

Impact of Climate Change on Fishermen in Mertasinga Village Gunungjati District, Cirebon

Hana Anggita Sari
Universitas Negeri Semarang
Indonesia
hanaanggitasari2@gmail.com

Tjaturahono Budi Sanjoto
Universitas Negeri Semarang
Indonesia
tjatur@mail.unnes.ac.id

Puji Hardati
Universitas Negeri Semarang
Indonesia
pujihardati@gmail.com

Abstract—Climate change is a fact that happening nowadays. Climate change as a result of natural and human activities in comparable time periods. The impact of climate change is beginning to be felt and is a threat to humans life, especially fishermen whose lives depend on nature. This study aims to determine the impact of climate change on fishermen in Mertasinga village. To find out the impact of climate change on fishermen, the research approach used is descriptive qualitative. Data collection through documentation and in-depth interviews. The initial informant of this study was the chair of KUD Mina Waluya. Furthermore, researchers find more information through KUD Mina Waluya members and fishermen until the data is redundancy or doesn't provide the new information. Data analyzed by data reduction, data presentation, and draw a conclusion. The results showed that climate change had an impact on fishermen. The results showed that climate change had an impact on fishermen. The impact felt by fishermen is change of seasons, decrease fish production on the coast of Cirebon which has an impact on the distance of the fishing ground and increased capital for fishing, and fishermen often experience sudden weather changes.

Keywords: Impact, Climate Change, Fishermen

I. INTRODUCTION

Global Warming is a fact that is happening. Global warming is a conversation in almost all levels of society in the world. What is very real about global warming is climate change. Climate changes continuously due to the interaction between its components with external factors such as eruptions, variations in sunlight,^[1] and human activities^[2] thus changing the composition of the global atmosphere and natural climate variability over a certain period of time^[3].

Indonesia is one of the countries most vulnerable to the threats and impacts of climate change^[4]. The results of observations of data during 1981-2020 Indonesian air temperature anomaly in January experienced an increase in average of 0.95°C^[5] and data for 30 years (1980-2010) indicated a change in annual normal rainfall^[6] and a shift in peak rainfall^[7] Indonesia is a country that has the second longest coastline in the world after Canada^[8]. Coasts have a very important role for community life^[9] however, coastal areas are vulnerable to the

impact of climate change and certain efforts need to be made to prevent further environmental degradation in these areas^[10]. Climate change causes changes in coastal and marine ecology^[11]. Coasts are susceptible to sea level rise, changes in the frequency and intensity of wind speeds, increased wave height, increased ocean temperatures, and increased carbon dioxide concentrations causing acidification of the oceans^[12].

Climate change can disrupt the fish catch of fishermen^[13] so that it has an impact on fishermen's welfare and increases the uncertainty of fishermen's livelihood aspects^[14]. Results of interviews with fishermen in Gunungjati District, current weather conditions are difficult to predict, unlike in the past certain months the number of fish can be predicted, but for now fishermen find it difficult to read natural navigation. This has an impact on the decreasing fish catch of fishermen, they only look for fish around the Cirebon coast, for fear of being suddenly hit by high waves. climate variability that occurs in one village in Cirebon Regency has an impact on fishermen's household. The losses that are felt are decreased fishing yields, decreased salted fish production, and failure to go to sea^[15].

Climate change has an influence on changes in the fishing season calendar, the loss of several animals that are a marker of changing seasons, and an increase in the intensity of storms in the sea that suddenly come to fishermen of Natuna Regency, Riau Islands^[16]. Bajau fishermen, Konawe District also feel climate change. Fishermen feel the increased risk of going to sea, reduced fish production, increased costs of fishing, less effective fishing gear they use, and difficulty determining fishing areas^[17]. Previous research has focused more on the study of the deep sea and the high seas, studies on the impacts of climate change in the Java Sea region are still very minimal. especially in Cirebon Regency it is still very minimal.

Based on the description above, the purpose of this study is the impact of climate change on fishermen in Mertasinga Village, Gunungjati District. This research can provide insight into the impacts felt by fishermen due to climate change. From this research the local government can also help fishermen in their economy, take policies that are in accordance with the conditions of fishermen and

create programs that aim to help and improve the fishermen's economy and this research can also be teaching material for teachers, especially geography teachers in SMA.

