

# Handling Environmental Damage: A Descriptive Study of Socio-Ecological Approaches in Conserving Cunda's River

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## ABSTRACT

*The phenomena of environmental damage associated with local community culture, and policies of related agencies in an effort to prevent damage to the river environment. The study focuses on handling environmental damage, which reveals facts in a qualitative descriptive manner that incorporates elements of community, culture, and government policy with a socio-ecological approach. Research has been carried out in three sub-districts in Lhokseumawe City. The three sub-districts that are the research locations are densely populated areas. The data was analyzed inductively to reveal patterns of handling environmental damage to the river by carrying out an intrinsic assessment of the data through relevant sources and carrying out source checks with in-depth research. Carry out comparisons with other sources to strengthen the issues studied and analyze data by using an inductive-qualitative approach. The study found the aspect is an important basis for fostering an environmentally caring attitude in communities around the river. Studies also found that the impact of environmental damage on nature will produce more eccentric arguments. Thus, the socio-ecological approach is effective in building community awareness against damage to the natural environment while protecting water quality and threats to existing biota.*

**Keywords:** Environmental, Socio-Ecological, Conserving and River.

## 1. INTRODUCTION

Preventing damage and preserving the river environment is an urgent need in efforts to care for nature. Handling environmental damage is a joint responsibility of both the community and local authorities (Clemson et al., 2019). Preventing environmental damage requires the support of academics, non-governmental organizations (NGOs), and local governments.

The importance of caring for the environment to ensure the continuity of river life is triggered by the increasing damage to the river environment, which seems neglected.

However, the threat of environmental damage to rivers is still very vulnerable and often receives little attention. The occurrence of damage to the river environment is thought to be the result of trends and behaviors of people who ignore negative impacts such as water pollution due to household waste (Pusparini et al., 2015)

The widespread conversion of mangrove forests into fishponds is thought to have contributed to river damage in addition to the cultural structure of communities in the river environment. Thus, the expansion of environmental ethics and socio-cultural integration has the opportunity

to reduce the level of environmental degradation (Waloven et al., 2023). The surveys show significant pollution of plastic waste in River in many development countries, but also surrounding area River of study such as shows in Figure 1 below:



**Figure 1:** Plastic waste on the edge of the Cunda's River estuary

According to Elfithri et al., (2021), policymakers and relevant authorities need to carry out internal monitoring of development activities around rivers. According to McGreavy & Hart, (2017), ideas and concepts for preventing river damage must be well prepared and structured through adequate education and regular evaluations, which are believed to be able to prevent damage to the river environment.

Several previous reports related to the environment at national and global levels were connected with the development of the concept and main objectives of this research such as Asian Development Bank (ADB) et al., 2017; Clemson et al., 2019; de Smedt, 2010; McGreavy & Hart, 2017; Singhal, 2003).

According to Abidin & Steven, (2021) reduced environmental knowledge and ethics have a direct impact on environmental conservation attitudes. This is connected with the development of sustainable environmental management concepts and patterns.

Generally, environmental pollution is caused by human error. The need for knowledge about minimizing environmental impacts is driven by the behavior and culture of local communities, in addition to population growth in the area. As most ecological management models are based on community context, exploring and its implications for species interactions, as well as community structure and culture, have serious impacts on the preservation of the surrounding nature (Grainger et al., 2022).

In the theoretical model of ecological compensation, the focus is on patterns of ecological compensation that influence the attitudes of surrounding communities. suggests that the ecological crisis requires psychological stability, such as understanding positive values about the natural environment (Kendall, 2015; Lewis et al., 2023).

Behavior and cultural values in a community, especially regarding patterns of interaction with the environment, are strongly related to environmental psychology (Mielke et al., 2022).

