

Coastal Women's Adaptation Strategy in Facing Climate Change at Cemara Beach, Banyuwangi Regency through a Gender Perspective

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ABSTRACT

The climate crisis has become a real threat facing global citizens since industrial/modern civilization and is a threat that cannot be avoided. However, climate problems are often focused only on technical paradigms, even though the climate crisis is more than just a problem of temperature, melting poles, and rainfall. The negative impacts of the climate crisis are felt politically in the social order of society, especially for people in vulnerable groups who are considered to have weak adaptive capacity due to limited access to the resources needed to fulfil their daily needs.

One of these vulnerable groups is the women living in the coastal area of Cemara Beach, Banyuwangi Regency. Cemara Beach, located directly opposite the Bali Strait, is an area that is vulnerable to climate change, especially now that there is an excess number of fishermen. There is exploitative use of natural resources. Climate change has significantly resulted in several physical changes in the Cemara Beach area, which include, among other things, seawater intrusion onto land, tidal waves, flooding, inundation in lowlands and erosion on Cemara Beach which in turn has an impact on coastal morphology, natural ecosystems, settlements and the economy. And fishermen's income.

It is hoped that the output of this research study will be a concrete solution in providing support for the environment and female fishermen at Cemara Beach. Through this research, the influence of climate change on the socio-economic conditions of Cemara Beach female fishermen and the adaptation strategies implemented to face climate change will be known. Hopefully, this research will become a further reference regarding fishermen's adaptation to climate change in coastal areas and small islands. Apart from that, the research is expected to be able to model adaptation patterns that are useful for developing climate change mitigation adaptation. Meanwhile, for the regional government of Banyuwangi Regency, this research can influence decision-making that determines development policies, especially the gender-responsive fisheries sector.

Keywords: *Climate Change, Coastal Women, Adaptation Strategy*

INTRODUCTION

Climate change is a global phenomenon due to massive activities using fossil fuels and land use change activities. Climate change begins with the accumulation of various gases produced by various atmospheric activities. Some of these gases include Carbon Dioxide (CO₂), Methane (CH₄), and Nitrogen Oxide (N₂O). These gases have special characteristics, such as glass, which transmits short wave or solar radiation but absorbs and reflects long wave radiation or return radiation emitted by the Earth, which is hot, so that the temperature of the Earth's atmosphere increases. (Santoso, 2015).

This accumulation condition results in the Earth's condition being similar to a greenhouse, which is always hotter than the air temperature outside. From there, gas accumulation is known as "greenhouse gas", and the influence it causes is known as the "greenhouse effect". From this natural process, global warming emerges, which will

influence climate change. Climate change is a real threat to living things on planet Earth. Various global, national, and regional recognitions declare climate change as a disaster threat mainly caused by human behavior because it does not consider sustainability aspects. Human activities, especially in the development of the industrial sector, have increased the concentration of greenhouse gases (GHG), and this is significantly related to the current increase in earth temperature. Widespread use of fossil fuels and deforestation for agricultural development to meet increasing food needs and population growth are factors that accelerate climate change. Likewise, overfishing and overexploitation in the marine sector are the main reasons for changes in the concentration of carbon dioxide (CO₂) and greenhouse gases in the atmosphere, disrupting Earth's energy balance. Changes in the Earth's temperature, which continues to increase, have reached a point of 1.1oC in 2017 compared to the period before the Industrial Revolution; it is predicted to continue to increase until it reaches 1oC between 2030 and 2045.

Meanwhile, data on temperature increases at the national level shows similar figures. In the last 35 years, Indonesia's temperature has increased by 0.9oC. This indicates that the 11- to 33-year period is the remaining opportunity to adapt and immediately implement mitigation efforts for the impacts caused by climate change. (Perdinan et al., 2020).

