Eurasia: Economics & Business, 5(23), May 2019
DOI https://doi.org/10.18551/econeurasia.2019-05

UDC 332

CARRYING CAPACITY OF MARINE TOURISM DEVELOPMENT THE TELENG RIA BEACH IN PACITAN REGENCY, EAST JAVA OF INDONESIA

Pangestu Gigih Budhiawan*, **Purwanti Frida**, **Haeruddin**
Master's Program in Coastal Resources Management, Diponegoro University, Semarang, Indonesia
*E-mail: gigih.bp@gmail.com

ABSTRACT
Marine tourism is one of the phenomena of human movement that has become a necessity, along with the growing service of goods and services and human efforts in seeking balance with their environment. Teleng Ria Beach is one of the coastal areas that has been developed as a marine tourism object in Pacitan Regency, East Java, Indonesia. The purpose of this study is analyzing carrying capacity Area of the Teleng Ria Beach for marine tourism activities. Data processed using analysis of the carrying capacity Area. Results of carrying capacity the Teleng Ria Beach area was 2095 each person/day or 764,675 person/year. This amount includes for coastal recreational activities, swimming, surfing, beach sports and water tourism. This amount includes for recreational beach, swimming, surfing, beach sports and water tourism. The area that can be used for coastal recreational tourism activities is around 1 ha, for swimming 0.8 ha, for surfing 1.5 ha, beach sports 0.3 ha, and for tourism waters covering an area of 15 ha.

KEY WORDS
Teleng Ria Beach, Marine Tourism Activities, Carrying Capacity

The development potential of coastal and ocean areas is one of them is environmental services. Coastal and small island environmental services which include the function of coastal and marine areas as a place of recreation and tourism. Coastal areas are basically interfaces between sea and land areas that influence and are influenced by each other, both bio-geophysical and socio-economic. Utilizing coastal resources as a marine tourism object is one of the efforts to explore and increase added value of coastal resources (Dahuri, 2011).

The most productive coastal area is the coastal area. The coastal area is an area where various natural forces originating from the sea, land and air interact with each other and create the shape of the coast. Beach tourism is one of the development sectors developed in the world today. Technological advances, easy access and transportation have a positive impact on developing coastal tourism (Choi and Sirakaya, 2005).

Tourism activity is one of the phenomena of human movement that has become a necessity, along with the growing service of goods and services and human efforts in seeking balance with their environment. The development of marine tourism is essentially an effort to develop and utilize marine tourism object and attractions found throughout the Indonesian seashore (Damanik and Weber, 2006). The direct results obtained from marine tourism for tourists are in the form of entertainment and knowledge, while the direct output for nature is the incentive that is returned to manage nature conservation. Indirect results, namely in the form of growing awareness in each person to pay attention to their daily attitudes, do not damage of nature (DKP, 2002).

Pacitan Regency is one of the coastal areas located on the southern coast of Java, which is located in East Java Province, Indonesia. Java Island is one of the islands with the largest population density in the world. Pacitan Regency which has a tourism slogan "paradise of java" is a marine tourism destination that has many beautiful beaches. The total area of Pacitan Regency is 1,389.87 km^2 with a coastline of 70.7 km. Pacitan Regency is directly adjacent to the province of Yogyakarta Special Region, which is one of the most visited tourist destinations in Indonesia. This is an opportunity to receive tourists and promote tourists destinations in Pacitan Regency, especially marine tourism.

DOI https://doi.org/10.18551/econeurasia.2019-05

One of the coastal areas in Pacitan Regency is Teleng Ria Beach, which is included in the Pacitan Urban Land Use Planning in 2009-2028, including as a tourism destination area and also plans to develop the strategic tourism area of Pacitan Regency. Teleng Ria Beach is one of the tourism assets for the Pacitan Regency government. Based on the Medium-Term Development Plan of Teleng Ria Beach, it also includes a tourism development zone, which functions as a node for the development of recreational tourism attractions, water tourism and soft adventure.

Tourists prefer to chose the tourism objects near from the city center to visit a tourism object compared to far from city center. It is because the secondary facilities such as restaurants, hotels and souvenir shop more available in the city center. Thus should the tourism objects is located close to the center of the city can attract more tourists (Susilowati and Putri, 2018). Teleng Beach is located in a very strategic location close to the city center and has good accessibility; besides, it also has better tourist facilities and infrastructure. The panorama around the beach is surrounded by green hills and close to the Fisheries Port.

