



## Socio-Economic Mapping of Sorong City's Coastal Communities in Southwest Papua, Indonesia

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### **Abstract**

Socioeconomic mapping employing a spatial technique is essential since it is frequently simpler to comprehend. Spatial mapping is a common technique for illustrating objects in space. This study aims to evaluate the socioeconomic status of coastal communities in Klasabi Village, Sorong Manoi District, Sorong City using a spatial technique. The distance between educational institutions and populated regions in Klasabi Kelurahan is between 140 and 400 meters. Based on SNI 03-1733-1989 and SNI 03-1733-2004, namely elementary schools and Islamic and state junior high schools located among community groups, the results and discussion show that the educational and learning facility requirements in Klasabi Village are sufficient. Within a reach radius of 0 to 600 meters surrounding community settlements, trade and service enterprises are easily accessible in Klasabi Village. According to SNI 03-1733-1989 and SNI 03-1733-2004, the necessity for health facilities is sufficient when seen from the radius of the service area, namely posyandu and pharmacies that are located in the midst of nearby groups and are accessible by private or public vehicles.

**Keywords:** *Social; Economic; Spatial; Sorong City*

### **Introduction**

Socioeconomic mapping is a technique for describing the socioeconomic and cultural conditions of a community or region (Zainal, 2020), including coastal areas close to mangrove ecosystems. This comprehension of the community's potential and socioeconomic circumstances enables stakeholders to empower the community through policies and programs that correspond with the community's and region's potential (Handayani *et al.*, 2020). In order to collect this information, socioeconomic mapping is carried out.

Socio-economic mapping using spatial techniques is necessary since it is often simpler to comprehend (Marfu'ah *et al.*, 2017). Utilizing images and mapping confirmed with satellite images, spatial technique is implemented (Setyawati, 2010). Objects produced by drawing and mapping are represented by universal symbols.

In social studies information-gathering research, social mapping is primarily used to plan human and regional development. Moore *et al* (2017) used this technique in planning marine management

spatially which is prone to mapping conflicts. Spatial technique in the research of Trialfhianty *et al* (2022) was used to support community-based mangrove area management options. A research of Liu *et al* (2019) used a spatial technique of social life in urban areas in Brisbane, Australia.

Coastal communities are comprised of coastal dwellers whose livelihoods are dependent on marine and coastal resources, as well as the environment, seasons, and markets (Nikijuluw, 2001; Purba, 2002; Satria, 2015; Wahyudin, 2003). Residents can work as fisherman, fish cultivators and other biota, fish dealers, processors of fisheries products, and providers of fishery production facilities, infrastructure, and processing equipment. Tourism, transportation, and other sectors that rely on marine and coastal non-biological resources can help support this community (Wibowo *et al.*, 2016).

Rich resources and diverse professions to handle abundant resources do not create prosperity in coastal areas (Baso, 2019). According to records, this community is the poorest in the socioeconomic structure of Indonesian society (Anwar & Wahyuni, 2019). Depending on environmental circumstances, seasons, and markets, commercial scale is classed as small business scale.

Most of the coastal areas in Indonesia with a touch of development are still far from expectations (Lasabuda, 2013), especially in Eastern Indonesia. The community has lacked access to development facilities and sources of success, such as education, health, the economy, and technology. It is ironic that the focus of development is on commercial centres, industry, and luxury houses at the expense of mangrove forests and reclamation of tidal regions, that have resulted in the destruction of the principal source of income for coastal populations (La Sara, 2014).

Sorong City is an area with significant maritime and coastal potential (Muharuddin, 2019), such as mangrove ecosystems, coral reefs and sea grass ecosystems, where people use these resources to meet their daily needs as is done by coastal communities in Klasabi Village, Sorong Manoi District. The aim of the research is to analyze the socio-economics of coastal communities in Klasabi Village, Sorong Manoi District, Sorong City using a spatial technique.

