



Marine Resources Management in Sorong Regency in Environmental Communication Perspective

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Abstract: The potential of marine resources in Sorong district, West Papua is very abundant, especially in the fisheries sector and encourages the economy and development of the State and can prosper the surrounding community. Suboptimal utilization results in a less prosperous community so that many social conflicts occur that threaten the disintegration of the nation. This study aims to analyze the management of marine resources in Sorong Regency in the perspective of defense management using a descriptive qualitative research design. The results of this study show that the management of marine resources in Sorong Regency is still not effective and in accordance with the principles of sustainable development. The economic aspect, the lack of understanding of fishermen related to the marketing system results in oligarchs so that those who benefit a lot are not fishermen. Ecological aspects, the use of fishing gear that is not environmentally friendly such as fish bombs and cantrang results in damage to marine ecosystems. The social aspect, open access management has resulted in fisheries production, both capture and aquaculture, starting to decline.

Keywords: Management; Marine Resources; National Defense.

Introduction

Indonesia is the largest archipelagic country in the world with 17,504 islands and an area of 5.8 million km² of sea waters. Indonesia also has a coastline of 81,000 km which is the second longest coastline in the world after Canada. Moreover, the sea and the coastal areas surrounding it contain enormous and diverse economic potential (development). Therefore, the world community knows Indonesia as the largest marine country in the world with abundant marine biodiversity (Polunin et al., 1983)

The Indonesian sea has about 8,500 species of fish, 555 species of seaweed and 950 species of coral reef biota. Fish resources in the sea cover 37% of fish species in the world, where some species have high economic value, such as tuna, shrimp, lobster, reef fish, various types of ornamental fish, shellfish, and seaweed. From this fisheries sector it is estimated that 7.3 million tons per year are spread in Indonesian territorial waters and the waters of the Indonesian Exclusive Economic Zone (EEZ) (LIPI, 2012). The sector has an economic value of

US \$ 82 billion per year. Even though the amount of capture fisheries production is only 93% utilized or 5.4 million tons of the 5.8 million tons of potential capture fish resources allowed (JTB) per year (Kementrian Perikanan, 2017)

West Papua Province is located in the center of the world's coral triangle which is the region with the richest marine biodiversity in the world (DPR, 2019). West Papua Province has various types of marine wealth both species of fish, mollusks, and coral animals. West Papua also has various types of ecosystems that support the growth of various marine life including coral reef, seagrass meadows, and mangrove ecosystems.

However, the extraordinary potential of marine resources in West Papua is not balanced with good management so that it is still far from achieving optimal development based on marine resources (Muchlashin et al., 2022). Of the seven sectors that can be classified as business fields in the marine sector Nurlaili et al., (2016) Namely (1) fisheries, (2) marine tourism, (3) mining and energy, (4) maritime industry, (5) marine transportation, (6) marine development and (7) marine services, it

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appears that each sector achieves different results. Of the seven sectors, only the mining and energy sectors have provided tangible results and contributions to the nation's economy. Meanwhile, the fisheries and tourism sectors, although potentially very large, the results achieved are still far from expectations. Similarly, the sea transportation sector, marine buildings, maritime industry and other marine services are not optimally developed, and are far behind.

According to Dahuri, (2005) there are other problems that are factors that are less than optimal governance of marine resources management. This can be seen from internal and external aspects which structurally are still obstacles and obstacles for each sector to achieve maximum results. These internal problems include citizen awareness and participation, resource utilization, low levels of technology and management accompanied by conditions and levels of poverty, as well as widespread backwardness of coastal and marine communities. Meanwhile, external problems usually stem from the still not conducive macroeconomic policies (political economy) to encourage marine development. Among them, the failure of monetary and fiscal policies to meet expectations, namely high interest rates and the lack of soft credit programs for the marine sector.

The wealth of West Papua's abundant marine resources has not brought blessings to the local community. The reason is, the area that is rich in natural resources is one of the poorest provinces in Indonesia. According to BPS 2020 data, the poverty rate in West Papua Province reached 214,470 people or reached 22.17% (Wambrauw et al., 2020).