Teleng Ria Beach has the potential for the development of marine tourism activities, whether already existing or which can still be developed. The marine tourism activities that can be done at Teleng Ria Beach include beach recreation and swimming. The development of marine tourism activities cannot be done without considering the factors that influence them. A significant factor is the carrying capacity of the region, because these factors are very vulnerable to change and damage. Management of tourism activities in the Teleng Ria Beach area needs environmental considerations in maintaining a balance between the conditions of the coastal environment and tourism activities. The purpose of this research is to analyze carrying capacity area of the Teleng Ria Beach for marine tourism activities.

The carrying capacity and its influencing factors differ according to areas due to the differences in such aspects as population, environment, natural resources, and local management. Therefore, it is extremely important for the policy making and priority of development programs to consider the existing situation, condition, characters, and local potentials that are reflected from their areas carrying capacity. As a matter of fact, many researches in areas carrying capacity as well as the available concepts have not yet explicitly considered the factors of physical land and water resources carrying capacity (Widodo *et al*., 2015).

METHODS OF RESEARCH

The research location is located on Teleng Ria Beach, which is located in Pacitan Regency, East Java, Indonesia, which is in the coordinates 08°13'15" S and 111°04'44" T. The research method used in this research is descriptive method, which is the fact finding with the right interpretation and has the purpose of making a systematic, factual and accurate description or description of the facts, characteristics, and relationships between the phenomena investigated (Nazir, 2014). Data collection techniques were carried out by field observation, in the form of identification of resources, identification of facilities and infrastructure, types of tourism activities on Teleng Ria Beach. Data collection through field observations is done by direct observation, recording and documentation. The purpose of the field observation is to find out directly the condition of the tourist attraction and various symptoms around it.

Data analysis was carried out by analyzing the carrying capacity of the area. Carrying capacity area is the maximum number of tourist who can physically be accommodated in the area provided at a certain time without causing interference to nature and humans (Yulianda, 2007). Determinants of carrying capacity area include of the tourist area, the number of tourist, the duration of tourism activities, and the number of officers and services (Fandeli, 2002).

According to Yulianda (2007) the calculation of carrying capacity area obtained by the formula as follows:

$$CCA = K \times (Lp/Lt) \times (Wt/Wp)$$

DOI https://doi.org/10.18551/econeurasia.2019-05

Where: CCA = Carrying Capacity of Areas; K = Tourists ecological potential each unit area; Lp = Area or length of area that can be utilized; Lt = Unit area for certain categories; Wt = Time provided by the area for tourists activities in 1 day; Wp = Time spent by Tourists for each particular activity.

The ecological potential of tourist is determined by the condition of the resources and the types of activities developed. The area of an area that can be used by tourists considers the natural ability to monitor tourists, so that sustainability can be maintained (Yulianda, 2007). Ecological potential of tourists (K) the area of activity (Lt) is presented in the Table 1.

Table 1 – Tourists Ecological Potential (K) for Area of Activities (Lt)

No	Tourists Activities	Σ (K)	Lt	Explanation
1.	Beach recreation	1	50 m^2	1 each person 5 m x 10 m
2.	Swimming	1	50 m^2	1 each person 5 m x 10 m
3.	Surfing	1	50 m^2	1 each person 5 m x 10 m
4.	Beach Sports	1	50 m^2	1 each person 5 m x 10 m
5.	Water Tourism	1	500 m^2	1 each person 50 m x 10 m

Source: Yulianda (2007).

According to Yulianda (2007), tourists activity time (Wp) is calculated based on the length of time tourists spend on tourism activities. The time tourists are taken into account with the time provided for the area (Wt). The time zone is the length of time the area is opened in one day and the average working time is around 8 hours. The prediction of the time needed for tourism activities is presented in the Table 2.

Table 2 – Predicted the Time needed for each Tourists Activity

No	Tourists Activities	Wp (hours)	Wt (hours)
1.	Beach recreation	4	8
2.	Swimming	3	6
3.	Surfing	2	4
4.	Beach Sports	2	4
5.	Water Tourism	3	6

Source: Yulianda (2007).

RESULTS AND DISCUSSION

Teleng Ria beach at coordinates 08°13'15" S and 111°04'44" T, is a sandy beach with a slope of 0-2% and surrounded by hills. The width of the beach that can be used for tourism activities reaches 50 m with a coastline length of about 1.5 km, which is a condition that is very suitable for marine tourism activities. It has a very strategic location because it is close to the city center, which is only about 3 km away. The area around Teleng Ria Beach is mostly used for settlements, the rest is for agriculture and plantation land.