## Materials and Method of the Research

The research method employed is a descriptive method based on the outcomes of a geographical analysis of socioeconomic data. Klasabi Village, Sorong Manoi District, Sorong City, Southwest Papua is the location of the study. The locations of research are depicted on the map in Figure 1.

60 respondents from the population of coastal settlements in RT 04 RW 01, Klasabi Village, Sorong Manoi District, Sorong City, Southwest Papua were surveyed for this study.

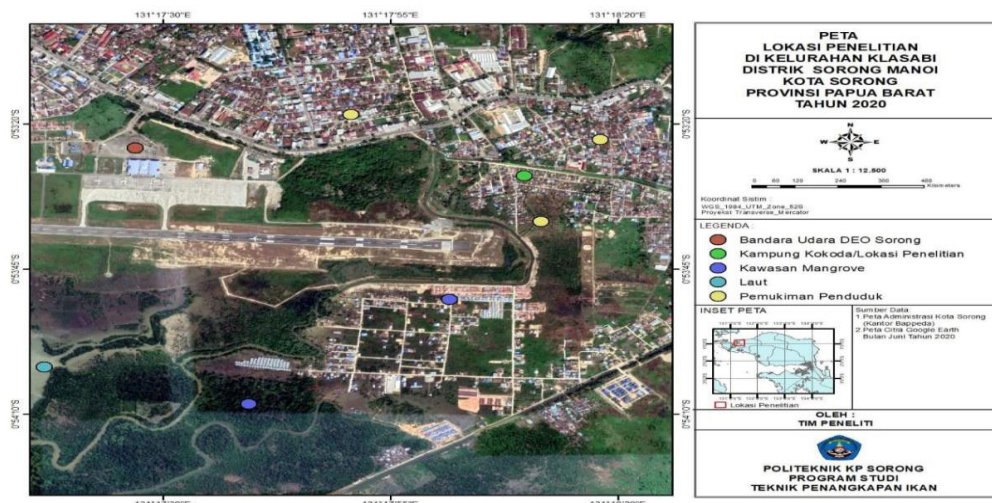


Figure 1. Research location

Using questionnaires consisting of questions presented to respondents, data retrieval procedures were carried out (Nasehudin & Gozali, 2012), including the identity of the respondent, social aspects, economic aspects of the respondent as well as perceptions and participation in the preservation of coastal ecosystems. In addition, analysis of spatial data and satellite images is used for socioeconomic mapping. The secondary data consisted of village monographs or general village descriptions from the Klasabi Kelurahan Office, the Sorong Manoi District Office, and the Sorong City Central Bureau of Statistics Office.

For the analysis of social, perception, and participation data, tabulation and interpretive analysis were applied. The objective of the tabulation analysis is to determine the perspectives and attitudes of the community on the existence of coastal ecosystems, as expressed in percentage (%) and shown in diagrams, followed by interpretation (Okoseray et al., 2017). For the economic aspect, income analysis was used to calculate the income of the respondents (Manggabarani, 2017). Mapping examination of social and economic infrastructures utilizing interpretation of satellite image data, spatial data processing, and Geographic Information Systems. Spatial socioeconomic approach generates maps of geographic density distribution, maps of income distribution, maps of livelihood distribution, maps of education level distribution, and maps of health distribution through the processing of geographical data.

## ***Results and Discussion***

Administratively, the city of Sorong consists of 10 sub-districts and 42 sub-districts with a land and water area of 1,105 km<sup>2</sup> (Hehanussa, 2013; Meirina Ayumi Malamassam, 2020; Tabalessy, 2014). Most of the area of Sorong City is a hilly area. This city was built on the seashore (Kusumastanto, 2021). Astronomically, Sorong City is located between 131°17' East Longitude and 0°53' South latitude and traversed by the equator.

