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Utilization of Main and Functional Facilities in UPTD Fishery Port Region II Air Bangis, West Sumatra

Tingkat Pemanfaatan Fasilitas Pokok dan Fungsional di UPTD Pelabuhan Perikanan Wilayah II Air Bangis, Sumatera Barat

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Abstract

The Air Bangis fish landing base is the only fish landing base in Sungai Beremas District, Pasan Barat Regency, and is classified as a type D fishing port. The imbalance between dense fishing activities and limited available facilities results in suboptimal fishing activities. This research was conducted using a survey method in May-June 2024 at the UPTD Regional II Air Bangis Fishing Port, West Sumatra Province. Data analysis used facility needs analysis and facility utilization level analysis. The facilities available at the Air Bangis Fish Landing Base consist of basic, functional, and supporting facilities. Of the 17 existing facilities, four whose utilization levels were analyzed were facilities that significantly influenced capture fisheries activities and were considered suboptimal in supporting dense fishing activities, namely land, docks, depth and area of port ponds, and TPI. The level of facility utilization obtained a value ranging from 17 to 61%, consisting of 2 facilities that have a level of utilization exceeding the capacity of the available facilities so that they are included in the category of not optimal, namely the dock and harbor pool. In contrast, the TPI's utilization level does not exceed the available capacity; facilities that are not used are the ice factory, cold storage, and fuel tanks.

Keywords: Landing base, Air Bangis, Level of Facility Utilization

Abstrak

Pangkalapan pendaratan ikan Air Bangis adalah satu-satunya pangkalan pendaratan ikan yang ada di Kecamatan Sungai Beremas Kabupaten Pasan Barat dan tergolong ke dalam pelabuhan perikanan tipe D. Ketidakseimbangan antara aktivitas perikanan yang padat dengan keterbatasan fasilitas yang tersedia mengakibatkan aktivitas perikanan tidak optimal. Penelitian ini dilaksanakan pada bulan Mei-Juni 2024 Di UPTD Pelabuhan Perikanan Wilayah II Air Bangis Provinsi Sumatera Barat dengan menggunakan metode survey. Analisis data menggunakan analisis kebutuhan fasilitas dan analisis tingkat pemanfaatan fasilitas. Fasilitas yang tersedia di Pangkalan Pendaratan Ikan (PPI) Air Bangis terdiri dari fasilitas pokok, fasilitas fungsional, dan fasilitas penunjang. Dari 17 fasilitas yang ada, 4 fasilitas yang dianalisis tingkat pemanfaatannya adalah fasilitas yang memiliki pengaruh yang signifikan terhadap kegiatan perikanan tangkap dan dianggap belum optimal dalam mendukung aktivitas perikanan yang padat, yaitu lahan, dermaga, dalam dan luas kolam pelabuhan, dan TPI. Tingkat pemanfaatan fasilitas diperoleh nilai berkisar antara 17%-61%, terdiri dari 2 fasilitas yang mempunyai tingkat pemanfaatan melebihi daya tampung fasilitas yang tersedia sehingga termasuk pada kategori belum optimal yaitu dermaga dan kolam pelabuhan, sedangkan

TPI tingkat pemanfaatannya tidak melebihi daya tampung yang tersedia, fasilitas yang tidak digunakan yaitu pabrik es, *cold storage* dan tangki BBM.

Kata kunci: PPI, Air Bangis, Tingkat Pemanfaatan Fasilitas

1. Introduction

West Pasaman Regency has an extensive coastline measuring 152 km, with its western boundary bordering the waters of the Indian Ocean. It boasts a potential fishery resource of 664,528 tons/year. The fishery resources are diverse, including various types of small pelagic fish such as scad, mackerel scad, and shortfin scad. In addition, there is potential for large pelagic fish, including Spanish mackerel, tuna, and others. One of the largest fish-producing areas in West Pasaman Regency is Air Bangis. Air Bangis has the longest coastline in the region, stretching 72.56 km, which is more than twice the length of Sasak Ranah Kinali Beach, which measures only 31.67 km (BPS, 2008). The Air Bangis Fish Landing Base is the only fish landing facility in the Sungai Beremas District and is classified as a Type D fishing port. A Type D fishing port is a classification of fishing ports typically used for fish distribution and packaging.