Tourists are not so difficult to go to the Teleng Ria Beach, because it is located close to the main provincial / district road which is ± 1 km away. Road access to the location has been paved with fairly good conditions. Teleng Ria Beach also has suffice accommodation for tourists who will visit and stay longer. Facilities for shopping for souvenirs or food are also available. Completeness of facilities is a major consideration for tourists to visit a tourism destination, because it is related to the needs and comfort of them. Services for tourists are supported by management resources totaling more than 75 professional employees.

The development and progress of a tourist area can be seen by the increasing number of tourists who come every year. The Regional Government and the management continue to increase the number of visits to Teleng Ria Beach between competition from other tourism objects in Pacitan Regency. The entrance ticket price for Teleng Ria Beach is IDR 10,000 / person for Mondays and IDR 15,000 for Saturdays, Sundays and holidays. Vehicle parking rates are IDR 3000 for two wheels, IDR 5000 for four wheels and IDR 15,000 for the bus. Ticket prices can change if a major tourist area is held. The number of visits by Teleng Ria Beach tourist in the last few years can be seen in the Figure 1.

DOI https://doi.org/10.18551/econeurasia.2019-05

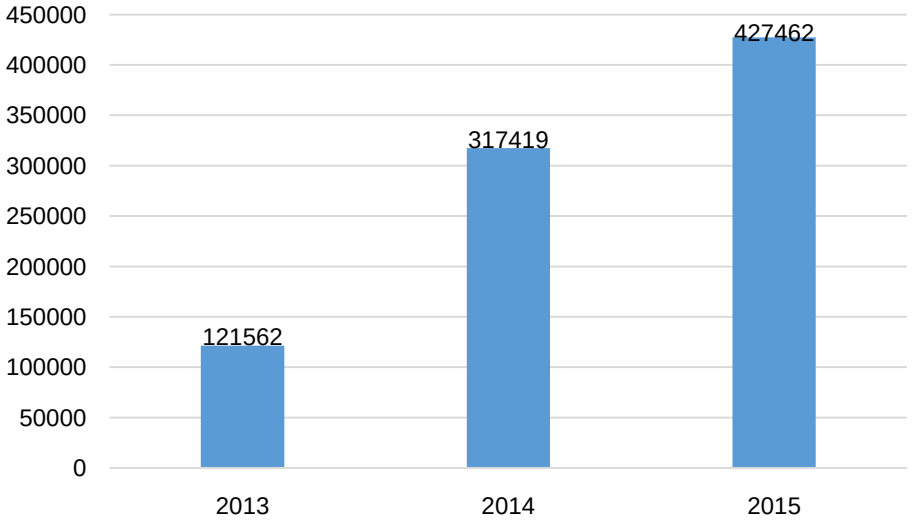

Figure 1 – Number of Teleng Ria Beach Visits since 2013-2015

Based on the graph above, the number of tourists arrivals on Teleng Ria Beach from 2013-2015 continued to increase. The pattern of tourists visits to Teleng Ria Beach can be seen from the number coming every month in the period of 2015, and the same thing happened in previous years. Many things cause the ups and downs of tourism demand on Teleng Ria Beach, such as the holiday season and the effects of the weather that occur throughout the year. The following is presented the number of tourists visits to Teleng Ria Beach every month in the Table 3.

Table 3 – Number of Teleng Ria Beach Visits in 2015

No.	Months	Number of Person	Percentage (%)
1.	January	42.335	10
2.	February	16.707	4
3.	March	20.127	5
4.	April	17.324	4
5.	May	39.537	9
6.	June	11.996	3
7.	July	82.086	19
8.	August	41.047	10
9.	September	36.557	8
10.	October	35.299	8
11.	November	37.253	9
12.	December	46.994	11
Total		427.262	100

The pattern of visits can help explain in broad terms the use of travel time for tourists. Fluctuations in tourist arrivals are generally influenced by certain seasons, such as before the turn of the year in December-January (10-11%), celebrations of the holidays (Eid al-Fitri) that occur in July (19%), and during school holidays. The number of visits decreased during low season in February, March, April and June (<5%) from the total number of visits every year. According to observations in the field, in general, tourists visiting Teleng Ria Beach are domestic tourists from various regions in Indonesia, the majority of which are from Pacitan and surrounding districts in East Java, as well as from Central Java, Yogyakarta and West Java.