Klasabi Village is part of the Sorong Manoi District which has an area of land 31.25 km<sup>2</sup> with boundaries, such as:

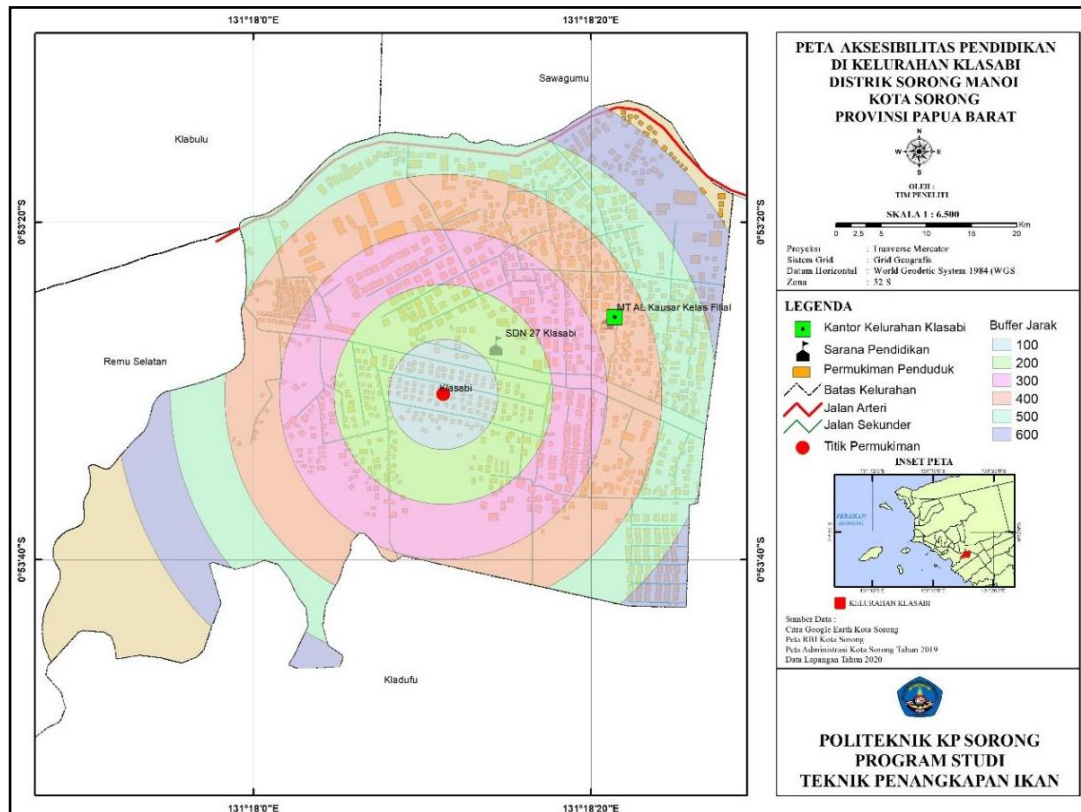
- To the north it is bordered by Malaingkeki Village
- To the south it is bordered by Sorong Waters
- To the east it is bordered by Klawuyuk Village
- West side is bordered by South Remu Village

This study investigated the social and economic conditions of Klasabi Village, as well as the distribution of social and economic facilities. This study focuses on the level of educational facilities, levels of income, types of employment and economic facilities (trade and services), settlements and health facilities.

The education level of respondents in Klasabi Village who live near the Mangrove forest is comparable to that of respondents in Klamana Village, Rufeii Village, and Saoka Village, Sorong City, where the majority of people graduated from junior high school, 35% only graduated from elementary school, 20% graduated high school, and 5% are undergraduates. Only one level of elementary school (SDN 27) and one level of junior high school are available in the area of Klasabi Village. Kindergarten and senior high school facilities are situated in subdistricts next to Klasabi Sub-District, including Kladufu Sub-District and Remu Selatan Sub-District. To access these educational institutions via private and public two-wheeled (ojek) and four-wheeled vehicles (taxis).

