



Adapting Coastal Settlement to Climate Change: Insight from Ecofeminist Perspective

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ABSTRACT

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In recent decades, the relationship between gender and climate change has become a central theme in various discourses. This is due to the massive environmental destruction recorded across the world, including along the coast of Sayung sub-district, with women and other vulnerable groups being the major victims of these environmental problems and social-ecological crises. This study, therefore, aimed to better understand the coping strategies and solutions used by gender-based coastal communities in facing types of disasters. The ecofeminist viewpoint served as both a theoretical framework and an analytical tool in examining the problem of tidal waves and land subsidence along the Sayung Demak coast. This perspective could capture the reality of women and vulnerable groups, as well as their adaptation process, through the expression of personal experiences with the existing conditions. In conclusion, current developments have significantly marginalized women and other vulnerable groups into economic adaptation, physical adaptation, and survival (quietly) with existing conditions. The findings of this study show several types of adaptations made by women in facing the climate change crisis. Based on an ecofeminist perspective, climate change is not sudden but results from a capitalistic and development paradigm. As a result, it impacts women and the environment, especially on the coast, with the occurrence of tidal floods (rob), floods, and abrasion. Women respond to this condition through economic, environmental, and physical adaptation. This condition implies that people's living space, especially women's, will disappear or become more complicated if this condition is not handled wisely through regulations and policies on development in coastal areas.

1. INTRODUCTION

Climate change may cause various effects in every country, region, generation, social class, occupation, gender, age, and income. However, floods, tidal waves, and land subsidence are some of the continual consequences. There are three levels to consider the effects of climate change [1]: the community's basic right of self-expression, equality of economic and social access for all communities, as well as collective rights regarding resources, energy, and a healthy environment. Although studies of gender in climate change have been widely conducted, studies on the subject still have opportunities. Because inequality of climate change impacts spread to every place, space, and aspect of life. Based on the report, the roles of men and women in natural resource management within the mountains of Solok Regency are different, and even the roles previously performed by men are changing [2]. The region's temperature and patterns have led women to participate actively in the productive roles which are previously dominated by men, resulting in a double burden for these women.

In-depth, gender studies at the ecosystem level are an insufficient foundation and input for policymaking at the local level. Based on the report, the most vulnerable groups,

including women, children, the elderly, and people with special needs, bear the brunt of climate change impact [3]. Purwianti et al. [4] reported that exposure, sensitivity, and adaptive capacity are the three factors influencing vulnerability to these impacts. It is exacerbated by the condition of women, who face hierarchical, social, and cultural inequalities in access and opportunities, leading to disparities in the vulnerability of women to the effects of climate change (floods, tidal waves, and land subsidence) that are becoming increasingly complex. Women face more vulnerable conditions than men [5, 6]. This vulnerability means that women will be able to adapt to disaster events. Apart from that, the increasing burden of responsibility in caregiving also hinders them in climate change and mitigation efforts.

The word "ecofeminism," was first mentioned in Francoise d'Eaubonne's book, entitled *Feminism or Dearth*. This book discussed the direct correlation between nature and women's oppression and how their liberation was inseparable. Although ecofeminism aimed to clarify the correlation between all forms of human oppression. It also focused on their attempts to dominate the non-human or natural world. Ecofeminists argued that women were culturally associated with nature. There was a conceptual, symbolic, and linguistic relationship between feminists and ecological issues [7].

The assumptions, values, and beliefs framed by the Western mentality toward patriarchal attitudes, maintain, justify, as well as explain the domination and subordination relationship between men and women (the logic of domination or oppressive dualistic and hierarchical patriarchy) has harmed women, as well as nature [8].

The ecofeminist perspective is one of the frameworks to see how the mean of capital production (labor, capital) exploits nature for the benefit of corporations which results in environmental damage that affects nature, the environment, and women [9]. They proposed ecofeminism that analyzes the correlation between capitalism with patriarchy, and bridges socialist, transformative feminists. They claimed a significant correlation between patriarchy and capitalism. Both are portrayed as a world of men that alienates nature and labor. They described the practice of nature oppression as a man seeking physical closeness, thereby becoming obsessed with sex because it is the only direct physical contact with nature. Therefore, both life and freedom are key issues in transformative ecofeminism that recognize and embrace the nature of women's physicality, materiality, carnality, and mortality. Nature is a finite commodity therefore humans need to learn about consuming as little of it as possible for the sake of future life and develop a subsistence mindset.

Ecofeminism is an approach that has a relationship with women as stated by Noya (2013) in the studies of Hunga and Candraningrum [10] and Maulana and Supriatna [11], in this approach, environmental problems can be solved. Ecofeminism at the same time criticizes the other pillars of modernism, which are anthropocentrism and androcentrism, so the environmental damage and deconstruction are androcentric practices and views. Ecofeminism has more value because it does not only focus on the subordination of women but also assesses the subordination of nature and the environment. Meanwhile, Hunga and Candraningrum [10] and Anggraeni [12] stated that women are creatures who are more prepared to face and solve environmental problems, create communities without violence, and are sensitive to the environment.

This is in line with other scholars, related to the relationship between environmental damage and modernization caused by patriarchy and capitalism, development there are issues of hegemony, power, and marginality of women, and how humans treat nature which also means how they treat women [12-14]. Ecofeminism ethics tries to dismantle patriarchal mindsets and policies that oppress nature and women. At the same time, towards justice for women and other humans.

