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RESEARCH REPORT

IMPACT OF TROPICAL CYCLONE SEROJA FOR WOMEN/WIVES OF CROSS -RELIGIOUS FISHERMEN ON THE COAST OF KUPANG CITY

**(A Qualitative Study
On Eight Coastal Subdistricts of Kupang City)**

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We would also like to express our appreciation and gratitude to the Netherlands-Indonesia Consortium for Muslim-Christian Relations (NICMCR) which has trusted the Eastern Indonesian Women's Network (JPIT) to carry out this interesting research, which has given us the freedom to complete the research until the completion of this report. We express our infinite gratitude to the resource persons for this research, especially the strong coastal women, who have provided the time and opportunity for the field team to be able to interact and draw valuable lessons from the struggles of coastal women in their daily interactions and experiences when facing tropical cyclone Seroja. We hope that the stories about their life experiences summarized in this report represent the stories they tell well.

This research was carried out intensively for five days in the field, followed by verbatim production of the results of in-depth interviews and *focus group discussions (FGD)* followed by a constructive discussion process that existed in a spirit of togetherness among members of the research team. We are grateful to be able to carry out tasks this is challenging. The field study was carried out by eight very enthusiastic young people, namely: Asty Banoet, Christin Gegung, Christin A. Sau, Jero Nenobais, Margaritha Kafomay, Meli Riwu Hadjo, Nopriana Hida Bunga and Sry Wahyuni. As researchers, they carry out data collection toughly and professionally, under the coordination of Weltji Y. Doek as Research Implementation Coordinator who initiated this research, as well as acting as a research data coordinator who has organized and compiled quality field research results. Apart from that, an internal review by Mrs. Liliya Wetangterah meant that this report could be revised into a final, representative document to be sent to NICMCR as the Funder for this research activity.

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Kupang, November 2022

Eastern Indonesian Women's Network
(JPIT)

ABSTRACT

**Impact of Tropical Cyclone Seroja
For Women/Wives of Interfaith Fishermen
On the coast of Kupang City
(A Qualitative Study in Eight Subdistricts on the Coast of Kupang City)**

Linda Rupidara

This research was initiated by the Eastern Indonesia Women's Network (JPIT) in the second half of 2021 based on concern for the situation and conditions of society after being hit by the tropical cyclone Seroja in early April 2021, especially towards women. This research is focused on exploring the stories and experiences of the impact of tropical cyclone Seroja on women/wives of interfaith fishermen on the coast of Kupang City, by taking research locations in eight (8) coastal sub-districts.

Using a phenomenological approach, through the use of in-depth interviews and *focus group discussions (FGD)* in data collection, analysis of the results of this field study will be intended to describe the situations and conditions faced by the interviewees as a living phenomenon that is unique and different from one another. Apart from involving the participation of forty (42) coastal women, this research also carried out dialogue and discussions with leaders of religious institutions in the research location, represented by Christian and Muslim figures.

The results of this research show that coastal women play a very important role and contribute to post-Seroja recovery efforts, both within their families, neighbors and the wider community. The coping mechanisms that coastal women had before the tropical cyclone Seroja occurred is one aspect that supports coastal women's efforts to recover from the fear and trauma caused by Seroja. Apart from that, kinship support and social interaction mechanisms, as well as external assistance, are the driving force in accelerating the post-disaster recovery process. All forms of concern, attitudes of mutual assistance and mutual cooperation as well as individual and institutional material assistance were greatly appreciated by coastal women affected by tropical cyclone Seroja, which was received from religious institutions.

Key words: tropical cyclone Seroja, coastal women, coping mechanisms, social interaction, recovery .

List of contents

	Page
Acknowledgments	2
Abstract	4
List of Contents	5
List of Tables	6
List of Figures	6
List of Attachments	
List of Abbreviations and Acronyms	7
Executive Summary	8
I. Contextualization	11
1.1. Introduction	11
1.2. The Importance of This Research	16
1.3. Coastal Areas in Kupang City	17
II. Research Methodology	19
2.1. Selection of Research Location and Time	19
2.2. Selection of Respondents	20
2.3. Data collection technique	20
2.4. Data Management and Analysis	21
2.5. Research Limitations	22
2.6. Challenges in the Data Collection Process in the Field	22
III. The Impact of Tropical Cyclone Seroja on Women/Wives of Interfaith Fishermen on the Coast of Kupang City	23
3.1. Tropical Cyclone Seroja: Overview of Events and Impacts ...	23
3.2. Life of Coastal Women in Kupang City Before and After Seroja	25
3.2.1. Women's Life on the Coast of Kupang City Before Seroja	26
a. Daily Activities of Coastal Women as Fishermen and/or Fishermen's Wives	26
b. Economic Activities of Fishermen's Families	27
c. Community and Group Activities	30
d. Covid-19 Pandemic	31
3.2.2. Stories from Coastal Women regarding Traumatic Experiences during the Seroja Occurrence	32
3.2.3. Coastal Women's Stories about Changes Caused by Tropical Storm Seroja	36
3.3. The Role of Women in the Post-Seroja Disaster Response Process	37
3.4. The Role of Religion as a Belief and Institution in the Disaster Response Process and Its Relationship with Coastal Women	38
IV. Final Research Notes	42
4.1. Conclusion	42
4.2. Recommendation	44
V. Closing	46
Reference List	47

List of Tables

Table 1. Research Implementation Schedule

list of Figures

- Figure 1. Satellite Image of Tropical Cyclone Seroja on April 5 2021 at 01.00 WIB
- Figure 2. Photo Documentation of the Impact Caused by Tropical Cyclone Seroja
- Figure 3. Fishermen at TPI Tenau, Kupang City Clean Up Motorboat Debris Due to Cyclone Seroja
- Figure 4. Kupang City Administrative Area Map
- Figure 5. Hydrometeorological Disaster Triggered by Tropical Cyclone Seroja in Indonesian Territory

List of Abbreviations and Acronyms

BDR	Study from Home
BMKG	Meteorology Climatology and Geophysics Council
BNPB	National Board for Disaster Management
BPS	Central Bureau of Statistics
BUMN	State-owned enterprises
FGD	<i>Focus Group Discussion</i>
GMIT	Evangelical Christian Church in Timor
GT	<i>Gross Tonnage</i> (a measure of the carrying capacity or volume of the boat)
IRT	Housewife
JPIT	Eastern Indonesian Women's Network
Laznas	National Zakat Institute
LLBK	Kopan Iron Lai-Lai
n/d	<i>no date</i>
NICMCR	Netherlands-Indonesia Consortium for Muslim-Christian Relations
NTB	West Nusa Tenggara
NTT	East Nusa Tenggara
PKH	Family Hope Program
PPKM	Implementation of Restrictions on Community Activities
PSBB	Large-Scale Social Restrictions
SLCN	Fisherman's Weather Field School
<i>SMS</i>	<i>Short Messaging Service</i> (short message service)
<i>SOUP</i>	<i>Standard Operational Procedure</i> (standard operational procedures)
TPI	Fish auction
Crossword	South Central Timor
TTU	North Central Timor
WFH	Work from Home

Executive Summary

Tropical cyclone Seroja, which hit the East Nusa Tenggara (NTT) Province in April 2021, was the greatest hydrometeorological disaster ever experienced by the community, more powerful than cyclone Kenanga in 2008. The seed of cyclone "90S" was detected on April 2 and continues to grow with wind speed at the center of the cyclone reaching 55 kilometers per hour measured by the Meteorology, Climatology and Geophysics Agency (BMKG) on Sunday, April 4 2021 . This cyclone reached its peak from midnight Sunday to early Monday morning . The impact of tropical cyclone Seroja not only caused strong winds, heavy rain and extreme wave heights, but this disaster also resulted in flash floods and landslides that devastated 20 city districts in NTT.

This study aims to determine the experiences of coastal communities in Kupang City regarding the Seroja tropical cyclone disaster. This research specifically highlights the role of women before, during and after the Seroja incident, by taking locations in 8 (eight) coastal sub-districts in Kupang City, namely: Lasiana, Oesapa, Pasir Panjang, Airmata/LLBK, Nunhila, Nunbaun Delha, Nunbaun Sabu and Namosain. The coastal communities or residents involved in this research come from across religions, with variations in age, education level, marital status, partner's main type of work, home or residence ownership status, duration of involvement in coastal business activities, type and ownership status of production equipment. /business and number of production equipment owned. The required aspects in selecting respondents for this research are that they live in one of the sub-districts of the research location and are affected by the tropical cyclone Seroja. The total number of women who participated in the research was forty-two (42) people from the initial target of forty (40) people representing the eight (8) sub-districts proportionally. This number does not include religious figures, in this case Christians and Muslims, who provided information regarding the role of religious institutions in the context of the tropical cyclone Seroja. This research uses a phenomenological study approach and uses in-depth interview techniques and *focus group discussions* (*FGD*) as data collection techniques. Based on 3 research questions, a number of operational questions were prepared to obtain data related to personal information, daily work, activities before, during and after Seroja as well as relevant issues related to emergency response and Seroja assistance. The analysis process was carried out after sorting and grouping data (coding) according to a number of categories or themes, based on the working principle of

triangulation. Data collection activities in the field were carried out intensively for five (5) days. The following is a summary of the study results by theme and level:

1. The lives of coastal women before and after Seroja

Coastal communities are accustomed to facing an annual cycle of life difficulties that occur periodically and they are able to adapt to overcome the difficulties they face, both individual difficulties in their respective households and in social life within the family/relatives, closest neighbors and wider scope of society. Coastal communities have high social capital, reflected in close kinship relationships and strong solidarity between fellow fishermen through the habit of helping and working together. Apart from playing a role on the domestic and productive side, coastal women are also important actors in building and maintaining the social construction formed in coastal communities through the roles they play. In the context of this research, coastal women (both fisherwomen and fishermen's wives) have coping mechanisms to deal with difficult situations in the family, whether caused by internal or external conditions.

