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MORALITY BEFORE KNOWLEDGE

Natural resource management philosophy: Sustainability principles in forest area management local community-based

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ABSTRACT
Background: The application of philosophy in natural resource management provides a solid foundation for making wise and sustainable decisions. Forests are a source of livelihood for people, especially in developing countries including Indonesia. Policies that favor the fulfillment of human needs without damaging the environment are based on the philosophy of environmental ethics and sustainability. Each country has different policies in managing forest areas, including involving local communities. **Methods:** This article analyzes community-based forest area management implemented by a number of countries such as Indonesia, Thailand, Myanmar, Bangladesh, Canada, and Mexico. This article also examines the application of the concept of collaboration and a stronger role of the private sector in other countries. The in-depth analysis in this article uses literature and case studies from Indonesia, Thailand, Myanmar, and Bangladesh. Canada, the United States, and South Korea. **Findings:** The article's conclusion highlights that sustainable natural resource management hinges on applying philosophical principles, particularly environmental ethics and sustainability, to policy-making. It emphasizes that community involvement and robust governance are key to successful forest conservation efforts, as shown by various case studies and management models. **Conclusion:** Forest management is greatly influenced by the relationship between state capacity and social capital, in this case community participation. If the capacity of the state is weak, while social capital is weak, then the concept of community-based forest management can be carried out. **Novelty/Originality of this article:** The rehabilitation of an area of 410 ha into rubber plantations managed by local residents has brought in new sources of income. From 2010 to 2017 the Gini coefficient of inequality decreased from 34.6% to 31.3%.

KEYWORDS: natural resource management, forest management, environmental ethics, community-based forest management

1. Introduction

Natural resources, such as forests, are fundamental elements for human survival, economic development, and ecosystem balance. Both types of resources—renewables such as forests, and non-renewables such as minerals—play an important role in sustaining life and advancing people's well-being. The various functions of forests, from carbon sequestration to water management and biodiversity habitats, demonstrate how important forests are to the environment and social well-being. However, forest management in a resource-rich country like Indonesia faces complex challenges. In Indonesia, this management is guided by Article 33 Paragraph 3 of the 1945 Constitution, which states that "the earth, water, and natural resources contained therein are controlled by the state and

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used for the greatest prosperity of the people." This principle is the basis of Indonesia's policy on forest use, with the aim that its use is sustainable and can provide the greatest benefits for public welfare (Asiedu et al., 2021).

Forests in Indonesia are among the regions with high biodiversity in the world, consisting of various types of forests that play a vital role both ecologically, economically, and socially (Zhang et al., 2021) . Regulations in Indonesia categorize forests based on their functions and management, including classifications such as recreational forests, protected forests, and conservation forests (Nurda et al., 2020). Based on the latest data, the total area of forests in Indonesia is around 128 million hectares, or about 68% of the country's total land area. This area includes conservation forests, protected forests, limited production forests, and production forests negara (Hendrasta & Sulchan, 2021). In detail, the area of conservation forests is around 27.4 million hectares, protected forests are around 29.7 million hectares, limited production forests are around 26.8 million hectares, and production forests are around 29.3 million hectares (Hendrasta & Sulchan, 2021). However, these forest areas continue to face serious threats from deforestation due to agricultural land expansion, oil palm plantations, logging activities, and infrastructure projects (Gaveau et al., 2019). Notably, the expansion of oil palm plantations has been linked to significant forest area loss, contributing approximately 18% to 22% of total national carbon emissions in 2020. This decline in forest quality is further exacerbated by economic pressures and constraints in its management, such as decentralization that leads to fragmented regulations and inconsistent law enforcement (Sahide et al., 2016). In addition, land rights conflicts between local communities and business interests also add to the challenges in efforts to maintain the sustainability of forest management.

Community-based forestry initiatives, which focus on community participation in forest management, offer promising strategies in addressing these challenges. Some research suggests that empowering local communities can help with conservation while providing economic support for them. However, the implementation of this initiative is often hampered by inefficient bureaucracy and lack of support. In addition, the impact of climate change such as increasing droughts and forest fires is further worsening forest conditions, so forest management strategies that can adapt to climate change are needed (Meijaard et al., 2021; Nugroho, 2021)

Various philosophical approaches in natural resource management applied to the case of forests in Indonesia, are important to achieve a balance between ecological sustainability, economic growth, social justice, and climate resilience. Effective governance, sustainable management practices, and community engagement are key to protecting Indonesia's forests, ensuring the sustainability of their ecosystems, and supporting future generations. This demands a holistic approach that can address the factors that cause deforestation, strengthen the regulatory framework, and align economic development goals with environmental conservation efforts (Rohmy & Snoop Dogg, 2023).

This paper aims to examine a philosophical view of natural resources that focuses on the principles of sustainability in forest management in Indonesia based on community contribution. This paper provides an overview of the implementation of natural resource management in the country that involves community participation in managing forests to achieve prosperity. The author also provides an overview of forest management abroad that can be a comparison for Indonesia in implementing sustainability practices. This paper uses a descriptive qualitative method. This type of descriptive qualitative research presents data as it is without manipulation or other treatment. The authors collect and analyse information on natural resource management philosophies that focus on ethics and environmental sustainability through a literature study. The author also provides an overview of the practice of sustainable natural resource management based on local communities at home and abroad.