Nature and women are equated as a single entity. Therefore, the destruction of nature is inextricably linked to the destruction of women. Warren [8] in the study of Tong [15] highlighted four basic assumptions associated with ecofeminism: (1) the oppression of nature and the oppression of women are significantly related; (2) a deep understanding of the oppression is required; (3) the feminist theory and practice must incorporate an ecological perspective; and (4) ecological problem solving must include a feminist perspective.

In the Indonesian context, scholars highlighted that extensive development in coastal areas cannot bring prosperity and even has a bad impact on women, as several studies below have shown.

Latifa and Fitranita [16] and Ardhyarini et al. [17] conducted research in the Indonesian context that poor urban women in Lombok, fishermen and women in coastal area in

Lamongan and Cirebon, bear a more severe burden due to climate change and ecosystem damage. As a result of this condition, women are the most vulnerable creatures to experience adverse effects of climate change, but women still survive so that their families and households are guaranteed.

Latifa and Fitranita [16] conveyed the same thing that poor urban women in Lombok and fishermen in Lamongan Indonesia bear a more severe burden due to climate change and ecosystem damage. As a result of this condition, women are the most vulnerable creatures to experience adverse effects, but women still survive and survive so that the survival of the family and household is guaranteed.

Malik et al. [18] conveyed the same message: coastal women are not involved at all in every stage of planning for the development of the coastal area of Makassar City, and even development has the most significant impact on women.

In the context of Sayung sub-district, environmental damage and women's damage is a linear relationship. Where in the context of Sayung environmental damage is caused by climate change which takes the form of floods, rods and abrasion disasters. This is in line with what was conveyed [19], the condition of the tidal flood in Sayung sub-district's coastal area was caused by intensified subsidence of the land surface, which has contributed to the expansion of the tidal inundation. Defined land subsidence as a natural phenomenon caused by soft soil compression. Meanwhile, Setyawan [20] stated that the physical load of buildings and groundwater extraction caused the soil conditions in the coastal area to compress, as shown by building subsidence and the consequent reduction in the land surface. This expansion in tidal inundation is bound to cause progressively worsened flood disasters.

Numerous studies have reported Sayung sub-district as one of the Demak Regency sub-districts where severe tidal conditions, floods, and land subsidence have been recorded. In this sub-district, five villages, have experienced tidal flooding, as well as land subsidence. Previous studies conducted in Bedono, Sriwulan, and Sidogemah villages [20-24], the communities resort to physical adaptation (elevating buildings and roads), economic as well as social adaptation, and in some cases occupational changes.

This was consistent with the findings of field observations conducted in five villages along the Sayung Sub-district's coastal area. There were severe tidal floods almost every day for several hours, with a continually rising water level. The impact of flooding impeded community activity, particularly for women who are breadwinners. In addition, housewives who were home alone during tidal waves must raise their goods to prevent damage by seawater (Anonymous, 2021).

Based on the results of previous studies, it is known that research related to flooding, rob, and abrasion and the types of adaptations have been carried out. Meanwhile, research that relates the issue of climate change, women and their impacts (tidal flood ("rob"), abrasion and flood), and women's strategies in dealing with them. There are few opportunities to study and understand how women adapt, and the strategies used to cope with these impacts. The ecofeminist perspective is an analytical tool used in understanding this because there is a connection between the environment and women's daily lives; this is in line with what Vandana and Mies conveyed that women have a special connection to the environment through their daily interactions and this connection has been ignored [23]. Therefore, this study aimed to better understand the coping strategies and solutions used by gender-based coastal communities in facing types of disasters.

months. Other information said that even if they already increased their house, in ten years they should be increased again. The impact of the tidal floods in Sayung District is shown in Figure 2. Not only the settlement but also the education facility was submerged by tidal floods. Other information from the information is about the height of tidal flood that can be informed by Meteorological Bureau, and can help the inhabitant to know the situation. In above, it is the conversation between interlocuter and researcher.

"The tidal flood would come by the hour and would recede after 2 (two) hours. The height of a tidal flood was about 30 cm (about knee height for an adult). Even though it has been paved and improved, in ten years this location will be flooded again". (Nur/Sdgmh/281021)

"The tidal flood would start at dawn. Tidal floods are common in this area. I believe they are usually around the height of the stairs (about 15 cm). The tidal flood would happen for about 2-3 hours. So, when I woke up at 4 a.m. It would already recede. The tidal floods are unpredictable, they could sometimes be very high and will submerge the houses and sometimes they are low". (Mgfh/Tmbllsk/071021)

"Yes, the tidal flood will reach knee height in this area. Every 3 a.m. the water rises to the height of an adult's waist (100 cm). The water would begin to rise at 2.30 a.m. and decrease later, at around 5 a.m. It would rise and then decrease from time to time. The water rises from the west every time there is a tidal flood. Depending on the season, floods may also start after 2 p.m. I've been in situations where tidal floods would hit while I was asleep. My feet would already be submerged in water when I woke up. If the water reaches waist height in my house, the water in the living room will reach knee level. It happens daily. In fact, it happened just last night". (Sdh/Bdn/281021)

