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MORALITY BEFORE KNOWLEDGE

Biocentrism and its role in shaping conversation approaches in protected areas

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ABSTRACT

Background: This study explores the shift from anthropocentrism to ecocentrism in the context of protected-area prioritization in Indonesia, highlighting the influence of deep ecology and biocentrism on human-environment relationships. The primary objective of the study is to analyze the impact of deep ecology and biocentrism on conservation efforts in Indonesia, offering insights into the challenges of integrating these philosophies into environmental policymaking for long-term biodiversity conservation. **Methods**: This study employs a literature review methodology, analyzing existing research, philosophical frameworks, and case studies related to anthropocentrism, biocentrism, and ecocentrism in the context of environmental ethics and protected-area management. The review includes works on deep ecology, environmental ethics, and Indonesia's specific environmental policies, drawing from both global and local perspectives to examine how these philosophies shape conservation strategies. **Findings:** Anthropocentrism, which views nature primarily as a resource for human use, has historically shaped environmental policies, often resulting in environmental degradation and biodiversity loss. In contrast, ecocentrism and biocentrism, which recognize the intrinsic value of all life forms, advocate for a more ethical and sustainable approach to conservation. As one of the most biodiverse countries in the world, Indonesia faces significant challenges in balancing development with biodiversity conservation, particularly in light of pressures from deforestation, agriculture, and urbanization. **Conclusion**: By adopting ecocentric values, Indonesia can ensure that its protected areas are managed in a way that promotes the sustainability of both human and natural systems. **Novelty/Originality of this article:** This study introduces a novel approach by integrating deep ecology and biocentrism into protected-area prioritization in Indonesia. It offers fresh insights into how these ethical frameworks can reshape conservation policies for long-term biodiversity sustainability.

KEYWORDS: anthropocentrism; biocentrism; ecocentrism; ecology; protected-areas prioritization.

1. Introduction

The relationship between humans and nature has been a central topic in environmental ethics and human geography, particularly in the Anthropocene era, where human activities significantly impact the planet's ecosystems. Environmental ethics, a branch of bioethics (Macer, 1998), investigates the relationship between humans and nature from a moral perspective (Surmeli & Saka, 2013), exploring issues such as harmony with nature and respect for all life forms. This area of study emphasizes principles like ecological holism, justice, responsible consumption, and sustainable resource management, encouraging people to develop a more rational approach to environmental sustainability (Surmeli & Saka, 2013). Studies have identified three major approaches to environmental

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ethics—anthropocentrism, biocentrism, and ecocentrism (Enger & Smith, 2006; Surmeli & Saka, 2013)—each of which frames the human-environment relationship differently. Anthropocentrism, as defined by Bhattacharjee & Debnath (2021), refers to a human-centered view of environmental responsibility, where the value of the natural world is primarily seen in terms of how it serves human interests (Bhattacharjee & Debnath, 2021). Historically, this view has dominated global environmental policies, particularly in the West, where the natural world has been considered a resource for human exploitation and development. This approach, while promoting rapid economic growth, has often led to environmental degradation, as seen in deforestation, species extinction, and climate change. Burchett (2014) emphasizes that this anthropocentric view can lead to significant ecological challenges, such as the loss of biodiversity, as human activities alter natural ecosystems for short-term gains (Burchett, 2014).