METHOD

This research was conducted using qualitative methods. Qualitative research is a type of research that aims to understand facts and phenomena related to events experienced by research subjects. Qualitative research has the power of describing events in a natural descriptive narrative form using scientific methods (Moleong, 2011). Qualitative methods are crucial to understanding perspectives, experiences, behavior and human interactions (Ikhsan et al., 2021). Even though it does not use data in the form of numbers, this method can effectively reveal social phenomena in society. In addition, qualitative methods research will provide a new dimension if researchers also carry out observations and interventions to provide integrated policy solutions. The technique for determining informants in this research is purposive sampling. The target object of this research is all women on the Puger Coast. Data was collected by interviews and observation, namely, making direct observations at the research location. Interviews were conducted with the Pantai Rejo Joint Business Group (KUB), the female fishing community and direct observations at the research location.

DISCUSSION

Law Number 27 of 2007 concerning the Management of coastal areas and small islands explains the meaning of coastal areas as transition areas between land and sea ecosystems, influenced by land and sea changes. The coastal area is a transitional area between land and sea. Coastal resources consist of several types of resources, namely biological resources, non-biological resources, artificial resources, and environmental services. In general, there are one or more ecosystems in a coastal area, and these ecosystems can be natural or artificial. Natural ecosystems found on the coast include seagrass beds, mangrove forests, coral reefs, sandy beaches, Baringtona formations,

estuaries, lagoons, and deltas. Meanwhile, artificial ecosystems can be ponds, tidal rice fields, and industrial, residential, and agro-industrial areas (Irwan Kurniawan Soetijono et al., 2020).

This description of the coastal area provides an understanding that the coastal ecosystem is dynamic and has diverse habitats. This shows that coastal ecosystems have enormous potential. However, coastal areas are vulnerable ecosystems most impacted by human activities. Activities that can potentially cause coastal environmental management problems include shipping and transportation, oil and gas refining, overfishing, mining of sea sand and coral reefs, forest conversion and aquaculture, which result in land conversion. (Mulyadi, 2007).

Rising sea levels are one of the problems resulting from climate change on the coast. Impacts that can occur include coastal erosion, changes in coastlines, loss of coastal wetland areas, tidal floods, loss of small islands due to erosion, seawater intrusion, and disruption of tourism and transportation activities. Several previous reports and events were reviewed to determine the economic impact of rising sea levels in Indonesia. Apart from impacting nature and the environment, this condition also impacts humans and the lives of people who live on the coast and depend on the potential of coastal resources for their livelihood

A. Condition of the Bali Strait

Geographically, the Bali Strait is located between Java Island to the west and Bali Island to the east. Meanwhile, to the south, there is the Indian Ocean and the Bali Sea to the north. The waters of the Bali Strait are shaped like a funnel with a water area of around 2,500 km² with an estimated width of the southern part of 55 km and the northern part of around 2.5 km. This condition causes the waters of the Bali Strait to be influenced by water masses from the Indian Ocean rather than water masses from the Flores Sea. Based on fisheries resources and oceanographic characteristics, the waters of the Bali Strait are included in the sub-area four category, which is the lemurs fish area, so the lemur's fishery in the Bali Strait is called Sardinella lemurs, which is specific and the only one in Indonesia. The Bali Strait is geographically influenced by the east monsoon cycle (southeast monsoon), which occurs from June to September, and the wet season (northwest monsoon), which occurs from December to March. This condition makes the Bali Strait an upwelling area rich in food sources for the survival of larvae, juveniles, and adult fish. This is one of the reasons that makes the Bali Strait a potential area for fishing activities (Hendiarti et al., 2004).

B. Condition of Cemara Beach

Cemara Beach is divided into two zones: the first is for visitors, and the second is the core zone. During turtle nesting season, this core zone is used, and there is also a semi-natural place to lay eggs. More than 16,000 pine trees are found on Cemara Beach, and more than 5 hectares of pine trees grow. Apart from being a conservation area, this shrimp pine is useful for preventing abrasion and adding economic value to the surrounding area. Mangrove vegetation is found on Cemara Beach. Mangroves or mangroves are vegetation in tidal areas and can be found along tropical to subtropical coastal areas. Indonesia is the country that has the largest mangrove area in the world,

namely around 3.1 million hectares or 22.6% of the total mangroves in the world. Ecologically, the mangrove ecosystem can function as seawater intrusion, wave barrier, and breeding place for various types of animals, such as fish, shrimp, crabs, shellfish, snails, and others. Apart from that, the potential of mangroves can also be used as a spawning ground, nursery ground, and feeding ground. Local communities can also utilize mangrove forest products to improve economic and tourism conditions (Dewi & Yuniartik, 2019).

