Research Article

Strengthening the Blue Economy through Marine, Coastal Resources and the Social Environment

Rizky Muliani Dwi Ujianti*, Mega Novita and Aan Burhanuddin

Faculty of Engineering and Informatics, Universitas PGRI Semarang, 50232, Indonesia

ORCID
Rizky Muliani Dwi Ujianti: https://orcid.org/0000-0001-7481-5526

Abstract.
The fisheries sector is a sector which supports Indonesia's development, because the waters in Indonesia are wider than the land. Central Java is a region that has a long coastline stretching along the north coast and the south coast of Java. This supports the development of fisheries potential in Indonesia. Research on the blue economy theme for the fisheries sector is being promoted. The method used is an analysis of economic aspects in Central Java, especially people engaged in fisheries (GRDP and income per capita), potential fisheries resources, human resource potential (number of fish fishermen and cultivators), fisheries households, as well as aspects of production and value fisheries production. The results of this research can provide an overview of the potential of fisheries in Central Java to facilitate their management. The research results show that GRDP in the fields of fisheries, forestry, and agriculture during the 2018-2022 period was 3.23%-7.33%; the highest per capita expenditure in the food sector is used to purchase food, and non-food cost is for housing and household facilities. The highest fish resource potential is a small pelagic fish. The most increased fisheries production in 2022 in the Central Java region will be in Rembang and Pati Regencies which have coastlines and are coastal areas.

Keywords: fisheries, blue economy, coastal resources, marine resources

Corresponding Author: Rizky Muliani Dwi Ujianti; email: rizkymuliani@upgris.ac.id

1. Introduction

The fisheries sector in Indonesia plays an essential role in supporting the Indonesian economy, and this is because most of Indonesia's territory is maritime areas. Central Java has a long coastline stretching along the North and South Java Sea and is supported by fish cultivation activities in public waters. and in line with the increase in the role of the maritime economy from 6.4% in 2015 to 12.5% of GDP in 2045 [1]. According to the UN, the blue economy is the sustainable use of marine resources aimed at economic growth, improving livelihoods, employment opportunities and the health of marine ecosystems. Relating to marine commercial activities at sea carried out economically efficiently, encouraging social inclusion and preserving healthy marine and coastal ecosystems.

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The focus is on maintaining the condition of the marine environment while providing social and economic benefits for both the present and the future [2]. Indonesia started the blue economy program in 2012 in Bali and West Nusa Tenggara, which features integrated upstream and downstream marine development[3]. Various sectors fall into the blue economy category, including fisheries, renewable energy, tourism, water transportation, waste management, and climate change mitigation. Each industry can help create a prosperous Indonesia if managed sustainably. The importance of capture fisheries, inland public waters as one of the typologies of marine and fisheries resources because they currently function as a source of livelihood for most people in rural areas, especially fishermen, fish cultivators in public waters as well as fishery product processors and fish traders [4]. Integration activities between the south coast and north coast of Java are focused on 1) Increasing production through the utilization of fisheries and marine resources and 2) optimal utilization of the potential of fishery resources that have yet to be utilized. Indicators that can be used for fisheries development in Central Java are fisheries production, fishing fleet, volume and value of fishery product exports to GRDP, per capita fish consumption, labor, fishermen's income, fishermen's education, and regulations and legislation. Central Java has relatively large fisheries resource potential, namely, a coastline of 791.76 km, which stretches on the north coast 502.69 km and the south coast 289.07 km and 34 small islands, and this potential must be utilized sustainably based on aspects of integration to achieve harmonization between various sectors. This research will provide an overview of the possibility of fish resources and provide input for sustainable.

2. Method

Some of the parameters that will be examined in this research are:

1. Economy in Central Java

a) Gross Regional Domestic Product (GRDP)

The real economic growth rate of a region can be determined using GRDP data [5]. Aquaculture development will affect GRDP in the fisheries sector, which is influenced by the amount of aquaculture production, especially in ponds, because the population in land areas is more significant than in coastal areas [6].

b) Per capita income

per capita income, as indicated by the per capita GRDP value, is one of the numbers used to see the success of development from the economic aspect of a region [7]

2. Fisheries

a) **Potential fish resources**

b) **Condition of human resources**

1. Number of fishermen

2. Fisheries Households/fishermen's households: several influencing factors are: level of education, number of family members, fishing/cultivating experience [8].

c) **Production and production value**

The data obtained for analysis comes from Semarang data in Figures 2022 (BPS) and Central Java fisheries potential data (Ministry of Fisheries and Maritime Affairs, 2022).