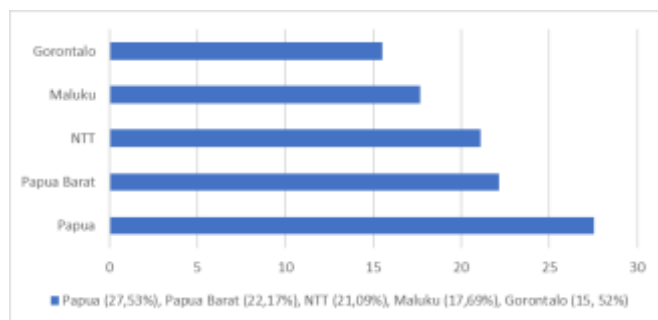


Figure 1. Provinces with the Poorest People in Indonesia in 2020 (%)

Based on figure 1 that West Papua ranks second in the province with the poorest population in Indonesia with a percentage of 22.17% after Papua Province. The existence of abundant natural resources (SDA) should allow the people of West Papua to become prosperous and prosperous if they are able to manage or process them. In research Djula, (2013) it is explained that there is a significant relationship between natural resources

and the economic growth of fishermen. The research also explains that good management in terms of coastal natural resources management managed by fishermen will be able to encourage the economy of the surrounding community.

West Papua Province geographically has direct territorial boundaries with countries in the Pacific region so it is important to be a marker of Indonesian sovereignty both in the defense aspect and the use of marine resources in Indonesia's Exclusive Economic Zone. The location of West Papua Province, especially Sorong Regency, is very strategic because it is the route of the Asia Pacific - Australia international trade route and also a sea toll gate in eastern Indonesia as stated in the national strategic program.

One of the problems in the utilization of marine and fishery resources in Sorong Regency is Illegal, Unreported and Unregulated Fishing (IUU Fishing). IUU Fishing can be interpreted as fishing activities that are carried out illegally, unreported and not in accordance with established rules. Based on data from the National Police Headquarters, which was conveyed by the Sorong Police Department through the Papua Regional Police, state losses due to IUU fishing in Sorong waters reached billions of Rupiah per year (JPPN.com, 2011). In addition to economic aspects, IUU Fishing also threatens the sustainability of the marine environment, food resources, security and state sovereignty and triggers other organized crimes such as human trafficking and smuggling, slavery, illicit trafficking in drugs and weapons (Petrossian, 2015).

One of the efforts of the Government of Indonesia in overcoming poverty and welfare of the Papuan people is by issuing Presidential Instruction (Inpres) Number 9 of 2017 concerning the acceleration of welfare development in Papua and West Papua Provinces. Development in the eastern region, which is currently massive, should not only be able to increase regional competitiveness, but also expected to maintain a balance of development between regions in accordance with their respective potentials, so that social welfare can be felt by the community. As it is well known that the development of key indicators in regional development includes economic growth, solving social problems, such as reducing unemployment, and reducing poverty as well as achieving ecosystem balance (Nastiti & Umilia, 2013).

Marine resources management policy in Sorong Regency through sustainable development in accordance with the 2nd mission of the West Papua RPJMD 2017-2022, namely equitable and sustainable environmental and natural resource management, and the 6th mission of building independent and sovereign agriculture (Fonner et al., 2020). The policy also synergizes with government programs contained in

Presidential Regulation Number 16 of 2017 concerning Indonesian Marine Policy which consists of 7 main pillars consisting of: (1) marine resources management and human resource development, (2) defense, security and law enforcement, (3) marine governance and institutions, (4) marine economy and infrastructure and improving community welfare, (5) marine space management and marine environment protection, (6) marine culture and (7) marine diplomacy.

In the management of marine resources with the principle of sustainable development, an important thing that cannot be ignored and must be considered is concern for the welfare of local communities and environmental sustainability (Agustina et al., 2020). Therefore, management does not only aim to obtain the maximum benefit without paying attention to the principles of sustainable development. Economic growth in the marine sector must be achieved through effective, sustainable, value-added, inclusive and innovative sustainable development to support economic activities. This is in line with Sustainable Development Goal 14, which demands a balance between conservation and responsible use of marine resources. The balance between protection and utilization requires the availability of clear, complete, responsible and transparent data and information, so as to facilitate the formulation of marine and fisheries development policies and avoid disputes arising from the use of marine resources (Sabana, 2019).