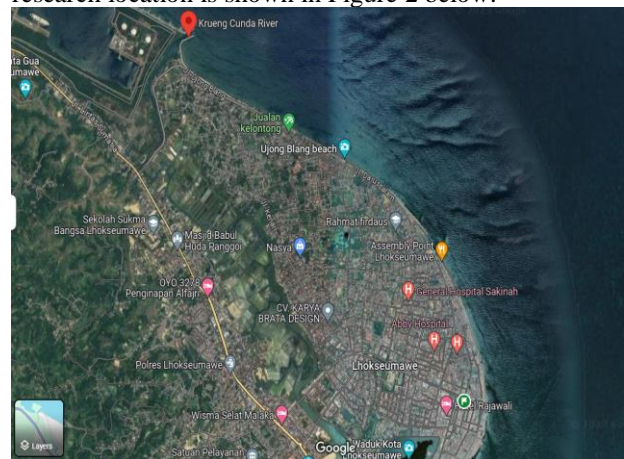
Although it is acknowledged that the increasing development of community businesses and the long-standing felling of mangrove forests have resulted in environmental damage, The risk of environmental damage also often originates from patterns, cultures, and behaviors that are less concerned about environmental impacts. Based on several studies, understanding and knowledge of local communities regarding environmental conservation are still lacking.

Based on the facts above, this study was created to explore and explain patterns of preventing environmental damage, local community culture in its interaction with the environment, and policies of related agencies in an effort to prevent damage to the river environment.

Thus, the study focuses on handling environmental damage, which reveals facts in a qualitative descriptive manner that incorporates elements of community, culture, and government policy with a socio-ecological approach.

## 2. METHOD

Research has been carried out in three sub-districts, namely, Banda Sakti, Muara Dua and Muara Satu in Lhokseumawe City. The three sub-districts that are the research locations are densely populated areas. The research location is shown in Figure 2 below:



**Figure 2:** Map of Cunda's River

The main focus of the study is the pattern of handling river environmental damage involving the relevant authorities and communities around the Cunda River. Samples were taken from four subjects in three sub-districts. Data was collected through observation and in-depth interviews as a constructive step for primary data. The data that has been collected is displayed in a table to find important concepts as material for analysis.

The data was analyzed inductively to reveal patterns of handling environmental damage to the Cunda River by: (1) carrying out an intrinsic assessment of the data through relevant sources (2) carry out source checks with in-depth research. (3) Carry out comparisons with other sources to strengthen the issues studied; and (3) analyze data by using an inductive-qualitative approach.

### 3. RESULTS

This research has produced descriptive data regarding river communities' environmental and cultural conservation patterns and interactions with the surrounding environment. The data have been taken from a number of subjects, as shown in Table 1 below:

Subject	Concept 1	Concept 2	Concept 3
Informant (1)	Pro-environment	Empathetic attitude	Alongside attitude factors
Informant (2)	No other option	Biota threats	Culture and attitude of the community
Informant (3)	Social class inequality	Inequality of social building/development	Knowledge gap
Informant (4)	Practices and knowledge	Respect to maintaining or protecting its natural resources	The ecosystem and external conditions

**Table 1:** Matric coding of the material data for conceptual development and analysis

The data shown in Table 1 is the result of in-depth interviews obtained from several subjects involved. The information obtained has been developed to produce new concepts that are used as primary material for analysis (Babchuk & Boswell, 2022). The new concept has convinced us that there is an important aspect consisting of social class inequality resulting from inequality in social building and development. This is visible in the government's lack of effort in dealing with the problem of environmental damage to rivers, namely respect for maintaining or protecting their natural resources.

On the other hand, factors regarding environmental damage to rivers are also triggered by the culture and attitude of the community and knowledge gaps, which aggravate their extinction. The ecosystem and external conditions and empathetic attitude show behavior that doesn't care about the environment involving the community, which is often influenced by an attitude of having no choice in interactions (Scheffer et al., 2017). Therefore, efforts to prevent environmental damage to rivers are strongly influenced by a pro-environment attitude.

### 4. DISCUSSION

Discussions regarding the local environmental landscape, community culture, and river environment show that cultural elements are very important in the environmental conservation process.

These findings focus on the regional environment, which turns out to be strongly related to cultural values in preserving the natural environment around rivers. Building an environmentally conscious culture often starts with a "values blueprint" process, which involves attitudes, internal communication, honesty, and objective policies from local authorities. This refers to the roles and responsibilities of communities living on riverbanks.

This culture is ideologically linked to the values, beliefs, and ideals of its people, which are always seen as fundamental to caring for a sustainable environment. In fact, preserving the environment includes psychological and intellectual aspects of managing the interactions of a community in everyday life.