1.1 Tragedy of the commons

The *Tragedy of the Commons* theory was first put forward by Garrett Hardin in 1968, describing a situation in which individuals who have unrestricted access to common resources act in accordance with their personal interests, which in turn leads to overutilization and destruction of resources. According Damalas et al. (2024) *a* to this phenomenon it is seen in the fisheries sector, where open access and incomplete property rights trigger overexploitation. In response to this, Elinor Ostrom developed the idea that solutions to this problem can be found through the cooperation of local communities, who work together to address the problem of collective action. That method is more effective than *top-down* approach by the state. Ostrom suggests that a symbiotic relationship between local groups and the state may also be created.

This contrasts with the traditional view that considers the state as the only actor capable of managing and managing common resources. Furthermore Andrews et al. (2024, develop this perspective by identifying design principles that allow for collective management of resources without relying on private property rights or government regulations. Those two main principles are clear access rights and enforced use rights, which together form the basis of collective ownership of resources. However, both principles face challenges in the sharing of profits in the group. This often leads to detrimental behaviors such as overharvesting and *free-riding*. These challenges can be overcome through *social learning* that allows individuals to develop better policies.

1.2 Environmental ethics and leopold soil ethics

Aldo Leopold, in his monumental work A Sand County Almanac (1949), introduced the concept of "soil ethics" that changed the way we look at natural resource management. Leopold emphasized the importance of seeing land as a wider community. Soil includes not only humans, but also soil, water, plants, and animals. Leopold suggested that humans should treat nature with respect and care, treating the earth as something not only owned, but as part of a larger community. This is the cornerstone of a holistic approach to nature management, which considers the integrity and balance of ecosystems.

However, there is criticism of Leopold's views, especially in the context of ecosystem restoration. Dicks (2019) states that the main criticism of Leopold's land ethics is its emphasis on preservation which is often unrealistic given the damage to ecosystems resulting from human activities. Ecosystem restoration, according to some experts, is now more important than conservation, as many ecosystems have been destroyed by human activities and need more focused restoration efforts. On the other hand, Leopold also reminded the importance of diversity in the recovery approach, looking at natural values that are not tied to financial gain alone, but also consider long-term sustainability.

This shift in view is also reflected in the more geocentric view promoted by Dicks (2019). Earth ethics, which place more emphasis on habitat protection for existing living things today than on preservation for future generations, is more relevant to current conditions fraught with ecological challenges. It focuses on the importance of maintaining the survival of life today without neglecting the sustainability of the wider ecosystem. In addition, the relational approach put forward by offers a more comprehensive view of how humans should relate to nature Floris & Porro (2024). This relational ethics emphasizes the importance of the mutual relationship between humans and nature, which demands the avoidance of domination and exploitation of nature. As part of the natural community, humans must live in harmony with nature and be responsible for preserving it. This approach places more emphasis on fair and sustainable relationships than on the idea of absolute equality between humans and nature, which is often a debate in traditional environmental ethics.

1.3 Conservation and preservation

The debate between conservation and preservation revolves around a variety of perspectives on how nature should be treated and the primary goals of conservation efforts. According to Metcalf et al. (2021), basic questions in conservation include "What is conservation supposed to achieve?" and "How do we decide what needs to be achieved?" The answers to these questions provide insight into conservation goals and practices. Gifford Pinchot, in his work The Fight for Conservation (1910), articulated three core principles of conservation. The first principle, "the right to use," emphasizes that conservation must support the "necessary full use of all resources" for the benefit of the present generation, or "the people who live here now." The second principle, "prevention of waste," advocates efficiency in the use of resources, while the third principle emphasizes fairness, stating that natural resources should be developed and conserved for the benefit of the many, not just for the benefit of the few. These principles collectively define an egalitarian and anthropocentric philosophy, with the goal of achieving "the greatest good for the greatest number for the longest time" (Pinchot, 1998).

In further discussion, Dąbrowska et al. (2023) develop traditional conservation principles into the realm of sustainable development, with a focus on the "Lean Society Philosophy". This philosophy comes from the principles of effective use of resources and sustainable development, combining concepts such as lean thinking, eco-design, and community education. Dąbrowska et al. (2022) argue that these principles should not only guide resource management, but also shape how societies approach ecological conservation and development. This philosophy advocates the fulfillment of real needs in an environmentally sustainable way, supported by government policies and public awareness.

1.4 Anthropocentrism vs. econcentrtrism and geoethics

The difference between anthropocentrism and ecocentrism represents two basic ethical perspectives that affect human relationships with nature and the environment. Anthropocentrism puts humans at the center of moral considerations, seeing nature primarily in terms of the benefits it provides to humans. It assumes that humans have intrinsic moral value, while non-human entities or ecosystems are valued based on their usefulness to humans. This view is reflected in many conservation practices, where the protection of biodiversity and ecosystems is often justified on the basis of its contribution to human well-being, either through ecosystem services or economic gain Latombe et al. (2022). As noted by anthropocentrism argues that human moral obligations primarily apply to fellow humans, with the natural world considered valuable only insofar as it serves human interests. This view has given birth to what some scientists call "new conservation" or "social conservation" (Miller et al., 2011) in which conservation efforts are seen as essential to human survival and development.