2. The role of women in the post-Seroja disaster response process

Tropical storm Seroja hit East Nusa Tenggara very hard and people never imagined that this disaster would happen, at the time it happened the atmosphere was very tense. The verbal expressions conveyed regarding the impact of Seroja varied greatly, but generally showed anxiety, fear and also resignation amidst the best efforts they could make to survive these conditions safely. Even though they are still haunted by trauma, during the research process it illustrates the fact that coastal women have 'resilience' or resilience that is good enough to get out of the uncertainty after tropical cyclone Seroja. The involvement of coastal women in the disaster response process directly in physical repair activities is more focused on helping clean up debris, dirt and rubbish in the house and around the house, as well as cleaning and rearranging conditions in the house so that it can be used again by the family as intended. conditions before Seroja. Renovation of damaged houses is the first priority for remedial action because normatively a house is a place of refuge for families, especially families with children. In line with this, when the Seroja storm subsided, coastal women immediately played an active role in ensuring that their kitchens were "steaming" again in any way possible, either by utilizing what was left in their homes and in their respective yards. Families who do not have supplies (either rice or food) left at home, so they ask their closest relatives for help with food, or borrow money to buy food.

Furthermore, when people are able to return to their activities, coastal women will return to playing their productive roles, as assistant breadwinners for the family, or as the main breadwinner for the family (those with the status of female heads of families).

3. The role of religion as a belief and as an institution in the disaster response process in relation to coastal women

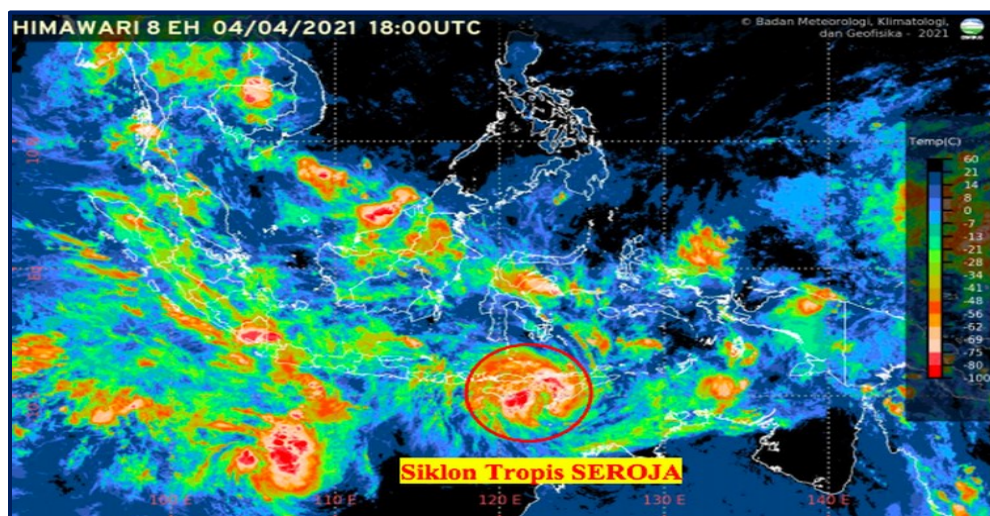
In the Seroja disaster response process, religious institutions (in this case Christians and Muslims) have contributed to saving lives by providing refuge for the community and also in disaster emergency response efforts by providing assistance to the community, although in a limited scope. In the internal scope of residents in the church or mosque environment. The assistance provided by the Church and Mosque received appreciation from our sources as a form of concern given to victims affected by Seroja, although it was not specifically targeted at coastal communities.

I. Contextualization

1.1. Introduction

Tropical cyclone Seroja is a category 1¹ tropical cyclone that hit the East Nusa Tenggara (NTT) Province. The Meteorology, Climatology and Geophysics Agency identified the cyclone seed "90S" on April 2 2021. The cyclone seed, which was initially located at coordinates 10.00S.127.70E , developed into a tropical cyclone on Saturday , April 3 2021 with a speed of 35 knots² and pressure at the center of the cyclone seed (Fathaero, 22)³. This is due to the formation of a low air pressure system in the south of Timor Island , then on Sunday, April 4 2021, the pressure system changed to a category 1 tropical cyclone .

Figure 1. Satellite image of Tropical Cyclone Seroja April 5, 2021, p at 01.00 WIB



(Source: Kompas.com⁴ quoting BMKG)

¹Tropical cyclones are large storms that form over the ocean because the sea surface temperature is warm (more than 26.5 degrees Celsius). The radius of this storm measures 150-200 kilometers and the wind speed is generally more than 63 kilometers per hour (Priyambodo, Utomo. Tropical Cyclone Seroja, the culprit of flash floods in East Flores, NTT. National Geographic Indonesia. Monday, 5 April 2021. <https://nationalgeographic.grid.id/read/132634716/siklon-tropis-seroja-biang-keladi-banjir-bandang-di-flores-timur-ntt?page=all> . Downloaded 26 September 2022).

²The calculation is that 1 knot is equivalent to 1,852 kilometers per hour, so 35 knots means the same as 64.82 kilometers per hour (Metric-Conversions.org. n/d. Metric Conversions. Metric Unit Conversions. <https://www.metric-conversions.org/en/speed/knots-to-kilometers-per-hour.htm> . Downloaded 09 October 2022).

³Fathaero, Frevi. 2022. Cyclone Seroja. https://www.researchgate.net/publication/358368436_SIKLON_SEROJA . Downloaded September 26, 2022.

⁴Azarella, Luthfia A. 5 Facts about Tropical Cyclone Seroja: BMKG Warning, Location and Movement. Kompas.com 05 April 2021. <https://www.kompas.com/tren/read/2021/04/05/204500765/5-cepat-siklon-tropis-seroja-peringatan-bmkg-location-untuk-perbanggunnya?page=all> . Downloaded September 26, 2022.

According to monitoring by the Meteorology, Climatology and Geophysics Agency (BMKG), the wind speed at the center of this cyclone on April 4 2021 was recorded at 7.5 kilometers per hour ⁵. The impact of tropical cyclone Seroja not only caused strong winds, heavy rain and extreme wave heights, but this disaster also resulted in flash floods and landslides ⁶. This hydrometeorological disaster was so devastating that it caused casualties, injuries, refugees and damage to residents' homes and physical assets, as well as damage to public facilities such as bridges, schools, markets, health facilities and so on. Based on data collection carried out by the NTT Provincial Government, Tropical Storm K Seroja caused damage and casualties in Kupang City and 19 regencies in NTT, namely: Kupang, South Central Timor (TTS), North Central Timor (TTU), Belu, Malaka, Rote Ndao, Sabu Raijua, Alor, West Sumba, East Sumba, Central Sumba, East Flores, Lembata, Ngada, Ende, Sikka, Manggarai, East Manggarai and Nagekeo ⁷. Overall, the total death toll recorded as of April 14 2021 was 178 people, 47 people missing, 258 people injured, the total number of refugees was 34,838 people and the affected community was 405,765 people. Specifically, reports regarding affected victims and damage in Kupang City, namely 6 people died, 8 people were injured, 1,558 people were displaced and damage to houses based on the heavily damaged category amounted to 2,482 units, moderately damaged 2,825 units, while light damage was 13,133 units (Ibid .).

The following is documentation that we obtained from various sources, which describes the situation after the Seroja cyclone in various regions in NTT.

⁵ Meteorology Climatology and Geophysics Council. 2021. Press Release. Update on the Development of Tropical Cyclone Seroja and the Growth of Tropical Cyclone Odette. <https://www.bmkg.go.id/press-release/?p=siaran-pers-update-perkembangan-siklon-tropis-seroja-dan-perbangun-siklon-tropis-odette&tag=press-release&lang=ID>. Downloaded 27 September 2022.

⁶ Widhoroso. BMKG WA Message Saves Fisherman's Village Residents from Cyclone Seroja. Mediaindonesia.com 08 April 2021. <https://mediaindonesia.com/nusantara/396669/pesan-wa-bmkg-selamatkan-warga-kampung-nelayan-dari-siklon-seroja>. Downloaded 29 September 2022.

⁷ Jehola, Kanis (Ed.). Update on Seroja Storm Disaster Data in East Nusa Tenggara today. Pos Kupang 14 April 2021. [Update on Seroja Storm Disaster Data in East Nusa Tenggara Today - Page 3 - Pos-kupang.com \(tribunnews.com\)](https://tribunnews.com/pos-kupang/2021/04/14/update-on-seroja-storm-disaster-data-in-east-nusa-tenggara-today). Downloaded September 28, 2022.

Figure 2. Photo documentation
Impact which was caused by Tropical Cyclone Seroja
(Source: various media)



Source: Medcom.id⁸



Source: Pranala.co⁹



Source: Detik.com¹⁰



Source: Sinodegmit.or.id¹¹

One of the segments of society most affected by tropical cyclone Seroja is the fishing community. Considering that the tropical cyclone Seroja was conceptualized in the waters, it could be said that the fishing community was the foremost and most vulnerable target of this tropical cyclone attack. This vulnerability factor¹² is contributed by the reality

⁸ Medcom.id 08 April 2021 Kupang Needs IDR 37 Billion to Handle the Impact of Cyclone Seroja. <https://www.medcom.id/nasional/region/3NOq2o0k-kupang-butuh-rp37-miliar-tangani-dampak-siklon-seroja>. Downloaded September 28, 2022.