In contrast, deep ecology and biocentrism propose a more inclusive and ethical relationship between humans and the environment. Rooted in the work of Norwegian philosopher Arne Naess, deep ecology advocates for a holistic view that recognizes the intrinsic value of all forms of life, irrespective of their utility to humans (Rosa, 2014). Biocentrism extends this idea by suggesting that all living beings, from animals to plants, have an equal right to exist, and human actions should not override the needs of the natural world. This shift towards recognizing the inherent worth of non-human life forms has gained momentum in environmental ethics, particularly as the ecological crises of the Anthropocene become more apparent (Drenthen, 2011; Kopnina et al., 2021). In recent years, the transition from anthropocentrism to ecocentrism has been increasingly reflected in global environmental policies and conservation efforts. This shift is driven by a growing recognition of the need to protect not only the resources that humans depend on but also the ecosystems that support a wide range of life forms. This is particularly important in biodiversity-rich countries like Indonesia (Whaley, 2018). Indonesia's diverse ecosystems, from tropical forests to coral reefs, are recognized globally as biodiversity hotspots. The protected areas are critical for the preservation of biodiversity and the promotion of sustainable development, but the prioritization and management often reflect differing human-environment perspectives. Indonesia face growing pressures from human activities, including deforestation, agriculture, and urbanization. The prioritization of protected areas in Indonesia requires a balance between development and conservation, where both anthropocentric and ecocentric considerations play a role. Understanding how deep ecology, which advocates for an ecocentric worldview, influences conservation efforts in these regions can provide insights into sustainable human-environment relationships (Daniels et al., 2016; Gorke, 2003).

The influence of these philosophies in Indonesia is becoming evident in the way protected areas are prioritized and managed. Indonesia is home to some of the most biodiverse ecosystems in the world, including rainforests, coral reefs, and mangroves, which are increasingly under threat from anthropogenic activities such as logging, mining, and urbanization. The Taita Hills in Kenya provide a parallel case study, where local populations' perceptions of nature conservation oscillate between anthropocentric and ecocentric worldviews (Rülke et al., 2020). Similarly, in Indonesia, efforts to protect these ecosystems reflect a growing understanding of the need to move beyond human-centered conservation models. Indonesia's commitment to international environmental agreements, such as the Convention on Biological Diversity, has led to the establishment of numerous protected areas. According to National Parks Association of Queensland Inc., Indonesia has 566 protected areas covering a total of 36,069,368.04 hectares, including 490 terrestrial areas and 76 marine areas (National Parks Association of Queensland Inc., 2024). These terrestrial zones encompass National Parks, Nature Reserves, Game Reserves, Hunting Parks, Grand Forest Parks, and Nature Tourism Parks. In the marine domain, seven significant national parks are managed by the Ministry of Environment and Forestry, including notable sites such as the Wakatobi and Bunaken National Parks. Stretching between the Pacific and Indian Oceans, Indonesia's unique geography includes the Wallace Line, a biogeographical division that separates the distinct faunal regions of Asia and

Australia. Indonesia's protected areas span diverse ecosystems like uplands, lowlands, mangroves, savannas, and mountain ranges. A prominent example of Indonesia's protected areas is Tanjung Puting National Park in Central Kalimantan (Borneo), covering 3,040 square kilometers. Famous for its population of orangutans, the park is internationally recognized through the efforts of the Orangutan Foundation International. It also houses species like the proboscis monkey, clouded leopards, and a variety of bird species. Another key protected area is Way Kambas National Park in southern Sumatra, home to endangered species such as the Sumatran Elephant and Rhino, and boasting 406 bird species and 50 mammal species. Kelimutu National Park on Flores is known for its stunning three-colored lakes and is home to 19 endemic and endangered species, including the Floresian eagle and Wallacea owl. It also supports a diverse array of plants, birds, mammals, and reptiles. Close by, the Mbeliling Forest Reserve near Labuan Bajo provides vital habitat for endemic species and is noted for its proximity to Komodo National Park, famous for its Komodo dragons.