II. METHODS

This research is located in Mertasinga Village, Gunungjati District, Cirebon Regency. This research uses descriptive qualitative method, data collection is done by documentation and in-depth interviews with informants. Researchers determined initial informants to dig up information related to the impact of climate change on fishermen in Mertasinga Village. The initial informant in this study was the chairman of KUD Mina Waluya who also works as a fisherman. After obtaining data from the initial informants, the researchers then looked for more information through KUD Mina Waluya members and fishermen until the data was saturated and did not provide any more recent information.

After the data is collected then it is analyzed through data reduction. Reducing data means summarizing, selecting the main things, focusing on the things that are important. Thus the data that has been reduced will provide a clearer picture and make it easier for researchers to carry out further data collection. After the data is reduced, the next step is to present the data. Data can be presented in the form of short descriptions and tables so that the data can be easily understood. Furthermore, drawing conclusions in qualitative research which is expected to be new findings that have never existed before and become a characteristic of the location or object under study. These findings can be in the form of a description or description of an object.

III. RESULT AND DISCUSSIONS

Mertasinga Village is located in Gunungjati District, Cirebon Regency, astronomically Mertasinga Village is located at 6°39'24" S - 108°31'46" E and 6°38'45" S - 108°33'29" E. Administratively, Mertasinga Village in the north is bordered by Muara Village, in the east it is bordered by the Java Sea, to the south by Kalisapu Village, and to the west it is bordered by Sambeng Village. Mertasinga Village is divided into North Mertasinga Village and East Mertasinga Village, because Mertasinga Village is traversed by the Bondet River which divides the village into two parts. Most of the fishermen in Mertasinga Village are small fishermen. Currently fishermen in Mertasinga village have felt and experienced the impact of climate change. Fishermen are more familiar with climate change as changing seasons. Climate change has had a very real impact on fishermen in Mertasinga Village. The impact of this climate change is a shift in seasons, decreased fish production on the coast of Cirebon,

and sudden changes in weather experienced by fishermen.

1.1 Changing Season

Fishermen in Mertasinga Village recognize three seasons, namely the baratan season, the kumbang season and the timuran season. The baratan season is a season marked by the abundance of marine products obtained by fishermen, fishermen also often call it the term "banjir". Kumbang season is a season that occurs between the western season and the eastern season, or the transition season is characterized by hot weather and strong winds during the day, cold weather at night, and sea products begin to decrease. The timuran season (dry season) is the season in which decreases seafood. Climate change has an impact in the form of changing seasons and is difficult for fishermen to predict. The seasonal change felt by fishermen can be seen in table 1.

Table 1. Seasonal Changes Due to the Impact of Climate Change

Season	Past/Nowadays	Month											
		1	2	3	4	5	6	7	8	9	10	11	12
Baratan	Past												
	Nowadays												
Kumbang	Past												
	Nowadays												
Timuran	Past												
	Nowadays												

Source: Data Analysis, 2020

Climate change impacts on changing seasons. Before 2000, fishermen could very precisely predict the arrival of the season. The baratan season occurs from December to June with a peak every January and February. Kumbang season occurs in July-August. The timuran season occurs in September, October and November. However, after 2000 fishermen began to feel the seasonal shift and unpredictable gradually. The timuran season is currently longer than the baratan season. In one year it is difficult for fishermen to predict the season, in certain years the "banjir" only occurs for one month and the timuran season comes earlier and occurs longer or vice versa. The seasonal change also happened suddenly. When the timuran season can suddenly occur in the baratan season or vice versa. The season of the kumbang (transition) used to occur with constant intensity. Currently, in certain years, fishermen only feel that the kumbang season is coming with an intensity that does not remain constant. kumbang season comes in only 2-3 weeks. This seasonal shift has an impact on fishermen's knowledge of nature that is difficult to predict, where Mertasinga Village fishermen only use instinct to predict the coming season.

