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STATUS OF FACILITIES AND INFRASTRUCTURES AVAILABILITY OF THE CAPTURE FISHERIES AREA IN WEST SUMATRA

STATUS KETERSEDIAAN SARANA DAN PRASARANA KAWASAN PERIKANAN TANGKAP DI SUMATERA BARAT

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ABSTRACT

The great potential of fishery resources in the Indian Ocean can be optimally utilized by the community of West Sumatra if adequate fishery infrastructure is available. The development of this infrastructure should ideally synergize with the outputs and outcomes of previous coastal area development programs in West Sumatra. One initial step to create this synergy is to analyze the conditions of the capture fisheries and the available infrastructure in the coastal areas, namely fisheries facilities and infrastructures, as well as the capture fisheries area development programs. This research utilized data and information obtained from field observations, interviews, focus group discussions (FGDs), questionnaire surveys, and secondary data from government agencies. The readiness of the area was assessed by the index of infrastructure availability relative to the infrastructure needs for the planned targets. The analysis concludes that the availability of fisheries facilities and infrastructures had a moderate category status, respectively 63% and 72%. Among several types of facilities, some still need to be constructed, such as clean water supply and ice factories to maintain the quality of fish.

Keywords: capture fisheries area, evaluation of facilities and infrastructures, fisheries infrastructure

ABSTRAK

Potensi besar sumberdaya ikan di Samudera Hindia akan dapat dimanfaatkan masyarakat Sumatera Barat secara optimum jika tersedia infrastuktur perikanan yang memadai. Pembangunan infrastruktur perikanan ini sebaiknya sinergi dengan *output* dan *outcome* dari program pengembangan kawasan pesisir Sumatera Barat sebelumnya. Salah satu langkah awal untuk membuat sinergi ini adalah melakukan penelitian yang bertujuan menganalisis kondisi perikanan tangkap yang akan dikembangkan dan kondisi infrastruktur yang tersedia di kawasan pesisir tersebut, yaitu sarana dan prasarana perikanan serta program pengembangan kawasan perikanan tangkap. Penelitian ini menggunakan data dan informasi yang diperoleh dari observasi lapangan, wawancara, *focus group discussion* (FGD), pengisian kuesioner, dan data sekunder yang bersumber dari instansi pemerintahan. Kesiapan kawasan dinilai dari indeks ketersedian infrastuktur relatif terhadap kebutuhan infrastruktur untuk sasaran yang direncanakan. Analisis menyimpulkan bahwa ketersediaan sarana dan prasarana perikanan memiliki status tercapai kategori sedang, masing-masing 63% dan 72%. Di antara beberapa jenis fasilitas yang masih harus dilengkapi adalah penyediaan air bersih dan pengadaan pabrik es untuk menjaga kualitas ikan.

Kata kunci: evaluasi sarana dan prasarana, infrastruktur perikanan, kawasan perikanan tangkap

INTRODUCTION

The fish resources in the Indian Ocean adjacent to the coastal areas of the West Sumatra Province are abundant. These potential resources can be utilized optimally by the local communities if adequate fisheries infrastructures are sufficiently available. The fisheries sector in West Sumatra is one of the largest contributors to the province's Gross Regional Domestic Product (GRDP) in 2020. Together with the agriculture and forestry sectors, the fisheries sector contributed 22.38% (Central Statistics Agency of West Sumatra Province 2021). The government has implemented a strategic policy in establishing the capture fisheries development area (CFDA) in the coastal area of West Sumatra (Decree of the Minister of Marine Affairs and Fisheries 2011). This policy is to improve the welfare of coastal communities and the sustainability of fish resources and the environment by involving various stakeholders such as the government, fishermen, and entrepreneurs. The outcomes of the policy are sustainable fisheries and maximum benefits (Djunaedi and Basuki 2002). The policy has been implemented and resulted in some output in terms of infrastructures (Marine and Fisheries Service of West Sumatra Province 2018). This program aims to increase the efficiency, sustainability, and productivity of the fisheries sector (West Sumatra Regional Development Planning Agency 2021). Among the infrastructures are fishing ports, transportation infrastructure, education and training facilities for fishers, fisheries information systems and sustainable fisheries resource management, and partnership programs (Ministry of Marine Affairs and Fisheries of the Republic of Indonesia 2020).

The outputs of this program include improved infrastructure facilities in the Bungus Ocean Fisheries Port (PPS). The Bungus PPS is equipped with facilities for docking and improved utilization of shipping lanes (Ikhsan *et al.* 2015). The outcome of this development is increased productivity and income for local fishermen, providing opportunities for exporting fishery products, especially tuna, to a wider market (Mongabay 2021). The Bungus PPS is also being developed as the main landing center for tuna and other fishery resources in the West Sumatra region (Ikhsan *et al.* 2015).

