

The Impact of Deforestation on the Environment and Sustainable Development in Indonesia

Rangga Basqian* ¹, Ikhwan Aulia ²

^{1,2} First Universitas Islam Negeri Sunan Gunung Djati

* Corresponding Author : Ranggabasqian@gmail.com

Abstract: This research aims to find out the impact of greater deforestation, as well as the impact on development in Indonesia. Forests are the lungs of the earth. Nowadays, we often see the phenomenon of deforestation being illegal and used for our own interests and to meet our needs which has a negative impact on the community's environment. The research method used to examine the problems discussed in this research is the normative analysis method, and the data analysis used comes from secondary data obtained through the literature. The impact of deforestation is very disappointing, due to the loss of the forest's ability to absorb air. ranging from global warming to flooding. Palm oil plantations are estimated to be the main source of 57% of deforestation in Indonesia. Good environmental quality and conditions during the development process are essentially the main expectations of several existing conventions

Keywords:Deforestation, Environment, Development, Indonesia.

Introduction

These days, we are often presented with the phenomenon of illegal logging, which is used for personal gain and to meet individual needs, having detrimental effects on the community's environment. Forests are a natural resource that hold an essential position in human life. Two-thirds of Indonesia's land area is forest, covering 191 million hectares, which contain diverse ecosystems ranging from highland tropical forests and lowland tropical forests to freshwater swamp forests, peat swamp forests, and mangrove forests. According to Article 1, Clause 5 of Law No. 32 of 2009 concerning Environmental Protection and Management, an ecosystem is one of the various elements of the environment that balance each other. However, the forest area in Indonesia has been decreasing year by year.

The rate of deforestation is not only an issue in Indonesia but worldwide. Nonetheless, the government continues to strive to reduce the rate of deforestation. According to data from the Ministry of Environment and Forestry, Indonesia has reduced the deforestation rate by 75.03%, from 462.46 thousand hectares in 2018-2019 to 115.460 hectares in 2019-2020 (Clearestha Nakita and Fatma Ulfatun Najicha, n.d.). Forests are the lungs of the Earth. Just like human lungs, forests play a role in supplying oxygen for all living beings. The fact that forests are the largest source of oxygen in the world makes them a crucial ecosystem. All living creatures use forests as a place to grow and thrive. Forests not only serve as breeding grounds but also fulfill various human needs. Beneficial interactions for living beings seem to have a significant impact on their survival. For centuries, communities have relied on resources obtained from forests.

Currently, forests are experiencing severe damage and deforestation due to irresponsible human actions. The loss of forests means that water can no longer penetrate the soil. Rainwater that falls on the ground surface causes erosion. The side effects of erosion include the loss of soil fertility due to continuous soil leaching by rainwater, floods due to the soil's inability to absorb water, and landslides (Arief Anggraeni, n.d.). Deforestation in Indonesia is closely related to the increasing need for land conversion for agriculture and mining. Causes of land deforestation include land clearing for palm oil plantations, forest fires, illegal logging, and timber production from HPH (Forest Concession Rights) concessions (Sunderlin, Aju, and Resosudarmo 1997).

There is a lot of news circulating about disasters that befall civilization as a result of our own actions, namely actions that do not preserve nature. Natural disasters such as crop failure, drought, flash floods, and forest fires are very common. The extent of deforestation also significantly impacts local agriculture, protected forests, and the flora and fauna in Indonesia's forests (Azwir 2017). Reducing the rate of deforestation requires serious and comprehensive

efforts. Otherwise, Indonesia could lose its forests (Turnip and Harianto, n.d.). Considering the increasingly evolving environmental issues, strict enforcement of forestry laws needs to be implemented (Said Yasif, n.d.).

Methods

The research method used to examine the issues discussed in this study is the normative analysis method, and the data used for the analysis comes from secondary data obtained through literature. The data used consists of some secondary data acquired through the use of books, journals, and documents. The normative analysis of the research can be used logically and normatively based on ethical and logical principles. This study focuses on two main areas: first, events, especially those related to the environment on a national scale (S. Nurbani 2018). The legislative approach and the conceptual approach are the methods used in this research. The legislative approach is a research method that starts from the boundaries of regulations related to current issues, such as the impact of deforestation on the environment and development in Indonesia.