In Klasabi Kelurahan, educational institutions are positioned between 140 and 400 meters from populous areas. Figure 2 depicts the educational facilities and achievement radius, as well as the spatial/mapping of educational facilities in Klasabi Kelurahan. According to SNI 03-1733-1989 and SNI 03-1733-2004, namely SD and MTS/SMP, which are at the heart of the community group, Klasabi

Kelurahan's educational and learning facility needs are acceptable. SMA amenities do not need to be located in the heart of the community, but they must be conveniently accessible. Using two- or four-wheeled vehicles, Klasabi residents can access the high school facilities with relative ease. According to Zuluaga Díaz (2007) investigating many studies on human resources, the influence of education on poverty is not confined to problems relating to money, such as income and wages, but also involves non-monetary factors. Therefore, education is a crucial tool for improving family welfare, including health, nutrition, and housing.



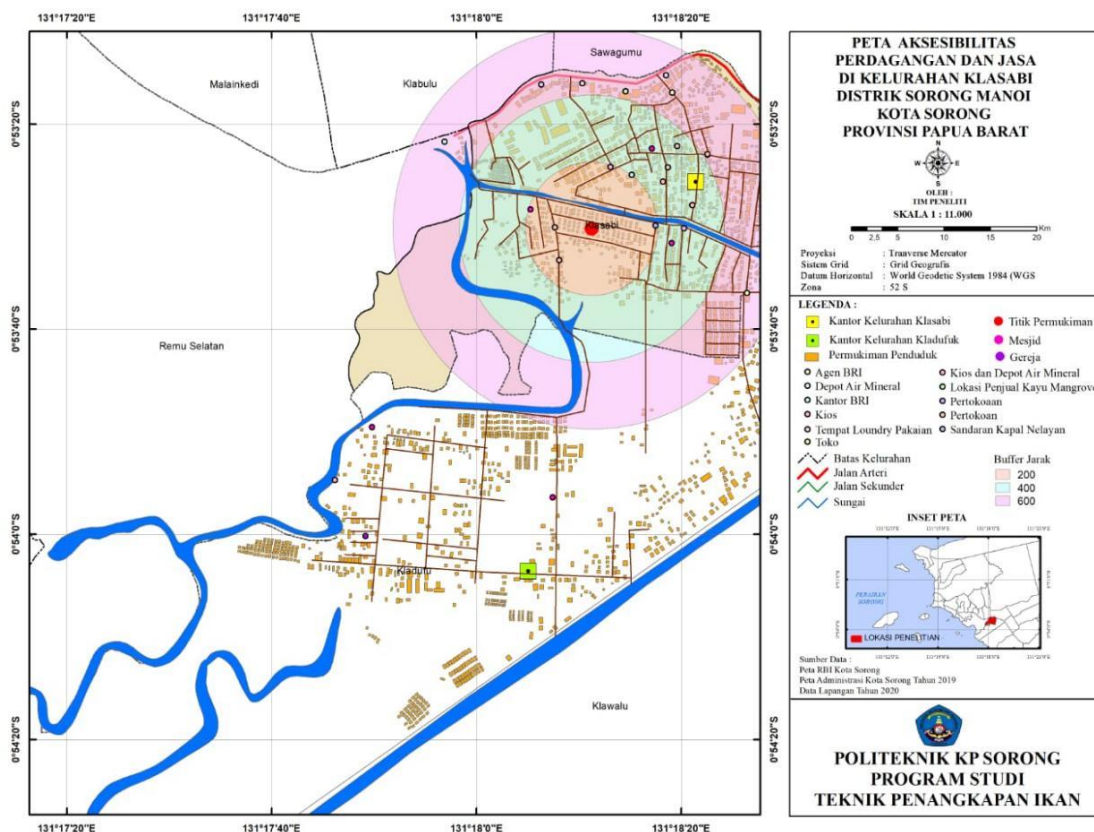
Gambar 2. Peta aksesibilitas pendidikan  
Figure 2. Education accessibility map

Based on the results of data collection on the type of work, the main type of work or livelihood of the respondent community is obtained, namely coral miners and mangrove wood sellers. 49.2% are coral miners and mangrove wood sellers, followed by traditional fishermen 20.3% and 15.3% farmers with an average income of IDR 1,000,000/month. Most of this income comes from the business of the head of the family or husband, especially those who work as coral miners/mangrove wood sellers and fishermen. According to Central Bureau of Statistics, if income < Rp. 1,999,000 is categorized as 'poor', so the condition of the respondents with an average income of Rp. 1,000,000/month is in the 'poor' category.