The outputs and outcomes of the CFDA should be synergized with the outputs and outcomes of a nation-wide minapolitan program (MP) that was implemented before the development of CFDA of West Sumatra. With this integration, the improvement of port facilities, docks, and fish processing units under CFDA will be in line with the MP goals to increase production, added value, and the welfare of coastal communities in a sustainable manner. This synergy is also expected to optimize local resources, facilitate access to export markets, and accelerate economic growth in the fisheries sector that is inclusive and competitive.

One of the initial steps to create this synergy is to conduct research aimed at analyzing the conditions of the capture fisheries that will be developed and the conditions of the infrastructure available in the coastal area, namely fisheries facilities and infrastructure and capture fisheries area development programs.

METHODS

Time and location

The research activity was in the form of collecting questionnaire data from August to November 2023. This activity focused on three locations of the CFDA of West Sumatra which began in 2010, namely: the Samudera Bungus fisheries area (Padang City), the Pasir Nan Tigo fisheries area (Padang City), and the Air Bangis fisheries area (West Pasaman Regency) (Figure 1).

Bungus ocean fishing port (PPSB) is in the administrative area of Labuhan Tarok Village, Teluk Kabung District (Bungus), Padang City, West Sumatra Province. Labuhan Tarok Village is situated at 0-140 m above sea level with an area of 320 ha, 16 km from Padang City and 42 km from Minangkabau International Airport. Fish products landed at PPS Bungus are dominated by tuna (Figure 2).

The Pasir Nan Tigo fisheries area is in Koto Tangah District, Padang City, 10.9 km from Minangkabau International Airport. In this area, the communities carry out raw fish processing into dried fish or salted fish (Figure 3).

Figure 1. Locations of the West Sumatra capture fisheries areas.

Figure 2. Activities in the Bungus Ocean fisheries area.

Figure 3. Padang city fisheries processing center in Pasir Nan Tigo.

The Air Bangis fishery area is in West Pasaman Regency, located on the coast facing the Indian Ocean, with its strategic location, Air Bangis has become one of the most potential fishery areas in West Sumatra. In the area, there is already a market for auctioning and selling fish (Figure 4).

Figure 4. The atmosphere of the fish market in the Air Bangis fisheries area.

Data collection methods

Both primary and secondary data were collected to describe the status of the condition of the infrastructures in the CFDA. For each type of infrastructure, the availability and condition of existing facilities and infrastructure are assessed and the achievements of the CFDA program are evaluated. The fisheries facilities are community institutions (farmer/fisherman groups), fish auction places, ice factories, financial institutions (banks and cooperatives), fish processing industries (small, household), fuel stations, processing/packing warehouses, fish drying areas, fish hatchery docking facilities. Infrastructure data includes road networks, clean water networks, electricity networks, telecommunications networks, docking facilities, and irrigation networks. The CFDA activities are training, counseling, hatcheries, and capital provision for home industries. The condition of the CFDA is described using data on population, livelihood structure, and program implementation data on institutions, coaching, capital provision, and management of fisheries products at home industries. The data were collected from direct observations, interviews, and questionnaires. Interviews were conducted with representatives from the Marine and Fisheries Service, Port Service, Regional Development Planning Agency (Bappeda), business actors, and fisher leaders. Questionnaires were given to 12 fishers to determine their level of participation in the programs of the CFDA in West Sumatra. The incidental sampling method was applied to select respondents of business actors and fisher leaders.

Evaluation method

The achievements of the CFDA program are evaluated by comparing the availability of outputs to the planned outputs of the CFDA program. The results are presented in the form of scores or values that indicate percentages of the results of achievement relative to the expected results or targets.

The formula used to determine the level of overall achievement (OA) of the CFDA is:

$$OA\ (\%) = \frac{Sum\ of\ achievement\ values\ of\ all\ items}{Number\ of\ items\ \times Maximum\ achievement\ value} \times 100\%$$

Based on the level of achievement (%), three categories of the status of the program are distinguished namely high, medium, and low (Tasni *et al.* 2021; Aswanah *et al.* 2013):

1. High: The infrastructure is highly available if 80 < OA ≤ 100% or score of 5. It means that the infrastructure is ready for its utilization according to the program objective.
2. Medium: The category of infrastructure is partly available if 50 < OA ≤ 80% or score of 3. It means that the infrastructure is partly ready for its utilization according to the program objective.
3. Low: The infrastructure availability is poorly available if OA < 50% or score of 1. It means that the infrastructure is not ready to contribute to the program objective.