Carrying capacity area is an approach needed to calculate the maximum number of tourists that can be accommodated by tourists objects. Tourism activities that have

DOI https://doi.org/10.18551/econeurasia.2019-05

developed in the Teleng Ria Beach area are beach recreation, swimming and beach sports. Teleng Ria Beach also has the potential for surfing and water tourism activities. The potential and carrying capacity of the Teleng Ria Beach area can be seen in the Table 4.

Table 4 – Potential Carrying Capacity Area of Teleng Ria Beach

No.	Tourit Activity	Lp	Lt	Wt	Wp	DDK
1.	Beach recreation	10.387 m^2	50 m^2	8	4	415
2.	Swimming	8.621 m^2	50 m^2	6	3	344
3.	Surfing	15.022 m^2	50 m^2	4	2	600
4.	Beach Sports	3.264 m^2	50 m^2	4	2	130
5.	Water Tourism	151.628 m^2	500 m^2	6	3	606
		Total				2095

Based on the calculation of carrying capacity of the Teleng Ria beach area is 2095 people per day, with details of 415 people doing beach recreation activities, 344 people doing swimming activities, 600 people can do surfing activities, 130 people can exercise the beach, and 606 people can do tourism activities in the waters. Beach recreation activities such as sightseeing, sitting around enjoying the scenery or just playing waves and sand can be done in an area of 10,387 m2 along the beach. The time provided by the manager is 8 hours every day, with the usual time used by tourists is 4 hours. Swimming can be done along Teleng Ria Beach by utilizing an area of 8,621 m2. The time provided by the manager is 6 hours per day with the usual time used by tourists to swim is 3 hours.

Others potential tourism activities at Teleng Ria Beach are surfing, which are generally preferred by foreign tourists. This activity requires special expertise by utilizing large waves and using tools such as surfboards. This tourism activity can be carried out in an area of 1.5 ha. Surfing activities are not too developed on the Teleng Ria Beach. Tourists prefer to do it on Pancer Door Beach which is still adjacent to the Teleng Ria Beach area because the waves are more challenging and the atmosphere is still relatively quiet.

Tourists who come to Teleng Ria Beach can also make use of an area of 3,264 m2 for beach tourism activities, such as playing beach volleyball, green grass fields can be used to play soccer, or jog around the beach. Generally, sports activities are carried out in the morning and evening, because the air is still fresh and protected from the hot sun.

The Teleng Ria Beach area also has the potential for water tourism activities or water sports, such as jet ski, banana boat and rolling donuts. The processing area used is around 15 ha. Based on the observation in the field, this tourism activity is not yet fully developed, only seen there are 2 jet ski units and 2 banana boats, even though the territorial waters are quite capable of accommodating these tourism activities and are also supported by area stability. Water tourism attractions such as jet ski and banana boats can be another option for tourists to enjoy Teleng Ria Beach if managed more optimally. Zoning of tourism activities on Teleng Ria Beach is presented in the Figure 2.

Grouping tourist to enjoy a tourists product at a certain place and time can be used as information about the carrying capacity of a tourism area. The carrying capacity of a tourism area is manifested in the number of tourists visiting a tourist object each unit area, each unit of time (with notes that both area and time are generally not averaged) due to the distribution of tourits in different and uneven spaces and times (Soemarwoto, 2008).

The carrying capacity of the Teleng Ria Beach area is very much needed to support marine tourism activities, because it deals with various tourist activities to reach a level of comfort. The calculation results show that the carrying capacity of the Teleng Ria Beach area is 2095 people every day or 62,850 people per month. Based on data on tourist visits in 2015, this amount is still sufficient to meet the capacity of the number of tourists to Teleng Ria Beach per month. Exceptions occurred in July which showed over carrying capacity, because the number of tourists was 82,086 people, greater than the carrying capacity of the region per month which was 62,850 people. This happens during the Eid holiday season (peak season) which occurs only once a year.

The number of Tourists to the Teleng Ria Beach tourists attraction in 2015 reached 427,262 people per year, an increase from the previous year which was only 317,419 people

DOI https://doi.org/10.18551/econeurasia.2019-05

per year. Based on the calculation of the carrying capacity of the area that has been obtained, if in a year there are 365 days, then the number of tourists that can be accommodated is 764,675 people every year. The number of Tourists compared to the carrying capacity of the region in general is still under carrying capacity because it has not exceeded the number of tourists in 2015. The increase in the number of tourists only occurs in certain months and seasons of the year.