Results and Discussion

Sustainable Development

Experts have long been concerned with the concept of sustainable development. Although the term sustainability itself is several decades old, the interest in this idea began with Malthus in 1798, who worried about the availability of land in England due to the rapid population explosion (Rahadian 2016). A century and a half later, attention to this desire increased after Meadows and colleagues published a paper titled "The Limits to Growth" in 1972. Sustainable development is humanity's effort to improve living conditions while striving not to exceed the life-supporting ecosystems (Rahadian 2016). To this day, the issue of sustainable development remains an important topic that needs to be continuously communicated to the public. (Margolang & Nurhasanah, 2023)

Sustainable development has a noble goal: to improve the welfare of society and meet the needs and desires of the community (Emil Salim 1990). Essentially, equitable development for present and future generations is the goal of sustainable development, as stated in Article 1, Paragraph (3) of Law No. 32 of 2009 on Environmental Protection and Management. Considering environmental integrity along with safety, competence, welfare, and growth plans that incorporate social and economic factors for the survival of current and future generations is known as sustainable development. Development is fundamentally more focused on the economy and can be measured using three factors: (1) Natural resources are never wasted before being utilized. (2) There is no environmental impact or contamination. (3) Initiatives must be able to expand resources in a balanced manner. It is evident that economic growth is necessary for sustainable development in countries whose needs are not aligned with planned economic growth; in reality, that growth itself is entirely based on sustainable principles.

However, the high level of manufacturing activity can be accompanied by widespread poverty. This condition can pose a danger to the environment (Rahadian 2016). The concept of sustainable development seeks to avoid political conflicts that may arise in developing natural resources to combat poverty and the need to stop environmental degradation. It must ideally proceed in balance (Jaya 2004). Sustainable development also requires meeting the basic needs of the community and providing citizens with greater opportunities to realize their dreams of improving their living standards without endangering the future.

Deforestation Impact on the Environment in Indonesia

Countries worldwide, including Indonesia, suffer from severe forest degradation, resulting in a continuous decline in timber supply annually. This degradation has profound effects, leading to disasters in various regions across Indonesia. A prime example is the recent flooding in Batu, Malang, East Java (Pranita Ellyvon 2021). The reduction of upstream water

catchment areas causes an imbalance in the overall biological system. Local tensions to transform forests into different environments are inevitable. The best way to address this demand is by preserving forests as water catchment areas. The lack of forest capability as water catchment areas has significant impacts, including substantial financial costs. Besides absorbing excess carbon dioxide from the atmosphere and converting it into oxygen through photosynthesis, forests also store large amounts of carbon. Hundreds of billions of tons of carbon can be stored in forests. With emissions of 2,563 MtCO_{2e}, Indonesia ranks third globally after China and the United States.

High emissions can have several adverse effects, such as:

1. A temperature increase of about 0.3 degrees Celsius since 1990.
2. An annual rainfall intensity increase of 2 to 3%, significantly raising the likelihood of floods.
3. Severe climate change posing a threat to food security.
4. Rising sea levels eventually submerging productive coastal areas and affecting lifestyles.
5. Warming sea temperatures impacting marine life and endangering coral reefs.
6. Diseases like malaria and dengue fever spreading through air and vectors (Down To Earth 2007; Directorate of Technical Education, 2017).
7. Global warming, recently highlighted as a worldwide environmental issue.

The greenhouse effect raises Earth's surface temperature, leading to global warming, exacerbated by extensive forest damage. According to the 2008 Guinness World Records, Indonesia has the fastest deforestation rate (Arief Anggraeni, n.d.). Greenpeace estimates that high levels of illegal logging, forest fires, and unauthorized logging accelerate deforestation by 76-80%. Consequently, deforestation contributes significantly to climate change due to carbon stored in the atmosphere and peatlands. This carbon will be released into the atmosphere if the trees above it die.

Palm oil plantations are estimated to be responsible for 57% of deforestation in Indonesia (Wahyuni and Suranto 2021). While these plantations positively impact the country's economic growth and reduce unemployment, they also cause environmental damage, affecting biodiversity in forests as species lose their natural habitats, potentially leading to the extinction of plant and animal species (Yanuar Rahman et al., n.d.). Excessive deforestation can also lead to flash floods, similar to the adverse effects of illegal logging in the Amazon River and West Papua, which also cause flash floods.

Discussing the environmental impact should include biodiversity concerning the ecosystem of living beings. Deforestation significantly affects the ecosystem itself, destroying habitats for various plant and animal species. This habitat loss means these species lose shelter, food, and breeding grounds. As the natural habitat area decreases, these species face extinction threats as they no longer have suitable conditions to survive. Habitat loss due to deforestation significantly threatens species that rely on forests as their homes (Streicher, Ramesh, and Downs 2021). Without suitable habitats, these species face population declines and possible extinction. Deforestation leads to the loss of natural habitats for many species in Indonesia, threatening the survival of endemic species found only in Indonesian forests. As cited by Nanang Jainuddin, ongoing deforestation in Sumatra and Kalimantan significantly impacts the extinction of unique species, especially the Sumatran orangutan and Sumatran tiger (Jainuddin 2023). Ongoing deforestation worldwide has resulted in substantial forest loss, directly impacting many species, especially those endemic or with specific habitat dependencies. The extinction of these species can have long-term effects on biodiversity and ecosystems as a whole.