"To find out the height of the tide we used data released by the Meteorological Bureau. From the data, we know that the road will sink when the graphic shows 8 and 3. When the graphic shows a number between 8 and 11, this means that the road will sink. The duration of a tidal flood ranges from 3 to 4 hours, and the tidal flood would usually inundate our homes at night. After the water recedes, the area will become muddy, and we often cannot go to work nor could our children go to school. I have already elevated my house so the water cannot enter my house unless through seepage from the floor". (Sus/Srwlh/201021)

"The tide comes up to knee height every day. Tonight, the tidal flood already entered our house at 3 a.m. in the morning but at 8 a.m. the water will recede, and if the tide begins at 5 a.m., it will usually recede by 11 a.m. I still go to my shop even though I must go through the water. When the water has receded, I will open the shop. When the tidal flood rises to knee height no one would go to my shop, and it will be detrimental (for my business and livelihood)". (Sirh/Prwsr/271021)

Based on the floods and tidal floods ("rob" in Indonesian) intensity map, as well as the results of interviews on the coast of Sayung Sub-district, were most severely affected by tidal waves. These villages were located in an area with high susceptibility to tidal waves. In these two villages, the community was forced to live on water because the roads were no longer visible and some were even lost. According to Mr. Har of Timbulsloko village, the current road was a 1 km long road recently constructed on the water to connect to 77 families located in the Timbulsloko sub-district. However, to reach the nearest village had to go by boat or on foot for about

200 m, through a road that is often submerged in water in the morning and at low tide in the afternoon.



(1) The flooded road in Sriwulan Village; (2) Settlements submerged by the tidal floods in Bedono Village; (3) & (4) school in Sriwulan village which has been abandoned due to rob floods.

Figure 2. Settlement conditions

Source: Field Observation, 2021

The condition of the Sayung coast is merely an accumulation of the consequences of disasters that have occurred for over two decades, beginning with the development of the Tambaklorok area in northern Semarang [28]. According to related studies, the Sayung coastal area, particularly Bedono and Timbulsloko villages, was most severely affected by the tidal waves. Figure 3 shows the changes in the area due to flooding.

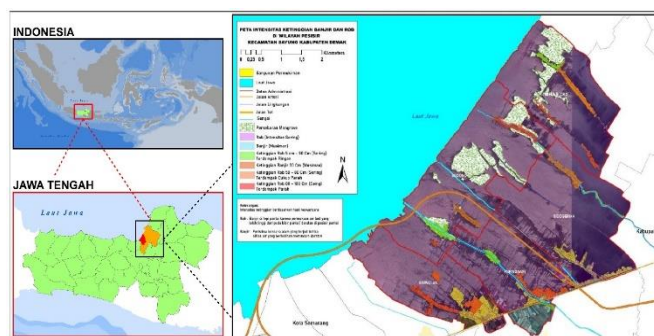


Figure 3. A map of the rob floods along with the Coastal Area of Sayung sub-district

Source: Goggle Map, 2021 & Field Observation, 2021

3.2 Women's survival strategy

Inhabitants of the community in the Sayung sub-districts coastal area, particularly the women, have developed strategies, including physical, economic, and social adaptation to survive in a tidal flood-affected environment.

3.2.1 Nature's survival strategy (surviving the situation as it is)

Women in the Sayung sub-district's coastal area developed numerous physical adaptation strategies. The women residing on stilts above the sea must be terrified when storms and large waves occur in the middle of the night, said Ibu Isti who lives in Timbulsloko, in a conversation can be shown below:

"I am terrified and frightened whenever water enters my house. That's why when it's cloudy, I always feel compelled to rush and become erratic because of my fear. Before August there was a loud bang on the mosque's door because of strong winds. There were also several destroyed houses in the Onggorawe area. There was even caterpillar season before that. There are so many caterpillars on the mangrove (brayut in Javanese) and trees, so I needed to bring an umbrella when walked outside. It is only recently, in September and October, that it is been peaceful". (Isth/Tmbllsk/071021)

In cases of emergencies, these women must evacuate and save the children. Some of these women live in hamlets without access to the outside, including Timbulsloko Hamlet. In addition to poor access to roads. Inhabitants also suffer from inadequate access to public health and education facilities. Pregnant women going for antenatal appointments must board boats to the midwife in Karanggeneng Hamlet, Timbulsloko Village. Meanwhile, parents must help their children cross the flooded road on foot or by boat, to attend the school which is in Karanggeneng Hamlet shown in Figure 4.



Figure 4. (1) & (2) Children navigating the road to school through rob floods experienced every day throughout the year; (3) The road that is always used for inhabitants even children go to school

Source: (1) & (2) Documentation by PPNI, 2021, (3) Private Documentation, 2021

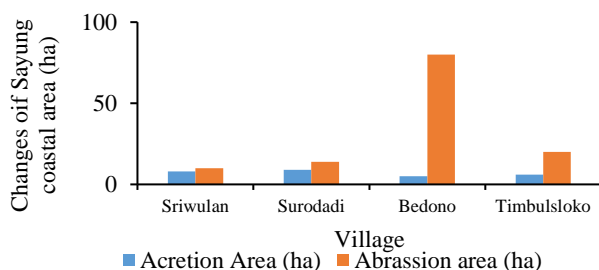


Figure 5. Changes in the Sayung Coastal Area due to flooding
Source: [28]

In cases where the sea level is high, the children in Timbulsloko and Senik hamlets are not able to attend school because the distance to school is approximately ± 1 km on foot

or by boat and this can also be connected by driving for approximately ± 1.5 km. According to the mothers of these children, the highest tidal wave in the morning is ± 30 cm to 50 cm (Figure 5).