3. Result and Discussion

3.1. Economy in Central Java

a) Gross Regional Domestic Product (GRDP)

The economic growth of a region can be measured by looking at the GDP growth rate at constant prices. GRDP is the amount of added value produced for all regional business and service areas, applying the total value of final goods and services produced by all economic units. Factors that influence GRDP growth in Indonesia are regional original income, general allocation funds, profit sharing funds, inflation, foreign investment, domestic investment, government expenditures regions, and labor [9] [10]. GRDP in the fields of fisheries, agriculture, and forestry in Central Java experienced an average increase of 3.23-7.33% during 2018-2022. One of the things that influences the blue economy in fisheries is the price of fish [11].

b) Per Capita Expenditure

Per capita expenditure has a significant influence on the human development index. Actual per capita expenditure has an impact on poverty levels. From the aspect of economic growth, it hurts poverty levels [12]. Per capita expenditure is the monthly consumption cost for all household members divided by the number of household members, which has been adjusted to purchasing power priorities [10]. The average per capita expenditure for Central Java in 2022 in the food sector is buying ready-made food and grains, following the staple food in the Java region: rice. The lowest food expenditure is tubers; for this reason, it needs to be encouraged the introduction of local food so that it can be consumed more widely. The Central Java region's highest per capita non-food expenditure is used for housing and household facilities, and the lowest is used for traditional ceremonies.

2. Fisheries

a) Potential fish resources

Relatively shallow waters known as the continental shelf with relatively flat and muddy bottoms are fishing areas for demersal fish resources [13]. Demersal fish are quite essential fish resources in the Java Sea. Based on the results of research conducted by the Scientific Stock Assessment Commission in 2001, the sustainable potential of demersal fish in Indonesia is estimated to be 1,370.10 million tons/year. Of this potential, 27% is in the Java Sea, 375.20 million tons/year [14]. The group of small pelagic fish species is a fish resource that is widely used to meet human food needs. Some examples of small marine fish include layang (*Decapterus* spp), kembung (*Rastrelliger* sp), siro (*Amblygaster sirm*), selar (*Selaroides* sp), tembang (*Sardinella fimbriata*), and teri (*Stolephorus* spp) [15]. Small pelagic fish resources have a role in regional economic development, especially in areas that have potential small pelagic fish resources. The primary role of small pelagic fish resources is to fulfill the nutrition and protein of the people in a place and increase the income of the community, especially fishermen in coastal areas, as well as support fish processing activities [15]. In Central Java, the highest potential fish resources found are small pelagic fish, then sizeable pelagic fish and the lowest is lobster.

B) Condition of Fisheries Human Resources

1. Number of fishermen

Cultivating fishermen are fishermen who produce fish in public land/water areas. For example, the most significant pond production in the Kendal region, Central Java, is in the Kaliwungu sub-district. In the Kaliwungu coastal area, there are no people whose livelihood is fishing but instead work as fish cultivators. For fishermen in the capture fisheries sector (fishermen who catch fish at sea), routine maintenance of fish auction sites is required because it helps fishermen and the community to be able to carry out buying and selling activities. Apart from this, it can also be a place to save money for fishermen in particular so that fishermen have savings to buy equipment or the necessities for fishing [16]. One of the fishery's human resources can be seen from the aspect of fishermen. These fishermen are still marginalized communities in various regions, so human resources must be developed. In Central Java itself, there is several supporting infrastructure, which includes three fishing ports, namely Pekalongan Nusantara Fisheries Harbor (PPN), Cilacap Ocean Fisheries Harbor (PPS), and Karimunjawa-Jepara Coastal Fisheries Harbor (PPP), there are 74 Fish Landing Centers which is spread across the North Coast and South Coast of Central Java [17].

2. Fishermen's households

Several influencing factors are: level of education, number of family members, fishing/cultivating experience [8]. The highest number of fishing households in 2012-2020 was in 2015-2016. Economic behavior in fishing households includes production activities, work allocation, income, and expenditure (consumption). These small-scale fishing households depend on the catch obtained in each season for their livelihood. The fishermen's income influences the household's ability to meet their daily needs by consuming food [18].

c) Production and production value

The data obtained for analysis comes from Semarang data in Figures 2022 (BPS) and Central Java fisheries potential data (Ministry of Fisheries and Maritime Affairs, 2022). The highest fisheries production and fisheries production value in Central Java is in the Rembang and Pati Regencies because these two districts are coastal areas directly connected to the Java Sea. Fishery production includes all fish catch/other resources caught from natural fishery sources, whether cultivated by fishing companies or fishing households. Production is not only the amount of catch sold but also includes the catch eaten by fishermen/fishery households or given to fishermen as wages. Fisheries production has a crucial role in economic and social development. The demand for marine products increases daily, resulting in more significant trade to meet market needs [19].

4. Conclusion

Based on the results and data analysis, it can be concluded: (1) GRDP in the Central Java region has increased from year to year, (2) The largest per capita expenditure in the food sector is for purchasing grain (rice) and non-food in the housing sector, (3) The number of fishermen and fishing households highest in 2016-2017, (4) Production and value of fisheries production in Central Java, highest in the Pati and Rembang districts.

Acknowledgements

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