Respondents whose primary source of income is coral mining or selling mangrove wood have a secondary source of income as fisherman while awaiting orders for coral and mangrove wood. A crowbar is used to mine corals, whereas a machete is used to cut mangrove timber. Canning, Dokarim Waters, and areas for collecting coral and mangrove wood near human settlements. As fisherman, they employ modest equipment, such as fishing rods, nets, and long boats for their fishing fleet. All Sorong waterways are available for fishing.

The Klasabi Village contains economic facilities, in this case trade and services, such as food stands, kiosks/shops, vegetable sales points, traditional markets, workshops, etc. The presence of expanding trade and service facilities in the Klasabi Village region can stimulate the real estate market and increase the consumption of local residents. Trade and service establishments in Klasabi Village are easily accessible/close enough to reach the settlement radius of 0 to 600 meters (*Raniasta et al., 2017*). The proximity of easily accessible commercial facilities, such as marketplaces, near human settlements will stimulate economic activity and expansion (*Suryani, 2015*). However, based on the results of the research, due to limited capital, the community cannot choose alternative jobs or other businesses. In addition, the community does not have skills, so work as coral miners/mangrove wood sellers or fishermen is an option.

The economic condition of the respondent community with income classified as 'poor' requires concern from the government through the provision of assistance in the form of physical assistance in the form of adequate fishing gear as a means of production for fishermen, as well as assistance in the form of cash funds that are directly loaned as capital, which can be used in rotation by society. In addition to providing motivation to people who have been in need of knowledge about skills to create alternative jobs besides mining corals, cutting mangroves or as fishermen as well as counseling and socialization regarding the importance of protecting mangrove ecosystems and coral reefs. Accessibility of economic or trade facilities and the radius of achievement can be seen in Figure 3.



Gambar 7. Peta aksesibilitas fasilitas perdagangan dan jasa

Figure 3. Accessibility map for economic and trade facilities

Based on the aspect of community ownership status in the Klasabi Village, the majority have houses with their own home ownership status. Owned houses consist of permanent, semi-permanent and non-permanent building structures, but most of the people living around the mangrove ecosystem have

semi-permanent and non-permanent houses. The type of wall used is made of wood, with the foundation of the house coming from rocks and floors made of soil, while those built on mangrove ecosystem land use wood or planks. Most of the roofs of the houses are zinc.

Keeping infrastructure in settlements in good shape can enhance the quality of the living environment. Poor infrastructure, on the other hand, can become a significant issue for residential areas and lead to the development of slums (Oktaviansyah, 2012). In general, Klasabi Kelurahan's seaside housing has been supplied by essential settlement infrastructure like as electricity, with all homes being lighted by electricity 24 hours a day. For clean water sources, the community utilizes rainwater for cooking, while well water is utilized for MCK. To make life easy for the community, garbage dumps or landfills should be located close to communities and have a road network and drainage system.

A person's social health refers to his or her ability to sustain and improve his or her individual life and family life so that it is feasible to work, rest, and enjoy vacations (Eliana *et al.*, 2016). In addition, public health status is influenced by four factors, including heredity (genetics), environment, behavior, and health service (Notoatmodjo *et al.*, 2012). The four factors must be met to get healthy physically, mentally, socially and spiritually. One factor should not be ignored to get optimal health.

Health Law No. 36 of 2009 provides a definition of health in the form of a dynamic condition which includes physical, spiritual, social health and not only being free from disease, disability, as well as weakness. Physically healthy means the condition of the body's organs functioning normally. Mentally or psychologically healthy is the mind, emotional, and spiritual in a healthy condition so that it can take advantage of the potential to work productively.