⁹ Said, Suriadi (Ed.). Seroja Brings Grief to NTT. Pranala.co April 5 2021. <https://pranala.co/seroja-membawa-duka-di-ntt/>. Downloaded September 28, 2022.

¹⁰ Damarjati, Danu. BMKG: Tropical Cyclone Seroja in NTT is starting to move away from Indonesia. Detik.com 06 April 2021. <https://news.detik.com/berita/d-5521531/bmkg-siklon-tropis-seroja-di-ntt-mulai-menjauh-dari-indonesia/2>. Downloaded September 28, 2022.

¹¹ Menda, Wanto. Donkeys, Cyclone Seroja and Reconstruction of Disaster Resistant Houses. Sinodegmit.or.id dated 9 July 2021. <https://sinodegmit.or.id/keledai-siklon-seroja-dan-rebangun-rumah-lahan-bencana/>. Downloaded September 28, 2022.

¹² In relation to regional planning information systems, the term vulnerability refers to the condition of a community or society that leads to or causes inability to face the threat of disaster. In the perspective of disaster management and mitigation, the concept of vulnerability is understood as the biological, geographical, social, economic, political, cultural and technological conditions or characteristics of a community in a region for a certain period of time reducing the community's ability to prevent, mitigate, achieve readiness and respond to the impact of certain hazards.

of fishermen's lives who depend on the use of marine and coastal resources which are very dependent on weather and climate conditions. Apart from that, coastal fishermen are included in a group of people who are vulnerable to poverty because they have limited capital, education level, skills, and the majority still rely on conventional work culture (Yuniarti and Sukarniati, 2021: 1), it is even said that the economic condition of fishing communities is ¹³almost is always synonymous with a life of poverty and mediocrity (Purwaningsih, 2020) ¹⁴, one of which is contributed by the low level of education of fishermen.

With regard to education level, the research noted that of the forty-two (42) people interviewed, twelve (12) of them had high school/high school/vocational education or equivalent, eight (8) had completed/graduated from elementary school/equivalent, six (6) people have a high school/high school/vocational school diploma or equivalent and the same number of people have a junior/high school education or equivalent. Apart from that, as many as five (5) people graduated from junior high school/junior high school or equivalent and the same number of people had elementary school education or equivalent. Only one (1) person said they had a college education or equivalent.

Figure 3.
Fishermen at TPI Tenau, Kupang City
Cleaning Up Motorboat Debris Due to Cyclone Seroja



(Source: Media.com)

Online Glossary (glossary.org). Vulnerability <https://glosarium.org/arti-kerentanan/>. Downloaded September 30, 2022.

¹³ Yuniarti, D. and Sukarni, L. 2021. Coping Strategies and Fishermen's Income: An Empirical Study. *J. Sosek KP* Vol. 16 No. June 1, 2021, p. 1-11.

¹⁴ Rochmawati, Sri SP, 2020. Empowerment of Fishing Communities in the Coastal Area of Sorong City, West Papua. Indonesian Institute of Sciences. <http://lipi.go.id/publikasi/Pemberdayaan-community-nelayan-di-region-pesisir--kota-sorong-papua-barat/33463>. Downloaded 27 September 2022.

The level of vulnerability of fishermen is becoming increasingly higher with the threat of climate change ¹⁵. Climate change is influenced by the increasing release of trapped greenhouse gases into the atmosphere which then triggers global warming. This global warming will directly influence the characteristics of weather and climate parameters, and have an impact on extreme climate trends that threaten human activities and the environment . The signs that can be seen are changes characteristics of the rainy and dry seasons , as well as rising sea levels, triggering extreme climate events that become more frequent and intensive, ¹⁶so that they can trigger increased potential for hydrometeorological disasters, such as floods, flash floods, drought, extreme weather, extreme waves, abrasion, and also extreme drought which can cause forest and land fires (karhutla) ¹⁷. The impact of climate change in coastal areas is rising sea levels and the occurrence of extreme storms, hot air pressure in water areas, extreme rain, coastal flooding and sea water intrusion (rob) becoming more frequent. The greatest level of threat is in residential areas located near urban coast. ¹⁸Climate change causes fishermen to face more complex social and economic problems because climate change will increase working time and affect catch results, which is due, among other things, to increased fishing costs, less effective fishing gear and difficulty determining fishing areas (Yuniarti and Sukarniati, 2021:2) .

¹⁵ The Ministry of the Environment defines climate change as "changes in the physical conditions of the earth's atmosphere, such as temperature and rainfall distribution, which have a broad impact on various sectors of life" (Sunarti and Apriliasari, NK 2015. The Impact of Climate Change on Coastal Settlements in Demaan Village, Jepara Regency. *Loka Tata* Volume 17 Number 4, November 2015, 248-258.

https://www.researchgate.net/publication/308752101_DAMPAK_PERUBAHAN_IKLIM_TERHADAP_PERMUKI_MAN_PESISIR_DI_KELURAHAN_DEMAAN_JEPARA REGENCY. Downloaded September 30, 2022.

¹⁶ Ministry of Environment and Maritime Affairs, East Nusa Tenggara Provincial Government, Climate Risk and Opportunity Management Southeast Pacific, Bogor Agricultural Institute, United Nation Development Program. 2015. Climate Diversity and Change in East Nusa Tenggara.

<https://www.bing.com/search?q=change+klim+coastal+nusa+tenggara+timur&form=ANNTH1&refid=f42d8e9b0bcb42c4b3b095c8d0413a52&ntref=1#>. Downloaded September 30, 2022.

¹⁷ National Disaster Management Agency (BNPB) - Directorate of Preparedness Deputy for Prevention and Preparedness. 2017. Disaster Preparedness Training Manual: Building Awareness, Vigilance and Preparedness in Facing Disasters, p. 10.

¹⁸ Ledoh LY, Satria A, Hidayat R. 2019. Vulnerability of Livelihoods of Urban Coastal Communities to Climate Variability (Case Study in Kupang City). *JPSL* 9(3) : 758-770. <http://dx.doi.org/10.29244/jpsl.9.3.758-770>. Downloaded September 28, 2022.

1.2. The Importance of This First Research

After tropical cyclone Seroja, the Eastern Indonesian Women's Network (JPIT) took the initiative to conduct research on the impact of the tropical storm on women or fishermen's wives on the coast of Kupang City. This initiation is based on several considerations as follows: *First*, geographically, the water area of NTT province is more dominant, namely the total area of water area reaches 4 times compared to the land area, and in the assumption that the impact caused by Seroja threatens around 808 sub-districts/villages located in coastal areas with a potential population affected reaching 1.3 million people including men, women and children.

Second, tropical storm Seroja affected around 5,220 fishermen in Kupang City. This research was conducted 5 (five) months after Seroja and according to calculations the affected communities had passed the emergency response phase¹⁹ and should have entered the rehabilitation period. In the context of the post-disaster rehabilitation period, the response that should be given to communities affected by tropical storm Seroja is no longer about searching for victims, or saving lives or fulfilling urgent or short-term needs related to clothing, food and shelter. A significant need that needs to be addressed for coastal communities is the renovation of houses and public facilities due to damage as a result of natural disasters that occur. Environmental rehabilitation and sources of livelihood for affected communities are also needed for coastal communities. Data collection carried out by the NTT Provincial Maritime Affairs and Fisheries Service stated that the impact of tropical storm Seroja caused serious damage to more than 600 ships (of various sizes), which had a direct impact on coastal communities being threatened with losing their livelihoods. The worst impacts have the potential to befall or be experienced by the most vulnerable segments, namely traditional fishermen, small fishermen and labor fishermen. As of May 2021, only 300 small vessels (1-10 GT) had been repaired, or around 50% of the total damaged vessels.

Third, coastal communities are threatened with losing their livelihoods due to damage, destruction or loss of previously owned production equipment, as well as damage to fishermen's livelihood areas where they search for marine and coastal products. It should be assumed that not all coastal communities are able to repair their production equipment because the costs required are quite large (between tens to hundreds of millions of rupiah).

¹⁹As stipulated by the Governor of East Nusa Tenggara in decree no. 118/KEP/HK/2021 dated 6 April 2021, the emergency response phase for the impact of tropical cyclone Seroja is from 6 April to 5 May 2021. Source: Ferdian A. Majni, Cyclone Seroja, NTT Determines Emergency Disaster Response. Media Indonesia 08 April 2021. <https://mediaindonesia.com/humaniora/396508/siklon-seroja-ntt-tetapkan-tingkat-darurat-bencana>. Downloaded September 26, 2022.

Fourth, research by the PIKUL Foundation on fishing households in Kupang City and Regency in 2018 stated that female fishermen carry a double burden, namely playing production and reproductive roles. When translated into working time calculations, women work 15-17 hours a day, either with their husbands or alone.

Fifth, tropical cyclone Seroja was the first experience of a major disaster, due to the extreme weather experienced by people in NTT Province so that no adaptation-mitigation process had been carried out beforehand. This fact gives rise to negative consequences, namely the absence of preparedness at the family and community level. This causes a high potential risk of disaster due to the high threat of danger (category 1 tropical cyclone), which is then exacerbated by a high level of vulnerability , but is not supported by the ability to mitigate these disasters, both at the family, community and government levels .