In Sayung Sub-district's coastal area, clean water is typically obtained through the use of artesian wells which are jointly (public property) or privately managed. Water fees in the community range from IDR 2,000 to 7,000 per month, with a total payment of IDR 15,000 to 80,000 per month, depending on water usage. This water is transported through pipelines located in unsanitary environments, hence, there is a high risk of pollution or contamination. Generally, mothers use the most water in the community, because housewives' duties, for instance, washing and cooking, generally require a large amount of water. As the women below said water is very important not only for drinking but also for everyday life.

"I take water from the channels (*nyalur*) from Ibu Suwarni's artesian well. There are two artesian wells in this area, besides Ibu Suwarni there is also one at Bapak Joko. It costs Rp. 3,500 per meter³ and how much they charge depends on the water that we use every day. Therefore, we can calculate how much money we expend on water." (Asrph and Swrn/Bdn/281021)

"I don't use channels, because the location of the artesian well is very far from my house, it is about 300 meters. I usually buy water. It costs Rp 4.000/m³. It all depends on usage. If you use a lot of water, you will need to pay more. I would typically pay around IDR 30.000-IDR 40,000 per month." (Nrn/Bdn/281021)

"To fulfill daily water needs, I took water from an artesian well that is close to my house, about 80 meters away (from my house). Look, you can see the artesian well tower from my house". (Sswd/Srwln/201021) (Figure 6)

"The water that we use comes from the mosque and the water comes from spring. We pay IDR 50,000 every month for four people, or around IDR 2,000 per meter". (Siti/Tmbllsk/071021)

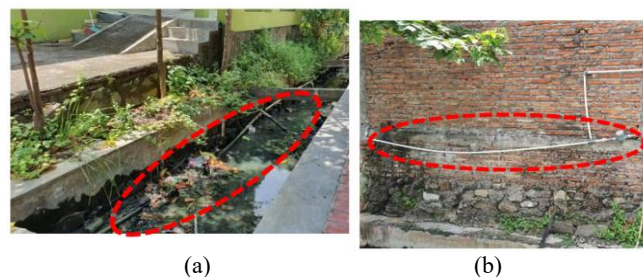


Figure 6. (a) & (b) Images of the pipelines used for transporting clean water to the residents' houses
Source: Field Observation, 2021

3.2.2 Economic survival strategy

The majority of people in Sayung sub-district's coastal area work as industrial workers, while only a few are pond fishermen. This is because the ponds have become filled with seawater due to the rising sea levels. The yields obtained from the community ponds have reduced significantly and are, consequently, unreliable as a source of income.

Women in Sayung sub-district's coastal area have no choice but to seek additional income by working as industrial workers, searching for seafood products (*golek kijing* in Javanese), opening stalls, and processing seafood.

A. Working as an Industrial Laborer in Semarang City

Young mothers in Sayung sub-district coastal areas

typically work as industrial workers in Semarang City to earn extra income. In addition, these women are burdened with other responsibilities, for instance, cleaning the house after each tidal flood (*rob*), which must be carried out before going to work or after returning from work at the factory. As Mrs. Swrn said below. On the other hand, Mrs. Siti said that to through the tidal flood, they must have a motorcycle and every year the motorcycle must be damaged because of salty water.

"When the tidal flood comes at night then I would have to clean the house before I go to work, but when it comes in the morning, I would clean the house after work in the evening. It's unpredictable, sometimes the tidal flood could happen in the afternoon and sometimes in the morning". (Swrn/Prwsr/271021)

Each woman must work even during tidal floods (*rob*), and in these cases, motorbikes are the most reliable means of transportation.

"When I go to work I have to find shortcuts ways, and this leads the motorcycle to be damaged since it will be exposed to saltwater (cause rust)". (Siti /Tmbslk/071021)

B. Hunting for Seafood (*Kijing/oyster*)

During the day, after the tide has receded, women in Bedono Hamlet and Bedono Village look for marine products in the form of *kijing* (in Javanese), or oysters. The women hunt for shells by the sea and sell the haul to collectors for IDR 17,000 per kilo of gravel. Generally, mothers collect about 5 to 10 kilos of mussels daily. The statement below was given by a respondent from one of the communities in Bedono Hamlet, Bedono Village.