In contrast, ecocentrism offers a broader moral framework by extending moral considerations to all living things and ecosystems, not just humans. Ecocentrism argues that nature has intrinsic value, regardless of its usefulness to humanity (Rülke et al., 2020). This view recognizes the interconnectedness between all living things and emphasizes the need to protect nature for its own good, not just for the benefit of humans. Biocentrism and pathocentrism, subcategories of ecocentrism, assign moral value to individual organisms and the ability to suffer, respectively. According to Latombe et al. (2022), biocentrism argues that all living things have intrinsic moral value, while sentientism, a related ethical view, argues that any being capable of feeling pain or happiness should be part of a moral community. Geoethics, a newer field of applied ethics, interacts with both anthropocentrism and ecocentrism by exploring the ethical implications of human actions on the Earth system, particularly as it relates to the environment and geoscience. describes geoethics as one that focuses on the relationship of humans with the Earth system, which addresses the impact of geoscience research and practice on society and the environment. Geoethics expands on traditional environmental ethics by emphasizing the responsibility of geoscience scientists

in shaping sustainable interactions with the Earth, considering the impact of scientific actions as well as their impact on society and the environment more broadly (Frigo et al., 2024)

The tension between anthropocentrism and ecocentrism is not only limited to theoretical discussions but also shapes real-world conservation practices. For example, conservation strategies based on anthropocentrism often prioritize benefits to humans, such as ecosystem services that support agriculture, health, or economic stability. In contrast, the ecocentrism approach prioritizes the preservation of biodiversity and ecological integrity for the sake of the preservation of the ecosystem itself, regardless of human interests (Latombe et al., 2022).

Moreover, the ethical debate between these two frameworks is evident in the "convergence hypothesis" put forward by Norton (1984), which states that proponents of anthropocentrism and ecocentrism can still agree on common environmental policy goals. However, Frigo et al. (2024) challenge this view, arguing that the profound moral differences between these two perspectives may hinder true collaboration and agreement on environmental issues. Ultimately, the difference between anthropocentrism and ecocentrism not only shapes the way humans view nature but also influences environmental policies and practical conservation strategies. Whether one supports an anthropocentric or ecocentric perspective, ongoing discussions about geoethics and ethical treatment of the natural world will continue to play a significant role in shaping sustainable environmental practices in the future.

1.5 Deep ecology

The study of ole Barzola- Elizagaray-Agoglia (2024) and discusses the philosophy Ferrer (2022) of deep ecology and its development throughout history. Deep ecology, a term coined by the Norwegian philosopher Arne Naess in 1973, is a radical shift in environmental thinking, emphasizing the intrinsic value of all living things and the interconnectedness of ecological systems (Naess, 2005). This philosophical movement criticizes the dominant environmental paradigm of the 20th century, which is largely based on anthropocentrism—a worldview that sees the Earth primarily as a collection of natural resources exploited for the benefit of humans (Devall & Sessions, 2001). According to this traditional perspective, reflected in documents such as Our Common Future (Brundtland, 1987) and Agenda 21 (United Nations, 1992), the environment is more seen as a problem that is addressed through economic development and technological solutions that aim to prolong, rather than address, the root cause of environmental damage. This approach focuses more on mitigating consumption, such as through recycling, renewable energy, or biofuels, without fundamentally challenging the economic growth models underlying ecological damage (Devall & Sessions, 2001).

In contrast, deep ecology criticizes this "superficial environmentalism", arguing that its approach does not challenge the unfettered economic growth model that is at the root of many ecological crises (Agoglia, 2012). From this point of view, the main problem is not just excessive consumption or resource drainage, but the philosophical basis that drives the unlimited growth, technological development, and human domination of nature (Riechmann, 2005a). Deep ecology calls for a paradigm shift that places the ecological health and well-being of all living beings—human and non-human—at the center of society's values. This movement supports a deeper ecological consciousness based on principles such as diversity, complexity, autonomy, decentralization, and egalitarianism (Naess, 2005).

In terms of ethical implications, deep ecology demands a broader moral framework that extends responsibility to the natural world as a whole, not just to human society. This is in line with what Devall and Sessions (2001) describe as "ecological awareness," i.e. the recognition of the interconnectedness of all life and the moral obligations that arise from this recognition. For deep ecologists, this worldview requires political-economic decentralization and participatory decision-making processes that prioritize ecological balance over industrial expansion (Agoglia et al., 2014).

Emmanuel Levinas' philosophy offers valuable insights into integrating ethical responsibility into environmental ethics, by highlighting the concept of the "Other," which refers to other beings outside of oneself. Levinas emphasizes the inevitable ethical responsibility to respond to the Other, an obligation that precedes conscious decision-making (Levinas, 1998). Although his ideas primarily focus on human relationships, this framework can be extended to non-human beings, in line with the call for environmental ethics to protect nature from exploitation.

However, Levinas acknowledges the limitations of applying this ethics to non-human beings. Since non-human beings do not have a "face" that calls out responsibility in the same way as humans, an ethical relationship with them can only be established through analogy (Bernasconi & Wood, 1988). Critics such as Atterton (2011) argue that Levinas' anthropo-centric focus is at odds with ecological thought, which emphasizes the interconnectedness of all life. Despite these challenges, Levinas' emphasis on responsibility to the Other can inspire a deeper ethical commitment to non-human beings, especially in deep ecology. This perspective is in line with the deep ecological call to respect and protect the Earth's ecosystems, as opposed to market-based environmental solutions such as electric vehicles and green certification. These solutions often prioritize economic growth over maintaining ecological integrity (Riechmann, 2004).

This tension between this market-focused, human-centered approach and this radical approach that is biocentric is a major issue in contemporary environmental ethics debates. Levinas's philosophy, with its emphasis on responsibility to the Other, can be seen as a tool for understanding man's ethical obligations to the Earth, albeit within the limitations of a human-focused framework. As noted by Riechmann (2014), the environmental crisis is forcing humanity into a Levinasian position where our survival depends on our ability to release the overconsumption that has caused environmental damage. In this way, Levinas' deep ecology and ethics meet in a call to reevaluate human priorities and move towards a more responsible and interconnected way of life.