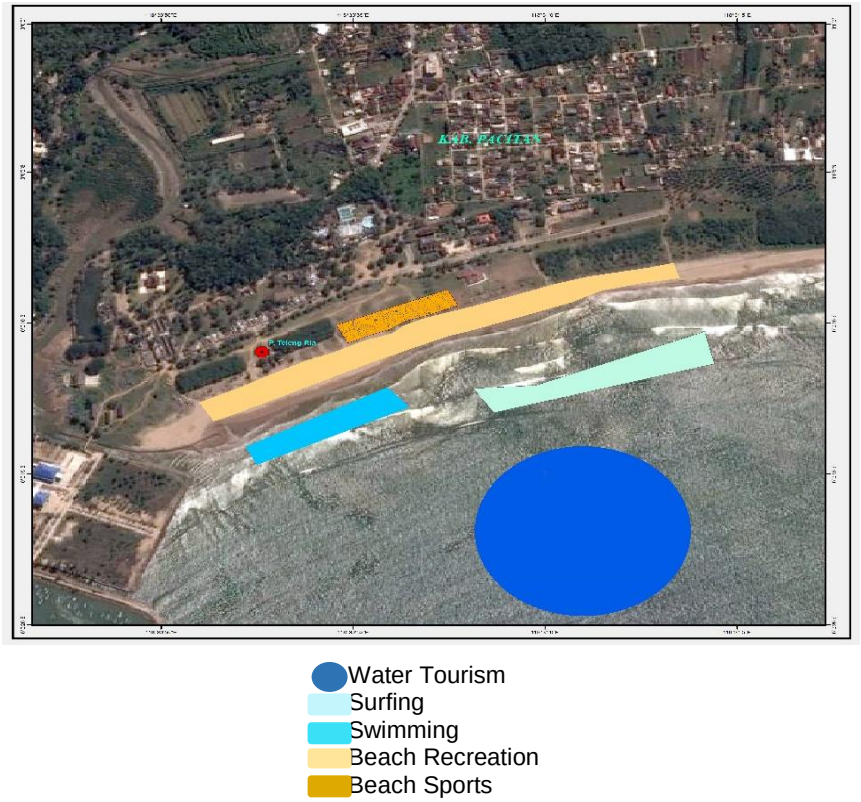

Figure 2 – Zoning of Teleng Ria Beach Tourism Activities

The amount of carrying capacity of the region (764,675 people every year) as the maximum estimate on Teleng Ria Beach. The increase in the number of tourists only occurs in certain months and seasons of the year. The advantages of these Tourists can still be tolerated because tourists have different goals and times when carrying out tourism activities. Tourists not only do tourism activities on the beach, but there are also those who choose to enjoy culinary in food stand / restaurants and play in the water park.

Based on the calculation of the carrying capacity of the region, tourism activities that have been developed and utilized to the maximum are coastal recreation, swimming and beach sports. Surfing and water sports tourism activities have not been developed and can still be an opportunity to maximize the potential of the Teleng Ria Beach area, so tourists are interested in visiting Teleng Ria Beach and staying longer.

Carrying Capacity Area (CCA) also affects power support psychological tourists, meaning if the number of the tourists exceeds CCA, then it will reduce the level of tourist satisfaction. The space for motion will be relatively narrow, where the more visitors it will be further reducing the space for movement and lower the level of satisfaction of tourists (Cisneros *et al*, 2016). Tourists hope to get entertainment and recreation from various tourism activities. Carrying capacity that exceeds, will result in a deterioration of resources in the region and reduce tourists satisfaction. Restrictions on tourist arrivals cannot be done against the advantages of the carrying capacity, but what must be done is to increase tourism services and attractions. The carrying capacity of the Teleng Ria Beach area for marine tourism activities must pay attention to the ability of the area of a tourists attraction

without affecting the quality of the environment, in order to create a sustainable marine tourism area and maintain its sustainability.

A region with diversity high diversity needs to be done study of its carrying capacity. Increased interest and business fields in marine ecotourism causing increased utilization coastal and coastal areas. Coastal area as part of the coastal region it the meeting between land and sea. Utilization of the coastal area raises the impact of environmental degradation, so affect the ecological function and decline quality of tourism. Tourism development environmental support base becomes the best option for precautionary measures (Chen and Teng, 2016).