"During the day, older ladies look for shells and sell them right away. They search in the backyard (in a pond behind their house), mainly for yellow clams. If we want to build a group of SMEs, it requires a long process and needs a large number of people. So, it is faster if we sell it directly to the collectors for a price of IDR 17,000/kg, and you can collect 5-10kg each day". (Rzkn/Bdn/281021)

C. Processing Seafood

Certain UMKM in the Sayung sub-district coastal area produce processed foods, for instance, market snacks, presto milkfish, milkfish brains, shredded milkfish, presto (Presto is a pressure cooker that is used to cook milkfish until is tender) petek fish, and salted fish. The employees in Sriwulan Village RW 2 producing these processed foods are mostly women. These employees work daily for several hours depending on the demand. Subsequently, the products are sold for IDR 90,000 per kilo of *otak-otak* and IDR 30,000 per jar of shredded fish. *Otak-otak* is the name of a seafood product in Java. As Mrs. Munaroh said:

"There are SMEs. In RT 1, there is a group of SMEs that make presto fish, *Otak-otak*, and *abon*. Several neighbors would also help. To prepare *Otak-otak* or presto fish you start by washing the fish, then seasoning and cooking them. The number of employees of these SMEs ranges from 1 to 10, depending on the amount of *Otak-otak* or presto fish to be made. They work daily. When making *abon* (dried shredded fish), the fish is shredded into this size (the size of a 100 ml bottle), and for small jar costs IDR 30,000. The fish used is milkfish, which costs Rp 90,000 per kg when turned into presto fish/*Otak-otak*". (Mnh/Swln/261021)

Other UMKM products sold in Sriwulan Village include rice and market snacks, for instance, pastels, donuts, arem-arem (rice that is wrapped with banana leaf), which are

available from dawn to 10 a.m. These processed food products are distributed to Mr. Masrokan (a pioneer of UMKMs in Sriwulan Village), who sells them at a stall in front of his house. About 80% of the members of this UMKM are female retired factory workers who desire to continue earning a living. In order to Mrs. Munaroh said that:

"Opening a stall here means that they can sell their product. They can only make the product and have no idea where to sell it. So, I created a place for them. When I opened the business in the morning, they would already arrive (with their goods), and by 9 a.m., everything was sold out. Every day, around 9 a.m. to 10 a.m., after everything is sold out, we pay them, and so on. The members are made up of about 80% older females. It is their primary source of income. The leader was a retired soldier (Mr. Masrokan) He retired because he wanted to look for a job in a factory, unfortunately, he was too old (40-50 years old) to become an employee. Therefore, they started making food products, and in the end, they not only produced but also started to sell them". (Mnh/Swln/261021)

In Timbulsloko Hamlet, Timbulsloko village, processed fish products including presto petek fish and salted fish, are commonly sold. However, these goods are not currently distributed beyond the village, due to the difficulty of transportation which requires walking a long distance and taking a boat for IDR 10,000. Furthermore, the women of Timbulsloko Hamlet produce these goods based on demand. Said Mrs. Marni that:

"There are dried fish, like milkfish, Petek fish, and so on. Living in Timbulsloko must be economical because the cost to go out is around IDR 10,000 so people here will be very selective to go out, they would only go out for very important things". (Mar/Tmbslk 13112021)

The following photos illustrate the economic potential initiated by coastal women to generate income for the family (Figure 7).



1. Processed shredded milkfish produced by the women of Sriwulan Village RW 2; 2. UMKM actors selling food in Sriwulan Village; 3. presto petek fish products from Timbulsloko Village

Figure 7. UMKM products
Source: Field Observation, 2021.

D. Working as Construction Workers

In Bogorame Hamlet, Timbulsloko Village, some elderly

women who are unable to work in factories have resorted to working as mortar lifters in building construction. A community member of Bogorame Hamlet, Timbulsloko Village, gave the following statement below.

“Yes, most inhabitants have worked construction jobs, because they were not allowed to work at the factory. For women, some of them look after the children of their neighbors as a part-time job”. (It/Tmblslk/071021)

E. Women Traders

Some residents of Timbulsloko sell fish, shrimp, crabs, etc., which are caught from the "yard" to be exchanged for other needs, such as rice, fruit, vegetables, and even electronic goods. However, some residents become intermediary traders. Below in Figure 8 shows women in Timbulsloko not only a housewife but also to fulfill their need have become a trader.



Figure 8. Strategy economic adaptation
Source: Handriana, E Documentation, 2022

3.2.3 Environmental adaptation

Environmental adaptation in the form of mangrove planting is being carried out by the government or organizations dedicated to mangrove conservation, to improve the condition of the Sayung sub-district coastal area. The village communities are often involved in mangrove planting, for instance, Wonorejo Hamlet, Timbulsloko Village, is where people search for and cultivate mangrove seeds, which are later sold at the price of IDR 60,000 per 1000 mangroves. In addition, the government monitors the plants' development each month until the plants grow to a certain size. Meanwhile, in Bogorame Hamlet, Timbulsloko Village, mangrove plating is managed by individuals under government oversight. The following statement was given by a community member of Bogorame Hamlet, Timbulsloko village. On the map below (Figure 9), you can see the mangrove distribution area in Sayung District.

“Those that cultivated corps are Mr. Nur Salim’s employees, and they will be reviewed by the sub-district or district. Mr. Nur Salim had an idea, where he would ask his neighbors to look for mangroves. He would then buy it from them and plant the mangroves. I do that too, and I occasionally get IDR 50,000 for it”. (Isti/Tmblslk/021121)

Apart from planting mangroves, Timbulsloko women also use their yards to plant vegetables using gallons or pieces of bamboo for vines. This refers to getting around the difficulty of getting vegetables. Even though this method still cannot

meet their daily vegetable needs, at least they can utilize their limited land to meet their vegetable needs. Apart from that, planting vegetables on the house terrace can reduce the sun's heat during the day. The weather is scorching because their village is level with the sea (see Figure 10 below).

