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Social and cultural characteristics in the development of small-scale fisheries: Case study of Cangkol Village, Cirebon, Indonesia

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Abstract

An overview of the condition of capture fisheries in an area is a tool for regional management parties in maintaining the sustainability of fishery resources in it. This research is focused on describing in general the area and conditions of capture fisheries in Kampung Cangkol, Cirebon. Residents in the Cangkol Village area have livelihoods as fishermen as much as 0.9% of the population. Within 5 years (2018–2022), the number of fishermen in Cangkol Village has tended to decrease. Nonetheless, the trend in numbers and production value of the catch of Cangkol Village fishermen tend to increase with the catch of demersal fish by the characteristics of sandy and muddy waters.

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1. Introduction

The fisheries sector is a sector that plays an important role in national development ^[1]. It is stated that if managed properly, the Indonesian capture fisheries sub-sector is expected to become the main driver of the national economy ^[2]. This is based on the fact that first, fishery resources in Indonesia are large in quantity and diversity; second, the industries in the fishery sector in Indonesia are related to various other sectors; third, the fishing industry in Indonesia is based on national resources; and finally, reflected in the potential of existing resources, the fisheries sector in Indonesia has a high advantage ^[3]. The three sub-sectors of the fisheries sector in Indonesia are capture fisheries, aquaculture, and fish processing ^[4].

The capture fisheries sub-sector is one of the mainstay sub-sectors that has an impact on the national economy ^[5]. In addition to the national economy, the Indonesian capture fisheries sub-sector plays a major role in world capture fisheries production ^[6]. The Food and Agriculture Organization (FAO) report in 2020 stated that Indonesian capture fisheries are among the five highest contributors to capture fisheries production, namely as much as 8% of the total world fisheries production. Statistically, Indonesia is ranked second after China with a contribution of 15% ^[7].

Cirebon City is located on the North Coast, in the eastern part of West Java Province with a coastal area of ± 7 km ^[8]. The location of this area is strategic for transportation and communication aspects because it is a transportation node from the Jakarta area to the eastern part of the provinces of West Java and Central Java via the northern cross-coastal route (Pantura) ^[9]. The coastal area of Cirebon City is relatively narrow because it is only located in two sub-districts, namely Lemahwungkuk and Kejaksan Districts with a total area of 8.56 km² ^[10]. The Cirebon coast consists of beaches with sandy and muddy characteristics ^[11].

The existence of coastal areas in Cirebon City influences the existence of fishing communities in it ^[12]. Fishing communities are defined as a group of individuals who live in coastal areas and make their main livelihoods by utilizing the natural resources available in the sea ^[13]. There are four points of fishing villages in Cirebon City, namely Cangkol Village, Samadikun Village, Pesisir Village, and Kejawanan Village ^[14]. Cangkol Village is part of the Lemahwungkuk District with a fishing community that is considered more developed than fishing communities in other villages in terms of its productivity as a fishing community that actively makes its FADs, is active in joint business groups, and can open marine tourism in its area ^[9].

Even though it is said to be more developed, this does not guarantee the welfare of the people in it because the fishing community in Cirebon City still lives in a state of concern seen from their slum living environment and unprosperous economic conditions ^[15]. This indicates the uneven development carried out in the coastal area of Cirebon City ^[16]. A description of the condition of capture fisheries in the Kampung Cangkol area needs to be known as a tool for related parties in monitoring the condition of the capture fisheries sub-sector in the area under which it is managed ^[17].

2. Method

The research was carried out in Cangkol Village, Lemahwungkuk District, Cirebon City, West Java Province in April–June 2023. The research location map is shown in Figure 1.



Fig 1: Research Location

The data collected is in the form of primary data and secondary data. The primary data in this research is the result of interviews and direct observation in the fishing community of Cangkol Village. Secondary data in this research is in the form of statistical data from the Department of Food Security, Agriculture and Fisheries (Dinas Ketahanan Pangan Pertanian dan Perikanan /DKP3) Cirebon City and the results of literature studies. Secondary data obtained includes data on an overview of Cangkol Village, the livelihoods of Cangkol Village residents, facilities and infrastructure supporting the activities of Cangkol Village residents, the development of the number of fishermen in Cangkol Village, and the catch production of Cangkol Village fishermen. The statistical data presented is in the form of 5-year time series data, 2018–2022.

3. Result

3.1. Geographical Conditions and Population of Kampung Cangkol

Cangkol Village is located at an altitude of 5 m above sea level with an average rainfall of 1,351 mm/year and 86 days of rainy days. The average temperature in Cangkol is 22.3°C, with an average maximum temperature of 33.0°C. The state of groundwater is affected by seawater intrusion so the need for water for drinking purposes is fulfilled by the water supply from the Regional Drinking Water Company (Perusahaan Daerah Air Minum/PDAM) of Cirebon City, which originates from Kuningan Regency. Other water needs are obtained from wells with a depth of 2–6 m ^[18].