C. Coastal Women's Adaptation Through a Gender Perspective

Adaptation is interpreted as adjustments in natural or artificial systems to respond to climate influences, both estimated and actual. Adaptation efforts aim to control the dangers caused or provide profitable opportunities. Adaptation can also mean natural and human efforts to make adjustments to reduce the impact of climate change, whether it will occur or has already occurred. Meanwhile, climate change adaptation is an effort made to increase the ability to adapt to the impacts of climate change, including climate diversity and extreme climate events. The aim is to reduce the potential for damage due to climate change so that we can take advantage of the opportunities presented by climate change. Vulnerability is the tendency of a system to experience negative impacts, including sensitivity to negative impacts and a lack of adaptive capacity to overcome them. Exposure is the presence of humans, sources of livelihood, species/ecosystems, environmental functions, services and resources, infrastructure or economic and socio-cultural assets in areas or locations that can experience negative impacts.

Vulnerability to climate change increases if there is unequal treatment between men and women related to social and cultural construction or if gender inequality occurs. Gender injustice and inequality that subordinate women weaken their ability and capacity to adapt to climate change. The following explains the importance of gender equality in addressing climate change: Naturally or biologically, men and women have different natural tasks and roles because of their biological equipment. Biological differences between women and men are natural differences because (1) They cannot change over time: women from ancient times to the present have had the same biological reproductive functions, namely menstruation, pregnancy, childbirth and breastfeeding breast milk. This biological reproductive function is "given" by God, and no one in this world can change it. (2) Not interchangeable: no matter how great our technological developments are, the biological reproductive functions of women and men are not interchangeable. Only women can conceive because women have eggs and a uterus, and only men produce sperm. (3) Valid throughout time: the function of biological reproduction has been valid from ancient times to the present. (4) applies everywhere: the biological characteristics of women and men and their biological reproductive functions apply everywhere, such as in Indonesia, America, Australia, Europe, etc. (5) God's Creation: these biological characteristics and reproductive functions are God's creation and therefore no one in this world can change them. (6) Natural: these biological characteristics and reproductive functions are given, or given to every human being from birth, so they are natural.

However, several cultures give stereotypes to men and women. Men are seen as strong, rational, and able to protect. Meanwhile, women are seen as gentle, emotional, and patient, and needing protection. Because of this, men are given the task of being the head of the family and earning a living in the public sector. Meanwhile, women are given duties in the domestic sector, educating children at home, taking care of the house, and serving their husbands. Certain cultures more specifically state that women's duties are around the well, kitchen, and bed. Stereotypes and duties of men and women like this are socio-cultural constructions that can change according to place and time and cannot be called natural. This socio-cultural stereotype of men's and women's duties in different places and times can be challenged because it is seen as unequal and unfair. (Made Metera et al., 2019).

Gender injustice and discrimination are conditions of inequality and inequality or unfairness resulting from a social structural system where both women and men are victims of the system. Gender injustice occurs because of beliefs and justifications that have been instilled throughout human civilization in various forms, which not only affect women but are also experienced by men. Although overall gender inequality in various areas of life is experienced more by women, gender inequality also has an impact on men. Forms of manifestation of gender injustice due to gender discrimination include the following conditions: marginalization or impoverishment, subordination, stereotyped views, violence, and double burdens.

Coastal women have a strategic role at every stage of fisheries business activities, so coastal women become the focus of coastal development activities. Regarding the double burden, coastal women not only act as housewives and carry out activities limited to the domestic sphere but also have the responsibility of earning a living for the family. In Moser's analysis, women have a double role (double burden) and three roles (triple burden), namely the reproductive, productive, and social roles.

Pine Coast women carry out reproductive roles by managing the family and all family members. As housewives, fishermen in the domestic area are the daily tasks of coastal women in Cemara Beach. These tasks include cooking, washing, shopping, managing family finances and looking after children. In this case, the role of the wife is more dominant than the role of the husband.