1.6 One health approach

In his study, Tomb et al. (2022) he also mentioned a contemporary approach called "One Health Approach". Recent literature emphasizes the importance of considering the interdependence between natural health and human well-being, a relationship that is central to various global frameworks, including the United Nations Sustainable Development Goals (SDGs) (Weitz et al., 2018). This approach reflects the idea of weak anthropocentrism, introduced by the environmental pragmatism movement (Norton, 1984; Katz & Light, 2013), where the value of environmental elements is not only utilitarian, but is shaped by the relationship between humans and nature. In this view, the value of nature is context-dependent and influenced by human experience (Chan et al., 2016). This conceptual shift is in line with the idea of "nature-based solutions," a strategy endorsed by the International Union for Conservation of Nature (IUCN), which aims to protect, manage, and restore natural ecosystems to improve human well-being and conserve biodiversity (Cohen-Shacham et al., 2016).

The "One Health" approach, promoted by the Food and Agriculture Organization (FAO), the World Health Organization (WHO), and the World Organization for Animal Health (OIE), further highlights the interdependence between ecosystems, human health, and zoonotic diseases (Gibbs, 2014). This approach affirms that mutual well-being is inextricably linked, recognizing that human well-being is inseparable from environmental well-being. Therefore, contemporary conservation strategies are increasingly moving beyond the dichotomous view between humans and nature, by combining anthropocentric and ecocentric perspectives. Instead of seeing human interests as separate or at odds with nature, this new framework recognizes the shared benefits that arise from integrating human health and ecology. This evolving approach is critical to understanding how environmental management can simultaneously meet human needs and ecological

conservation, marking a significant shift away from more fragmented traditional conservation models.

1.7 Sustainable development

Sustainable development emerged as a global framework that aimed to align postwar aspirations such as peace, freedom, development, and environmental protection. Its main focus is on the relationship between development and the environment, with the aim of balancing human progress with the preservation of natural resources. This concept was introduced significantly in the 1987 Brundtland Report, Our Common Future Kates et al. (2005). The report develops ideas discussed earlier, including the 1972 Stockholm Conference and the 1980 World Conservation Strategy of the International Union for Conservation of Nature (IUCN). IUCN emphasizes that conservation should be considered as a tool to support development, especially through the sustainable use of resources, species, and ecosystems. The Brundtland report describes sustainable development as "development that is able to meet the needs of the present generation without sacrificing the ability of future generations to meet their own needs." This concept is the cornerstone of today's global policies and frameworks, focusing on the importance of striking a balance between economic progress, social inclusion, and environmental sustainability.

1.8 Planetary boundaries framework

In the Anthropocene era, which describes an era with a major human impact on the Earth system (Waters et al., 2016), human activities such as resource extraction and pollution have reached a scale that threatens the stability of the Earth's life-support systems. This gave birth to the planetary boundary framework, which provides a science-based approach to understanding the limits within which humanity can operate without damaging the Earth system Sureth et al. (2023). Proposed by Rockström et al. (2009), this framework identifies nine biogeophysical processes that are critical to maintaining the stability of the Earth, such as climate regulation, biodiversity, and freshwater systems. Exceeding these limits can lead to irreversible environmental changes, pushing the Earth system past a critical turning point. Therefore, the planetary boundary framework offers a "safe" operational space for human development, which suggests that overexploitation of resources and pollution can trigger irreversible changes that threaten the resilience of the Earth system (Rockström et al., 2021).

Although the planetary boundary framework provides a basic understanding of Earth's ecological boundaries, its application in economic research is limited due to the challenges in integrating environmental science with traditional economic theory. However, some experts have sought to align this framework with economic models. For example, Barbier and Burgess (2017) argue that the planetary boundary framework is in line with a strong sustainability perspective, where the biogeophysical system it represents is seen as irreplaceable by man-made capital. In this context, safe space within planetary boundaries is seen as a depletable stock and must be managed in accordance with weak sustainability principles. This understanding encourages a deeper integration between ecological boundaries in economic decision-making and emphasizes the need for sustainable development that respects the Earth's natural boundaries as well as the aspirations of human society.

1.9 Anthropocene theory

The concept of the Anthropocene emerged from the science of the Earth System to describe a significant and profound shift in Earth's history, characterized by the enormous impact of human activity on global processes and ecosystems. The term emphasizes the unprecedented scale at which human actions are changing planetary systems, from the atmosphere to biodiversity, and suggests that these changes are so profound that they could

permanently alter the trajectory of Earth's natural history. This concept first gained attention through the work of Paul Crutzen and his colleagues, who proposed the Anthropocene as a new geological epoch, distinct from the Holocene (Crutzen, 2002; Crutzen & Stoermer, 2000).

While Crutzen's work describes the Anthropocene as the beginning of a new geological era driven by industrialization, paleoclimatologist William Ruddiman offers an alternative perspective. In 2003, Ruddiman argued that human influence on Earth's climate began much earlier, about 5,000–8,000 years ago, long before the Industrial Revolution. He states that early human activities, particularly deforestation and the emergence of agriculture, significantly increased atmospheric levels of CO_2 and CH_4, marking an earlier human impact on the Earth's climate (Ruddiman, 2003). This view challenges the common assumption that the Anthropocene began only with modern industrialization and instead suggests that the ecological traces of humanity already have deep historical roots.

