



## Borneo Coastal Women: The Ecological Dilemma Of Charcoal Production

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### Abstract

The expanse of mangrove forests and the harmony between the riverbanks and beaches in the Batu Ampar area of Kubu Raya Regency have evoked a sense of beauty, even sadness. They evoke a clear tone, often with aesthetic and emotional connotations. The natural beauty and potential of the timber industry in the 1980s greatly piqued the interest of those seeking money. Now, after the collapse of the timber industry, what remains are the black hands of strong-willed women who "guard" the charcoal stove tradition. They struggle for a life that feels increasingly difficult amidst waves of ecological dilemmas. Through their narratives, unexpected strength and resilience are revealed regarding their role in maintaining the balance between the economy and nature. This research invites reflection on how women's grace can be a guiding light towards sustainable production, for a better future for future generations. This study uses a qualitative method with a descriptive approach, involving women who guard the charcoal stove tradition and the mangrove ecosystem as data sources. The research instruments include observation guides, interviews, literature studies, and documentation. The research findings show the importance of navigating the central role of women in the charcoal production industry in Borneo, which is often overlooked in environmental and economic discourse.

**Keywords:** Coastal Women, Ecological Dilemmas, and Guardians of Tradition

### 1.Introduction

Batu Ampar, traces of glory were etched into the 1990s. Where the forest spread out, yielding a paradise to look forward to. Domestic and foreign ships sailed back and forth, carving out the bustle of life as a welcoming harbour was established. This "Glorious Era" was known as far away as Europe. Many foreign ships always docked and anchored right in the river directly opposite Batu Ampar Island, known as Teluk Air International Harbor (Susanto, 2022). At that time, lumber mills flourished, attracting workers from far and wide in the hope of earning money in this region. Now, that exotic bustle is only a distant memory, where the glory days have become a thing of the past (Dolan, 2024). It is especially remembered by those who experienced that glorious era. Although some returned to their hometowns, many chose to integrate with the local community. Batu Ampar is indeed known for its fame—formerly located in Pontianak Regency, then changed its name to Mempawah Regency, and now as an area within Kubu Raya Regency. However, its name remains captivating for its ~~Figure 1. Batu Ampar Mangrove~~ refuses to erase its traces. Traces of the sparkling river stretch between Batu Ampar Island and Teluk Air Island. On the coast, rocks are arranged, covered in the green of mangrove forests. It refuses to remain silent, but wants to continue to beat, as described by every wave of leaves and the grip of its roots.



Kondisi Hutan Mangrove di Batu Ampar

The existence of mangrove forests, with their various species, is even known as the richest mangrove ecosystem in the world. More than 80 percent of the world's mangrove tree species are found in the Batu Ampar mangrove forest (Surya Atmaja, 2023). Unwilling to be eroded by time, this aquatic and swampy habitat continues to thrive, along with other habitats such as fish, shrimp, and crabs, which support the local community. This is especially true for those who rely on the wonders of nature for their livelihoods, and it serves as proof that Batu Ampar remains vibrant and captivating.



It continues to offer future generations the promise of its charm and history, linked to the meaning of its people's lives. A history of the rise and fall of a wood processing factory that contributed to the national income (Grossman & Oberfield, 2022). The mangrove charcoal kitchen business is now all that remains. It has become a saviour and a source of hope for struggling residents. Amidst the storm of change, they remain resilient with determination and a tireless work ethic. They also pursue other jobs as farmers, traders, fishermen, and even stone crushers. Nevertheless, they continue to rely on nature as a source of life. Faithfully maintaining tradition by managing the mangrove charcoal kitchen. Mangrove forests have been a source of life for local communities for hundreds of years. Mangrove forests are not just ecosystems, but also household staples, sources of income, and a legacy passed down through generations (Das et al., 2022). The persistence of managing a mangrove charcoal stove since 1906 has become ironic. It has eroded their hopes and their main source of livelihood with the issuance of Government Regulation No. 27 of 2025, which prohibits the exploitation of mangrove forests. This policy immediately threatens existing livelihoods. The question is, where is the balance? There is a fire burning within the stove, as well as stories of struggle and resilience as guardians of tradition. Therefore, consideration must be given to ensuring that the hopes of the community and nature can coexist.