With regard to health facilities, Klasabi Kelurahan does not have a health center. The only health facility available is the auxiliary health center (Pustu). Pustu functions to help carry out the tasks and functions carried out by the public health center, including (Kesehatan, 2013):

- Assisting in increasing access to basic health services in the work area of the public health center.
- Supporting the implementation of Community Health Enterprises.
- Supporting the implementation of health services, especially SMEs.
- Playing a role in supporting Integrated Healthcare Center activities,
- Supporting the implementation of Posyandu activities, immunization, MCH, health counseling, surveillance, community empowerment, and environmental health promotion.
- Providing referral services to health centers.

The sub-health center located in Klasabi Village is located in the vicinity of settlements with a reach radius of 0-600m which is quite easy to reach. The health accessibility map is shown in Figure 4. The close distance makes it easy for people to get health services. However, based on interviews with respondents regarding health services, the community did not pay much attention to their health condition or were lazy to check themselves at the Pustu. If they were sick, people preferred to buy medicine at the pharmacy, especially if they only had a fever. The types of diseases that many people suffer are malaria and flu.

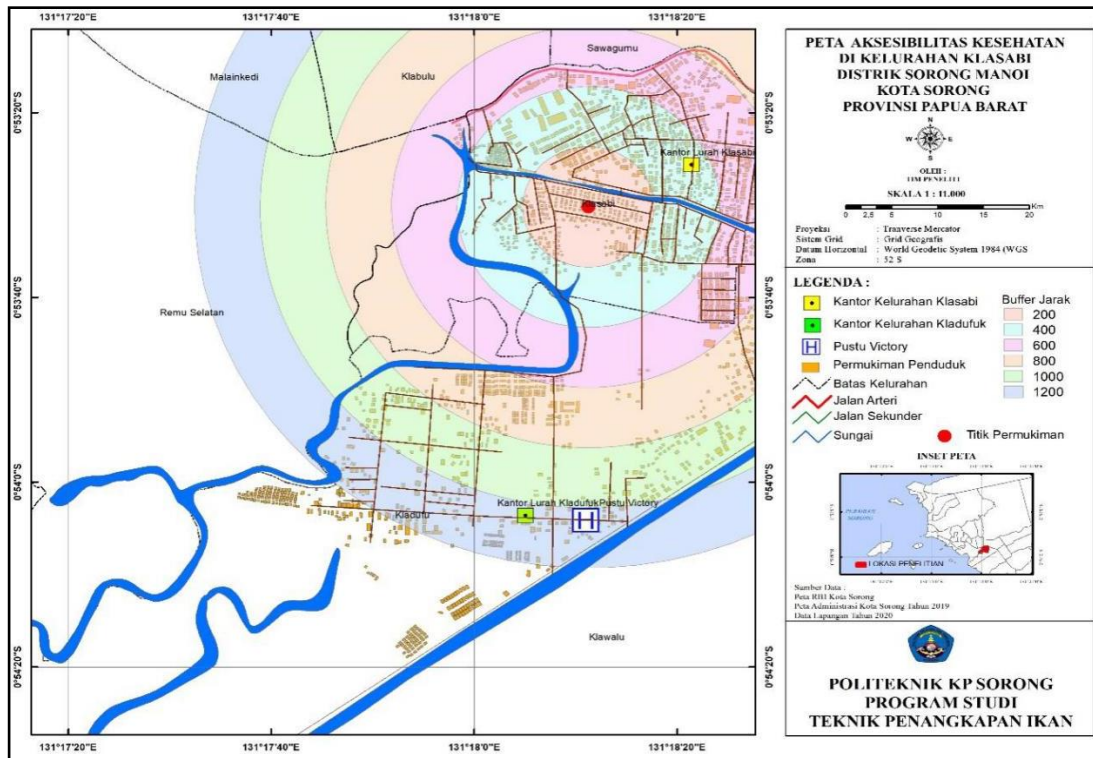


Figure 4. Health accessibility map

Based on SNI 03-1733-1989 and SNI 03-1733-2004, the need for health facilities is sufficient when viewed from the radius of the service area, namely posyandu and pharmacies which are in the midst of neighboring groups and can be reached by private or public vehicles (ojek). . Ojek is the only means of public transportation because city transportation does not operate in the Klasabi Village area.