According to Harahap (2018), the Air Bangis Fish Landing Base includes primary facilities such as docks, harbor basins, retaining walls, and perimeter fences. Functional facilities include a fish auction site (TPI), an ice factory, a machine workshop, and a Solar-Packed Dealer for Fishermen (SPDN). Meanwhile, the Air Bangis Fish Landing Base's supporting facilities include a port office, security posts, guard posts, coastal stalls, parking areas, complex roads, and a prayer room. The underutilization of any facility can hinder the smooth operation of fishing activities. On the other hand, landing base facilities play a significant role in developing fisheries in Air Bangis, the largest fish-producing area in the West Pasaman Regency (BPS, 2017).

The Air Bangis Fish Landing Base facilities are not fully equipped to accommodate the high intensity of fishing activities. The dense fishing activities at the landing base Air Bangis are evident from the number of vessels docking there, as reported in the 2023 annual report, which recorded 378 boats. The relatively small dock, measuring 88 x 5 m, cannot handle all unloading and mooring activities, resulting in queues lasting approximately 1–3 hours. The daily fish catch, which reaches up to 50 tons, exceeds the Fish Auction Site's (TPI) capacity, forcing marketing and auction activities to spill onto the port roads. The imbalance between the high intensity of fishing activities and the limited facilities results in suboptimal operations. Four of the 17 facilities at the landing base of Air Bangis face significant issues, particularly in primary and functional facilities such as land area, docks, harbor basins, and the Fish Auction Site (TPI).

Research on the utilization of primary and functional facilities is necessary. This study employs facility needs analysis and utilization rate assessment to evaluate how effectively existing facilities are used and to identify improvements and developments required to meet the needs of the local fishing industry. The study aims to determine the utilization level of the primary and functional facilities at the Air Bangis Fish Landing Base in Region II of West Sumatra Province. It is intended to provide valuable information and serve as a consideration for port management in developing the facility and formulating policies related to facility utilization. Additionally, it aims to optimize facility usage to better support fishing activities at the landing base of Air Bangis.

2. Material and Method

2.1. Time and Place

This research was conducted in May-June 2024 at UPTD Region II Air Bangis, West Sumatra Province.

2.2. Methods

The method used in this study is a survey. According to Nazir (1983), a survey is an investigation conducted to obtain factual information about existing phenomena and gather factual data regarding a group or region's social, economic, or political aspects. The survey conducted in this research aims to collect information on the facilities and their utilization levels at the Region II Fishery Port (PPW II) in Air Bangis, West Sumatra Province. The data collected includes both primary and secondary data. Primary data provides information on fishing fleets, catch volumes, fishing durations, vessel sizes, fishing activities, and facility dimensions. Secondary data includes published reports, general conditions of the research site, and documentation sourced from institutions such as the West Sumatra Provincial Marine and Fisheries Office (DKP) and the Region II Fishery Port in Air Bangis.

2.3. Procedures

Data was collected using observation, literature review, documentation, and interviews. Observation involved direct on-site monitoring to gather data related to primary and functional facilities. The literature review included studying introductory information on the utilization of facilities at the landing base of Air Bangis. Documentation was carried out by capturing direct photographs to support the collected data. Interviews were conducted to obtain necessary information, using questionnaires to guide data collection questions.

2.4. Data Analysis

The data analysis used in this study includes facility needs analysis and utilization rate analysis. Facilities assessed include land area, unloading docks, and mooring docks, which are calculated using the formula by Pianc in Syahputra (2015). The harbor basin area is calculated using the formula from the Directorate General of Fisheries (1981), while the depth of the harbor basin and the location of the Fish Auction Site (TPI) is calculated using the formula by Triadmodjo (2010). To determine the utilization rate of facilities, the formula by Soedjono (1985) is applied.

2.4.1. Facility Needs Analysis

Facility needs analysis determines the size of the facility needed to accommodate all existing activities.