About the black hands of mighty, strong-spirited women fighting for the family economy (Cuder-Domínguez, 2022). Now they are increasingly weak, some even unable to hold back their tears, as the charcoal kiln activity, which has long been managed by generations, slowly closes. Their mainstay of income is threatened with no longer pulsating, and their hopes fade amidst the silence. Now they, as guardians of that tradition, are once again caught in a dilemma. Crying and regretting the accusation that the charcoal kiln activity as a source of income has contributed to the destruction of the mangrove forests that should be protected. The tears shed by these women, the guardians of tradition in Batu Ampar, are the voice of their conscience. They should also encourage everyone to reflect. To ponder the choice: Between survival and environmental conservation. A struggle that should not be separated. Finding ways for tradition and ecosystems to coexist. There is always hope. Encouraging togetherness to find a way, where those dark hands can once again carve a future that is friendly to nature and humans. Moreover, it is known that the cause of the increasing threat to the mangrove forest ecosystem is more due to several mangrove charcoal kitchen activities that began as family businesses but then transformed into an unofficial export network industry, suspected of being controlled by corporations (Rasquinha, 2024).

The black hands of these strong-hearted women, now facing a dilemma, are a symbol of struggle and resilience. Threatened with their families' faltering economic survival, a profound irony. The research findings of (Irfani & Hariyono, 2020) also signal that feminist issues are crucial to address in realizing a gender-sensitive future in Batu Ampar, Kubu Raya Regency, West Kalimantan. Therefore, this research is crucial, not only to understand women's participation in meeting their livelihood needs, but also to find a balanced solution between the necessities of life and environmental conservation. This ensures that long-rooted traditions are not lost and the mangrove forest ecosystem is maintained. Focusing on impact research and sustainability potential, this research can help these women find environmentally friendly work alternatives, creating new, harmonious paths where the economy and ecosystems can complement each other. To ensure their voices are not overlooked, initiatives are needed that can drive change that not only benefits but also protects natural and cultural heritage as a way of honouring their struggles.

## 2. Literature review

The role of women in coastal economic activities has been extensively researched, particularly in the context of the relationship between culture, ecology, and sustainability. A study by (Irfani & Hariyono, 2020) highlighted the issue of feminism in the Batu Ampar coastal community, showing that women's identities are often caught in a dilemma between economic demands and ecological values. This research aligns with (Ayu, 2022) study, which found that women make significant contributions to supporting the family economy while also facing structural limitations in decision-making. In an ecological context, Catton & Dunlap (1978) introduced the human ecology paradigm, emphasizing the dynamic interactions between humans and the environment. This theory has been expanded upon in contemporary research on mangrove ecosystems, emphasizing the importance of sustainability (Hamdani, 2025).

## 3. Research Questions

The research on "Black Hands Strong Souls of Coastal Women of Borneo Amidst the Ecological Dilemmas of Charcoal Production in Batu Ampar, Kubu Raya Regency," is based on the problem formulation: What is the role of women who guard tradition in mangrove charcoal production in Batu Ampar, and how does this practice affect the sustainability of the mangrove ecosystem? Based on the research problem formulation, the objectives of this study are: To understand the role of women as guardians of tradition in mangrove charcoal production in Batu Ampar and its impact on the sustainability of the mangrove ecosystem. In this context, we will analyse how women's charcoal production practices not only contribute to the family economy but also affect the surrounding ecosystem.



#### 4. Significance of Study

This research has important significance, both academically and practically.

**First Academic Significance:** This study contributes to the literature on environmental sociology and human ecology by offering an in-depth understanding of how local communities, particularly women, interact with their ecosystems in the face of ecological dilemmas. Using a qualitative approach, this study provides a rich narrative of women's strength, resilience, and the often-overlooked central role of women in environmental and economic discourses.

**Second Practical Significance:** The results of this study can inform more equitable and sustainable decision-making and policy formulation. Recommendations such as improving environmental education, involving women in decision-making, encouraging sustainable innovation, and ecosystem rehabilitation can help find a balance between community economic needs and environmental conservation. This research demonstrates that solutions do not have to eliminate deeply rooted traditions but rather integrate them with environmentally friendly practices.