However, as Washington et al. (2017) argue, simply designating areas for protection is not enough; there must also be a fundamental shift in how humans perceive their relationship with the natural world(Washington et al., 2017). Ecocentrism, which sees all components of the environment, both living and non-living, as having intrinsic value, offers a framework for this transformation. By adopting an ecocentric worldview, policymakers can prioritize biodiversity conservation not just for its benefits to humans but for the sake of preserving the Earth's ecological integrity (Taylor et al., 2020; Washington et al., 2017). The implementation of ecocentric policies in Indonesia's protected areas faces several challenges, particularly in balancing the needs of local communities with conservation goals. Spínola (2024) notes that while ecocentrism and anthropocentrism are often viewed as opposing forces, they can, in fact, be complementary (Spínola, 2024). In practice, this means that policies should aim to meet human livelihood needs while also protecting ecosystems. This approach is particularly relevant in regions where communities rely on natural resources for their survival, such as Indonesia's rural and indigenous populations. The integration of deep ecology and biocentric ethics into Indonesia's protected-area prioritization also aligns with global trends in environmental education. According to Surmeli & Saka (2013), environmental ethics, including ecocentrism and biocentrism, play a crucial role in shaping individuals' attitudes towards conservation (Surmeli & Saka, 2013). In Indonesia, environmental education programs that emphasize the interconnectedness of all life forms and the moral responsibility humans have towards the environment can foster a culture of sustainability. Such programs are essential in shifting public attitudes from seeing nature as a resource to be exploited to recognizing its inherent worth. This study explores the transition from anthropocentrism to ecocentrism, guided by three theoretical frameworks.

1.1. Anthropocentrism theory

Anthropocentrism, as defined by Rae (2016), is the belief that humans occupy a unique and central position in the universe, elevating them above non-human entities. This ideology creates a binary opposition between humans and the non-human world, justifying human privilege through factors such as cognitive abilities, religious beliefs, and moral frameworks. Anthropocentrism can appear in "strong" forms, which attribute intrinsic value solely to humans, or in "weak" forms that recognize some level of environmental responsibility while still maintaining human superiority. The historical development of anthropocentrism has roots in both ancient philosophy and religious traditions. Philosophers like Aristotle argued that animals exist for human benefit, and religious teachings on human dominion further reinforced this view. In modern times, thinkers such as Descartes emphasized human cognition as the foundation for existence, while Kant maintained that rationality set humans apart, thus justifying the use of nature for human purposes.

Philosophical and ethical critiques of anthropocentrism highlight the environmental and moral consequences of prioritizing humans over other entities. Freud argued that

developments such as the Copernican revolution and Darwinism challenged human-centered thinking, while Foucault suggested that the concept of "man" is a historical construct nearing its end. These critiques contributed to the rise of ecocentric and biocentric movements, which argue for the intrinsic value of all life forms and challenge the superiority of humans. In the realm of environmental ethics, anthropocentrism has faced opposition, with thinkers like White attributing ecological degradation to human-centered views. In response, environmentalists have proposed non-anthropocentric frameworks like biocentrism and ecocentrism, which emphasize the interdependence of all life forms. However, some scholars contend that anthropocentric ethics can still promote environmental stewardship if reinterpreted to acknowledge the interconnectedness between humans and the environment. Posthumanist theories take this critique further by challenging anthropocentrism and breaking down the boundaries between humans, animals, and technology. Haraway's concept of the "cyborg" illustrates the blurred lines between humans and machines, while posthumanist thinkers advocate for overcoming the binary logic of anthropocentrism. They call for new ethical frameworks that move beyond human dominance and instead emphasize interconnectedness and shared existence.

1.2. Ecocentrism

Ecocentrism, as introduced by Thompson (2001), is a philosophical approach within environmentalism that emphasizes the intrinsic value of ecosystems, moving beyond human-centered perspectives. Unlike anthropocentrism, which prioritizes human interests, ecocentrism asserts that all parts of nature, including ecosystems, species, and natural systems, possess inherent worth. This perspective emerged alongside the environmental movement in the 1950s and 1960s, aiming to address environmental degradation by promoting respect for the interconnectedness of natural entities. The evolution of ecocentric thought was significantly influenced by the development of ecology as a science and key environmental works such as Rachel Carson's Silent Spring and the Club of Rome's Limits to Growth. These works highlighted the fragility of ecosystems and warned against the dangers of unchecked growth and resource exploitation. Thinkers like Hardin further contributed to ecocentric ethics by exploring the "tragedy of the commons," where individual actions driven by self-interest can lead to environmental collapse, reinforcing the need for an ecocentric approach.