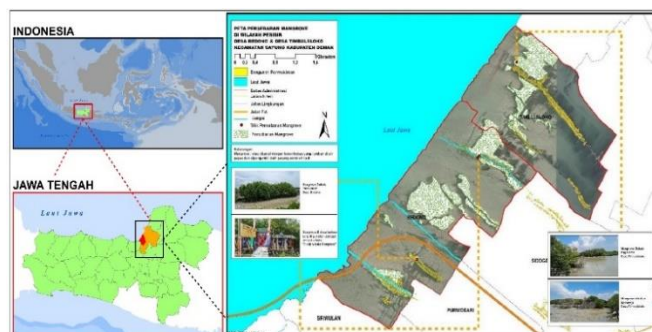


Figure 9. A map of mangroves in the coastal area of Sayung sub-district

Source: Google Map, 2021 & Field Observation, 2021



Figure 10. Food security strategy adaptation
Source: Team Documentation, 2022

3.3 Discussions and finding

Ecofeminism can be used in two ways: as an ideology and as an analytical tool [29]. In this discussion, ecofeminism as an ideology is interpreted as an awareness that can become a value system, social movement, and life practice. Below are several findings that show the resilience of women in facing the social and ecological crisis that occurred in the Sayung and Timbusloko areas. Apart from that, climate change impacts not only the economy and environment but also the health and welfare of citizens. For this reason, increasing adaptive strength and resilience to the vulnerability of climate change to ecosystems and communities is a challenge in the global era. Below are some findings from studies related to women's adaptation using an ecofeminist perspective.

3.3.1 Communal adaptation/communal resilience

The impacts of climate change are not gender-neutral, as evidenced by the disproportionate effects on women and marginalized communities. Climate change amplifies existing gender inequalities, exacerbating the vulnerabilities of women who often depend on natural resources for their livelihoods and well-being. An ecofeminist approach provides a critical lens to understand the intersections between gender, the environment, and climate change.

Based on the results above, it is known that the disaster that occurred in the Sayung area, particularly Timbusloko hamlet, does not make women, as individuals, and groups lament their fate. The people of Timbusloko hamlet carry out various ways. Over the years, they faced the inundated situation of settlements. They are starting from the water level of a few inches to reach one meter. These methods show the process of personal and community resilience (community resilience) that continues to grow. Social support between members of the community and social support from outside strengthens confidence in overcoming the situation, encourages the emergence of creative thoughts and actions, and encourages appreciation of daily experiences to live a meaningful life, not just survival. Even women can develop various forces to deal with existing conditions. Based on related theories with gender and climate change, what is done by Sayung women is the toughness of the adaptation in good aspects that are individuals such as changes in livelihoods that were initially farmers, then became farmers but with increasingly unreachable disasters (flood/rob and abrasion) makes women choose to be laborers in a factory around Sayung. In addition to individual economic adaptation, women develop communal adaptation such as some residents of Timbusloko sell fish, shrimp, crabs, etc., which are caught from the "yard" to be exchanged for other needs, such as rice, fruit, vegetables, and even electronic goods. However, some residents become intermediary traders.

An essential aspect of the impact of climate change inequality on women is its effect on economic sustainability. Women in many regions of the world are responsible for engaging in subsistence farming, gathering resources, and performing other work that depends heavily on natural resources and environmental stability. Climate change disrupts traditional livelihood methods, causing women to seek alternative income-generating activities. These alternatives may be less reliable, time-consuming, or require less skill. Additionally, the limited availability of financial resources, credit, and decision-making authority for women in the home and community may also hinder their capacity to adapt to the economic hardships caused by climate change [30].

3.3.2 Capitalism (infrastructure) vs ecofeminism

According to the findings of this study, the Sayung sub-district, particularly Bedono village (Senik hamlet) and Timbusloko village (Timbusloko hamlet), are most affected by the *rob* (tidal floods) conditions which were first recorded in 2017 (According to Mr. Har). This condition has become the permanent state of the area, and even the outbound roads are no longer navigable and must, therefore, be replaced with a new road constructed by the community.

"The first tidal flood happened in 2005 and it got worse when the port and settlement in Tambak Lorok were constructed. The construction of the sea highway in Demak Regency also worsened the tidal flood here. In 2017, the situation worsened as even the road in front of the mosque was sinking". (Har/Tmbslk 07102021).

This condition shows the relevance of ecofeminism because nature and women tend to be most affected by capitalistic development's oppression of nature. Based on the condition of the Sayung sub-districts coast, from Sriwulan village to Timbusloko village, the construction of the Port in Tanjung Mas, Semarang, was the major factor initiating the onset of rob floods in the area. This is consistent with the statement given by Suwarni and Asropah of the neighborhood Association 7/5 Dukuh Tonosari, Bedono Village, Sayung sub-district which is given below.

"Because there was construction in the Tambak Lorok Settlement and the Tanjung Mas Port area, water would flow into the Bedono area, including the Morosari beach area." (Asph and Swni/Bdn/281021)

Dusun Timbusloko remains submerged in water and women, as well as children of the community are most vulnerable to the impacts of the rob floods, for instance, inadequate access to education and healthcare facilities, due to the difficulty in navigating the flooded roads. The existence of capitalistic and patriarchal development, as well as the desire to dominate nature, has caused numerous injustices to women and other vulnerable groups, as seen in the Sayung area. This is consistent with the report by Warren [8] in study of Silvia [13]. The relationship between capitalism and patriarchy is expected because society is shaped by patriarchal values, beliefs, education, and behaviors that justify the relationship of domination and subordination, as well as the oppression of women by men.