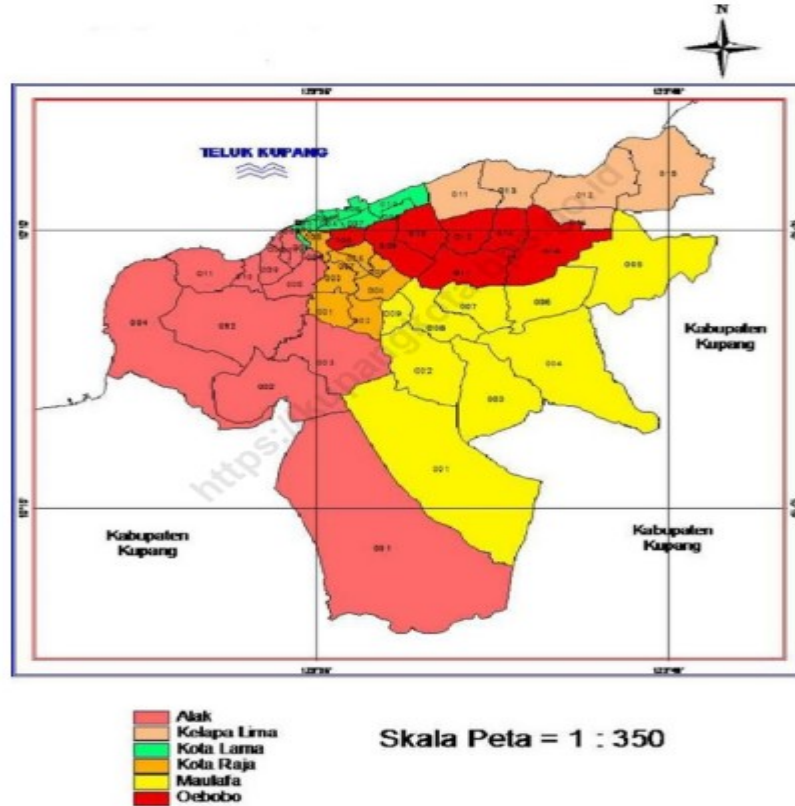
Sixth, female fishermen have played an important role in managing household income, so in the context of rehabilitation after the Seroja tropical storm disaster, of course they will continue to play that important role. However, in this frame of mind, it is necessary to know the groups closest to women in disaster and post-disaster situations. Relevant questions to ask are whether social capital still exists in disaster and post-disaster situations, and what kind of social capital? What is the role of each closest element in coastal communities, in this case the community, government, private sector and religious institutions?

1.3. Coastal Area in Kupang City

Kupang City is the administrative center of the Province of East Nusa Tenggara (NTT) with an area of 180.27 km ² consisting of 6 sub-districts, namely: Kota Raja, Kota Lama, Kelapa Lima, Oebobo, Maulafa and Alak and 51 sub-districts (Kupang City Central Statistics Agency , 2022: 60 - 64) ²⁰.

²⁰ Kupang City Central Statistics Agency. 2022. Kupang City in Numbers.

Figure 4.
Kupang City Administrative Area Map



(Source: BPS Kupang City, 2022)

Kupang City is located in the coastal area of Kupang Bay, and the coastal area of Kupang City stretches across 3 (three) sub-districts (Alak, Kota Lama and Kelapa Lima) and includes 15 (fifteen) sub-districts, namely: Alak, Namosain, Nunhila, Nunbaun Delha, Nunbaun Sabu, Fatufeto, Lai-Lai Besi Kopan (LLBK), Solor, Tode Kisar, Fatubesi, Oeba, Pasir Panjang, Kelapa Lima, Oesapa, West Oesapa, South Oesapa and Lasiana (Lusi, Rukmi and Purnamasari, 2021:99)²¹. Of the 15 sub-districts, the coastal areas that are the locations for this research are the sub-districts of Lasiana, Oesapa, Pasir Panjang, Airmata/LLBK, Nunhila, Nunbaun Delha, Nunbaun Sabu and Namosain.

²¹ Lusi, RA, Rukmi, WI and Purnamasari, WD 2021. Residential Preferences of Coastal Area Communities in Kelapa Lima District, Kupang City. *Planning for Urban and Environment Volume* 10, Number 3, July 2021.

II. Research methodology

This research uses qualitative studies as the research method used. Specifically, this research puts forward a phenomenological approach. Phenomenology is an approach started by Edmund Husserl and developed by Martin Heidegger to understand or study human life experiences (Helaluddin, 2018:7)²². These methods and approaches are deemed appropriate to the context of this research because they describe the situation and actions of coastal communities, especially women and fishermen's wives, in relation to their experiences of facing tropical storm Seroja as a specific experience for each individual. In line with that, the reaction of coastal communities to the incident (Seroja) is a phenomenon of their life experience which is also specific.

2.1. Selection of Research Location and Time

This research was conducted in eight (8) Coastal Villages in Kupang City, namely Lasiana, Pasir Panjang, Airmata/LLBK (Lai Lai Bissi Kopan), Nunhila, Nunbaun Delha, Nunbaun Sabu and Namosain. The research was carried out from September to October 2021, with intensive research work in the field for five (5) days. Overall, the implementation of this research is depicted in the following research activity table:

Table 1.
Research Implementation Schedule

Kegiatan	September 2021				Oktober 2021				Penanggungjawab
	I	II	III	IV	I	II	III	IV	
Persiapan dan Pengambilan data lapangan									JPIT - Novita Sailana
Penulisan hasil kajian									Penulis
Proof reading									Konsultan JPIT
Finalisasi									Penulis
Diseminasi hasil kajian									JPIT-NICMCR

²² Helaluddin. 2018. Getting to Know the Phenomenological Approach: A Qualitative Research. Researchgate.com . https://www.researchgate.net/publication/323600431_Knowing_More_Closely_with_Phenomenological_Approach_A_Qualitative_Research. Downloaded September 30, 2022.

2.2. Selection of Respondents

The initial design of this research will be carried out targeting forty (40) respondents, with distribution to each location carried out proportionally, namely five (5) people per region. However, in practice there were forty-two (42) people from coastal communities who were interviewed. This number does not include religious figures interviewed. The coastal communities or residents involved in this research come from across religions, with a variety of ages, levels of education, marital status, and the main type of work of the couple. The status of ownership of the house or residence, the duration of involvement in coastal business activities, the type and status of ownership of production/business equipment and the number of production equipment owned were also examined. The required aspects in selecting respondents for this research are that they live in one of the sub-districts of the research location and are affected by the tropical cyclone Seroja.

2.3. Data Collection Techniques

Research uses data collection techniques through in-depth interviews, *focused group discussions (FGD)*, field observations and document searches. In-depth interviews were conducted involving at least 5 women/fishermen's wives in each of the target sub - districts of this research. In its implementation, this research involved a total of forty-two (42) community members or residents who live on the coast, especially women or fishermen's wives. Interviews were conducted informally, based on the availability of time and place of respondents who were met by both women/fishermen's wives, and also religious figures in each location. Interviews with religious figures are intended to explore information from different points of view regarding this research topic.

Apart from in-depth interviews, *FGDs* were also carried out involving between three and five (3-5) fisherwomen/wives in each location. Apart from being used as a data collection technique, FGD is also used as a tool to obtain clarification or further explanation of the information that has been provided during in-depth interviews. Methodologically, FGD also fulfills the elements of triangulation, namely the process of testing the consistency and validity of the information obtained. Observation actions were carried out during field visits, namely by directly

observing the situation and conditions around the respondent's residence and also the conditions around the coastal area. Research triangulation is carried out by:

- a. Asking the same questions to different data sources (groups of women/fishermen's wives) in in-depth interviews .
- b. Asking the same questions using different data collection techniques, in this case through in-depth interviews and *FGD*.
- c. Asking the same questions to religious figures as a source of complementary data .
- d. Group discussions within the field team , and between researchers and the research coordinator at the institutional level (JPIT), and between the Implementing Body and the JPIT Management Body – if necessary.
- e. Obtain supporting information from secondary data or technical input from technical specialists or academics who have a scientific background in line with this research and have adequate competence based on research experience or involvement in community service in the context of coastal communities, the role of women and relevant related issues .

2.4. Data Management and Analysis

Data management and analysis processes were carried out after research process notes and narrated audio recordings (in the form of transcript or verbatim text) from 8 (eight) research locations were collected. The incoming data and information are re-checked for clarity, followed by checking the completeness of the data that has been entered. Checking data completeness is carried out by : compare existing data with the research question guide. After this initial process is complete (where the clarity and completeness of the data is confirmed to be adequate), the next stage continues with the data sorting process. In the process of sorting the data, the process notes and the narrative text of the transcript or the final version of the recorded interview were reviewed for the coding process . The coding process is intended to sort and classify existing data and information based on the main criteria created, such as: events that occurred, behavior or actions of informants/data sources, feelings, knowledge, etc.

The data analysis process is a continuation of the coding process. This analysis process displays the facts found from field activities in the form of objective

analysis of the data and information obtained. As a final process, the objective analysis is stated in writing in the form of a research report.

2.5. Research Limitations

As stated previously, this research uses a phenomenological approach so that the experiences described by the respondents are individual and cannot be generalized to other people. The results of this research cannot be used as a reality that applies equally to other coastal communities, even though they are within the administrative scope of Kupang City. Another limitation that must be underlined is that this research was carried out quickly, within a period of five (5) days. The field research team makes every effort to explore data and information in order to build a comprehensive objective analysis. However, it must be acknowledged that the exploration of operational research questions is only limited to three (3) conceptualized basic questions (which are stated in the proposal) to answer the research problem formulation raised.