### Conclusion

With a geographical perspective, elementary and junior high school facilities are located within 150-400 meters of Klasabi village, and the majority of responders are junior high school graduates. The respondent's primary source of income is as a stone miner and seller of mangrove wood, with a monthly average income of 1,000,000 IDR. In Klasabi Village, a variety of economic or commercial facilities are within easy reach or accessibility. The respondent's home ownership status is their own, however the majority are not permanent. For power, there are roads and drainage facilities. The Klasabi Village health facility is the Sub-Health Center.

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## References

- Anwar, Z., & Wahyuni, W. (2019). Miskin Di Laut Yang Kaya: Nelayan Indonesia Dan Kemiskinan. *Sosioreligius*, 4(1).
- Baso, I. A. (2019). Revitalisasi Pemberdayaan Masyarakat Pesisir Bagi Kesejahteraan Nelayan. *Membangun Sumber Daya Kelautan Indonesia: Gagasan Dan Pemikiran Guru Besar Universitas Hasanuddin*, 75.
- Eliana, S. K. M., Eliana, S. K. M., Sumiati, S., & Sumiati, S. (2016). *Kesehatan Masyarakat*. Pusdik SDM Kesehatan.
- Handayani, H., Mustasim, M., & Suruwaky, A. M. (2020). Persepsi dan Partisipasi Masyarakat terhadap Ekosistem Mangrove di Distrik Sorong Timur, Kota Sorong Provinsi Papua Barat. *Jurnal Airaha*, 9(01), 58–62.
- Hehanussa, G. M. (2013). *Kajian Persepsi dan Partisipasi Masyarakat Terhadap Penetapan Kawasan Konsevasi Perairan dan Strategi Perwujudan di Kota Sorong Provinsi Papua Barat*. Universitas Terbuka.
- Kesehatan, K. (2013). *Data Dasar Puskesmas*. Kementerian Kesehatan RI.
- Kusumastanto, T. (2021). 7.3 Kebijakan Ekonomi dalam Pembangunan Negara Maritim. *Pengembangan Perikanan, Kelautan, Dan Maritim Untuk Kesejahteraan Rakyat Volume II*, 641.
- La Sara, L. S. (2014). *Pengelolaan Wilayah Pesisir*. Alfabeta.
- Lasabuda, R. (2013). Pembangunan wilayah pesisir dan lautan dalam perspektif Negara Kepulauan Republik Indonesia. *Jurnal Ilmiah Platax*, 1(2), 92–101.
- Liu, Y., Cheshire, L., Wang, S., & Fu, X. (2019). A socio-spatial analysis of neighbour complaints using large-scale administrative data: The case in Brisbane, Australia. *Cities*, 90, 168–180. <https://doi.org/https://doi.org/10.1016/j.cities.2019.02.010>.
- Manggabarani, I. (2017). Kajian Sosial Ekonomi Masyarakat Nelayan yang Bermukim di Pesisir Pantai (Studi Kasus Lingkungan Luwaor Kecamatan Pamboang, Kabupaten Majene). *AGROVITAL: Jurnal Ilmu Pertanian*, 1(1), 27–33.
- Marfu'ah, A. U., Siswono, A., Syaifullah, I. H., Habib, M. A., & Affandi, R. (2017). *Analisis Spasial Pelayanan Fasilitas Sosial Ekonomi di Kelurahan Giripurwo*.
- Meirina Ayumi Malamassam, D. K. K. (2020). *Migrasi Eskalator Ke Kota Sorong*. Yayasan Pustaka Obor Indonesia.
- Moore, S. A., Brown, G., Kobryn, H., & Strickland-Munro, J. (2017). Identifying conflict potential in a coastal and marine environment using participatory mapping. *Journal of Environmental Management*, 197, 706–718.
- Muharuddin, M. (2019). Peran Dan Fungsi Pemerintah Dalam Penanggulangan Kerusakan Lingkungan. *JUSTISI*, 5(2), 97–112.
- Nasehudin, T. S., & Gozali, N. (2012). *Metode penelitian kuantitatif*.
- Nikijuluw, V. P. H. (2001). Populasi dan sosial ekonomi masyarakat pesisir serta strategi pemberdayaan mereka dalam konteks pengelolaan sumberdaya pesisir secara terpadu. *Bogor (ID): Pusat Kajian*