The occurrence of floods and tidal floods (*rob*) in the Sayung sub-district is continually worsening and is bound to become even worse with the imminent construction of the sea highway which will divide the Sayung sub-district into the north and south regions of the sea highway. When this occurs, the area north of the sea highway is bound to be "sacrificed" in a capitalistic and patriarchal development. The communities of these areas already struggle with the existing conditions, including inadequate potable water. This is in line with the report by Hartono and Prasetyojati [31], which reported a significant change in the physical, chemical, and ecological conditions of the water in the Sayung Sub-district, due to land subsidence, as well as the presence of industrial area that releases waste into water bodies. The following statements were given by the women (Mrs. Endang and Suwarni) in several tidal flood areas.

"Yes, but occasionally when there is a big tidal flood, and the channels are damaged, water would flow into the settlement and the water would turn salty. The water is normally fresh if there is no damage from a tidal flood. The clean water flows in this area once every 2 (two) days. For

example, if the water does not flow today the water will flow tomorrow. Clean water in this location must be divided evenly so good scheduling is required. We divided the Community Unit (RT) 1 into two areas. We alternate access to clean water every two days since we cannot use it simultaneously. Then, to ensure that the water is not contaminated with water from the tidal flood, I make sure that the roads and rivers are dry, so it is safe to let the water into the houses". (Edng/Swln/261021)

"The water here (in Purwosari) is of bad quality since it is contaminated with saltwater. We must be very careful in using water that often becomes salty. I would need to precipitate it first before processing it if I want to drink it". (Swri/ Prwsr/ 271021)

The issue of inadequate potable water is related to the right to potable water for women and all vulnerable groups. Despite the increasing popularity of environmental and gender issues, very little has been implemented to ensure women have unlimited access to potable water, under PMK No 492/MENKES/PER/IV/2010 regarding drinking water quality requirements, which states the water consumed by the community must meet the mandatory parameter standards, including all water safety parameters whether directly (microbiological and chemical parameters) or indirectly (chemical and physical) related to health. A statement by one of the interview respondents described the drinking water as "salty," and this is probably due to seawater intrusion. This is caused by land subsidence due to development and water extraction (use of artesian well water) by both residents and

industry. Consequently, the water remains salty even when artesian wells are used. According to USAID and Indonesia Urban Water Hygiene (IUWASH) [32], Indonesia ranks as the ASEAN country with the least access to clean water and urban sanitation. Apart from this fact, the burden on women in the Sayung coastal area has been overlooked long enough. The health of women and other vulnerable groups is always conferred a lesser priority, compared to infrastructural issues.

Based on the interviews with the respondents, tidal flood (rob) have become a daily occurrence, therefore, the environment is generally unsafe. However, the residents are forced to remain there for various reasons, including limited funds to relocate, social ties (most residents have families in the area), and work (farmers). According to the ecofeminism critique, all forms of oppression are interconnected. The exclusion of women due to gender inequality has a significant impact on their role in design. The book shows women's second-class status occurs due to being associated with nature and regarded as symbols, while men are regarded as culture creators [33].

In Sayung coast, expansion and exploitation carried out in the name of capitalist development led to the destruction of natural resources (land and water). Batubara [34] described socio-ecological crises as the result of capitalistic development and massive resource exploitation. These conditions led to the onset of social and ecological injustice, as well as gender injustice.