Data shows deforestation rates in Indonesia have relatively decreased recently. With a net deforestation rate reduction of 75%, the 2019-2020 period recorded the lowest deforestation rate ever. This success is evident in reducing the deforestation rate to 0.46 million ha/year in 2019 and 0.12 million ha/year in 2020, along with forest land tenure (PPTKH/TORA), sustainable forest management, social forestry, and forest rehabilitation. The highest

deforestation rate occurred between 1996 and 2000, followed by a decline in subsequent periods. Deforestation rates are measured every two years, with the last measurement period in 2018-2019 resulting in 0.46 million ha/year, including 0.37 million ha in forest areas and 0.09 million ha in non-forest areas ("PERATURAN MENTERI LINGKUNGAN HIDUP DAN KEHUTANAN No. 1 Tahun 2022," n.d.). Despite this, current environmental issues are crucial to address. Environmental destruction equates to the destruction of humanity, making it essential to treat nature responsibly and compassionately. Individuals, families, communities, and nations all have a shared duty to address these environmental issues.

The problem lies in most Indonesians' lack of awareness or concern that if Indonesia's forests are not preserved, major disasters will occur. Indonesians must shift their mindset to consider survival in the next ten, thirty years, or even for future generations. Relying solely on the government is insufficient to prevent forest destruction. Public participation is necessary to preserve forests for their survival (Arief Anggraeni, n.d.).

Impact of Deforestation on Development in Indonesia

Development involves creating new infrastructure and improving existing facilities to achieve new goals to enhance a nation's and its people's living standards (Oekan S. Abdoellah 2016). Development aims to benefit all citizens. The government, as a development agent, needs natural and human resources to build or develop infrastructure. However, development requires space for resource exploration and as work areas, potentially harming the environment due to social and physical environmental engineering. The next step is to assess the extent of damage that can be repaired to ensure development proceeds. Humanity cannot stop developing to meet its survival, progress, and development needs. According to Article 33, Paragraph (3) of the 1945 Constitution, the state has control over land, air, and natural resources for the people's maximum benefit. The primary cause of deforestation in Indonesia is corrupt political and economic interests that view forests and other natural resources as opportunities for profit for groups and personal gains (Arief Anggraeni, n.d.). Humans are inherently part of the ecosystem, both as subjects and objects of development. Ecology in development encompasses all these aspects.

Despite Indonesia implementing several policies for sustainable development, environmental damage indicates failure in achieving sustainable development. The core values expected from current conventions are good environmental quality and conditions during development. Although deforestation rates are high, few efforts are made to restore forests. Additionally, forest resource management conflicts are concerning as local communities are marginalized by government policies that prioritize the economy and support businesses. Most forest management policies are financially motivated. If left unchecked, Indonesia's forests will disappear, and its biodiversity will perish.

A summit in Rio de Janeiro, Brazil, in 1992 resulted in sustainable economic development policies. This convention represented societal awareness of the adverse environmental impacts of development. However, in reality, the agreement remains rhetoric without significant action (Rivaldo Junior and Hendra Tenis STFT Widya Sasana Malang Armada Riyanto, n.d.). To date, economic development interests continue to disregard forest or environmental concerns. Therefore, government repressive actions are necessary to protect forests. Besides repressive actions, changing mindsets and behaviors is crucial. Humans must see nature as an integral part of themselves. According to Javanese philosophy, the macrocosm and microcosm are unified. The message is that living in harmony with nature leads to harmony with God (A. Sonny Keraf 2014).

In development, there will always be pros and cons, as sustainable development is essential for human survival, but it also negatively impacts the surrounding environment. Sustainable development is complex, involving numerous interrelated factors to consider in its implementation (Jaya 2004). Therefore, raising awareness about sustainable development is crucial, especially for policymakers at both micro and macro levels.

Conclusion

Deforestation, characterized by the reduction of forested areas due to land use for infrastructure, mining, agriculture, and plantations, has profound impacts on the environment. One of the most significant consequences is global warming, as deforestation releases large amounts of stored carbon dioxide into the atmosphere, exacerbating climate change. The removal of trees also leads to environmental degradation, disrupting ecosystems and diminishing the natural services they provide. Additionally, the loss of forested floodplain areas increases the risk of flash floods, as these regions are crucial for absorbing excess rainwater. The biodiversity within forests suffers greatly as well, with numerous species losing their habitats, leading to potential extinction. While deforestation for sustainable development is often seen as a necessity due to human needs, it is imperative to manage and mitigate the extent of this damage. By doing so, development can continue in a way that balances human growth and advancement with environmental protection, ensuring that the impact on the planet remains manageable.

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