Demographically, the population of Kampung Cangkol is divided into female and male residents. The residents of Cangkol Village consist of residents of RW 04 Kampung Cangkol Utara, RW 05 Kampung Cangkol Tengah, and RW 06 Kampung Cangkol Selatan. There are a total of 26 RTs in the three RWs with a distribution of 9 RTs in RW 04, 8 RTs

in RW 05, and 9 RTs in RW 06 ^[18]. The male population is 0.8% more than the female population. Data on the population of Cangkol Village by gender are shown in Table 1.

Tabel 1: Jumlah penduduk Kampung Cangkol berdasarkan jenis kelamin

Gender	Population (people)	Percentage (%)
Female	3.291	49,4
Male	3.367	50,6
Total	6.658	100

Source: Lemahwungkuk Village Population Data, 2023

3.2. Livelihoods of Cangkol Village Residents

The residents of Kampung Cangkol consist of residents whose livelihoods are fishermen, civil servants, traders, laborers, employees, and some who are unemployed or otherwise. It is shown in Table 2 that 4,245 residents are unemployed. Livelihood as a fisherman is the least livelihood for the residents of Kampung Cangkol, which is only 0.9% or as many as 60 people ^[19].

Table 2: Livelihoods of the people of Cangkol Village

Livelihoods	Total (people)	Percentage (%)
Fishermen	60	0,9
Civil servant	104	1,6
Trader	642	9,9
Freelance worker	454	7,0
Employee	979	15,1
Unemployment / others	4.245	65,5
	6.484	100

Source: Lemahwungkuk Village Population Data, 2023

3.3. Facilities and Infrastructure in Cangkol Village

The residents of Cangkol Village need various facilities and infrastructure as supporting facilities in carrying out various activities ^[20]. Facilities and infrastructure in Cangkol Village were built with various functions, namely the functions of worship, sports, health, and education.

The results of interviews with respondents indicated that of all the existing religious infrastructure, residents of Cangkol Village tended to concentrate on religious activities. The residents of Cangkol Village, especially the children, actively utilize sports facilities and infrastructure as a place to play in the afternoon. To support the health conditions of the residents of Cangkol Village, the Kampung Cangkol Community Health Center is available as the main health infrastructure. The closest formal education infrastructure for the residents of Kampung Cangkol is only at the elementary school level so that children in Kampung Cangkol continue their education in the vicinity of the Lemahwungkuk District. As a tourism facility, fishing tourism was created by the fishing community in Cangkol Village.

3.4. Supporting facilities and infrastructure for fishermen

Cangkol Village is one of the four fishing villages in Cirebon City ^[19]. Fishing communities run fishing businesses to fulfill their daily needs ^[21]. Therefore there are various facilities to support fishing activities in Cangkol Village.

Based on the results of interviews and observations, it is known that the administrative office of the Cangkol Fish Auction Place (TPI) by the fishing community functions as a

central secretariat and storage for fishing units belonging to the business group with fishermen. The fish marketing area by the fishermen of Kampung Cangkol is used as a place to sort fish after being caught or a place for fishermen to gather and have meetings when needed. Jetty is the way to the ship and where the ship is anchored ^[22]. Banking is used by fishermen as a place to save. Joint Business Group (KUB) is a management facility formed as a forum for fishermen to improve the quality of fishing businesses ^[23].

3.5. The Development of Fishermen in Cangkol Village

The types of fishing businesses in Cangkol Village consist of skipper fishermen (owners), boat crew (ABK/workers), and seasonal fishermen. The skipper fisherman is the owner of the ship as well as the captain when the fishing effort is carried out ^[24]. Ship's crew (ABK) or labor fishermen offer services or have certain attachments to skipper fishermen when fishing operations are carried out ^[25]. Seasonal fishermen are fishermen who offer services at certain times, depending on the fish harvest season ^[26]. An overview of the development of the number of fishermen in Cangkol Village is shown in Figure 2.

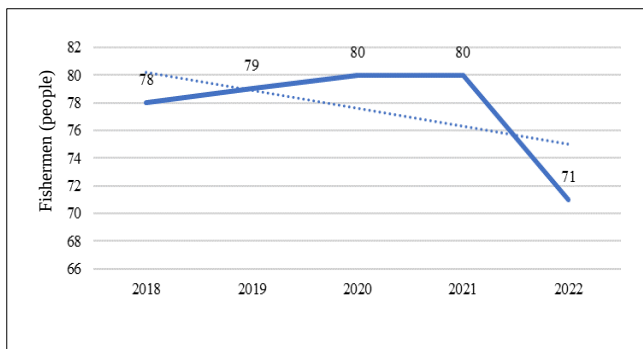


Fig 2: Total Population of Cangkol Village who Work as Fishermen

The trend in Figure 2 shows that the number of fishermen in Cangkol Village tends to decrease. In the last five years, the largest number of fishermen will be in 2020 and 2021 with 80 people. The least number of fishermen will be in 2022 as many as 71 people. Based on the results of interviews with the chairman of the Nelayan Association, Mr. Suparman, he stated that the fishing community in Cangkol Village was entirely residents without the presence of immigrants in it so the number of fishermen in Cangkol Village tended to continue to decline ^[27]. Another causal factor is that there are fishermen who are looking for other opportunities and moving to other coastal areas, especially Jakarta.