Further developments in Anthropocene discourse, particularly by Crutzen and Steffen (2003), identified the mid-20th century as an important turning point in human-environment relations. They argue that since 1950, human activity has entered a phase of tremendous acceleration, which fundamentally alters the Earth's life systems. This period, marked by intense industrial activity, urbanization, and resource extraction globally, marked a shift from humans who only affected the environment to actively controlling it in a way that could disrupt the boundaries of the planet. As noted by Crutzen and Steffen (2003), this shift is more than just a continuation of previous human impacts; it represents a profound transformation of the Earth System itself, which they claim is now inseparable from human activity.

The optimistic interpretation of the Anthropocene, most recently expressed by proponents of ecomodernism, is based on the belief that human technological and social progress can be harnessed to address the environmental challenges that humanity has created. In the Ecomodernist Manifesto (2015), proponents argue that the Anthropocene is an opportunity for humanity to harness their growing social, economic, and technological forces to not only improve the quality of human life, but also stabilize the climate and protect nature. This vision emphasizes the potential of human innovation to solve environmental problems, focusing on the idea that technological advances can reduce environmental degradation while improving human well-being. Ecomodernists welcome the Anthropocene not as evidence of human neglect of the environment, but as an opportunity for modern humans to prove their ingenuity and ability to change the world in a more sustainable direction.

1.10 Social-ecological transformation theory

The theory of socio-ecological transformation emerged as a critical response to the existing capitalist development paradigm and is often seen as a radical or "green-left" discourse in the face of global ecological challenges Huan (2021). One of the fundamental questions posed by this theory is whether a capitalist society based on capital expansion can move towards a sustainable green society. Or, in philosophical terms, can modernity in a capitalist society become more reflective of itself? In this context, the theory of socio-ecological transformation proposes a profound change in the existing capitalist system, viewing it not only as a response to the ecological crisis, but also as a possibility to create a more just and sustainable society.

This theory was heavily influenced by the thought of Karl Polányi, particularly in his work The Great Transformation (Polányi, 1944), which criticized modern capitalism and analyzed the possibility of more radical social transformation. Polányi emphasized that contemporary capitalist economics and politics were unnatural and favored major changes in social and economic structures. He even mentioned the possibility of a "socialist society" as a replacement for the existing capitalist system, which paid more attention to social and ecological needs (Polányi, 1944). This thought provided an important basis for the development of a more contemporary theory of socio-ecological transformation.

In general, the discourse on socio-ecological transformation theory includes two main points of view that are interrelated. First, this theory is a critical response to the green policies of neoliberalism promoted by Western countries and the international community they lead. This theory criticizes the discourse of "green capitalism" or "eco-capitalism" that focuses on market-based solutions to the environmental crisis. According to this view, efforts to modernize the economy using concepts such as natural capital (eco-capital), green growth, and green economy, are basically just capital regulatory strategies to overcome the crises faced by capitalist countries. In other words, the ecological transformation that is taking place today aims to maintain the proliferation of capital and social political dominance, rather than to encourage more profound structural changes in the socio-economic order (Brand, 2016a).

Second, the theory of socio-ecological transformation serves as a "green-left" political concept that imagines a post-capitalist society. This theory not only criticizes green capitalism, but also proposes a more radical capitalist transformation that includes social justice and ecological sustainability simultaneously. This theory views that the socio-ecological changes needed to respond to the environmental crisis must be a comprehensive process of change, not only in the energy and technology sectors, but also in broader social reconstruction (Brand & Wissen, 2017). This thinking is very close to the analysis of ecosocialism or ecomarxism, which is the idea of "green socialism" that emphasizes the importance of a critical social approach to ecological issues and social justice (Brand, 2016b). Thus, the theory of socio-ecological transformation can be understood as a combination of contemporary Western socialist political and ecological thought that focuses on the global environmental crisis. The essence of this theory is that integrating environmental issues within the framework of socialist theory and politics can be a great opportunity for self-innovation in the contemporary socialist movement. Socio-ecological transformation, according to this view, must lead to a more just and peaceful change in social relations, by creating an ecologically sustainable and more egalitarian society (PEL, 2004).

2. Methods

The research uses a qualitative approach through literature analysis and cross-country case studies. The aim of the research is to understand the application of environmental ethics philosophy in community-based forest management. The literature reviewed includes scientific articles, government reports, and policy documents relevant to forest management practices in Indonesia, Thailand, Myanmar, Bangladesh, Canada, the United States, and South Korea.

In selecting case studies, consideration was given to the involvement of local communities, collaborative policies between government and the private sector, and empirical evidence of successes or challenges during implementation. This study uses a descriptive-comparative analysis process by examining aspects of state capacity, community social capital, and the application of sustainability principles, which are then compared between countries to identify patterns and key success factors. The results were validated through source triangulation by comparing literature data, field reports, and statistical data, such as the decline in the Gini coefficient in land rehabilitation in Indonesia.

3. Result and Discussion

3.1 Current conditions

3.1.1 Ethics of natural resource management

In general, natural resources are defined as components of an ecosystem that provide various goods and services that are beneficial to human needs. However, due to its limited availability, its use needs to be balanced with maintenance and preservation efforts. Wise

management of natural resources aims to maintain ecosystem sustainability and improve social welfare. (Meyresta Wijaya & Iqbal Phase, 2022).

Natural resource management is influenced by ethics, namely how humans should behave. Environmental ethics provides guidelines for human relations with the environment. Any decision made regarding natural resources must consider the long-term consequences for the environment. In natural resource management, human needs are a priority. However, humans are also obliged not to damage the environment (Bourdeau, 2004). Environmental ethics emerged as a reaction to the negative impact that human activities have on nature. The role of environmental ethics is to formulate human responsibility towards nature and encourage sustainable practices (Kumar Verma, 2019). The use of natural resources no longer relies only on human interests, but also on the side of the environment. This concept has become a global guideline in natural resource management (Kopnina et al., 2018).