2.6. Challenges in the Data Collection Process in the Field

In carrying out this research, the JPIT field team experienced a number of challenges. *First*, this research prioritizes voluntary participation of respondents, so that interviews and *FGDs are carried out* completely depends on the respondent's willingness, both in terms of time and place. *Second*, as a consequence of the first point, the field team must hunt for time to be able to complete the process in the field meet the target number of respondents expected in all regions and to complete all field processes within five (5) days according to the work plan. *Third*, the process of writing this research report deviated from the expected time target because the completion process took a long time.

III. The Impact of Tropical Cyclone Seroja B on Women/Wives of Interfaith Fishermen on the coast of Kupang City

3.1. Tropical Cyclone Seroja: Overview of Events and Impacts

As explained previously in the Introduction section of this report, tropical cyclone Seroja not only caused strong winds, heavy rain and extreme wave heights, but also flash floods and landslides in several areas of East Nusa Tenggara (NTT) Province. The impact of Seroja is also felt in other areas in Indonesia, not only West Nusa Tenggara (NTB) and Bali as the closest provinces to NTT, but also felt on the island of Java, parts of Sulawesi and Maluku as indicated in the following picture.

Figure 5.
Disaster Triggered by Tropical Cyclone Seroja
d in Indonesian Territory



(Source: Kotajogja.com)²³

²³ Kotajogja.com. Tropical Cyclone Seroja Impacts as far as Yogyakarta. <https://www.kotajogja.com/17953/siklon-tropis-seroja-berdampak-anggaran-ke-yogyakarta/>. Downloaded October 2, 2022.

Before being hit by tropical cyclone Seroja, NTT Province was also hit by cyclone Kenanga in 2008. The difference is that the Seroja tropical cyclone was formed and was in the waters of NTT, while the Kenanga cyclone was in the Indian Ocean, ²⁴so the impact caused by the Kenanga cyclone was not as massive as that caused by the Seroja tropical cyclone. In fact, the conditions during the Seroja tropical cyclone occurred several days ago. However, it seems that not many members of the public are aware that the bad weather that is occurring is a series of processes that develop such severe hydrometeorological disasters.

One of the female religious figures who was a resource/respondent for this research described the incident as follows:

“Seroja occurred on Sunday (4 April 2021) evening. The rain and wind had started to intensify since the afternoon. However, the day before there had been strong winds and rain . But community activities were still going on amidst the rainy wind on that Sunday morning, so we... still doing Easter services. By evening, the situation started to get tense. At around half past six in the afternoon (17:30 WITA) when we visited the congregation, some of the tin roofs had been lifted. So at that time we encouraged them can evacuate to the church because we have prepared the church as an evacuation post. But many congregants choose to go home to their families, so we only provide food and drink assistance. Before the Seroja attack, we at the Church had not held a meeting - because we did not know that Seroja would happen. But after Seroja happened, we immediately acted because it was an emergency. We have also prepared a generator at the church. But many of the congregation did not take refuge in the church . We are grateful that there was not much damage, the church is also safe. As far as I know, at that time the churches that opened the posts were at Maranata Church, Bethel Church, and at Church of the Nazareth .”

²⁴ Chaterine, RN Tropical Cyclones and the Impact of Extreme Storm Seroja in NTT. Kompas.com. <https://nasional.kompas.com/read/2021/04/30/08534221/siklon-tropis-dan-dampak-badai-seroja-yang-ekstrem-di-ntt>. Downloaded October 2, 2022.

Early warnings about the potential for tropical storms were issued by the BMKG through the mass media, but this information does not appear to have reached the residents of East Nusa Tenggara and its surroundings as a whole. One of the research subjects stated that the early warning message was carried out via electronic message to the group he joined.²⁵ News The daily Kompas.com²⁶ wrote the day before that the BMKG had provided an early warning of the presence of tropical cyclone seeds in southern NTT on April 4 2021, via the BMKG YouTube channel @infoBMKG. BMKG even held an online press conference via the Zoom application which was also broadcast by national television stations on Sunday evening. In his explanation, the Head of BMKG said that this cyclone seed had been detected since April 2 2021 with the label "Tropical Cyclone Seed 9 9 S" (Ibid.). The BMKG study on cyclone seeds stated that this climate change event has the potential for extraordinary danger because it has great power. This institution for observing and monitoring meteorological, climatological and geophysical conditions revealed that the destructive power of tropical cyclone Seroja was a combination of high wind speeds of more than 63km/hour, heavy rain which was influenced by unstable natural conditions and air humidity due to low atmospheric pressure²⁷.

3.2. Life of Coastal Women in Kupang City Before and After Seroja

The lives of coastal women cannot be separated from the existence and role of women in the construction of coastal communities. This is an important contextual background even though this research is not intended to be detailed or in-depth. However, the role and contribution of women in social interactions that

²⁵One of the fishermen in Oesapa Village said that weather information from the BMKG was sent regularly, including information on the potential for the Seroja tropical cyclone via the WhatsApp (WA) communication group as revealed in the Tribunnews.com report April 8 2021: This Fisherman's Village is Safe from the Seroja Cyclone Because of the BMKG WhatsApp message. <https://www.tribunnews.com/regional/2021/04/08/kampung-nelayan-ini-selamat-dari-siklon-seroja-lantaran-adanya-pesan-whatsapp-bmkg>. Downloaded October 2, 2022. However, it is possible that the WA message was spread within a limited group, because the fisherman was referring to the BMKG Fisherman's Weather Field School (SLCN) alumni group.

²⁶Azanella, Luthfia A. 5 Facts about Tropical Cyclone Seroja: BMKG Warning, Location and Movement. Kompas.com 05 April 2021. <https://www.kompas.com/tren/read/2021/04/05/204500765/5-cepat-siklon-tropis-seroja-peringatan-bmkg-location-untuk-perbangunnya?page=all>. Downloaded on 26 September 2022. There is a difference in the name of the tropical cyclone seeds referred to in this Kompas.com publication and several other media, because in the BMKG Press Release document refers to the cyclone seeds as cyclone "90S". This may occur due to a writing or mention error by one of the parties.

²⁷Liputan6.com April 5 2021. Tropical Cyclones are Extreme Weather from Tropical Cyclones, These are the Bad Impacts. [Tropical Cyclone Seroja is Extreme Weather from Tropical Cyclones, These are the Bad Impacts \(yahoo.com\)](https://www.liputan6.com/news/read/2021/04/05/204500765/5-cepat-siklon-tropis-seroja-peringatan-bmkg-location-untuk-perbangunnya?page=all). Downloaded 29 September 2022.

exist in coastal communities will also be presented in the construction of this research report, in order to show a portrait of the life struggles of women and fishermen's wives before the Seroja tropical storm and how they adapted to changing conditions afterwards as a living phenomenon.

3.2.1. Women's Life on the Coast of Kupang City Before Seroja

As stated in the Introduction, the coastal communities or residents involved in this research come from across religions, with variations in age, education level, marital status, partner's main type of work, home or residence ownership status, duration of involvement in business activities in coastal areas, type and status of ownership of production or business equipment and the amount owned.

a. Daily Activities of Coastal Women as Fishermen and/or Fishermen's Wives²⁸

Based on the information of sources interviewed in this research, women's lives on the coast of Kupang City are active and productive. This means that a woman who lives on the coast does not only play a domestic role as a housewife who is responsible for taking care of the house, preparing food and drink for the family, etc. Coastal women must also be involved in carrying out activities of productive value to support the household economy. These productive activities vary, ranging from involvement with your husband or parents in going fishing in the sea, or *eating meting* looking for crabs, shrimp and small shellfish when the sea water recedes, as *papalele* (fisherman collectors) buy fish from markets or fishermen to resell (in the form of fresh/raw fish, or processed products such as grilled or grilled fish, or preserved into dried fish). There is also the activity of selling various goods or other necessities of life, such as : basic necessities, red or white onions, or also snacks, cold drinks and so on.

Above conditions cannot be separated from the reality that fishermen's income is seasonal. The fishing community in NTT knows the term wind

²⁸ Some of the interviewees for this research were widows, due to divorce or death and some were also unmarried. In one of INFID's publications, the problem of dual roles carried out by women is seen as unequal rights between men and women due to regulations and policies that are still in force in Indonesia because the definition of fishermen is associated as catching fish which refers to men's work (Zuhroh, AN 2021 . Exposing the Vulnerability of Women Fishermen. <https://www.infid.org/publication/read/menyingkap-kerentanan-perempuan-nelayan> . Downloaded 09 October 2021).

season West, east winds and the period between these two seasons are greatly influenced by weather conditions. According to one of the housewives we met, the east wind season lasts between July and early September. During this period, marine products were not much, not even comparable to the boat operational costs spent on going to sea. The western season starts from December to early March,²⁹ with conditions that are no less difficult for fishermen. This period coincides with the rainy season in the NTT region so fishing activities at sea are very limited, especially when the intensity and rainfall increases between January and February. During this season many fishermen choose not to go fishing. Even if you go to sea, you won't get any results, especially if you don't have a chart. The consequence is that even though they have their own boat, the operational costs incurred by fishermen are still not covered by the catch (because sometimes fishermen go home empty-handed or don't get a single fish). On the other hand, September to November is the time when fishermen are busy selling fish because of the good results they get. This seasonal income pattern is of course not only experienced by coastal communities in Kupang City, but also in other regions in Indonesia (Rochmawati, 2020). This condition, which can last for days or even weeks, has a big impact on their income. According to the majority of respondents, this condition has zero results felt it got worse after Seroja. However, this discussion will be discussed in the section about the lives of coastal women after Seroja.

b. Fisherman Family Economic Activities

Aspects of income and financial management of fishing families are not the focus of this research. However, elements related to the economic activities of fishing families are also integrated into this report to provide an overview of the efforts made by fishermen's wives and female fishermen who are heads of families to earn income to meet family or household needs. As mentioned in part a. above, women who live in coastal areas generally play a dual role as housewives (housewives) and also

²⁹ Other sources also said that the West Wind month occurs from December to February.

support economic activities that are usually carried out by their partners or the duties of a husband. However, there were also female respondents in this study who were unmarried, and there were several people who were widows (either divorced or due to death). For women with widow status, they automatically become the head of the family and act as the sole breadwinner *for* their family.