RESULTS AND DISCUSSION

Availability of capture fisheries infrastructure: facilities and infrastructure

The types of facilities and quantities of each facility in the CFDA are as follows:

(1) Community institutions (fishermen/ farmer groups)
The number of fishermen/farmer groups in each fishing area is more than 8 farmer groups. Based on interviews conducted with the Marine and Fisheries Service in each region, this number has exceeded their target.

(2) Government institutions
Government institutions directly involved in the development of capture fisheries in West Sumatra consist of the Ministry of Maritime Affairs and Fisheries, the Regional Development Planning Agency (Bappeda), the Fisheries and Marine Service, and the Port Service.

(3) Fish auction place (TPI)
The only fishing area that has an active TPI is the Air Bangis area, while the Bungus PPS area does not have a fish auction. The Pasir Nan Tigo area has a TPI but it is not actively used.

(4) Ice factory
Fishermen and related agencies reported that the ice factory currently located around the fishing area is privately owned.

(5) Financial institution (cooperative/ bank)
Only one fishing area has a cooperative, but it is managed by the private sector.

(6) Fishery product processing/home industry
All fishing areas have SMEs or home industries to process fishery products.

(7) Market
The active market is the market located in the Air Bangis fishing area.

(8) Processing/packing warehouse
The processing/packing warehouse is only found in the Air Bangis Capture Fisheries Area.

(9) Fish drying field
All capture fisheries areas that are the object of the study have fish-drying fields.

(10) Workshop docking
The three capture fisheries areas in West Sumatra do not yet have a workshop docking.

(11) Refrigerator (coldroom/cold storage)
The only cold storage that can be used is in the PPS Bungus capture fisheries area, and the Air Bangis capture fisheries area is experiencing damage that has occurred for more than 2 years.

(12) Social facilities, such as education
The three capture fisheries areas in West Sumatra do not yet have social facilities.

The respondents of this study acknowledge the availability of the fisheries facilities in the CFDA, their perceptions as summarized in Table 1. Overall, such perceptions resulted in a moderate availability of fisheries facilities in the CFDA of West Sumatra; OA = 63.3%. Four output items that are considered fully available are community institutions, government institutions, home industries of fish processing units and fish drying area. The fisheries processing units in the Pasir Nan Tigo were provided by the government and used directly by the local community. However, storage rooms and drying rooms, greenhouses are not well maintained.

Three other output items considered poor or not available are ice factory, docking facilities, and educational facilities. As observed directly, these facilities are not utilized optimally. For example, the cold storage in Bungus was still empty with a utilization rate of 50% of its capacity. The cold storage was rented by fish collectors, not from fishermen directly. Likewise in Air Bangis, the cold storage owned by UPTD has not been functioning for a long time.

The rest output items are considered moderately available. They require special attention from the regional governments, e.g. procurement of these facilities. Since there is no government-owned ice factory, they stakeholders buy ice from local private ice factories, likewise in Air Bangis there is no government-owned ice factory. Workshop docking and other social facilities are also not yet available.

The types of infrastructures and their condition in the CFDA are described below.

(1) Road network
The road network from downtown to the CFDA capture fisheries area is good because the road has been paved and is wide.

(2) Clean water network
The clean water network is currently only available in the PPS Bungus but not in the other two areas.

(3) Electricity network
The PPS Bungus has a good electricity network, while the electricity network in the two other two areas is inadequate.
(4) Telecommunications network
The three capture fisheries areas have very good telecommunications networks.
(5) Pier
All sites of the CFDA have piers for ships to dock to unload their catch.
(6) Drainage network
The drainage network is not yet constructed, owned by the three capture fisheries areas is not yet in accordance with what was planned.
(7) Transportation mode
The transportation mode at each site of CFDA is available but limited.
(8) Fishing gear
The fishing gear used by fisheries on each site of CFDA is dominated by traditional fishing gear. A few large fishing boats have modern environment-friendly fishing gear.
(9) Use of technology
A few fishers on each site of CFDA use Sonar and GPS. These technologies help fishermen and fish farmers locate fish.
(10) Processing of marine products
The processing of marine products is limited to drying salted fish, because it does not require the use of sophisticated technology.

The respondents of this study acknowledge the availability of fisheries infrastructure in the CFDA, their perceptions as summarized in Table 2. Their perceptions resulted in a status of moderate availability of fisheries infrastructures in the CFDA of West Sumatra, OA = 72%. Among the eleven types of infrastructures, road networks, telecommunication networks, and ports were considered fully available (scores of 5). The other infrastructures were considered moderately available (scores of 3).

The roads were in very good condition while the telecommunications network provides easy access and the ports have dockyards that can accommodate existing fishing boats.

The provision of clean water in the Air Bangis fisheries area is currently inadequate. Users of the fish market must purchase clean water water sellers. Clean water is needed by fish processors, traders and fishers. The processing of marine products has been practiced in a basic way, i.e. drying.