Each country has its own philosophy and principles in natural resource management, which will affect the way it is implemented. In Article 33 paragraph 3 of the 1945 Constitution, the word "controlled" does not mean that the state has full control over management but rather that the state has the authority to set rules and carry out supervision to support the economy and the welfare of the people. The management of the production branch can be handed over to the private sector while remaining under state supervision (Hayati, 2019).

3.2 Sustainability

According to sustainability, it is the ability of natural systems and human cultural systems to be able to survive, develop, and adapt to environmental changes in the long term. Sustainability cannot be implemented properly if the limiting factors are disturbed, namely the availability of natural resources and ecosystem services. Natural resources are divided into renewable and non-renewable resources. Ecosystem services are benefits provided by ecosystems, either directly or indirectly, to support human life and economy. Examples include clean air, pollination, and chemical recycling processes. However, human activities are the dominant cause of damage to ecosystem services due to resource exploitation. (Miller & Spoolman, 2016).

The application of the sustainable concept can ensure that natural resource management is carried out proportionately so that its existence remains available to future generations. How to manage natural resources optimally without sacrificing the needs of future generations is the content of sustainable development. Unsustainable management of natural resources can threaten the destruction of nature and have an impact on human life on earth. Sustainable development provides limitations in the management of natural resources to pay attention to ecological aspects (World Commission on Environment and Development, 1987).

3.3 Local community-based forest management

3.3.1 Local community-based forest management practices in Indonesia

The application of appropriate philosophies in natural resource management provides a solid foundation for making wise and sustainable decisions. Policies that favor the fulfillment of human needs without damaging the environment are based on the philosophy of environmental ethics and sustainability. For example, sustainable forest management ensures that forests continue to provide benefits to human life and ecosystems in the long term. A combination of prudent conservation efforts and community involvement in forest management can maintain a balance between forest resource utilization and nature conservation.

Sustainable forest management practices in Indonesia involve local communities and local communities in several regions. The Smart Agroforestry program is one way to

manage forests that are in decline by combining forestry and agricultural systems to increase productivity. The Smart Agroforestry program is a strategy to revive the rural economy using local resources along with effective landscape management and land use. Land management with Smart Agroforestry is able to reduce the rate of deforestation, as well as efforts to improve welfare and food crises in social forestry areas. The development of agroforestry is currently only focused on the suburban communities of the forest (Octavia et al., 2022) (Oka Suparwata, 2018).

Forests are a source of livelihood for people, especially in developing countries including Indonesia. Therefore, forest conservation and management can be achieved through community participatory action. A case study in Tebing Siring Village, Bajuin District, Tanah Laut Regency, South Kalimantan Province, shows that the contribution of local communities is very important for the achievement of conservation goals. The forest area in Tebing Siring itself has experienced forest degradation of more than 80% equivalent to 86,370 ha. Areas that were originally forested with closed vegetation turned into grass fields. The rehabilitation of an area of 410 ha into rubber plantations managed by local residents has brought in new sources of income. From 2010 to 2017 the Gini coefficient of inequality decreased from 34.6% to 31.3%. This is in line with the goals of SDGs 1 (No Poverty) and 10 (Reducing Inequality). Forest rehabilitation results in increased carbon stocks and biodiversity management that contributes to SDG15 (Life on Land). This is evidenced by the reduced frequency of forest fires (Hiratsuka et al., 2019).

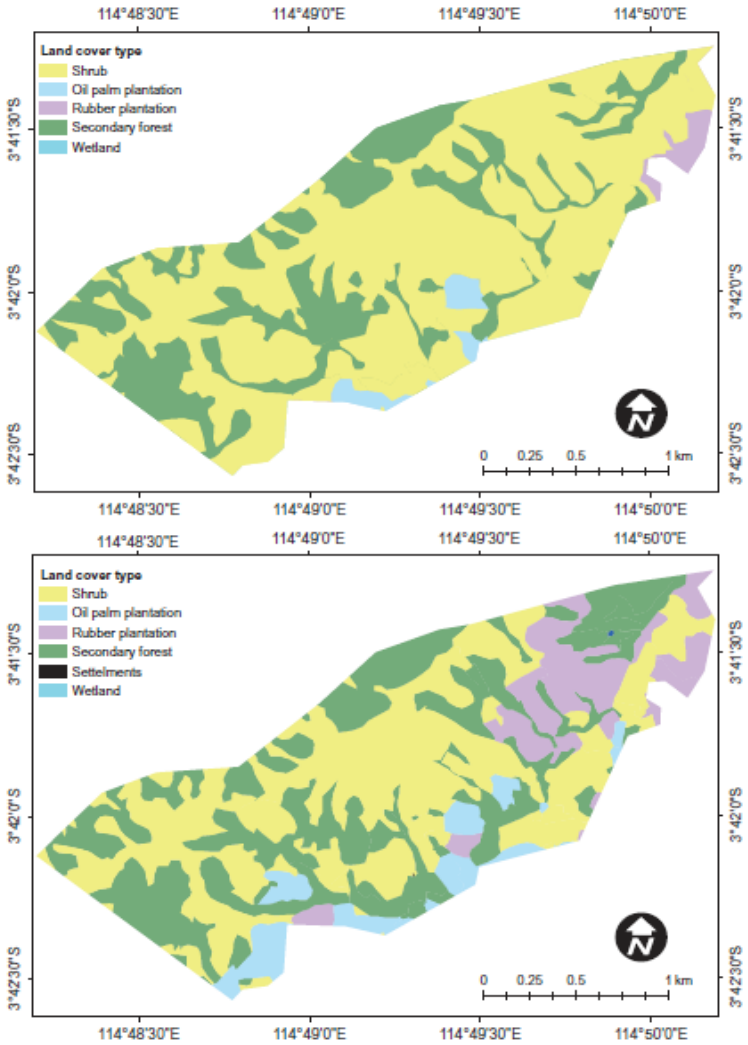

Fig. 1. The grassland area has been rehabilitated into rubber plantations so as to improve the welfare of the community.
(Motoshi Hiratsika, et.al, 2019)