Unloading Dock: $L = \frac{n.\ Lu.\ Q.\ S}{Dc.\ U.\ T}$ Lu= 1,1 (LOA)

Description:

L = Length dock required (m)
n = Number of fleets in operation (units)
U = Unloading speed (Hour)
S = Irregularity factor
Dc = Voyage return period (days)
T = Time available for service (hour)

Mooring Pier: $L = \frac{n\ .Lu.\ TS.S}{Dc.\ T}$

Description:

L = Length of pier required (m)
Lu = Constant indicating the distance
N = Number of fleets in operation (unit)
TS = Service time required (hours)
S = Irregularity factor
T = Time available for service (hour)
LOA = length of sample vessel (m)

Harbor Pool Area: L= Lt + 3. N LOA. B Lt= 3.14 (1.5. LOAmax)^2

Description:

L = Area of the harbor pool
Lt = Turning Basin (m^2)
N = Number of fleet (units)
LOA = Average ship length (m)
LOAmax = Largest ship length (m)
B = Average ship width

Port Pool Depth: H= d + G + R + P + S + K

Description:

H = Depth of the harbor basin
D =Ship *draft*
G = Vertical motion of the ship
R = Net freedom space
P = Measurement accuracy
S = Sediment deposition
K = Dredging tolerance

Fish Auction Place (TPI): $S = \frac{N\ x\ P}{R\ x\ a}$

Description:

S = area of auction venue (m^2)
N = Number of catches per day (ton)
P = Weight of fish caught per unit area (kg/ m^2)
R = Number of auctions that occur in one day

2.4.2. Facility Utilization Level

$$\text{Facility Utilization Level} = \frac{\text{Facilities utilized}}{\text{Facilities available}} \text{ x } 100\%$$

Description: If utilization >100%, then the utilization level exceeds optimal; If the utilization percentage = 100%, then the utilization level is optimal; If the utilization percentage is < 100%, then the utilization level is not optimal. The level of facility utilization is then obtained, grouped based on the rate of data analysis results, and discussed descriptively so that it can be used as a guideline for increasing facility utilization at the landing base of Air Bangis.

3. Result and Discussion

Landing base Air Bangis is located in Air Bangis Village, Sungai Beremas District, West Pasaman Regency, West Sumatra Province. Geographically, Air Bangis lies between 0°09'–0°31' N latitude and 99°10'–99°34' E longitude, at an elevation of 319 m above sea level. The landing base Air Bangis facilities are categorized into primary, functional, and supporting facilities. The primary facilities include docks, harbor basins, retaining walls, and perimeter fencing. The functional facilities include a Fish Auction Site (TPI), a Solar-Packed Dealer for Fishermen (SPDN), an ice factory, cold storage, and a machine workshop. Supporting facilities include the port office, security posts/guardhouses, sanitation facilities (MCK), coastal stalls, parking areas, internal roads, and a place of worship. The size, type, and condition of the facilities at the landing base of Air Bangis are detailed in Table 1.

Table 1. Type, area, and condition of landing base Air Bangis facilities

No	Type of Facility	Area	Condition
1	Main Facility		
	Land	0,86 Ha	Good
	Dock	88 m	Not good
	Harbor pool	630 m^2	Shallowing
	Plaster	110 m	Good
	Surrounding fence	1,8 m	Good
2	Functional Facility		
	TPI	609 m^2	Good
	Ice storage	201,5 m^2	Severely damaged
	Ice wherehouse	12 m^2	Not good
	Guardhouse	12 m^2	Good
	Security guard office	20 m^2	Good
	Fresh Water Tank	30 m^2	Good
	Workshop	348 m^2	Good
3	Supporting Facility		
	Office	180 m^2	Good
	Coastal shop	376 m^2	Good
	Parking lot	875 m^2	Good
	Musholla	36 m^2	Good

Among the 17 facilities available at the landing base of Air Bangis, three are non-functional and cannot be operated: the ice factory, cold storage, and fuel tank. The utilization rate of 4 of the 17 available facilities, namely land, docks, harbor basins, and the Fish Auction Site (TPI), is assessed. The land is critical for developing a fishery port or fishing landing base. This land can be used to build primary, functional, and supporting facilities. Landing base Air Bangis has a total land area of 0.86 ha.

Landing base Air Bangis has a jetty-shaped dock, which, according to Triatmodjo (2010), refers to a dock that extends into the sea. The jetty at Air Bangis is aligned with the harbor basin and is connected to the mainland by two straight, rigid bridges measuring 70 m x 5 m and 18 m x 4 m, forming a T-shape with a concrete structure. The dock is 88 m long. Based on the analysis, the required length for an unloading dock is 23.03 m, while the length needed for a mooring dock is 251.97 m. Therefore, the unloading and mooring docks at the landing base of Air Bangis have a utilization rate of 28%, meaning these facilities are not fully optimized. This dock is primarily used by small vessels with a weight of no more than 8 GT, employing fishing gear such as monofilament gillnets, multifilament gillnets, and trammel nets (Harahap, 2018).