Ecocentrism challenges traditional anthropocentric views by expanding moral responsibility beyond human well-being. Aldo Leopold's "land ethic" broadens this responsibility to include soils, waters, plants, and animals, viewing the Earth as a community to which humans belong. Ecocentrism promotes valuing ecosystems and species for their intrinsic qualities—such as biodiversity, integrity, and stability—rather than their usefulness to humans. Deep ecology, influenced by Arne Naess, goes further by advocating for an expanded sense of self that identifies with all living beings. This philosophy suggests that self-realization involves recognizing one's interconnectedness with the environment, leading to an ethical commitment to protect all life forms. However, critics of deep ecology, including ecofeminists, caution against an overly subjective approach, arguing that it risks subordinating nature to human perception. Ecocentrism also extends into environmental politics, emphasizing sustainable development and ecological justice. The concept of "sustainable development," promoted by the World Commission on Environment and Development, supports growth within environmental limits. Ecocentric political strategies range from eco-anarchist ideals that promote decentralized, community-based governance to ecosocialist visions advocating cooperative resource management to tackle global environmental challenges.

However, ecocentrism faces challenges in the practical application. Critics question whether it can offer solutions that balance environmental preservation with human needs. Prioritizing non-human entities may conflict with policies aimed at improving human well-being, and extending moral consideration to all natural systems could lead to impractical obligations, such as protecting every ecosystem or species, regardless of human interests.

Ecocentrism has nonetheless had a significant impact on environmental ethics and policy. It reshapes ethical discourse by insisting on the intrinsic value of nature and encourages environmental responsibility beyond human concerns. While it presents both conceptual and practical challenges, ecocentrism has inspired shifts toward sustainability and ecological respect, complementing other environmental approaches by integrating ecological awareness into policymaking. As global environmental crises intensify, ecocentric principles continue to shape debates on environmental justice, sustainability, and planetary governance.

1.3. Biocentrism theory

Biocentrism emerged in response to global environmental concerns and the limitations of anthropocentric ethics, which prioritize human interests over the non-human world. Influenced by environmental movements in the 1960s and 70s, including Rachel Carson's Silent Spring and Paul Ehrlich's The Population Bomb, biocentrism advocated for a reevaluation of humanity's relationship with nature. This shift aimed to expand moral consideration to all living beings, addressing ethical concerns that anthropocentrism had failed to resolve. At its core, biocentrism holds that all living entities possess intrinsic moral worth, not just humans or sentient creatures. Unlike anthropocentrism, which limits moral standing to humans, or sentientism, which only extends it to conscious beings, biocentrism asserts that being alive is sufficient grounds for moral relevance. Biocentrists argue that even non-sentient beings, such as plants, have interests, like growth and reproduction, which make them deserving of ethical consideration. Kenneth Goodpaster introduced the concept of "moral considerability," which distinguishes between moral standing and moral significance. While all living beings may deserve ethical recognition, their interests may vary in importance, especially in cases of conflict. For instance, the interests of a sentient being, capable of experiencing suffering, may be given more weight than those of a non-sentient organism.

However, biocentric ethics face practical challenges, particularly in balancing conflicting interests between humans and non-humans. Critics argue that egalitarian biocentrism, as proposed by Paul Taylor, could lead to impractical outcomes, such as prioritizing a plant's survival over human needs. However, modified versions of biocentrism, such as those suggested by Attfield, incorporate consequentialist principles that weigh the interests of beings based on their capacities and the context of conflicts. Biocentrism has far-reaching implications for addressing environmental challenges like climate change, biodiversity loss, and pollution. It advocates for inter-species equity, urging humanity to consider the moral significance of non-human life when making environmental policies. Biocentrists call for sustainable practices that preserve biodiversity and protect ecosystems, not solely for human benefit, but for the intrinsic value of all living beings. Additionally, biocentrism plays a significant role in discussions of animal welfare, opposing practices that cause unnecessary suffering, such as factory farming and animal experimentation. Although it acknowledges that human interests may sometimes override those of animals, biocentrism emphasizes the importance of minimizing harm and respecting the inherent value of animals. It also critiques genetic engineering practices, arguing that animals created by humans deserve ethical treatment aligned with their well-being.