1.2 Decreasing Fish Production on the Coast of Cirebon

Compared to the past, fish production around the coast of Cirebon has decreased. In the past, fishermen looking for fish did not need to go far, only on the coast of Cirebon, to obtain fish that could be sold and could be consumed for daily use. However, currently the fish production around the Cirebon coast can only be used for consumption, not for sale. From the decreases fish production on the coast of Cirebon, now it has an impact on fishermen's daily income. During the baratan season, fishermen usually earn Rp.100,000 - Rp.200,000 / day and during the kumbang season and the timuran season, fishermen can earn a net income of around Rp.30,000 - Rp.20,000 / day. When compared to the past baratan season, the fishermen's income remained the same, but during the kumbang season and the timuran season, the fishermen could earn up to Rp.50,000 / day. The reduced fish production on the coast of Cirebon also affects the distance from which fishermen can go to sea if they want to get fish to sell. Currently fishermen sail up to 60 miles with a travel time of 2-3 hours. Fishermen go to sea to Indramayu and Losari waters. With a longer reach, fishermen's capital for fishing, such as fuel for boats, also increases its use. Thus, the capital to go to sea is also higher when compared to the catch obtained by fishermen. In this situation, fishermen often lose money because of the high capital to go to sea and the fishing area is increasingly distant. Fish production data at TPI Bondet can be seen in table 2.

Table 2. Fish Production at TPI Bondet

Year	Amount	
	Kg	IDR
2013	448.967	4.320.246.035
2014	548.814	4.593.636.400
2015	359.543	3.561.305.050
2016	200.121	1.466.035.000
2017	211.680	1.351.503.000
2018	177.764	1.173.931.000
2019	235.961	1.341.555.500

Source: Satuan Pelayanan Pelabuhan, 2020

Fish production fluctuates from year to year and tends to decline. In 2013 and 2015 the total income reached 4 billion rupiah. Sea products are dominated by anchovies, bilis, tanjan fish, pirik fish and lapan fish. The fish production chart at Bondet TPI can be seen in figure 1.

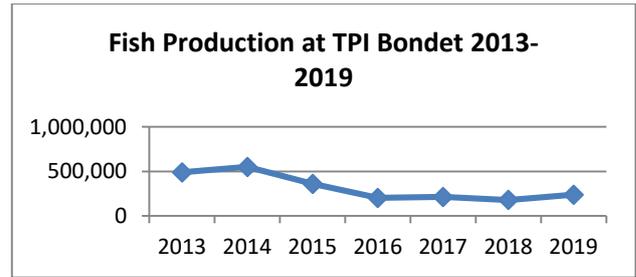


Figure 1. Fish Production from 2013-2019

1.3 Sudden Change in Weather

When the weather conditions are favorable, where the clouds are clear and the wind is calm, the fishermen decide to go to sea, but often when they are ready to go to sea they cancel going to sea because suddenly the weather changes, it rains and the wind is strong. Some desperate fishermen decided to go to sea even though the weather was not very favorable. When they are halfway to the sea, the weather often changes suddenly. If possible, fishermen continue to go out to sea even though they are at risk, some decide to return to land because it is too risky.

The impact of climate change has been very real experienced and felt by fishermen. Awareness of the importance of the environment for life must be instilled in each individual through education. If humans continue to exploit the earth without any real reciprocal concern for the environment, of course the impacts of climate change from human actions will turn to disrupt human life. Humans should begin to get used to living in harmony with nature. The awareness of each human being will certainly be unbalanced if it is not accompanied by pro-environmental policies established by the government. The results of this study provide an overview of the impacts of climate change experienced by fishermen and can assist local governments in making policies and programs aimed at helping and improving the fishermen's economy. Besides that, this research can also open our eyes to be more aware of the environment, because humans actually need nature.

IV. CONCLUSION

The impact of climate change is starting to be felt by fishermen who depend on the weather for their livelihood. The changes occur gradually and are fluctuating and tend to increase. The impact that is felt is a shift in seasons, a decrease in fish production on the coast of Cirebon which has an impact on the distance of the fishing area and increased capital for fishing, and fishermen often experience sudden changes in weather.

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