According to Article 1, Paragraph 29 of the Republic of Indonesia Law No. 17 of 2008, on a landing base, a harbor basin refers to the water area in front of the dock used for the operational purposes of mooring and maneuvering ships. At the landing base of Air Bangis, the harbor basin is used to maneuver vessels while mooring. The area of the harbor basin is 630 m². Based on the analysis of the required harbor basin area, it was calculated that the necessary size for the dock is 18,646 m², which results in a utilization rate of 29%, indicating that the facility is not yet fully optimized. The harbor basin at the landing base of Air Bangis has a depth of 2 m. Based on the analysis of the required depth, the basin should have a depth of 3.55 m, giving a utilization rate of 17%, again showing that the facility is not optimal. The shallow depth of the harbor basin at the landing base of Air Bangis causes vessels weighing over 8 GT to carry out provisioning, mooring, and unloading of catches at nearby mooring areas around the port.

Landing base Air Bangis has a Fish Auction Site (TPI) with dimensions of 33 m x 19 m, totaling an area of 609 m², painted blue, and in good condition. Activities at the TPI include auctions, marketing, and packaging of the catch. The large volume of fish produced daily makes the TPI unable to accommodate all marketing activities, causing these activities to spill over into the port roads. Based on the calculation of the required area for the TPI, the necessary size is 374.1 m², while the available TPI area is 609 m², resulting in a utilization rate of 61%. This indicates that the facility is not fully optimized.

4. Conclusions

Landing base Air Bangis has a potential fish resource of 664,528 tons/year. The main facilities available at the landing base Air Bangis are the pier, harbor pool, retaining wall, and perimeter fence; functional facilities include TPI, SPDN, ice factory, and machine workshop, while the supporting facilities available are the harbor office, security post/guard post, MCK, coastal cafe, parking lot, complex road, place of worship. Of the 12 facilities available at the landing base of Air Bangis, five facilities are calculated for their utilization. The area of the harbor pool currently utilized is 18,646 m^2 with a utilization rate of 29%, which indicates that its use is not optimal because the available area of the harbor pool is only 630 m^2. Meanwhile, the depth of the port pool required is 3.55 m with a utilization percentage of 17%, which is also not optimal because the available pool depth is only 2 m.

5. References

[BPS] Badan Pusat Statistik. (2008). *Sungai Bremas dalam Angka.* Badan Pusat Statistik Kabupaten Pasaman Barat. Simpang Empat. p98.

[BPS] Badan Pusat Statistik. (2017). *Sungai Bremas dalam Angka.* Badan Pusat Statistik Kabupaten Pasaman Barat, Simpang Empat. p98.

Ditjen Perikanan. (1981). *Standar Rencana Induk dan Pokok-Pokok Desain untuk Pelabuhan Perikanan dan Pangkalan Pendaratan Ikan. PT. Inconeb*. Jakarta. p169.

Harahap, H. (2018). *Pemanfaatan Fasilitas Pangkalan Pendaratan Ikan (Landing base) Air Bangis Kabupaten Pasaman Barat Provinsi Sumatera Barat*. Fakultas Perikanan dan Ilmu Kelautan. Universitas Riau. Pekanbaru.

Laporan Pengajuan Pengoperasian Pelabuhan landing base Air Bangis (2023).

Laporan Tahunan Pangkalan Pendaratan Ikan (landing base). (2023). Air Bangis.

Nazir, M. (1983). *Metode Penelitian.* Ghalia Indonesia. Jakarta.

Soedjono, K. (1985). *Perencanaan Pelabuhan*. Ganeca Exacta. Bandung.

Syahputra, F., Pane, A.B., Lubis, E., & Iskandar, B.H. (2015). Main Facility Necessity of Lampulo Coastal Fishing Port for 15 Years for the Future. *Marine Fisheries: Journal of Marine Fisheries Technology and Management,* 6(1): 33-43.

Triatmodjo, B. (2010). *Perencanaan Pelabuhan*. *Edisi Pertama.* Beta Offset. Yogyakarta. p490.

Undang-Undang Republik Indonesia Nomor 17 Tahun (2008) tentang Pelayaran.