#### 5. Research Methodology

The researcher used a qualitative research type with a descriptive approach. It describes phenomena and facts holistically related to the research on "The Black Hands of the Strong Souls of Coastal Women of Borneo Amidst the Ecological Dilemmas of Charcoal Production in Batu Ampar, Kubu Raya Regency." Bogdan and Taylor state that qualitative research is research that produces descriptive data in the form of written or spoken words from people and observed behaviour (Moleong, 2019). This research was navigated through a field study design. A field study is one of the methods or approaches in qualitative research. It is intended to intensively study the background of the problem, the current situation and position of the event, as well as the specific social environment unit that is given as it is (Sugiyono, 2015). This fieldwork was conducted in Batu Ampar District, Kubu Raya Regency, West Kalimantan Province, in response to the government's increasing attention to family-community businesses related to charcoal kitchens and the sustainability of mangrove ecosystems in recent years. The researchers actively interacted directly with the research subjects. The goal was to obtain comprehensive and in-depth data. Direct observations of the research subjects, as well as gathering information through interviews, were also conducted, supplemented by documentation and field notes, to achieve the desired research results.

In this qualitative research, the data collection tools, implementation quality, and results are highly dependent on a critical and open attitude, which are crucial for the continuity of observation, interview, and documentation techniques. Therefore, the researcher acts as the research subject in this study. The researcher searches for, processes, and collects valid data, which is then analysed and summarized as research findings. The data analysis or data processing process begins with reviewing all data successfully obtained from various sources (observation facts—observations, interviews, and documentation). Data reduction is carried out by creating abstractions. Abstraction or simplification is an effort to create a summary of the core processes and statements that need to be carefully considered. Data validity efforts are also continuously carried out in order to prove whether the research conducted is truly scientific research and to test the data obtained. Data validity tests in this qualitative research include: credibility, transferability, dependability, and confirmability tests.

#### 6. Findings and Discussion

The mangrove charcoal kitchen is a family business in Batu Ampar involving women. The charcoal kitchen has been running since 1906 and has become a tradition, supporting the local economy. The community's daily lives are in contact with the mangrove habitat, making this tree a key raw material for the charcoal kitchen. Batu Ampar Village is known for its extensive mangrove ecosystem. Batu Ampar, one of 15 villages in Batu Ampar District, Kubu Raya Regency, is known to have approximately 38,449.67 hectares of mangrove forest (Pontianak Post, 2025). There are at least 500 charcoal kitchens spread across four hamlets in Batu Ampar Village. Limau Hamlet, for example, has at least 100 units. This is not to mention the other hamlets, where nearly 80 percent of the population still produces mangrove charcoal. Batu Ampar District, as part of the Kalimantan Island region, is precisely located in Kubu Raya Regency, West Kalimantan Province. Batu Ampar area directly borders Kubu and Terentang Districts. To the north with Kayong Utara Regency. To the south with the Karimata Strait, and to the west with Sanggau Regency, and Ketapang Regency to the east. Geographically, its point is at 14°10' East Longitude to 109°59'30" East Longitude and 01°02'00" South Latitude to 0°16'40" South Latitude. The coastline stretches for 167.26 kilometers. The beach stretches from Batu Ampar Village to Tanjung Harapan Village. The eastern boundary of Batu Ampar District is located between 18 km and 67 km from the coastline. In the context of this study, the author bases it on a grand theory perspective of human ecology (Catton Jr & Dunlap, 1978); Murdock, 1979; Olsen et al., 1977; Malthus, 1798; Durkheim, 1933; and Hawley,



1950). From this ecological perspective, it is clear that the human adaptation process, and in this case, women in Batu Amar play a significant role as "guardians of the mangrove charcoal kitchen tradition," has resulted in certain types of interactions and organizational arrangements.