Productive roles are related to roles that produce products, services or work that economically generate income for the family. Cemara Beach coastal women play a productive role in increasing family income, which is only additional because the husband makes the main income. However, the role of women on the Cemara coast is often related to the fishing profession, starting from preparing provisions, taking part in catching fish using drag nets, managing stalls for the needs of Cemara beach visitors and producing culinary businesses that utilize the local potential of Cemara Beach, for example making peanut brittle made from mangrove leaves and processing grilled fish. The social role of coastal women at Cemara Beach is forming a group of culinary mothers chaired by Mrs. Sulaiyah. This culinary group regularly receives invitations to take part in training related to economic empowerment through increasing business capacity and skills. Universities organized some of the training, and the Banyuwangi Regency regional government and state-owned companies. The next social role is organizing recitations, social gatherings and taklim assemblies. One of the community activities is managing

waste, especially from visitors to Cemara Beach. The picket schedule for the women's group is on Friday mornings, while for the fathers, it is on Sunday mornings. Another activity is planting pine trees. Another activity related to adaptation efforts is planting pine trees. The threat of abrasion and tidal floods that occur regularly (Amin Madani, 2020) caused the collapse of several pine trees (Cahyani, 2020).

Fishermen consist of catch fishermen and aquaculture fishermen. Fishermen are a vulnerable group to climate change. Fishermen, especially catch fishermen, depend on the grace of nature to obtain their catch. Climate change makes it increasingly difficult for fishermen to maintain their main income from catches. The same thing happened to the fisherman's wife. From a gender perspective, female fishermen have a double burden, apart from reproductive duties as required by patrilineal society as housewives. The first burden is reproductive duties, identical to the domestic realm. These include doing household chores, namely cooking, looking after children, and cleaning the house. The second burden is reproductive duties. The uncertain income of fishermen requires female fishermen to be directly involved in activities that increase household income. The types of activities carried out by female fishermen are processing her husband's catch, participating in the sea fish trade, and even catching fish. Female fishermen have done the same thing at Cemara Beach, Banyuwangi.

Cemara Beach is one of the leading tourist attractions in the Banyuwangi city sub-district, so it has the advantage of being not far from the centre of Banyuwangi city. Tourism is a type of hospitality industry with a multiplier effect, meaning that activity in the tourism sector can mobilize other supporting industries. The main components of Cemara Beach tourism are natural beach destinations, shady trees and a cool atmosphere. At the same time, attractions include turtle conservation activities, boating along the river estuary and a diversity of mangrove types, namely mangrove (*Rhizophora mucronata*), peep at/white pada/bogey (*Sonneratia alba*), and api-api (*Avicennia alba*). There are three types of mangrove associations, namely Deruju/ Jeruju (*Acanthus ilicifolius* L.), Keranji/ Dadap Laut (*Clerodendron inerme*) and Kambangan (*Derris trifoliata*) (Dewi & Yuniartik, 2019). Apart from getting the main income from entrance ticket fees and parking tickets, the Management of Cemara Beach, namely the Wisata Awareness Group (Pokdarwis) of Cirrus Beach, earns income from renting boats. (Sodiqin, 2019), turtle conservation tours and education.

CONCLUSION

Climate change impacts not only geophysical systems such as floods, drought, and rising sea levels but also systems related to human life, such as health, economy, culture, and behavioural patterns. In Indonesia, climate change has a major impact on many aspects that concern the livelihoods of many people, such as agriculture and fisheries. Banyuwangi's Cemara Beach is one of the locations vulnerable to climate change impacts such as rising sea levels, flooding and changes in fishing seasons. Adaptation is needed to increase the capacity to survive in daily life. In the case of the Cemara Beach female fishermen. Various levels of society feel climate change impacts throughout the world. The increase in human population, technological advances, and ever-increasing consumption need also increase the risks and impacts of climate change. Not all communities can adapt to climate change, especially groups whose livelihoods

depend on the climate and the bounty of nature, one of which is fishermen, especially female fishermen. Fishermen are a group that experiences multiple impacts due to climate change, which significantly affects their living conditions.

Systematic and continuous efforts are needed from a gender perspective so that the problems of female fishermen can be resolved completely, some of which include policies, institutional arrangements, and expanding access and participation of female fishermen, especially those on Banyuwangi's Cemara Beach.

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