Good management of marine resources through sustainable development is an effort to maintain and preserve natural resources and make maximum use of them (Fonner et al., 2020). This will have a positive impact on surrounding communities that rely on marine natural resources as their economic livelihood. If the potential of marine resources can be utilized optimally, the economy of the surrounding community will grow so that poverty and welfare which are one of the factors in the conflict in West Papua can be overcome and Indonesia's sea sovereignty is maintained. The abundant potential of marine resources in Sorong Regency of West Papua must be balanced with effective and optimal management, so that the problems of environmental damage, poverty and welfare can be overcome and the threat of disintegration of the Indonesian nation will disappear.

Based on the description above, researchers are interested in conducting research related to Marine Resources Management in Sorong Regency in the Perspective of Environmental Communication, which aims to analyze the way of managing marine resources in Sorong Regency in the perspective of environmental communication.

Method

In this study, researchers used qualitative methods whose data sources were obtained from interviews and *Forum Group Discussion* (FGD) with resource persons and explained in words. This study aims to understand the phenomenon of marine resources management in Sorong Regency, West Papua holistically and by means of description in the form of words and language, in a special natural context and by utilizing natural methods (Moleong, 2016).

Qualitative research has a known scheme in several data collection methods. Sugiyono, (2015) explained that data collection techniques are the most important step in the research process with the aim of facilitating the data collection process. The process of collecting data in qualitative research can be carried out through several methods, including: observation, interviews, both structured and unstructured, documentation and visual materials, as well as various efforts to record or record information needed in research (Creswell & Poth, 2016).

In this study, the authors used data analysis techniques from concepts proposed by Miles and Hiberman in Sugiyono, (2017), which translates that activities in qualitative data analysis are carried out interactively and take place continuously until they are complete, so that the data is saturated. Activities in data analysis are: data reduction, data display, and conclusion drawing/verification.

Result and Discussion

Marine Resources Management in Sorong Regency in Environmental Communication Perspective

The management of marine resources in Sorong Regency itself is carried out based on the principles of benefits, justice, partnership, equity, integration, openness, efficiency, and sustainable sustainability in accordance with Law Number 45 of 2009. In the explanation, it is also mentioned about obligations in the management of marine resources based on the principles of planning and integration of control.

Natural resources are one part of the defense component that must be managed to be ready for universal defense, mentioned in paragraphs (9), (10), and (11), which are as follows: First, in paragraph (9) it is explained that "Natural resources are potentials contained in the earth, water, and aerospace which in their original form can be utilized for the benefit of national defense," Second, in paragraph (10) it is explained that artificial resources are natural resources that have been increased in use for the benefit of national defense. Third, First, in paragraph (11) it is explained that the components of national facilities and infrastructure explained in paragraph (11) are "the

results of human cultivation that can be used as supporting tools for the benefit of national defense in order to support national interests." (Makmur Supriyanto).

In this study, researchers used G.R Terry's management theory which was elaborated with environmental communication theory. Environmental communication is the use of planned and strategic communication processes to support effective policy making and project implementation directed at environmental sustainability. It is a two-way process of social interaction that allows related people to understand key environmental factors and respond to problems in a competent manner. Environmental communication aims not so much at the dissemination of information, but at a shared vision of a sustainable future and at the development of capacity within social groups to solve or prevent environmental problems.

Furthermore, management theory according to George. R. Terry in Silalahi & Mifka, (2015) consists of POAC planning, organizing, actuating, controlling.