A development that takes into account the carrying capacity area means including sustainable development, in accordance with the concept of sustainable development as a form of tourism development that uses natural resources and cultural heritage to increase the number of tourists and profit from tourism activities while maintaining environmental sustainability. A development of tourism by considering the carrying capacity of resources is sustainable tourism (Mavris, 2011).

CONCLUSION

Carrying capacity of the Teleng Ria Beach in Pacitan Regency, East Java, Indonesia is 2,095 people each day or 764,675 people each year. This amount includes recreational beach, swimming, surfing, beach sports and water tourism. The area that can be used for coastal recreational tourism activities is around 1 ha, for swimming 0.8 ha, for surfing 1.5 ha, beach sports 0.3 ha, and for tourism waters covering an area of 15 ha. Analysis of the carrying capacity of the Teleng Ria Beach area is needed to support marine tourism activities, if the carrying capacity of the area has over capacity will affect the quality of environmental resources in the region and reduce the satisfaction and comfort of tourists on the tour.

ACKNOWLEDGEMENTS

The authors send their gratitude to Department of Master Coastal Resources Management, Diponegoro University, Indonesia. This research was supported by Pacitan Regency Government and relevant agencies in completing data. We would also thank to El John Tirta Emas Ltd as the company for managing the tourist area, and local society around the Teleng Ria Beach for sharing the necessary information.

REFERENCES

1. Chen, C. L., & Teng, N. (2016). Management priorities and carrying capacity at ahigh use beach from perspectives : a way towards sustainable beach tourism. J. Marine Policy, 74, 213–219.
2. Choi, H. S. C., & Sirakaya, E. (2005). Measuring Residents Attitude toward Sustainable Tourism: Development of Sustainable Tourism Attitude Scale. J. Travel Research, 43, 380-394.
3. Cisneros, M. H., Sarmiento, N. V., Delrieux, C. A., Picollo, M. C., & Perillo, G. M. (2016). Beach carrying capacity assesment through image processing tools for coastal management. J. Ocean and Coastal Management, 130, 138-147.
4. Dahuri, R., Rais, J., Ginting, S. P., & Sitepu, M. J. (2011). Pengelolaan Sumber Daya Wilayah Pesisir dan Lautan Secara Terpadu. Jakarta: PT. Pradya Paramita.
5. Damanik, J., & Weber, H. V. (2006). Perencanaan Ekowisata: dari Teori ke Aplikasi. Yogyakarta: C.V. Andi Offset.
6. Departemen Kelautan dan Perikanan. (2002). Pengelolaan Pesisir dan Lautan. Jakarta: Direktorat Jenderal Pesisir dan Pulau-Pulau Kecil.
7. Dinas Kebudayaan Pariwisata Pemuda dan Olahraga Kabupaten Pacitan. (2016). Data Kunjungan Wisata Tahun 2015. Pacitan: Kabupaten Pacitan.

DOI https://doi.org/10.18551/econeurasia.2019-05

8. Fandeli, C. (2002). Perencanaan Kepariwisataan Alam. Yogyakarta: Fakultas Kehutanan, Universitas Gajah Mada.
9. Mavris, C. (2011). Sustainable Environmental Tourism and Insular Coastal Area Risk Management in Cyprus and the Mediterranean. J. Coastal Research, 61, 317-327.
10. Nazir, M. (2014). Metode Penelitian. Bogor: Ghalia Indonesia.
11. Soemarwoto, O. (2008). Ekologi Lingkungan Hidup dan Pembangunan. Jakarta: Djambatan.
12. Susilowati, M. H. D., & Putri, O. K. (2018). Spatial Pattern of Tourists Distribution based on Physical and Accessibility Factors in Pacitan Regency, East Java, Indonesia in The 3rd International Conference on Energy, Enviromental and Information System (ICENIS):14-15 August 2018, Semarang, E3S Web of Conf, 73: 03007.
13. Widodo, B., Lupyanto, R., Sulistiono, B., Harjito, D. A., Hamidin, J., Hapsaria, E., Yasin, M., & Ellinda, C. (2015). Analysis of environmental carrying capacity for the development of sustainable settlement in Yogyakarta urban area. J. Procedia Environmental Science, 28, 519-527.
14. Yulianda, F. (2007). Ekowisata Bahari sebagai Alternatif Pemanfaatan Sumberdaya Pesisir Berbasis Konservasi. Bogor: Institut Pertanian Bogor.