The philosophical shift from anthropocentrism to ecocentrism in Indonesia's environmental policies reflects a broader global trend towards more sustainable and ethical forms of conservation. As Taylor et al. (2020) argue, the inclusion of ecocentric values in biodiversity conservation is not just a moral imperative but also a practical one, as it offers a more comprehensive approach to addressing the environmental challenges of the 21st century (Taylor et al., 2020). By adopting these values, Indonesia can ensure that its protected areas are managed in a way that prioritizes the well-being of both humans and the natural world. So, the primary objective of this study is to analyze how the influence of deep ecology and biocentrism has shaped human-environment relationships in the context

of Indonesia's protected-area prioritization. It seeks to explore the practical implications of integrating ecocentric and biocentric values into environmental policy-making and to assess the challenges and opportunities this presents in ensuring sustainable conservation efforts.

2. Methods

This study employed a literature review methodology to investigate the philosophical shift from anthropocentrism to ecocentrism and the impact on protected-area prioritization in Indonesia. Through a comprehensive analysis of academic journals, environmental reports, and case studies, this methodology enabled the identification of key theoretical frameworks—anthropocentrism, biocentrism, and ecocentrism—and their relevance to Indonesia's biodiversity conservation efforts. The data collection process focused on identifying and synthesizing relevant literature from a variety of sources, including academic journals, books, and reports related to environmental ethics and conservation. The study also incorporated case studies focusing on Indonesian protected areas and the impact of global environmental frameworks. Additionally, government publications and reports from non-governmental organizations (NGOs) were analyzed to understand Indonesia's conservation policies and international commitments. Key sources included works on environmental philosophy, particularly deep ecology, ecocentrism, biocentrism, and relevant case studies from Indonesia's conservation efforts.

The inclusion criteria for the literature review focused on selecting publications that explored key environmental philosophies such as anthropocentrism, ecocentrism, and biocentrism. Additionally, literature that specifically addressed Indonesia's management of protected areas and the participation in global environmental agreements was included to ensure relevance to the Indonesian context. Case studies related to conservation policies and environmental philosophy were also considered, providing real-world examples that helped bridge theoretical discussions with practical applications in Indonesia's conservation efforts. On the other hand, publications were excluded if they were unrelated to the relationship between humans and the environment or if they focused solely on non-environmental ethical issues, as these did not align with the study's focus. Literature that lacked relevance to Indonesia's policy context was also excluded.

The research identifies recurring themes such as the limitations of anthropocentrism, which often prioritizes human needs over environmental preservation, and the crucial role of ecocentrism in promoting conservation efforts. The study also examines the integration of biocentric ethics into policy, emphasizing the value of all living beings. A comparative analysis of anthropocentric, ecocentric, and biocentric frameworks highlights the differing impacts on protected-area prioritization and biodiversity management in Indonesia, with ecocentric and biocentric approaches offering more sustainable solutions. The study situates Indonesia's environmental policies within the broader global shift toward ecocentric conservation models, as influenced by international agreements. Through critical reflection, the research evaluates the challenges of balancing economic development with ecological protection, as well as the opportunities to enhance biodiversity conservation and align with global sustainability goals by integrating ecocentric and biocentric principles into Indonesian conservation policies.

The literature review methodology is well-suited to this study as it enables a comprehensive analysis of key theoretical frameworks, such as anthropocentrism, ecocentrism, and biocentrism. By exploring these concepts, the review provides insights into global environmental ethics and the practical application within the Indonesian context. Additionally, this method facilitates a critical understanding of the challenges involved in balancing human needs with biodiversity conservation, offering a nuanced perspective on how these ethical frameworks shape conservation strategies and policy development in Indonesia. However, the lack of primary data may limit the scope of empirical insights in the study, making it reliant on secondary sources for analysis. Additionally, there may be potential biases in the available literature, particularly

concerning the integration of ecocentric and biocentric philosophies within the Indonesian context. Furthermore, applying global environmental theories to local governance structures presents contextual challenges, as international frameworks may not fully align with Indonesia's unique socio-political and environmental landscape.