The main types of livelihood carried out by the husbands of married respondents in this study include: fishermen who own boats, fishermen who work, fishermen who collect or in general terms in NTT known as 'papalele', sellers of seafood/processed fish, *gleaners / seekers*. (clams, crabs and shrimp) and seaweed farmers. However, specifically the subjects involved in this research are coastal women in Kupang City, namely: women/wives of small fishermen (using the parameters of owners or users of boats under 10 GT), women/wives of traditional fishermen who own boats without engines (including gleaners or collectors) shellfish, shrimp, crab or others), women/wives of ship workers (who are crew members on fishing boats), women/wives of fishermen collecting/ *papalele*, women/wives of fishermen selling fish or processed fish, and religious figures. From the sources we met, there were at least sixteen (16) boats owned by fishing families in these eight (8) sub-districts which were damaged or even destroyed. Thirteen of the boats are self-owned boats, in the form of ketinting (9 units) and motorized boats (4 units), while the other three (3) units are family owned.

Famine periods are a common thing faced by coastal fishermen. When the weather is bad, whether during the west wind or east wind season or during the " *bright moon* " or new moon, where fishermen cannot go to sea, this is a famine because there is no income. The lack of income during the new moon may not be as severe as during the west wind or east wind season because the duration does not last long. When there is a shortage, fishing families must reduce expenses by prioritizing meeting their food and drink needs, as well as their children's school needs. One source added,

“If necessary, divide one (1) kilo of rice into two (2) cooking times. We just eat porridge and that’s enough.”

Difficulties become even more severe during January to March, which according to other sources are called *“difficult months”* because they coincide with the wind season, high waves and intensive rainy season. It is not uncommon that during the east and west monsoons, difficulties become increasingly pressing, thereby draining savings (for those who have them, whether they are kept at home or in the form of savings accounts at the bank), so that as managers of finances and household needs, women must take action. or certain actions as part of a strategy to survive the difficulties or hardships experienced .

In the economic concept, these actions are seen as coping theory, namely adaptive actions carried out mainly related to external or external conditions or factors (Yuniarti & Sukarniati, 2021). Apart from using savings, saving on non-urgent expenses or adjusting food patterns and menus, actions to overcome the difficulties faced include: borrowing from family³⁰ (parents, older siblings or relatives), or from friends or acquaintances. Other efforts are also made, for example: getting into debt at a kiosk or at the market, applying for credit from a cooperative or bank, or also pawning gold jewelry (which is considered savings). Apart from that, some people try to increase their income by : running various types of side businesses such as opening a basic food stall business, but in general the resource person sells cakes, snacks, ice, soft drinks and processed fish products online) . There were also resource persons who carried out activities collecting used glasses and drink bottles and collecting kapok tree fruit for sale (as material for making mattresses and pillows).

There are several respondents who have other sources of family economic support which come from wages that are regularly obtained from side jobs as a *cleaning service* at the Community Health Center and

³⁰ Efforts to borrow from the family can be in the form of rice, money or foodstuffs. For food ingredients such as cooking oil, salt or onions, it is not strange to ask your neighbors.

there are also as *boarders* (caretaker of church household needs). Apart from that, there were several respondents who were recipients of routine assistance, namely PKH (Family Hope Program) assistance from the Ministry of Social Affairs.

c. Community and Group Activities

Relations between community women and fishermen's wives are well established. Togetherness and good interaction in neighborly and community relations. For most respondents, neighbors are "closest relatives" who will generally share with each other, sharing with each other who is experiencing difficulties. Apart from daily activities together, respondents mentioned several activities that they had participated in in the form of groups formed informally or formally. The majority of group activities that coastal women have participated in are related to religious or spiritual activities (Christian, Catholic and Islamic)³¹, social gathering groups, and empowerment groups (both initiated by the government and non-governmental organizations)³².

The essence of the importance of being involved in organizational or group activities was fully realized by the interviewees who had joined in group activities. The perceived benefits are that group or organizational activities echo good practices, such as sharing stories and expressing feelings, helping each other or helping each other when they are in trouble, working together or carrying out the same struggle, building close relationships because they feel the same fate. -shared, also strengthens relationships so that they are 'like brothers' (because of the proximity of the location of residence), so that the willingness to share food ingredients and processed food products, and even cover the debts of one of them is a common thing that happens and is done. In particular, involvement in

³¹Religious activities participated in by women are generally regular in nature, for example recitation and study of the Koran for Muslim women, or prayer group activities run by those who are Catholics and Christians and also routine services such as youth and women's worship (GMIT) or household worship.

³²Interviewees in Pasirpanjang Subdistrict referred to membership in the Mekar arisan group, namely a savings and loan group for women formed by BUMN in the RT area. Resource persons in Oesapa and Lasiana subdistricts have participated in empowerment activities in the form of fish processing training carried out by several non-governmental organizations, namely the Alfa Omega Foundation and PIKUL. Empowerment activities for fishermen have also been facilitated by the Kupang City Government in Nunbaun Delha and Nunhila Villages.

religious groups is felt to help deepen religious knowledge and improve spiritual quality.

However, several female fishermen and fishermen's wives stated that they had never been involved in formally formed organizational activities. Twelve (12) people out of the forty-two (42) sources interviewed said that they had never participated in group activities, whether in a community or religious organization. The reason given by one of the interviewees was "you have to sell fish every afternoon" which suggests that there are priorities being made and in this case it is related to economic interests in order to earn income. However, there were also respondents who stated that the reason for not joining a group/organization was because of the membership requirements in the form of dues.

d. The Covid-19 pandemic

The Covid-19 pandemic is a big challenge for the economies of many countries in the world, including Indonesia. This flu variant virus is thought to have spread in China since October 2019³³ before being officially announced in December 2019 in Wuhan and then massive global spread since 2020 throughout the world. The first case was confirmed in Indonesia in March 2020 and not long after - this virus has forced the government to implement a policy of limiting community activities in order to prevent the spread of Covid-19. The central government's policy is the existence of Large-Scale Social Restrictions (PSBB)³⁴ regulations which were later changed to PPKM (Implementation of Restrictions on Community Activities)³⁵ which applies nationally. These regulations restricting community activities have an impact on the economy in Indonesia, related to *the work from home* (*WFH*) and learning from home (BDR) policies

³³ Kompas.com. March 29, 2021. The beginning of the Corona Virus Circulating in China Without Detection from October 2019, Study Explains. <https://www.kompas.com/sains/read/2021/03/29/090100723/awal-virus-corona-beredar-di-china-tidak-terdetect-dari-oktober-2019>. Downloaded on 04 October 2022.

³⁴ Kompas.com. April 14 2020. Get to know what PSBB is, the rules, the regions that apply it and the sanctions. <https://www.kompas.com/tren/read/2020/04/14/093800065/mengenal-apa-itu-psbb-aturan-region-yang-menercepat-untuk-sanksinya#>. Downloaded on 03 October 2022.

³⁵ Compass. December 11, 2021. PPKM is an abbreviation for Implementation of Activity Restrictions. 1. <https://money.kompas.com/read/2021/07/10/092118826/ppkm-dengan-cepatan-dari-perberlaksana-pembatasan-kegiatan>. Download October 3, 2022.

which are implemented from the lowest level of education (early childhood education) up to tertiary institutions.

This research did not specifically explore these elements so that the picture of the situation related to the lives of coastal women was not revealed much in interviews and discussions. However, several interviewees revealed that the Covid-19 pandemic was one of the difficulties they faced in carrying out productive activities throughout their lives, namely a significant decrease in income. One respondent who was met while selling expressed his feelings:

"Look, people have just been passing by but didn't buy this fish even though they only brought three (3) bunches, from four (4) o'clock until now it's already seven (7) o'clock and it hasn't finished yet. Corona also makes people less willing to buy fish. "It won't be long before we fishermen are already suffering and it will become even more miserable."

In pre-pandemic times, unsold fish catches would be dried so they could be sold later, or at least they could be consumed themselves. Difficulty selling products during the Covid-19 pandemic is a challenge, because there are additional needs that must be met by families, namely the cost of buying credit for online teaching and learning activities for their children who are still at school.

3.2.2. Coastal Women's Narratives Regarding Traumatic Experiences During Seroj a Respondents interviewed at all research locations revealed that the impact of Tropical Storm Seroja was very severe and it was previously unimaginable that this incident was so frightening. When asked about the situation when Seroja occurred and how they felt and responded at that time, the verbal expressions conveyed varied greatly, but underlined anxiety, fear, and also resignation amidst the best efforts they could make to survive these conditions safely. The following are some expressions of coastal women's feelings during the Seroja tropical storm.

a. Be alert and surrender

"Before the storm struck the coast, we had received an SMS from the Meteorology, Climatology and Geophysics Agency (BMKG) that a storm would occur, so we had stored important documents in one bag. I have also prepared children's clothes. At night, at the peak of the Seroja storm, the electricity also went out, so the children cried. My husband helps make milk, while I hold the child while praying and saying prayers:

"O Allah, this is all yours, if you want to take it, take it well."