The role of women in the mangrove charcoal kitchen processing system has created a unique type of interaction and organizational structure. As the "primary" driver in charcoal production, their role not only provides a source of income for the family but also, as (Ayu, 2022) termed it, provides them with bargaining power within the community. As guardians of traditional knowledge, the women in Batu Ampar contribute to the transmission of processing and maintenance techniques to the next generation, creating strong social bonds. In this process, they form a mutually supportive social network, fostering collaboration within groups to share resources and information, particularly regarding developing patterns of adaptation to the environment for the sustainability of the mangrove charcoal kitchen business. Although women's roles in Batu Ampar are often seen as dim, even diminished, in supporting the family economy within the formal structure, their role as guardians of the charcoal kitchen tradition has significant influence on community decision-making, including in natural resource management. Some women are involved in activities promoting environmental conservation, such as mangrove planting and protection campaigns and efforts to reduce excessive illegal logging.

Their voices in community meetings often navigate the development of local policies that support the sustainability of mangrove ecosystems. They appear more aware of the importance of selective logging for environmental conservation in charcoal processing. Amid challenges such as climate change, these women demonstrate remarkable adaptability by seeking alternative processing methods and diversifying products. These include organizing mangrove replanting activities to repair and restore degraded areas and improving raw materials for charcoal kilns. Key components of the mangrove charcoal-making process include: the population, specifically the women, the mangrove charcoal kiln organization, the environment, and technology. What deserves serious attention is their presence as guardians of tradition. Women who maintain the mangrove charcoal kitchen tradition in Batu Ampar serve as economic and cultural pillars. They combine ancestral skills (a term related to ancestors or heritage passed down from previous generations) with ecological awareness. With every movement of their hands, they not only process charcoal as a source of livelihood but also maintain a balance between human needs and ecosystem sustainability, in line with the human ecology theory proposed by (Catton Jr & Dunlap, 1978).

In this process, they actualize the understanding that humans and nature are part of an interdependent whole, creating a harmonious symbiosis. Lighting a fire in their charcoal kitchen, of course, with a spark of hope that their efforts can light the way for future generations. It symbolizes the importance of understanding how to preserve cultural heritage while protecting fragile mangrove forests. Within each piece of charcoal produced, a narrative of struggle and commitment to sustainability is embedded, connecting tradition and profound ecological responsibility. The connection between tradition and ecological responsibility ideally creates harmony. Every cultural practice is not only a legacy from our ancestors but also a reflection of the collective awareness of the importance of environmental preservation. This is in line with (Rollo, 2025) argument that culture and ecosystems mutually shape and influence each other. Traditions practiced by local communities serve as a bridge between historical values and contemporary needs to maintain the balance of nature. Inherited practices instill a responsibility to protect natural resources, creating a deep bond between cultural identity and ecological sustainability. Traditions serve not only as reminders of the past but also as catalysts for a more sustainable future, where present and future generations can coexist with nature in lasting harmony. Current and future generations can live in harmony with nature. Creating a mutually supportive ecosystem, as Olsen et al. (1977) stated, emphasizes the importance of human interaction with the environment. In this context, awareness of sustainability becomes a bridge connecting traditional values with the demands of modernity, where everyone plays a role as a guardian of the earth. Integrating ancestral knowledge and contemporary innovation, through the black hands of Batu Ampar women, we can strengthen relationships and make nature a true partner in life's journey. Where the current generation leaves a responsible footprint, while future generations inherit the richness of a sustainable ecosystem, ensuring that harmony with nature is not just a dream, but a reality that can be achieved and celebrated.

The ever-growing human needs, in line with Malthus's (1798) thinking, create a challenging dynamic between population growth and resource availability. In this context, ecological sustainability becomes a call for reflection, where every step towards fulfilling needs must not ignore the natural limits that must be maintained. Ecological sustainability becomes a call for reflection, remembering that every step towards fulfilling human needs must be taken with awareness of existing natural limits. It is important to recognize that natural resources are not unlimited and that overexploitation can cause irreparable damage. This reflection encourages everyone to consider the long-term impacts of their actions and to develop more sustainable consumption patterns. When attempting to meet the necessities of life,





there should be an effort to integrate sustainability principles into daily policies and practices. The role of women who maintain the charcoal stove tradition is believed to possess knowledge of nature's limitations. This is not merely an individual responsibility, but also a collective one involving the community, government, and the private sector. Collaboration is essential to create harmonious solutions where meeting human needs does not compromise the health of the Batu Ampar "universe." This not only protects the environment but also ensures that future generations have access to the same resources enjoyed today.