1. *Planning*

The planning stages include needs recognition, meetings and discussions, obtaining and conveying information, organizing, formulating management goals and strategies, and developing institutional structures. Looking at the things at the planning stage, the most important key here is the active participation of both parties, both the government and the community. Problems arise at the stage of introducing the need for a new management model. This arises as a consequence of the need for a mentoring agency. Institutions that are generally offered to carry out these activities are NGO or NGO institutions. The condition of the people of Sorong Regency who are a little reluctant to the existence of NGOs makes this process more difficult. This is due to negative public perception of the presence of NGOs. According to the community, the existence of NGOs does not change their situation for the better, instead what often happens is the departure of NGOs after the "project" is completed and there is no sustainability. The people of Sorong Regency view NGOs as only chasing money regardless of their situation.

Based on the findings of the study, the researcher analyzed that marine resources management planning in Sorong Regency has gone quite well with the core community formation program and the PUMP program and the Aquaculture Production Improvement Program derived from TP Funds.

2. *Organizing*

The role of existing institutions in the community such as the core community and the Community Supervision System (Siswamas) is a central role in the management of marine resources. The problems that

exist at this stage are human resource problems in balance and coordination problems between the government and the community. HR problems are caused by the weak knowledge of administrators about formal institutions, because the level of education possessed by administrators is on average at the elementary and junior high school levels. This problem can be overcome by continuing to hold counseling and training related to institutions by competent parties in their fields, such as academics and the government. The lack of human resources in this institution is certainly very influential considering its enormous role in realizing sustainable management of marine and fisheries resources.

In the community, complete control is carried out by customary law and government law, but the Kabupaen Sorong community is more dominant in using customary law. This is related to the management of natural resources as a whole. If the control of natural resource management is carried out individually, the control carried out is by maintaining and applying customary laws such as: returning small fish to thrive, and not using poisons or trawls in fishing.

This happens because of the lack of knowledge of human resources due to internal and external factors. On the one hand, there is a positive thing, namely that with the application of natural resource management based on local wisdom, these natural resources are used as friends by maintaining without damage. In contrast to the principle of control, if the community thinks that natural resources are only limited to things that are used as tools, these resources are only taken advantage of without protection and care.

With this case, we can find out the positive and negative things in natural resource management carried out by the community with efforts to manage local wisdom, especially people in Sorong Regency. The imbalance between abundant resources and economic welfare is due to the lack of knowledge of human resources in utilizing existing potential because they are already in the comfort zone with hereditary circumstances.

In research conducted by researchers, there are several things or rules that exist in the community, although they are not written but can be applied based on the habits of indigenous Papuans, especially the people of Sorong Regency. These include: (1) People who fish in the area must ask permission from community leaders or people who are determined in the community; (2) It is not allowed to fish using trawls or bombs to protect the underwater ecosystem; (3) If you get a small fish it will return it back so that it can breed; (4) Maintain mangroves to preserve the habitat in the mangrove forest.

Thus, there seems to be an ideal condition that is expected where the Government protects customary law or local wisdom in Sorong Regency in marine resources management policies to save environmental sustainability, welfare, and social justice. Then, the establishment of the core community program and the Community Supervision System (Siswamas) indicates good organization between the government and fishing communities in the management of marine and fishery resources in Sorong Regency. Not only has that, in order to overcome illegal fishing, the Directorate General of PSDKP also coordinated with the Indonesian Navy, National Police and BAKAMLA.

3. *Actuating*

The implementation of marine resources management that takes into account the socio-cultural conditions of our community feels very much needed, especially for areas that have a level of dependence on these marine resources. The same is also shown for the Sorong Regency area with an effort to maintain the continuity of their own resources and communities. The existing management model in Sorong Regency may not necessarily be implemented in other regions because this is very dependent on the socio-cultural conditions of the area which are definitely different.

Based on the results of the study, researchers perceive that the role of environmental communication is very important in the management of marine resources in Sorong Regency so that the concept of marine resources can be utilized optimally without having to damage the marine environment. Sementara, pengelolaan sumberdaya laut di Sorong Regency is actually more nuanced to return the authority of marine resources management to local communities by not neglecting the existence of the state, and other related tools. It is also used as an opportunity to harmonize the balance between economic, ecological, and social dimensions.

a. Economic aspect

In the utilization of marine natural resources themselves, the community has not maximized the use of marine natural resources because there are still many things that need to be improved in the use of marine natural resources. This can be proven from the lack of fish farming, lack of catch production even though in the Sorong Regency government program there are several catch programs, such as breeding asar fish (smoked fish), making caught fish into canned fish, making the coast a tourist spot, as sea transportation.