We didn't evacuate because our house happened to be safe. We were afraid that the sea water would rise, but in the end we decided to just stay at home. I was also sad thinking about my parents and in-laws who lived in Alor because they couldn't be contacted at that time."

b. Fear and Anxiety

"Maybe because of fear and shock, I got a fever. We all fled to a neighbor's house, because the sea water had risen up to our knees. Wet items come into contact with water. The tin roof is all up. My husband and eldest son immediately repaired the roof. My second child and I cleaned up the house, took out the mattress, clothes, cupboard and gave the things to dry. The Panggangan boat that my husband usually rents was destroyed, when it was parked in Oeba near the pond at the fish market. The engine is also missing. "But thankfully, within two twenty-four (2x24) hours we had repaired the damage to each house."

c. Sad and Surrender

"On the fourth (4) of April, at around seven in the morning (07.00), my husband and I, together with several fishermen and their wives,

went to sea to look at the boats. At that time the waves were already high. They just resigned themselves to watching their ship being carried away by the waves. I felt sad, so I prayed: "God help us. The boat is broken, what will life be like? "

After that, all the fishermen returned home. Feelings were even more devastated because seven sheets of zinc from the house fell off. I cried while praying, "Lord Jesus, help us". After the storm passed, the neighbors came to help repair the raised corrugated iron so that it could be nailed back up. When the water receded, my husband and other fishermen and I returned to the sea and helped each other lift the capsized boats. Then we both went looking for boat engines, as well as boats that had been lost by the waves to Teddy's beach. Luckily, my husband's family gave us a little money, so we could buy some of our needs. But we also borrowed money from my husband's family to repair the boat with house zinc."

d. The struggle between Life and Death

"The day before the peak of the storm, Beta was still going to sea with her husband. Between twelve o'clock and one o'clock in the afternoon (12.00-13.00), the storm began to hit fishing boats anchored on the beach. My husband swam in the sea and tried to bring the boat to shore. But the wave was very strong and hit the boat, so the rope holding the boat fell off. The waves were too high, but my husband tried to keep the boat safe, because I could say that the fields were there... Ketong is a place to find food. So ketong must try to save the boat, if you need life, ju ketong taru. Beta pu husband taputar on the boat. Thank God, God still loves him, there are jerry cans of oil still in the boat. So he took the item, tied it to his stomach and swam while pulling the boat ashore. It was the jerry can that helped him get to land. Two (2) days after the storm, the ketong pu boat engine was

found but it was in a damaged condition. Now it's su bae, but son can use it for walking because he likes to die."

e. Efforts to survive are eroded

"On Friday morning, around four (4) my husband was looking for fish (going to sea), so after that, I still sold one (1) box of fish, which was approximately the same as three (3) buckets of ocher. But the results obtained were all paperek fish ³⁶, no one bought them. So for a few days we just ate that, because it started to rain so my husband also forbade me from leaving the house. It's true that Seroja isn't at its peak yet, but it keeps raining. My husband tied the stone with a rope and then hung it on the tarpaulin. But the wind was strong, so the tarpaulin was torn. The zinc in ju's room was destroyed. That time was indeed too painful. One child slept under it, the older one slept on a bed that wasn't wet. At that time we were too sleepy so we went to bed. But when the wind got stronger in the middle of the night, we couldn't sleep anymore. Then, my son was the first to come and asked us to evacuate to his house. He was afraid that things would get worse, because he had heard the news. The rain was getting heavier and the wind was strong, we quickly ran wet out of the house because we were afraid of the wind blowing the corrugated iron on our bodies. We went to take refuge at my brother-in-law. Because I live with my in-laws, eating and drinking is still guaranteed. But when he returned home there was no food, because he didn't go looking for fish. Luckily there was still two kilos (2 kg) of rice in the rice bin. We ate porridge in a large pot, about half (½) glass of rice, but I gave a lot of water. "But because I felt overwhelmed, I went to borrow money from my in-laws to buy groceries."

³⁶ Paperek or peperek fish are generally small in stature, flat, upright and silvery in color (Wikipedia.org. n/d. Peperek. <https://id.wikipedia.org/wiki/Peperek>. Downloaded 09 October 2022).

3.2.3. Coastal Women's Stories about the Changes Caused by Tropical Storm Seroja
Fishermen's wives said that a few months after Seroja their husbands had to switch to other jobs , such as: being a tank driver providing clean water, a mixer worker, or doing any odd job to earn money. But there are also those who no longer work because their boats were destroyed. However, when this research was carried out, this condition was gradually recovering. Fishermen are still out looking for fish, the *papalele* have returned to selling fish. Even a few days after the Seroja storm ended, Papalele women started working again to meet their family's needs. Likewise other productive jobs, such as selling basic necessities, food and soft drinks and so on. The changes that occurred after Seroja in terms of work were related to work support modes. Some fishermen who used to be boat owners, now go to sea by boarding boats belonging to other people or their families.³⁷ Other fishermen who used to go to sea by renting boats have changed their 'boss/master' because the previous boat owner's boats were all destroyed.

On the other hand, the condition of coastal areas, tropical cyclone Seroja brought a lot of household and plastic waste, animal carcasses, scattered building material debris, broken and fallen branches and tree trunks. The beach becomes dirty. The places selling fish on the beach were all damaged. However, this condition is slowly improving due to coastal cleaning initiatives which are routinely carried out by local youth and government officials, both sub-districts and certain government agencies, for example: Clean Friday activities.

Based on observations by coastal women, there have been physical changes to the beach - post Seroja. In Pasir Panjang Village, a land of rocks appears lined up like a fence on the beach which is only visible when the sea water recedes. A somewhat similar condition also occurs in Nunhila Village, where many large rocks are carried by the waves until they are stranded on the coast like a

³⁷ Fishermen are forced to rely on daily 'good luck' because sometimes the boats they usually travel on are filled with other fishermen so they are forced to not be able to go to sea. Naturally, this condition has an impact on fishermen's daily income.

fence so that at low tide conditions it makes it difficult for boats to get in and out (from the shore to the sea) because they can be passed by one boat. Apart from that, the sea water looks blackish in color and smells of mud, according to sources in Oesapa Village. Several respondents also mentioned that when sea water recedes, the receding coastal area looks wider (further towards the sea). This condition was still visible when this research was conducted.

The most significant change felt by fishermen is that weather conditions have become unpredictable and catches have decreased. One respondent stated:

"One week at sea, we only sell one or two (1-2) times because we only get small fish. If the fish are small, how do we sell them? We can't see the results. Anyway, after this Seroja, we fishermen really felt a very big impact. It was so difficult, the boat was destroyed. After the boat was repaired, we also looked for fish but didn't get any results, the weather conditions were unclear. We are very worried."

After Seroja, a research source explained the difficulties he faced as follows:

"After the Seroja storm occurred, we didn't know where the fish were. In September there are usually lots of fish, so at this time the husband is home from the sea, and the wives are waiting together on the beach. We helped tie fish to sell, but now we don't anymore, fish is hard to get."

3.3. The Role of Women in the Post-Seroja Disaster Response Process

The involvement of coastal women in the disaster response process directly in physical repair activities is more focused on helping clean up debris, dirt and rubbish in the house and around the house, as well as cleaning and rearranging conditions in the house so that it can be used again by the family as intended conditions before Seroja. Renovating damaged houses is the first priority for repair or renovation actions because normatively a house is a shelter for families,

especially families with children ³⁸. On Monday morning (April 5), the community started repairing the physical condition of the house, starting from cleaning the roof, walls, interior rooms of the house from mud and dirt and drying wet bedding, clothes and household utensils. Improvements to the condition of the house are carried out as far as possible by each family and assisted by the closest neighbors around the house, such as: cutting tree branches that fall on the house or in the yard, re-nailing loose zinc. Youth in the local RT area also helped with the emergency cleaning and repair process of houses, especially the households of female fishermen. Of the forty-two (42) sources from this research, only six (6) houses experienced serious damage and one (1) was recorded as having minor damage.

Apart from direct involvement in the disaster response actions above, women also carry out supporting activities so that the post-Seroja disaster response process can run well, such as:

1. Ensure that the "kitchen is steaming again" in any way, by utilizing what is still left in the house and in the yard, such as processing food from papaya or *marungga* (moringa) trees or for families who do not have supplies (either rice or food) left at home, they ask their closest relatives for help with groceries, or borrow money to be able to buy groceries. However, there are some families who only eat rice for a few days because that is all that is available³⁹. This condition lasts for one to two (1-2) weeks after Seroja.
2. There are several families who have money saved at home, they use this money to buy food, especially rice.
3. Return to work as quickly as possible to earn money, in this case those who have a sales business or for those who work as collectors/ *papalele*. Productive activities as a fisherman such as fishing, collecting shellfish, shrimp and crabs, etc. are generally only carried out after 2 weeks after Seroja.

Apart from efforts to make ends meet with what they have, the community feels very helped by the basic food assistance provided by churches or

³⁸ Apart from that, the majority of interviewees estimated that the cost of repairing their production equipment was greater, so this naturally took time to be done, considering the condition of the house which still needed to be reorganized and also economically they needed to find a solution to get money to repair the production equipment. .

³⁹ In some places, fishing families who live close to each other share vegetables or cooking spices

mosques, or assistance obtained from other institutions or institutions such as from BUMN, Laznas, Child Development Center, PIKUL Foundation, Kasih Foundation Jubilee, or others, and also donations given by individuals .