3. Results and Discussion

3.1 Data of indonesia protected areas

According to UNEP-WCMC (2024), there are a total of 699 protected areas in Indonesia, with 254 of them having undergone evaluations for management effectiveness. Figure 1 uses three color-coded categories to indicate the types of protected areas: green represents terrestrial and inland waters protected areas, blue signifies marine protected areas, and yellow designates other effective area-based conservation measures. Data from UNEP-WCMC (2024) showed that Indonesia's terrestrial and inland waters protected areas cover 12.02% of its total land area, equivalent to 226,556 square kilometers out of a 1,885,354 square kilometers land mass. This coverage is a significant step towards biodiversity conservation, aligning with the goals set out in Indonesia's 5th National Report, where 22.00% of terrestrial and inland waters were identified for protection. However, only a portion of these protected lands undergoes assessment through Protected Area Management Effectiveness (PAME) evaluations, which ensure that conservation measures meet certain standards. Currently, 7.14% of these protected areas, amounting to 134,624 square kilometers, have been evaluated for their management effectiveness, underscoring the ongoing need for expanded assessments to ensure proper stewardship of these resources. Meanwhile, in the marine and coastal realm consist of 3% of Indonesia's waters, covering 180,765 square kilometers out of a total 6,021,765 square kilometers, is designated as protected. This lower percentage, compared to terrestrial coverage, reflects the challenges of establishing and managing marine protected areas, although it remains a crucial initiative for safeguarding marine biodiversity, fisheries, and coastal ecosystems. Like terrestrial areas, only a fraction of marine protected areas undergo PAME evaluations, which assess the effectiveness of management practices. Currently, just 0.08% of marine protected areas, or 4,687 square kilometers, have received such assessments (UNEP-WCMC, 2024). This limited evaluation points to the need for enhanced resources and focus on marine conservation management to ensure these areas are effectively protected against threats like overfishing and habitat degradation.

Fig.1. Map of Indonesia Protected Areas
(UNEP-WCMC, 2024)

According to data from BPS (2024), over the six-year period, both water and land areas designated for conservation remained relatively stable, though some fluctuations occurred. The water area, for instance, generally remains around 5.3 million hectares except in 2021,

when it drops to 4.76 million hectares before returning to the previous level in 2022 (BPS, 2024). This decrease in 2021 may reflect temporary reallocations or challenges in marine conservation efforts, highlighting the dynamic nature of environmental management. In terms of land area, the table shows minimal yearly changes, indicating a consistent commitment to forest conservation. The total conservation area, which combines both water and land areas, also shows slight annual variations, but the overall conservation footprint remains significant. Appendix 1 also showed various forest classifications, including protected forest, limited production forest, permanent production forest, and convertible production forest. Protected forest areas, which are crucial for biodiversity preservation, generally hold steady, though a slight reduction is observed in 2021, mirroring the trend seen in the water area. Limited and permanent production forests, which permit regulated resource extraction, also exhibit minor variations across the years, reflecting a balance between conservation and economic needs. Convertible production forests, areas that can potentially be reallocated for other uses, maintain relative consistency, although slight increases in area are seen in specific years. Furthermore, the total land and water area of forest regions (combining conservation, production, and convertible lands) shows minor fluctuations but generally indicates stable forest management practices across the years. Overall, Appendix 1 illustrates Indonesia's ongoing commitment to protecting natural areas, balancing conservation with limited resource use, and adapting to evolving environmental needs.