Indirectly in utilization must optimize the use or benefits contained in nature, especially in marine natural resources, utilization does not mean exploiting without preserving and maintaining natural resources, but utilization that is balanced with the preservation of

existing natural resources so that in the future children and grandchildren can still feel the sumebr of these natural resources.

Research Johanson, (2013) mentioning that effective marketing is indicated by an efficient distribution channel pattern, including relatively little involvement of intermediary traders and relatively short distribution channels. Regarding prices, the longer the marketing distribution channel, the higher the price formed. In this study, the pattern of distribution of catches based on marketers in Pantura Java is still inefficient because there are still long and many intermediary traders in the distribution channels involved. The distribution channel of catches in the form of fresh fish at the port of Pantura Java is included in the indirect distribution channel. These twelve ports distribute through several intermediaries including producers (fishermen)-collecting traders (baskets)-wholesalers-retailersconsumers.

b. Ecological Aspects

In utilizing these marine natural resources, sometimes people do not pay attention to aspects of sustainability, and if this is left continuously for a long time it is feared that it will cause a decrease in population in natural habitats, it can even result in ecosystem damage and extinction of existing types of marine natural resources. In the context of fishery resources, its existence in Sorong Regency is also dwindling. The invasion of technologically advanced destructive foreign vessels, the spread of overfishing practices by local actors-even using environmentally unfriendly fishing techniques-have depleted fishery resources.

The use of more modern fishing gear such as trawls and seine nets will damage the ecology because some types of fishing gear net fish from the seabed. This can result in damage to coral reefs that have an impact on the destruction of the marine ecosystem. The next impact is the decline in fish resources due to the very small size of the net hole, so that the fish caught are not selective and cause overfishing. If small fish are caught in fishing gear, it will result in a decrease in fish species in the waters.

Many international and regional conventions govern sustainable fishing, such as The 1995 Code of Conduct for Responsible Fisheries, The 1995 Agreement for the Implementation of the Provision of the United Nations Convention on the Law of the Sea of 10 December 1982 (The 1995 UNIA). Indonesia also ratified the international rules, such as UU No. 17 tahun 1985 tentang Ratifikasi UNCLOS, Undang Undang Republik Indonesia Nomor 21 Tahun 2009 tentang Pengesahan Agreement For The Implementation Of The Provisions Of The United Nations Convention On The Law Of The

Sea Of 10 December 1982 Relating To The Conservation And Management Of Straddling Fish Stocks And Highly Migratory Fish Stocks. At the national level, Law No. 45 of 2009 concerning Amendments to Law No. 31 of 2004 concerning Fisheries has adopted the principles of sustainable fisheries management.

Related to the regulation of fishing equipment in Indonesia, the Government has issued several regulations, including Kepmen KP No.06/2010 concerning Fishing Equipment in Fisheries Management Areas of the Republic of Indonesia and Ministerial Regulation No. 02/2011 and its amendments concerning Fishing Lines and Placement of Fishing Equipment and Fishing Aids in Fisheries Management Areas of the Republic of Indonesia. Not only stopping at formal rules, MMAF wants to ensure the use of environmentally friendly fishing gear. MMAF also develops inventions or modifications of fishing gear to make it more environmentally friendly. One way is to hold an Environmentally Friendly Fishing Equipment Innovation Competition.

c. Social Aspect

The structure of the fishing fleet used by the people of Sorong Regency in general still shows a small fishery scale, with almost all fishermen having a fishing fleet. For more details can be seen in the Table above. Most of the boats used are medium sized made of fiberg / ass using a propulsion motor with a power of 7 to 15 PK. This type of boat is generally used for small-scale fishing gear operating in coastal areas or zone II (3 to 9 miles). The fishing gear that is generally used is a net.