When a culture of environmental conservation is formed in a community, sustainable conservation will easily occur. In this way, values, beliefs, and culture directly involve the surrounding community in caring for the river environment (Betancourt et al., 1992).

All societies are closely connected to nature; in fact, they generally rely heavily on nature (Mahanty et al., 2023; Williams et al., 1998). Patterns of natural resource use have changed drastically due to urbanization, industrialization, and changes in consumption choices, resulting in excessive production of plastic waste. Apart from that, urban expansion also results in a reduction in river width. This triggers a decline in river water quality, which is very important for biota. River conservation efforts refer to the sustainable use and management of natural resources such as animals, water, air, and earth sediments. Thus, nature conservation is very important to protect biodiversity and maintain balance.

According to Liu et al., (2022) and Mengist et al., (2020), knowledge of the environment and ecosystem is significantly correlated with awareness and concern for environmental damage. In other words, there is a significant relationship between the level of knowledge and attitudes towards environmental protection. This is considered positive by the fact that environmental knowledge is successful when accompanied by systematic education. Even the level of environmental damage is related to the attitudes of the surrounding community. The increase in population along the river area is believed to have a strong impact on the environmental wisdom of the river, which is often triggered by the culture of throwing away plastic waste carelessly.

It is clear that knowledge about the ethics and dangers of environmental damage to rivers is important for efforts to

care for the environment. To increase attitudes and awareness towards protecting the river environment, it requires structured action from all parties as a form of responsibility towards the environment around the river. An environmentally friendly attitude is a positive action to prevent or overcome the risk of destroying the river environment, such as not carelessly throwing away waste and chemicals as well as used food scraps.

Previous findings explain a relationship between pro-environmental attitudes and behavior. It must be acknowledged that pro-environmental attitudes are often formed by factors of ongoing knowledge and education. The knowledge factor is important for maintaining river sustainability and water quality and protecting existing biota.

On the other hand, socio-cultural factors and structural policies can immediately reduce the impact of community activities on the environment. However, the context of conceptual analysis shows an informative function of empathetic emotions and moral reasoning about the environment, which influences pro-environmental attitudes in communities around rivers.

Of course, government policies that support environmental conservation must be developed to provide a more visible attitude towards protecting the river environment both individually and in a structured manner through an adequate post-budget. These aspects are strongly related to the socio-ecological system. The social-ecological approach recommends that there is a mutual influence between the behavior and culture of the communities that live around rivers.

This social-ecological approach requires the government to prioritize programs to reduce the high level of environmental damage to rivers. Even though there is an increase in awareness that can be seen in certain cases, such as the culture of throwing trash on the riverbank, it tends to decline in several areas along the river.

This pattern of environmental awareness is generally triggered by pressure from the authorities through personnel assigned to monitor excessive household chemical waste disposal activities.

The socio-ecological approach shows the existence of objects of empathy and participants in enhancing moral values that are eccentric and controlling. In the context of anthropometry, environmental empathy is always connected to moral arguments (Adolph, 2020; Leduc et al., 2021).

The condition shows that there is a direct connection with social resources, especially the culture and habits of the communities that live around the river. The two types of moral arguments are egocentric and non-environmental. Indeed, values and emotions are always visible in

environmental decision-making by policymakers or local authorities.

This domain is in line with the theory of values, beliefs, and norms, which emphasizes that pro-environmental behavior is more likely to occur if individuals believe that environmental attributes will have bad consequences for objects and can reduce threats to the possibility of more severe environmental damage.

As the theory of reasoned action shows, generating feelings of empathy focuses a person's attention on the needs of the object of empathy which in this context is connected to ongoing knowledge and education (Mishra et al., 2014; Sumiati et al., 2021).

It makes sense that manipulation of empathy through education and reasoning about environmental and moral values increases community awareness and pro-environmental attitudes. This aspect is an important basis for fostering an environmentally caring attitude in communities around the river. Important information regarding the impact of environmental damage on nature will produce more eccentric arguments, while the presence of information regarding the impact of environmental damage on humans will produce more eccentric arguments. Thus, the socio-ecological approach is effective in building community awareness against damage to the natural environment while protecting water quality and threats to existing biota.

## **AUTHORS' CONTRIBUTIONS**

All authors equally contributed to conduct the research and write the article.

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