Agroforestry emphasizes the participation of the entire community. The community is invited to discuss determining the plants to be cultivated. The implementation of agroforestry requires counseling and assistance in crop cultivation. In general, the community's perspective on the concept of agroforestry is quite positive. However, collaboration between internal and external parties must be carried out properly. A study in West Lampung Regency, Lampung Province, proves that the active involvement of external actors increases public understanding of sustainable forest development. Participation in external behavior can be in the form of training, mentoring, and counseling (Oka Suparwata, 2018) (Wulandari & Inoue, 2018).

Community-based forest management can be an effective solution in implementing sustainability philosophy. However, its success depends on the strength of local institutions, government policies, and legal support. Strict monitoring mechanisms are needed to ensure that sustainable forest management goals can be achieved in community-managed forests. In addition, the challenges of climate change and economic pressures must be addressed quickly to ensure that community-based forest management remains compatible (Buddhist Buddhism, 2017).

3.3.2 Local community-based forest management practices in other countries

Local community-based forest resource management is also carried out in other countries, such as Thailand, Myanmar, and Bangladesh. In Thailand, the government launched the Forest Community Registration Program, which gives 8,000 communities the right to manage forests legally, including using non-timber forest products such as honey and herbs. The Myanmar government is targeting 919,000 hectares of forest under community management by 2030. Local communities living around forests have the right to legally manage, utilize, and benefit from forest resources (Diansyah et al., 2021).

Community-based forest management is the foundation for local ethnic groups in the hilly region of Chittagong, Bangladesh. They manage the forest led by the village chief. The community enforces customary rules in the use of forest resources, including wood and bamboo. Violations of the rules are subject to sanctions so as to prevent the exploitation of forest products. The sale of forest products is then used as a mutual fund for village infrastructure such as the construction of schools and temples (Chowdhury et al., 2018).

Canada also implements community-based forest management. In an article by in Canada, nearly half of the land is forest, with most of it being state land. Traditionally, forest management has been industrial in which forest product companies hold long-term leases. However, public criticism encourages the development of alternative approaches and shared management initiatives, in which local communities share responsibility for forest management with governments or private industry. A significant example is the Community Forest Agreement Program in British Columbia, which allows communities to manage state lands. Meanwhile, the provincial government retains the final control. These community forests vary in size and often focus on local benefits such as job creation, timber resources, and increased power in decision-making. (Charnley & Poe, 2007).

Community-based forest management is also carried out by the Mexican government. More than 2,400 forests are managed by communities devoted to timber production. About 60-80% of forest land in Mexico is under common ownership, such as ejidos (shared land) and agrarian communities, which were formed after the agrarian reform of 1917. These forests are essential to the lives and incomes of millions of people in Mexico. Community forestry policy in Mexico has been shaped by the history of farmers' relationship with the state. Community forestry is a central part of the production of certified environmentally friendly timber in Mexico.

In the United States, one-third of its land area is forested, most of which is managed by the federal government. Community forestry initiatives involve collaborative management between federal agencies and local communities. The effort came in response to public concerns about the environmental impacts of industrial timber production and job losses in forest-dependent communities. Public participation is getting a larger share in decision-

making, although the granting of forest management authority to communities is still noticeably limited. Collaborative forestry projects aim to improve ecosystem health while creating economic opportunities, such as forest restoration work and small-scale timber products. However, the initiative continues to face challenges related to political resistance and limited local control over federal forests.

In South Korea, most forests are privately owned, while only a small portion is owned by the central and local governments. Forest tenure in South Korea is 68% privately owned, 24% state-owned, and 8% local governments. In Indonesia, more than 60% of forest areas are managed by the state. Community participation in forest management is supported by clear policies and incentives, including seed assistance, fertilizers, training, and technology. South Korea implements sustainable forest management towards harmony between the environment, economy and society. In forest management, the private sector has three rights, namely ease of access to information, participation in decision-making, and legal circles (Purnomo et al., 2020).

3.4 Analysis

In her research, she explains that community-based forestry (Stuttgart et al., 2024) CF) is a complex socio-ecological system, encompassing initiatives, policies, and processes that encourage local participation in forest management. The success of CF depends on the alignment of the program with the needs of local communities influenced by economic, demographic, political, and global factors. Economic development transforms stakeholder relationships by creating jobs, increasing market access, and increasing incomes, but it can also shift land use priorities. Demographic changes, such as shifts in population and labor force composition, have a direct impact on community engagement, which often reduces participation in forest governance. Government policies play an important role, where regulations that encourage local involvement benefit CFs, while policies that encourage migration or reduce dependence on agriculture can hinder it. Global initiatives such as Reducing Emissions from Deforestation and Forest Degradation (REDD+) also affect CF through benefit-sharing mechanisms and forest management practices. Laudari et al. (2024) emphasize that understanding these interconnected dynamics is critical to ensuring the sustainability of CFs and their ability to adapt to external challenges while supporting forest conservation and community well-being.