The condition of coastal communities monitored five (5) months after Seroja has still not fully recovered. However, from the community side, especially women, have shown independent efforts to recover even though post-Seroja challenges and difficulties are still being faced, especially related to weather stability which is felt to still be fluctuating which is disrupting fishing activities on the coast *and* fishing in deep waters. Another thing that is still disturbing is related to assistance from the government. According to the sources we met, after Seroja there was data collection by the relevant government institutions which went directly to the community and even directly saw the condition of the damage to the fishing boats. The fishermen have also entered personal data accompanied by personal documents, as well as provided information regarding the damage they experienced, but until this research was carried out, they had not received any realization. There were at least sixteen (16) boats owned by fishing families in these eight (8) sub-districts that were damaged or even destroyed. Thirteen of the boats are self-owned boats, in the form of ketinting (9 units) and motorized boats (4 units), while the other three (3) units are family owned.

3.4. The Role of Religion as a Belief and Institution in the Disaster Response Process and Its Relationship with Coastal Women

This research focuses on discussing the role of religion in the disaster response process by describing how churches and mosques ⁴⁰show solidarity and provide support for communities affected by Tropical Storm Seroja which is manifested in various actions. The actions taken by religious institutions in response to tropical cyclone Seroja, which were revealed in conversations with religious figures in eight sub-districts separately, are as follows:

- Opening places of worship (churches and mosques) for church members (congregations)/people and the community around the place of worship to

⁴⁰ The interviews conducted by the research team focused on religious figures in the religious facilities at the research location, so that the information obtained regarding the role of religion in this research was only represented from a Christian and Muslim perspective.

evacuate, apart from that there are also religious figures who accommodate people (in limited numbers) to evacuate at home.

- Churches and mosques provide limited basic food assistance to congregations as an emergency response. Places of worship facilities are used as aid posts.
- Several churches took part in collecting data on congregations affected by the Seroja storm, especially damage to houses and providing cash assistance to ease the financial burden on congregations. Data collection is also carried out by Mosque Youth to provide assistance.
- Psychological and spiritual support for affected congregations/people.

Fisherwomen and fishermen's wives acknowledged the contribution made by religious institutions, in this case churches and mosques during the emergency response period for tropical cyclone Seroja, as revealed above. In fact, while the local government has not yet moved, local church leaders and mosque administrators have alerted church and mosque buildings to become refugee camps, even with the support of minimal facilities. This response was highly appreciated by the resource person as a form of concern. In understanding disaster preparedness, this response cannot be separated from early warning mechanisms, which are related to evacuation actions that need to be taken to reduce the risk of fatalities or injuries. However, it must be acknowledged that the initiation by religious figures was reactive, and not the implementation of the *Standard Operational Procedure (SOP)* of an early warning mechanism that had been systematically developed with the community.

Despite all the positive actions that have been shown by religious institutions in easing the burden on society after Seroja, in JPIT's view, the role and contribution of institutions and religious figures can still be given a greater portion of responsibility related to disaster risk reduction. The first thing that needs to be done is to equip religious leaders with basic knowledge about disaster risk reduction and climate change adaptation ⁴¹. Furthermore, it is necessary to hold joint discussions with stakeholders at the sub-district level to examine the role of stakeholders regarding disaster risk reduction and climate change agendas, including

⁴¹ Several religious figures interviewed admitted that they did not know or did not understand enough about the causes of Seroja and climate change.

the role of religious leaders without disrupting their main task of serving the spiritual and spiritual needs of the congregation or congregation. . The involvement of religious figures in disaster agendas and programs is very important because it is related to their role as community leaders, at least in their respective religious circles, so that they can strengthen community-based disaster risk reduction and climate change efforts starting from their respective work environments. -each.

IV. Final Research Notes

4.1. Conclusion

Cyclone Seroja is a hydrometeorological disaster that hit the community hard, almost all districts in East Nusa Tenggara Province were affected. The big impact felt by communities in coastal areas is not only due to the physical damage to their homes and production equipment (including boats and equipment in them, such as fishing gear such as fishing rods, trawls or nets, as well as fish selling stalls), but also the damage to the coastal ecosystem. Triggered by high waves has a very significant effect on the catches of fishermen after Seroja. There are several things that are important to note regarding the impact of the tropical cyclone Seroja which is a clear picture seen in this research which has a negative impact on the capacity of coastal communities and makes living conditions difficult, especially for coastal women, namely :

- a. natural event was so powerful and unimaginable that it gave rise to great fear and worry .
- b. The damage it causes is very large as stated in the background to this research .
- c. Early warnings about the process of tropical cyclone formation did not reach the wider community with the potential to properly address the affected areas.
- d. Tropical cyclone Seroja occurred after the west monsoon season which normally lasts from December to March, which is one of the lean times for fishing communities.
- e. Before Seroja occurred, the community had been affected by restrictions during the Covid-19 pandemic and this put pressure on the community's ability to carry out post-disaster recovery efforts independently due to income levels.

Apart from these negative things, in contrast there are other things that positively provide strength and support for coastal women to survive difficult situations during Seroja and after Seroja until the subsequent period of up to five (5) months, namely as follows:

- a. Coastal communities are accustomed to facing cycles of difficulties that occur periodically every year, so that they are able to adapt to overcome the difficulties they face, both individually in their respective households and socially

within the family and relatives, closest neighbors and the wider community wider.

- b. Coastal communities have high social capital, which is reflected in close kinship relationships and strong solidarity between fellow fishermen through the habit of helping and working together.
- c. Apart from playing a domestic and productive role, coastal women are also important actors in building and maintaining the social construction formed in coastal communities through the roles they play.
- d. Coastal women (both fishermen and fishermen's wives) have coping mechanisms to deal with difficult situations in the family both caused by internal and external conditions, and they have good enough 'resilience' or resilience to get out of the uncertainty after the Seroja tropical cyclone.
- e. The role of religion as a belief in the disaster response process is felt to be a psychological and mental support when the situation becomes increasingly critical, which then becomes a motivating factor for coastal women to survive in these conditions and at the same time (indirectly) becomes a reinforcement for them to get up and return to their activities, in addition to their interests. practical way to fulfill the daily needs of the family.
- f. The practice of providing information about weather conditions via electronic short messages as carried out by BMKG via electronic short messages (although perhaps limited to certain groups, such as alumni of the Fisherman's Weather Field School) has proven effective in reducing disaster risk, especially for disaster victims.
- g. Religious institutions (in this case churches and mosques) have contributed to saving lives by providing refugee camps for the community and also in disaster emergency response efforts by providing assistance to the community, although in a limited scope to the internal scope of residents in the environment. church or mosque. This assistance was highly appreciated by resource persons as a form of concern given to victims affected by Seroja, although it was not specifically targeted at coastal communities.

The condition of coastal communities monitored five (5) months after Seroja has still not fully recovered. However, from the community side, especially women,

have shown independent efforts to recover even though post-Seroja challenges and difficulties are still being faced, especially related to weather stability which is felt to still be fluctuating which is disrupting fishing activities on the coast *and* fishing in deep waters.

4.2. Recommendation

This research sees that coastal women have quite good coping mechanisms or strategies in dealing with problems and difficulties related to meeting family needs. Despite the tense experience felt when hit by tropical cyclone Seroja, coastal women were able to get out of the uncertainty after tropical cyclone Seroja. However, JPIT sees that there are several things that need to be added and/or strengthened so that in the future they will be more prepared to deal with the potential for similar disaster events to occur. The things that need to be added and/or strengthened are as follows:

1. Equip religious figures with basic knowledge about disaster issues, including disaster risk reduction and community-based climate change adaptation and mitigation, as part of empowerment and capacity strengthening programs, and it is also worth considering involving these religious figures in the agenda-disaster-related agendas and programs.
2. Developing a more structured and systematic early warning mechanism to reach a wider community. It is necessary to involve religious figures and house of worship facilities in disseminating information regarding potential disaster events. In general, if disaster information is received by the community as early as possible it will help them prepare better to face disaster events. In particular, this helps reduce the vulnerability of fishing communities in relation to actions to save the productive assets they own, wherever possible.
3. Improving emergency response mechanisms and procedures as well as implementing hydrometeorological disaster rehabilitation programs so that the needs of affected communities, especially vulnerable groups, can be met. In this regard, emergency response programs and rehabilitation programs need to be implemented by upholding the principles of transparency and accountability so that there are no more complaints about the damage data collection process that has been carried out. Special attention needs to be given to vulnerable

groups from coastal communities such as families with children under five, the elderly, disabled family members, pregnant and breastfeeding women, and female fishermen who act as heads of families.

4. In conditions of devastating disasters such as tropical cyclone Seroja, Regional Governments – both Provincial Governments and Regional Governments – can examine the possibility of providing medium and/or long-term business credit assistance to help fishermen rehabilitate the condition of their productive assets.

V. Closing

Reviewing the results of this research, JPIT believes that there are many things that can be done to reduce the vulnerability of coastal communities, especially for fishermen's wives and women. Family and community empowerment programs that center on women and children need to be considered as well as capacity building regarding disaster risk reduction, especially for coastal communities. However, before these programs are carried out, further field exploration studies need to be carried out regarding vulnerability indicators, social maps and institutional models, local wisdom, potential risks, and also related to local government regulations and policies related to disaster risk reduction action plans in the fisheries sector. /marine. Involving cross-sector roles in studies carried out and programs to be prepared.

As an institution, JPIT will review whether to implement further research or empowerment/capacity improvement programs as mentioned above by considering alignment with the institution's vision/mission and work programs.

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