Table 1. Recapitulation of the level of availability of facilities in the capture fisheries development areas in West Sumatra.

No	Outputs	Availability score	Values	Available Level (%)
1	Community institutions (fishermen/ farmers groups)	5	90	
2	Government institutions (Regional Development Planning Agency (Bappeda), Fisheries Service)	5	85	
3	Fish auction place (TPI)	3	60	
4	Ice factory	1	1	
5	Financial institutions (cooperatives/ banks)	1	10	
6	Processing of fishery products/home industry	5	80	63,3%
7	Market	3	75	
8	Processing/packing warehouse	3	65	
9	Fish-drying area	5	90	
10	Docking facilities	1	1	
11	Coldroom/cold storage	3	65	
12	Social facilities, such as education	1	1	
	Total	38	623	

Table 2. Recapitulation of the level of availability of infrastructures for the Capture Fisheries Development Areas in West Sumatra.

No	Variables	Categories	Values	Available Level (%)
1	Road network	5	95	
2	Clean water network	3	70	
3	Electricity network	3	75	
4	Telecommunication network	5	85	
5	Port	5	85	
6	Irrigation network	3	60	72%
7	Transportation Mode	3	78	
8	Fishing gear	3	60	
9	Use of technology	3	70	
10	Sea product processing	3	65	
	Total	36	743	

Table 3. Recapitulation of the achevement level of the minapolitan program for capture fisheries in West Sumatra.

No	Variables	Categories	Values	Available Level (%)
1	Coastal community skills program	3	58	
2	Labor absorption	5	80	
3	Training program	3	58	60%
4	Extension program	3	60	
5	Capitalization (home industry)	1	10	
	Total	15	266	

Minapolitan program was developed before the capture fisheries development areas. The summary of respondent's perception on its achievement is presented in Table 3. Among the 5 program items, labor absorption appeared to be fully accomplished while investment in home industries was poorly achieved. The other three program items were moderately achieved, these were a community skill program, training program, and extension program. Overall, the minapolitan program was implemented moderately (score of 60%).

CONCLUSION

The condition of the capture fisheries development area in West Sumatra is quite good, and some outputs have been utilized and contributed to the welfare improvement of the local communities. However, some facilities and infrastructure still need to be improved or to be constructed in the short future. Overall, the availability of both fisheries facilities and infrastructures is in moderate status (score of 63.3% and 72%, respectively), while the level of implementation of minapolitan program reached 60%.

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REFERENCES

Aswanah YK, Efani A, Tjahjono A. 2013. Evaluasi terhadap Implementasi Program Pengembangan Kawasan Minapolitan Perikanan Tangkap di Pelabuhan Perikanan Nusantara (PPN) Brondong Kabupaten Lamongan Jawa Timur. *Jurnal ECSOFIM*. 1(1): 97-108.

Central Statistics Agency of West Sumatra

Province. 2021. *West Sumatra Province in Figures 2021*. Padang (ID): BPS of West Sumatra Province.

Decree of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia Number KEP.18/MEN/2011 concerning General Guidelines for Minapolitan. Jakarta.

Djunaedi A, Basuki MN. 2002. Perencanaan Pengembangan Kawasan Pesisir. *Jurnal Teknologi Lingkungan BPPT*. 3(3): 225-231.

Ikhsan SA, Rosyid A, Boesono H. 2015. Strategi Pengembangan Pelabuhan Perikanan Samudera (PPS) Bungus, Padang, Sumatera Barat Ditinjau dari Aspek Produksi. *Journal of Fisheries Resources Utilization Management and Technology*. 4(2): 69-82.

Marine and Fisheries Service of West Sumatra Province. 2018. Annual Report of the West Sumatra Marine and Fisheries Service. Padang.

Ministry of Marine Affairs and Fisheries of the Republic of Indonesia. 2020. Strategic Plan of the Ministry of Marine Affairs and Fisheries 2020-2024. Jakarta.

Mongabay. 2021. Potensi Besar Ekspor Tuna dari Sumatera Barat. https://www.mongabay.co.id/2021/06/06/potensi-besar-ekspor-tuna-dari-sumatera-barat/. [20 Agustus 2024].

Tasni N, Siradjuddin I, Surur F. 2021. Evaluasi Pengembangan Kawasan Minapolitan Kabupaten Bulukumba. *Journal of Urban and Regional Planning*. 2(2): 1-6. DOI: https://doi.org/10.26418/uniplan.v2i2.46721.

West Sumatra Regional Development Planning Agency. 2021. Regional Medium-Term Development Plan 2021-2026. West Sumatra Provincial Government.