by at Meulaboh.

### 3.2.3 Facilities Potential

The existing tourist facilities in the Padang Seurahet area today can be said to be very minimal and present unintentionally. This is because now the area is not or has not been managed for tourist purposes. The following are things that already exist or have the potential to be or are ready to be used for tourism purposes: (1) Road. There is already one access road to the area that connects the Padang Seurahet area with other parts of Meulaboh City. Around Padang Seurahet there are national roads, provincial roads and residential or urban roads (Figs. 7 and 10); (2) Large, undeveloped open land that is ready for the development of a tourist area. The land is also separated from other urban areas by a river channel so there is no need to construct a perimeter fence (Figs. 6 and 7); (3) Nearly 1000 m long coastline which can be managed as a tourist attraction; (4) Telecommunication, electricity, fresh water can be fulfilled easily because Padang Seurahet is a part of Meulaboh City.

### 3.3 Development Concepts

The development of the Padang Seurahet coastal area as a tourist or tourism area should be carried out using the concept of sustainable development. The point is so that the built coastal tourism area can be present in a sustainable manner, not for a short term; and provide benefits for the surrounding population. Described by Michelangeli et al. [22], that the basic principles of sustainable development and the implementation of sustainable management should be applied to every form of tourism, every kind of tourist destination, in all segments of tourism. These principles cover the environmental, economic and socio-cultural aspects of tourism development. In order for activities to be sustainable for the long term, the components of sustainable development must be

balanced. Thus, sustainable tourism is tourism which: (1) optimizes the use of environmental resources, (2) respects the socio-cultural authenticity of local communities, and (3) provides socio-economic benefits for all parties involved [22].

#### 4. Conclusions

This preliminary study illustrates that the Padang Seurahet coastal area has a good enough potential to be developed as a coastal tourism spot when viewed from from the aspects of the natural potential of tourist attractions, market potential or visitors, and the potential availability of supporting facilities for tourism activities. The coastal area of Padang Seurahet which was separated from other areas of Meulaboh City by Krueng Cangkoï provided advantages in management, because there was no need to construct a perimeter fence. Western part of Padang Seurahet coast is erosional. Efforts to build a coastal defense system should be carried out by taking into account sediment transportation patterns along the coast, and it is suggested that a coastal defense system be built that can capture coastal sediment. Making a proper and good coastal defense system can increase the tourist attractions of the Padang Seurahet beach. The fishing port in Krueng Cangkoï can be used to support the development of coastal tourism activities in Padang Seurahet.

#### Acknowledgements

We would like to thank Mr. Hari Dwi Nugroho (Harry Scout Picture) for his permission to use his video excerpt published on Youtube.

#### References

- [1] R. U. Cook and J. C. Doornkamp, Introduction: Geomorphology and environmental problems, in: R. U. Cook and J. C. Doornkamp (Eds.), *Geomorphology in Environmental Management: An Introduction*, Clarendon Press, Oxford, 1977, pp. 1-7.
- [2] C. A. M. King, Coast, in: R. U. Cook and J. C. Doornkamp (eds), *Geomorphology in Environmental Management: An Introduction*. Clarendon Press, Oxford, 1977, pp. 188-222.
- [3] WTO (World Tourism Organization), *Indicators of Sustainable Developments for Tourism Destination: A Guidebook*, WTO Madrid, Spain, 2004, p. 507.
- [4] E. Wulandari, The concept of disaster-prone coastal city development in Indonesia, case: Cities in Aceh Province (in Bahasa Indonesia), *Seminar Proceeding*, 2016, available online at: <http://lingkungan.ft.unand.ac.id/new/id/information/snstl-proceeding/snstl-ii-2016>.
- [5] E. Wulandari, B. Nasution, M. Djamaludin and F. Salsabila, The development process of estuary coast rural settlements on the west coast of aceh and its sustainable adaptation, case: Geulanggang Batee Rural Area, Aceh Barat Daya District (in Bahasa Indonesia), *Jurnal Arsitektur Zonasi* 3 (2020) (3), available online at: <https://ejournal.upi.edu/index.php/jaz/article/view/27873>.
- [6] S. C. Liew, A. Gupta, P. P. Wong and L. K. Kwoh, Recovery from a large tsunami mapped over time: The Aceh coast, Sumatra, *Geomorphology* 114 (2010) 520-529.
- [7] Reuters, 230,000 people lost in a day: Asia remembers devastating 2004 tsunami, *China Daily Asia*, accessed on 12 Oct. 2020, available online at: <https://www.chinadailyhk.com/articles/188/231/81/1577342735593.html>.
- [8] L. M. Marafa, Integrating sustainable tourism development in coastal and marine zone management, *Études caribéennes* (2008) 9-10. Online since 15 August 2008, connection on 22 October 2020, available online at: <http://journals.openedition.org/etudescaribeennes/1373>, doi: <https://doi.org/10.4000/etudescaribeennes.1373>.
- [9] B. Cicin-Sain and R. Knecht, Coastal tourism and recreation: the driver of coastal development, accessed on 22 October 2020, available online at: <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.584.3617&rep=rep1&type=pdf>.
- [10] Ministry of Health of the Republic of Indonesia, Guidelines for the Prevention and Control of Coronavirus Disease (Covid-19), 5th Revision (in Bahasa Indonesia), accessed on 16 Nov. 2020, available online at: <https://covid19.go.id/p/protokol/pedoman-pencegahan-dan-pengendalian-coronavirus-disease-covid-19-revisi-ke-5>.
- [11] N. Muhajir, *Research Methodology (in Bahasa Indonesia)*, (6th ed.), 2011 Development, Rake Sarasin, Yogyakarta, 2011.
- [12] A. Jaya, Eliminate boredom on the coast at Ujung Karang (in Bahasa Indonesia), Abdid Jaya's Weblog, accessed on 25 Oct. 2020, available online at: <https://m4rp4un6.wordpress.com/2009/04/27/melepas-jen-uh-di-pantai-ujung-karang/#comment-3129>.
- [13] S. Yulinnas, West Aceh coastal tourism, ANTARAFOTO, accessed on 25 Oct. 2020, available online at:



- <https://www.antarafoto.com/asian-games-2018/v1493561708/wisata-pantai-aceh-barat>, 2017.
- [14] F. Aldevan, Approaching Ramadan, visitors to the tourist beach of Ujung Karang are booming (in Bahasa Indonesia), accessed on 25 Oct. 2020, available online at: <https://acehekspres.com/berita/jelang-ramadhan-pengunjung-pantai-wisata-ujung-karang-membludak/>.
- [15] F. Tarmizi, The exotic of Ujung Karang coastal tourism from the corner of Bumi Teuku Umar (in Bahasa Indonesia), RRI of Meulaboh, accessed on 25 Oct 2020, available online at: <https://rri.co.id/meulaboh/gaya-hidup/645682/exotis-wisata-pantai-ujung-karang-dari-sudut-bumi-teuku-umar#>.
- [16] Harry Scout Picture, 6 minutes above Meulaboh (Video file), accessed on 22 Oct 2020, available online at: <https://www.youtube.com/watch?v=F4Ik5uKaPcE&t=14s>.
- [17] DTRP (Department of Tourism, the Republic of the Phillipine), *Tourism Development Planning Guidebook for Local Government Units*, DTRP, Manila, 2012, p. 64.
- [18] N. Rangel-Buitrago, A. Williams and G. Anfuso, Hard protection structures as a principal coastal erosion management strategy along the Carribean coast of Colombia: A cronical of pitfall, *Ocean & Coastal Management*, doi: <http://dx.doi.org/10.1016/j.ocecoaman.2017.04.006>,. 2017.04.006,.
- [19] J. R. C. Hsu, L. Benedet, A. H. F. Klein, A. L. A. Raabe, C. P. Tsai and T. W. Hsu, Appreciation of static bay beach concept for coastal management and protection, *Journal of Coastal Research* 24 (2008) 198-215.
- [20] National Ocean Service NOAA, Marks 45th Anniversary of the Coastal Zone Managemen Act, accessed on 22 Oct. 2020, available online at: <https://oceanservice.noaa.gov/news/oct17/czma-anniversary.html>.
- [21] BPS (Central Statistic Agency) Aceh Province, Total population of Aceh Province by Regency/City, 2017-2019 (in Bahasa Indonesia), accessed on 24 Oct. 2020, available online at: <https://aceh.bps.go.id/statictable/2020/02/24/247/jumlah-penduduk-provinsi-aceh-menurut-kabupaten-kota-tahun-2017-2019-.html>.
- [22] G. Michelangeli, S. Sampaolesi and A. Satta, A common strategy for tourism development in the coastal area of the Adriatic Sea: Technical report, ASTA (Azoini pel la Sostenibilita del Turismo nell Adriatico), Italy, 2007, p. 64, doi: 10.13140/RG.2.1.2662.8085.