3.6. Number of fisherman effort (Trips) in Cangkol Village

There are 27 boats belonging to the fishing community of Cangkol Village ^[19]. These vessels are 3 GT vessels with outboard motor engines. Fishermen who own boats usually go out to sea with one crew member. The development of the number of fishing trips in Cangkol Village is shown in Figure 3. The figure shows that the number of fishing trips in Cangkol Village tends to increase. There was a decrease in activity in 2019 and 2020 due to restrictions on the activities of fishing communities during the COVID-19 pandemic ^[28]. Re-arrest activity will increase in 2021 as restrictions on community activities have been relaxed ^[29]. Based on the

results of the interviews conducted, the average fishermen in Cangkol Village make 10-12 trips in one month with a distance of FADs 40-60 km from the coast.

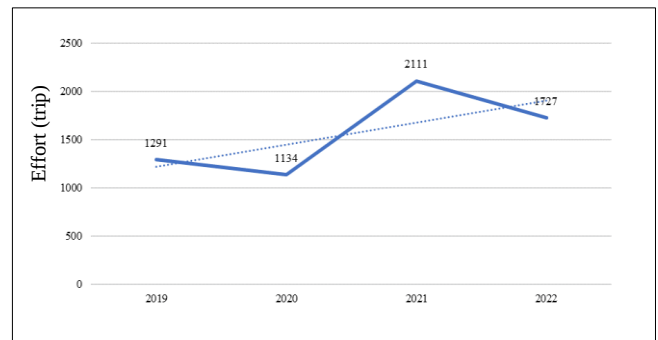


Fig 3: The development of the total effort (trip) of fishermen from Cangkol Village

3.7. Cangkol Village Fisherman Capture Fisheries Production

The fishing effort of Cangkol Village fishermen is carried out using hand-line fishing gear with assistive devices in the form of FADs. FADs are operated by sinking them to the bottom of the water so that fish gather around them making it easier for fishermen to catch fish ^[30]. The development of caught fish production in Cangkol Village is shown in Figure 4. Based on Figure 4, the trend of caught fish production in Cangkol Village tends to increase. The highest production was in 2019, amounting to 612,945 kg. The lowest catch will be in 2021, amounting to 134,049 tons.

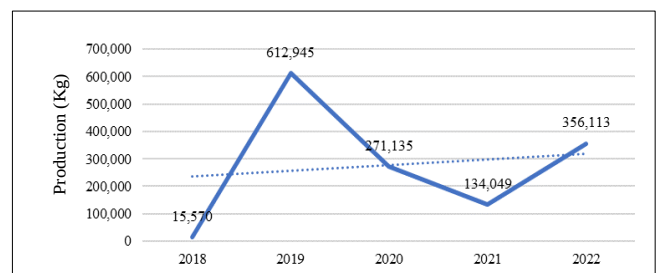


Fig 4: Catch Production of Cangkol Village

Following the picture of catch production, the trend of fish catch production value in Kampung Cangkol also tends to increase. The highest catch production value was found in 2019, amounting to IDR 29,350,803,000.00. The lowest fish catch production value is in 2021 of IDR 5,695,938,851.00. The development of the production value of caught fish in Cangkol Village is shown in Figure 5.

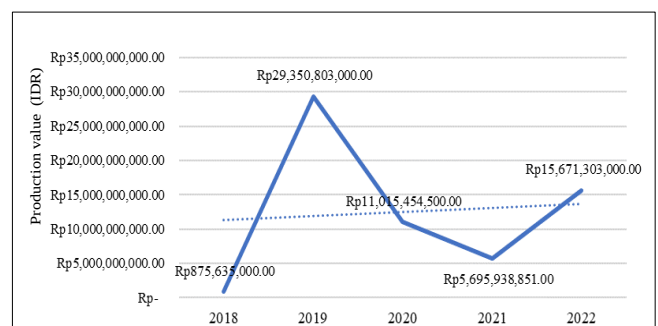


Fig 5: Cangkol Village Fishermen's Catch Production Value

Conclusion

The population of Kampung Cangkol makes a living as fishermen as much as 0.9%. Within 5 years (2018-2022), the number of fishermen from Cangkol Village tends to decrease. Even so, the number of trips, production, and production value of catches from Kampung Cangkol fishermen tends to increase. All three aspects showed a decline in 2019 and 2020 due to restrictions on community activities due to the COVID-19 pandemic.

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