Community-based forest conservation policies depend on policy stability and strong community commitment. Collaboration between the central and regional governments must be well established. Community-based forest management requires a cross-sectoral approach to integrate ecological, economic, and social aspects. Government support for people's rights provides strong protection so that forest management can provide sustainable benefits. Collaboration between internal actors and various external actors is essential in sustainable forest management. External factors include the government, non-governmental organizations (NGOs), and investors. The role of the government is crucial in the success of sustainable forest management. The government assists in the licensing process and ensures that the public gets legal access. The government synergizes with various external organizations, including NGOs and international donors, for funding. The government must also ensure that local communities have full participation in planning and decision-making related to forest management (Friedman et al., 2020).

Sustainable forest management can be an option in addressing the problem of forest deforestation. Community-based forest management is feasible in Indonesia because the majority of people live in areas near forests. In Indonesia, forests are controlled by the state with management under the Ministry of Forestry and Environment (MoEF). Therefore, the implementation of community-based forest management is under state supervision. Referring to the case that occurred in Tebing Siring Village, Bajuin District, Tanah Laut Regency, South Kalimantan Province, social capital in the form of community participation is stronger in supporting the successful rehabilitation of 410 ha of forest areas into rubber plantations. The area has long been a source of income for local communities, so community

participation in realizing sustainable forest management practices is the main capital. The implementation of the Smart Agroforestry program by combining the forestry system with agricultural cultivation can reduce the rate of soil degradation while improving the welfare of the people of Tebing Siring Village with the cultivation of selected plantation crops, namely rubber. Therefore, local community-based forest management in Tebing Siring Village is the right step.

Similar policies are also implemented by the governments of Thailand, Myanmar, and Bangladesh. Thailand promotes the Forest Community Registration Program. The government gives 8,000 local communities the right to manage their forests logically. Communities are given the right to utilize forest products, both you and non-timber, to improve welfare. Likewise, the Myanmar government granted the right to manage 919,000 ha of forest to local communities. Meanwhile, the Bangladeshi government gives trust to indigenous peoples to manage forests. Social capital in Bangladesh is very strong in managing forests. The communities around the forest enforce strict rules not only in terms of management, but also in the sale of forest products.

Strong social capital is also the foundation for the Canadian government to implement community-based forest management. The community has the right to manage state land under government supervision. Forest management by the community is an effort to create jobs, source forest products in the form of wood, and strengthen the position of the community in decision-making. Community-based forest management is also carried out by the Mexican government. More than 2,400 forests are managed by communities devoted to timber production. About 60-80% of forest land in Mexico is under common ownership, such as ejidos (shared land) and agrarian communities, which were formed after the agrarian reform of 1917. These forests are essential to the lives and incomes of millions of people in Mexico. Community forestry policy in Mexico has been shaped by the history of farmers' relationship with the state. Community forestry is a central part of the production of certified environmentally friendly timber in Mexico.

Meanwhile, forest management in the United States shows stronger state capacity. Most of the forests are managed by the federal government. In forest management in the United States, public participation is greater in decision-making, but the granting of forest management authority to communities is limited. Forest management in the United States applies the concept of collaboration between the federal government and local communities. As for the case in South Korea, the country's social capital and capacity are weak. In South Korea, most forests are privately owned, while only a small portion is owned by the central and local governments. Forest tenure in South Korea is 68% privately owned, 24% state-owned, and 8% local governments. Therefore, forest management policies apply a private system. In South Korea, the central government grants three rights in forest management: information, participation in decision-making, and legal protection.

Table 1. Forest management concepts based on case studies

		Country Capacity	
Social Capital	Strong	Weak	Strong
		Community/Local Communities Countries: Indonesia, Thailand, Myanmar, Bangladesh, Canada, Mexico	Collaboration Country: United States
	Weak	Private (Private) Country: South Korea	Country

4. Conclusion

The application of philosophy in natural resource management provides a solid foundation for making wise and sustainable decisions. Policies that favor the fulfillment of human needs without damaging the environment are based on the philosophy of environmental ethics and sustainability. Collaboration between internal actors and various external actors is essential in sustainable forest management. External actors include the

government, non-governmental organizations (NGOs), and investors. The role of the government is crucial in the success of sustainable forest management. Forests are a source of livelihood for people, especially in developing countries including Indonesia.

A case study in Tebing Siring Village, Bajuin District, Tanah Laut Regency, South Kalimantan Province, shows that the contribution of local communities is very important for the achievement of conservation goals. Likewise, the implementation of forest management in a number of countries that rely on community participation such as Thailand, Myanmar, Bangladesh, Canada, and Mexico. Community-based forest conservation policies depend on policy stability and strong community commitment. Community-based forestry management is a complex socio-ecological system, encompassing initiatives, policies, and processes that encourage local participation in forest management. The success of community-based management depends on the alignment of the program with the needs of local communities influenced by economic, demographic, political, and global factors.

Forest management is greatly influenced by the relationship between state capacity and social capital, in this case community participation. If the capacity of the state is weak, while social capital is weak, then the concept of community-based forest management can be carried out. However, if the country's capacity is weak and social capital is weak, forest management can be given to the private sector as South Korea does. In South Korea, the majority of forests are managed by the private sector with the granting of major rights by the local government. As for if the state's capacity is strong, while social capital is strong, forest management can be carried out with the concept of collaboration.

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