As humans strive to fulfil their desires and demands, they are not simply confronted with the reality that the Batu Ampar universe has a limited capacity. It is crucial for all parties to innovate and adapt, creating an elegant balance between consumption and conservation. In the symphony of life, awareness of the importance of ecological sustainability is a key note that must always be heeded, so that future generations can enjoy the beauty and richness of nature that has been inherited, not as an empty legacy, but through the dark hands of women who guard the tradition of the charcoal kitchen, becoming a source of inspiration and sustainable life. As Durkheim (1933) argued, community development is closely linked to social structures and collective norms that bind individuals together. In the context of ecological sustainability, development is determined not only by economic growth but also by a collective awareness of responsibility towards nature. When the women who maintain the charcoal kitchen tradition realize that they are part of a larger ecosystem, a solidarity emerges that encourages collective action towards environmental preservation. They are not merely beneficiaries but also protectors of their environment. These sustainable practices persist today, and they go beyond fulfilling their economic needs, limited to traditional business practices. Rather, their actions can be contaminated by internalized norms, changing their perspectives on needs and resources. In this process, every step towards development must reflect the values of solidarity and justice, where human well-being is inseparable from environmental health in Batu Ampar.

Integrating Durkheim's (1933) social principles, society can develop harmonious lifestyles where growth and ecological sustainability go hand in hand, creating generations capable of not only meeting current needs but also preserving the beauty and diversity of nature for the future. Similarly, Hawley (1950) theory suggests that solutions to the challenges of ecological sustainability can be found through the development of responsive and flexible social systems. Improving environmental education and awareness in the community is a crucial first step in building knowledge about the importance of sustainability and the impact of human activities on the environment. Involving women who maintain the charcoal stove tradition in decision-making regarding natural resource management can foster a greater sense of ownership and responsibility for the environment. Strengthening social bonds, among other things, without eliminating the charcoal stove business that has existed for centuries. Wise steps are needed to encourage sustainable innovation by implementing environmentally friendly technologies and agricultural practices that reduce negative impacts on ecosystems. Rehabilitation of degraded ecosystems, such as mangroves and forests, must be carried out to restore their ecological functions, thereby providing economic benefits to communities. Implementing policies that support sustainability, including strict regulations on natural resource exploitation and incentives for environmentally friendly practices, will strengthen these efforts. Through these steps, they can build a more harmonious relationship with the environment and create sustainability for current and future generations.

## 8. Conclusion and recommendations

The mangrove charcoal kitchen in Batu Ampar Village has been a vital family business since 1906, serving as an economic lifeline for the local community. With approximately 38,449.67 hectares of mangrove forest and 500 charcoal kitchens in operation, the role of women as "tradition keepers" in this system is crucial. They not only contribute to charcoal production but also maintain traditional knowledge and build supportive social networks. Women have a significant influence in community decision-making, serving as agents of change promoting sustainable practices. In the context of human ecology, the relationship between tradition and ecological responsibility is a key pillar in maintaining the balance between human needs and environmental preservation. On that basis, it is necessary to recommend the following things: First, Environmental Education and Awareness: Increase environmental education programs for the community, especially women, to better understand the importance of sustainability and the impacts of charcoal processing practices; Second, Participation in Decision Making: Involving women in the decision-making process related to natural resource management, thereby increasing their sense of ownership and responsibility towards the environment; Third, Sustainable Innovation: Encourage the application of environmentally friendly technologies in the charcoal production process, as well as developing sustainable agricultural practices that can reduce negative impacts on the ecosystem; Fourth, Ecosystem Rehabilitation: Carrying out rehabilitation programs for degraded mangrove forests to restore ecological functions and provide economic benefits to the community; and finally, Supporting Policies: Implementing policies that support sustainability, including strict regulations on the exploitation of natural resources and incentives for environmentally friendly practices.



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