*Sumberdaya Pesisir Dan Lautan, Institut Pertanian Bogor.*

- Notoatmodjo, S., Anwar, H., Ella, N. H., & Tri, K. (2012). Promosi kesehatan di sekolah. *Jakarta: Rineka Cipta*, 21–23.
- Okoseray, K. M., Widiastuti, N., & Parenden, D. (2017). Pemanfaatan, Persepsi dan Partisipasi Masyarakat Terhadap Pelestarian Ekosistem Pesisir Distrik Manokwari Selatan. *Jurnal Sumberdaya Akuatik Indopasifik*, 1(1), 93–104.
- Oktaviansyah, E. (2012). Penataan Permukiman Kumuh Rawan Bencana Kebakaran di Kelurahan Lingkas Ujung Kota Tarakan. *Jurnal Teknik Sipil Dan Perencanaan*, 14(2), 141–150.
- Purba, J. (2002). *Pengelolaan lingkungan sosial*. Yayasan Obor Indonesia.
- Raniasta, Y. S., Ikaputra, I., & Widyastuti, D. T. (2017). PENGEMBANGAN KAWASAN STASIUN TUGU YOGYAKARTA BERBASIS TRANSIT DENGAN PENDEKATAN AKSESIBILITAS. *Jurnal Transportasi Multimoda*, 14(1), 41–54.
- Satria, A. (2015). *Pengantar sosiologi masyarakat pesisir*. Yayasan Pustaka Obor Indonesia.
- Setyawati, W. (2010). *Konsep Spasial Permukiman Dusun Pelemsari, Cangkringan, Yogyakarta*.
- Suryani, Y. (2015). Teori Lokasi Dalam Penentuan Pembangunan Lokasi Pasar Tradisional (Telaah Studi Literatur). *Seminar Nasional Ekonomi Manajemen Dan Akuntansi (SNEMA) Fakultas Ekonomi Universitas Negeri Padang*, 152–163.
- Tabalessy, R. (2014). Pengelolaan Ekosistem Mangrove di Kota Sorong Propinsi Papua Barat. *Program Pasca Sarjana Universitas Sam Ratulangi Manado*.
- Trialfhianty, T. I., Muharram, F. W., Suadi, Quinn, C. H., & Beger, M. (2022). Spatial multi-criteria analysis to capture socio-economic factors in mangrove conservation. *Marine Policy*, 141, 105094. <https://doi.org/https://doi.org/10.1016/j.marpol.2022.105094>.
- Wahyudin, Y. (2003). Sistem sosial ekonomi dan budaya masyarakat pesisir. *Makalah Disampaikan Pada Pelatihan Pengelolaan Kawasan Konservasi Perairan, Tanggal, 5*.
- Wibowo, H., Bahri, E. S., & Harto, P. P. (2016). Optimalisasi Peran Masyarakat Nelayan Batam dalam Pengembangan Ekonomi. *SOSIO DIDAKTIKA: Social Science Education Journal*, 3(1), 92–104.
- Zainal, R. I. (2020). Analisis Stakeholder di Wilayah Operasional Perusahaan Pertambangan Migas. *MBIA*, 19(3), 283–292.
- Zuluaga Díaz, B. C. (2007). Different channels of impact of education on poverty: an analysis for Colombia. *Borradores de Economía y Finanzas; No. 11-Junio 2007*.

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