For this type of motorless boat is only owned by a few fishermen and usually this boat is made of wood or commonly referred to as a "clog boat" with the fisherman referred to as a 'bose fisherman' because he has to row. This type of boat can only operate in coastal areas (1 to 3 miles), with fishing gear used is fishing rods, pintur, arad, or berenong.

Large boats are very few found in this area with an operating area capable of covering a distance of 9 to 12 nautical miles. This is rarely done considering the too big waves in the waters of Sorong Regency. In general, each fishing fleet does not only use one type of fishing gear in its operations, this applies to all sizes and types of vessels. In general, the type of fishing boat or boat operating in the waters of Sorong Regency is an outboard motorboat, using an engine that can be installed and removed quickly and easily from the stern of the capat. This ship is used to catch fish or shrimp using several fishing gear such as gilinet, sirang, pintur, Ciker or rawe. In the selection of fishing gear it is used in what target is desired, but the dominant fishing gear used by fishermen is fishing rods whose fishing goals are

fish that live near or around the bottom of the waters such as snapper, grouper, stingrays and other small fish.

From the results of the study, the researcher gave his analysis that the people of Sorong Regency still use a simple method or commonly known as the traditional fishing method so that every day there is no target how much to take home to be sold to the market so that the results obtained in sales are not optimal. Then in terms of technology and production systems used by the people of Sorong, it is still not advanced as well as the security of fish quality that has not been guaranteed.

4. Supervision

The many problems in Sorong waters such as overfishing, illegal fishing, and fishing that damage the environment make an effective monitoring system needed. However, Sorong's vast waters make this area difficult to monitor and vulnerable to fisheries crime. Relevant institutions responsible for monitoring marine resources in Sorong's territorial waters such as the Sorong Regency Marine and Fisheries Service, the Water Police (Polair), Special Criminal Investigators, the Indonesian Navy, and BAKAMLA have limited surveillance resources to monitor their vast areas, which results in large surveillance operation constraints faced. Therefore, the Sorong Regency Government has taken steps to formalize potential support from the central government by synergizing the responsibilities of stakeholders through the signing of a Memorandum of Understanding between the DKP of Sorong Regency and the Directorate General of PSDKP, KKP (Letter of Agreement No. 09/2019). The agreement aims to improve the efficiency and effectiveness of supervision, increase the involvement and capacity of the POKMASWAS community, and increase synergy in supervisory operations and exchange of data and information among stakeholders.

This community-based monitoring system aims to ensure that fish resource management and utilization practices become more controlled. For this reason, it is necessary to optimize the participation of existing Pokmaswas members to actively socialize wider supervision efforts. POKMASWAS is an eye for law enforcement agencies in the field involved in monitoring marine and fisheries resources in Indonesia. When POKMASWAS members observe a fisheries crime, they must report it to the authorities for follow-up. POKMASWAS cannot 'enforce' the law, but it is very important to support monitoring and monitoring activities. Therefore, it is imperative to maintain their enthusiasm and commitment to patrol/monitor and report, as well as assist them in building a strong and reliable network with broader law enforcement officers and agencies who can follow up their reports with appropriate enforcement actions.

In its activity to report illegal fishing activities to the MMAF Control Center using SMS Gateway. SMS Gateway reporting system is one of the practical tools that allows POKMASWAS to make reports via text phone (SMS) in real-time to related parties.

Conclusion

Marine resources management in Sorong Regency is still ineffective and not in accordance with environmental communication principles. This can be seen from the planning with the core community formation program and the program to increase capture and aquaculture production from the TP Fund. However, in organizing involving several agencies such as the Indonesian Navy, National Police, Bakamla and also the community is less effective because of human resource problems in balance and coordination problems between the government and the community that are not in line. Human resource problems are caused by weak public knowledge about formal institutions, because the level of education possessed by the average management is at the elementary and junior high school levels. Management is carried out based on three aspects, namely economic, ecological and social aspects. Meanwhile, in terms of supervision in Sorong Regency, one of them is the establishment of POKMASWAS (Supervisory Community Group). The system used in its own reporting uses the SMS Gateway reporting system.

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Conflicts of Interest

The author declare no conflict of interest.

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