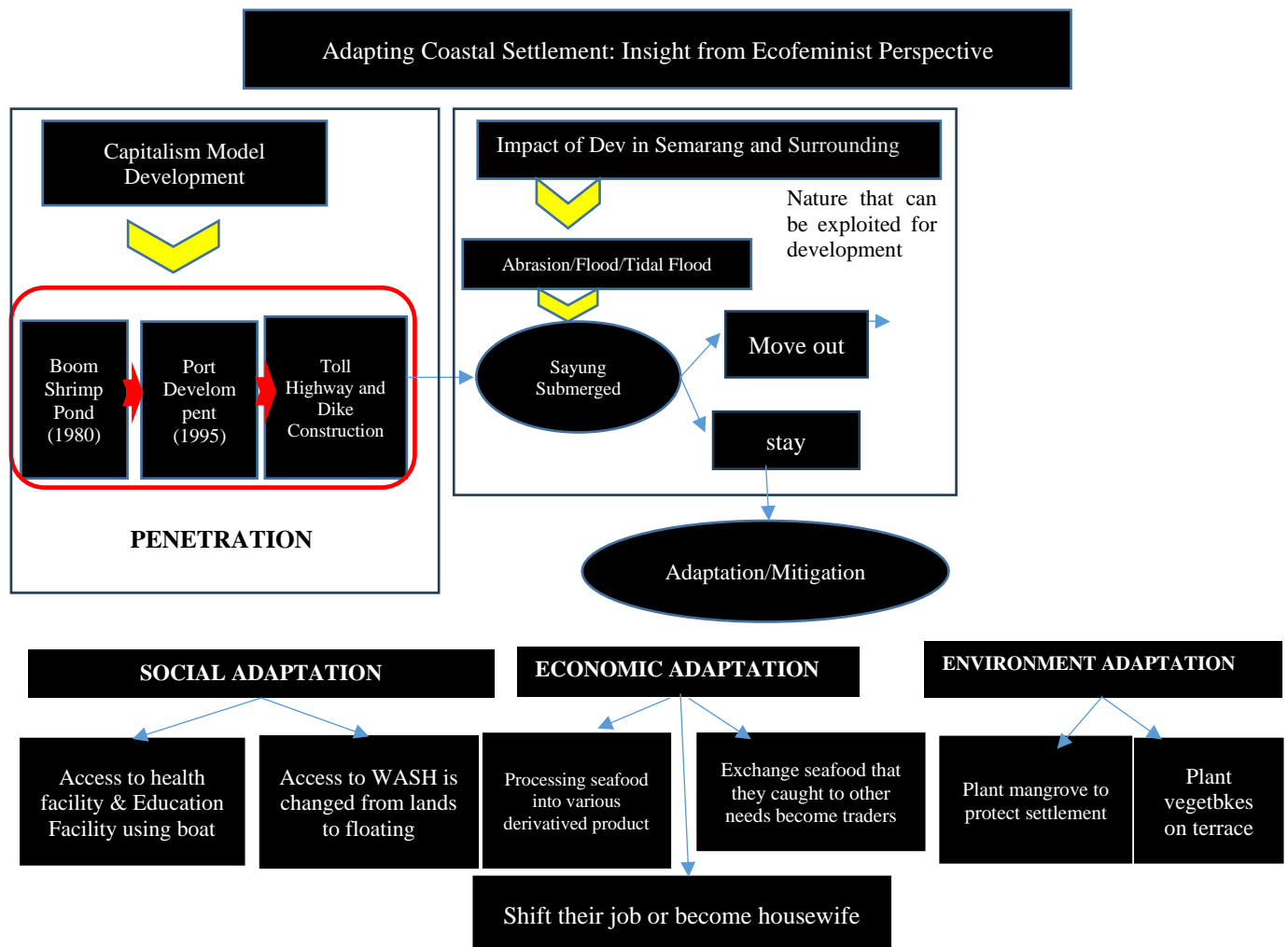


Figure 11. The relationship between capitalistic development-impact-adaptation
Source: Researcher Analysis, 2023

According to Karmilah and Handriana [34], the development in Sayung is increasingly strengthening inequality, which exploits humans and non-humans (water and land). This is reinforced by Arivia [35], who states that women are always connected with nature, so conceptually, symbolically, and linguistically, there is a connection between feminist issues and ecology. Exploitation causes the social-ecological crisis. To continue living, capitalism must continue to destroy nature (non-humans) and humans [36].

This ecological inequality is in line with what Orr and Kish [37] conveyed: the challenge of sustainable development is the existence of unbalanced conditions between economic and environmental development. It is worth noting that the two conditions cannot be separated, so the solution offered is transformative.

Figure 11 is an abstract portrait of Sayung's condition, seen from an ecofeminist perspective. Capitalistic development will impact not only nature (nonhuman) but also humans.

4. CONCLUSION AND RECOMMENDATION

4.1 Conclusion

The relationship between capitalism and patriarchy is mutually exclusive, with capitalism being a mode of production and culture involving the oppression of the female gender. However, the ecofeminism perspective shows the two ideologies work in the form of domination.

Inequitable development breeds social inequity and perpetuates poverty, and as a form of adaptation, several women resort to submission and silence in the face of discomfort. The major victims of coastal development are vulnerable groups, nature, and society. Capitalistic development destroys the environment, as well as the cultures within, and alters the economic structure.

In Sayung coast, the communities have adapted by elevating buildings in anticipation of deteriorating environmental conditions, changing occupations, and processing marine products into ready-to-eat food such as shredded and milkfish presto. Women and other vulnerable groups are most affected by this condition, particularly by the consequent inadequate access to basic amenities.

4.2 Recommendation

Based on the challenges caused by floods, tidal waves, and land subsidence, as well as the position of vulnerable groups (women, children, and people with disabilities) who are culturally constructed to be marginalized citizens, but are nonetheless responsible for the fulfillment of safe drinking water, certain practical and strategic changes must be implemented. For instance, all non-environmentally friendly forms of development must be abolished, including excessive industrial development in coastal areas, which marginalizes vulnerable groups. Furthermore, a more environmental and vulnerable group-friendly model of development ought to be implemented to ensure vulnerable groups have the opportunity to participate in planning.

Apart from the recommendations mentioned above, specific recommendations are presented below.

Strengthening women's participation and leadership in mitigation and adaptation efforts at various levels through appropriate recognition and capacity strengthening. According

to Khan [38], women play an important role in adaptation and mitigation efforts in climate change action. If women are actively involved, there will be a significant increase in environmental sustainability and reduced emissions.

Advocate for implementing special protection and schemes for vulnerable groups to mitigate and adapt to climate change. This is not just a policy, but a call for empathy and understanding towards those most affected by climate change.

Women and men face different situations and impacts of climate change, so it is necessary to ensure adequate consultation on mitigation and adaptation policies, programs, and activities carried out at various levels both central, regional, and village are appropriate and valuable for both men and women.

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