Meanwhile, Table 2 provides an overview of Indonesia's marine conservation efforts from 2017 to 2020, highlighting specific types of protected marine areas and their respective sizes in hectares. Marine National Parks, one of the largest conservation categories, remain consistent at around 4 million hectares until a slight reduction in 2020. Similarly, Marine Nature Tourism Parks and Aquatic Tourism Parks maintain their areas steadily, demonstrating a commitment to preserving these zones for tourism and biodiversity alike. The Marine Wildlife Reserve and Marine Nature Reserve show slight decreases over time, particularly in the Marine Nature Reserve, where the area drops significantly in 2018 and remains stable afterward, indicating possible shifts in conservation focus. National Water Parks and Aquatic Nature Reserves also remain consistent, with no significant area changes, emphasizing stable conservation measures for aquatic ecosystems. In contrast, the Regional Marine Conservation Area shows a notable increase across the years, expanding from around 9 million hectares in 2017 to nearly 14 million hectares by 2020 (BPS, 2022). This growth suggests a targeted effort by Indonesia to expand marine protection at a regional level in response to increasing environmental challenges.

Table 2. Total area of Indonesia marine conservation (hectares), 2017-2020

Type of Marine Conservation	Area of Marine Conservation (Hectares)			
	2017	2018	2019	2020
Marine National Park	4,043,541.30	4,043,541.30	4,043,541.30	3,968,975.30
Marine Nature Tourism Park	491,248.00	491,248.00	491,248.00	491,248.00
Marine Wildlife Reserve	5,678.25	5,678.25	5,678.25	5,400.00
Marine Nature Reserve	154,480.00	91,820.00	91,820.00	91,820.00
National Water Park	3,355,352.82	3,355,352.82	3,355,353.82	3,355,352.82
Aquatic Nature Reserve	445,630.00	445,630.00	445,630.00	445,630.00
Aquatic Tourism Park	1,541,040.20	1,541,040.20	1,541,040.20	1,541,040.20
Regional Marine Conservation Area	9,107,723.71	10,901,101.76	13,172,342.49	13,949,677.46

(BPS, 2022)

3.2 Indonesia environmental law

Indonesia's environmental law has evolved significantly over time, adapting to both national and global demands for sustainable management of natural resources. Tracing back to the colonial period and continuing through the reformation era, Indonesia's

environmental legislation has undergone several changes to meet contemporary ecological challenges. The most recent and comprehensive reform came with Law No. 32 of 2009, which established guidelines for environmental protection and management, emphasizing sustainability and the preservation of biodiversity (Suhendra et al., 2019). This law builds upon the principles outlined in Indonesia's 1945 Constitution, specifically Article 33, which outlined the importance of a national economy based on sustainability and environmental stewardship. One of the primary drivers behind Indonesia's environmental legislation is the need to align with international standards, such as the Sustainable Development Goals (SDGs), which emphasize environmental sustainability in development planning. The changing global landscape, with increased transboundary pollution and environmental degradation, has necessitated a shift from a solely national focus to a global perspective, requiring Indonesia to adapt the laws to address international environmental concerns (Suhendra et al., 2019). Additionally, technological advancements and population growth have exacerbated environmental pressures, including deforestation and pollution, underscoring the need for robust legal frameworks to protect ecosystems from these cumulative impacts.

Law No. 32 of 2009 integrates several principles central to sustainable development, including intergenerational equity, biodiversity conservation, and precautionary measures, reflecting a growing recognition of the intrinsic value of ecosystems beyond their immediate utility to humans (Helmi, 2011). As Kuswanto noted, sustainable development in Indonesia now encompasses a multi-dimensional approach, incorporating social, economic, and environmental aspects to ensure that development does not compromise the needs of future generations (Bracci & Maran, 2013). This approach aligns with global definitions of sustainable development, emphasizing that current resource use must not endanger environmental integrity for the future. Indonesia's environmental law also incorporates the principle of strict liability, particularly in cases involving hazardous substances, where parties are held accountable for environmental damages regardless of intent (Suhendra et al., 2019). This principle is reflected in Article 88, which mandates strict liability for businesses handling toxic materials that pose environmental risks. While this concept aligns with international conventions, such as those on oil pollution and nuclear energy, the practical application in Indonesia has been limited due to unfamiliarity with strict liability concepts among the judiciary (Elnizar, 2018). However, if fully implemented, strict liability could streamline environmental litigation, making it easier for prosecutors to hold offenders accountable and incentivizing businesses to comply with environmental standards.

The environmental law's emphasis on a biocentric perspective marks a significant shift from anthropocentric models. While earlier laws prioritized human-centered development, recent legislation acknowledges the intrinsic value of all species and promotes a holistic view of ecological relationships. This biocentric approach positions all living beings as interconnected, with humans as part of a broader ecological system rather than the dominant species (Kotzé, 2014). The Anthropocene, a term describing human-driven environmental changes, underscores the urgency of adopting biocentric values to prevent further ecological degradation and foster sustainable coexistence. Furthermore, Indonesia's environmental law encourages integrated environmental management across national and regional levels, supporting decentralization efforts. This cooperation aligns with sustainable development principles, promoting efficient resource management that balances economic growth with conservation efforts (Roy & Tisdell, 1999). The objectives of Indonesia's environmental policies, including the promotion of green development, aim to sustain natural resources for future generations, supporting justice and equity in resource distribution (Megwai et al., 2016).

3.3 Biocentrism as urban planning for biodiversity

Biocentrism’s integration into Indonesia's urban planning and conservation efforts reflects a complex dialogue between human needs and the intrinsic value of ecosystems,

mirroring global discussions around biodiversity protection. The expansion of urban areas in Indonesia often places significant strain on natural habitats that were originally settled by species now forced to adapt or relocate due to anthropogenic pressures. This biocentric perspective contrasts with the largely anthropocentric approaches seen in international conservation reports, where biodiversity is frequently framed in terms of the utility to humans. For instance, the 1972 UN Stockholm Conference and the 1987 WCED Brundtland Report outlined an anthropocentric rationale that prioritizes environmental conservation primarily to support human economic and social development (Taylor et al., 2020). This perspective emphasizes the protection of natural resources to ensure human well-being, relegating nonhuman species to instrumental roles in advancing human-centered goals. However, the biocentric ideals highlighted by the United Nations Environment Programme (UNEP) at the 1992 Rio Earth Summit began to shift the discourse towards recognizing the intrinsic value of biodiversity. The summit's Convention on Biological Diversity highlighted the ecological, genetic, social, and aesthetic values of biodiversity, acknowledging its worth beyond human utility (Taylor et al., 2020). This shift aligns with Indonesia's conservation efforts, which aim to preserve biodiversity for its own sake, especially in protected areas. These areas span both terrestrial and marine ecosystems, covering over 12% of Indonesia's landmass and 3% of its waters, demonstrating a commitment to a more biocentric framework (UNEP-WCMC, 2024). Despite these steps, challenges in effectively managing and assessing these protected zones remain, with only a fraction evaluated under Protected Area Management Effectiveness (PAME) metrics, emphasizing the need for ongoing efforts to align conservation practices with biocentric values.

International conservation frameworks continue to reflect anthropocentric undertones, as seen in the Millennium Ecosystem Assessment, which focuses on "nature's contributions to people" (NCP), underscoring ecosystem services as essential for human existence (Taylor et al., 2020). This emphasis on human benefit can undermine the moral rationale for conserving all species, as the theory of functional redundancy suggests that the extinction of certain species may not affect ecosystems if their roles are filled by other organisms (Loreau, 2004). Yet, many conservationists argue for a shift toward biocentric and ecocentric rationales, as promoted by thinkers like Leopold, who espoused a "land ethic" in which the moral worth of ecosystems and species lies in their contribution to the integrity and stability of the biotic community (Umar & Winarso, 2022). This biocentric perspective resonates with Indonesia's approach to urban biodiversity, as the country faces increasing environmental pressures from urbanization and resource exploitation. Urban planning initiatives that integrate biodiversity, such as green urbanism and biophilic city designs, encourage a balanced approach to development that respects ecological integrity. According to Puppim de Oliveira et al. (2010), cities have unique opportunities to support biodiversity by providing environmental awareness among residents and implementing locally effective policies (Umar & Winarso, 2022). By aligning urban planning with socio-ecological approaches, Indonesia can address environmental challenges while implementing ethical responsibility towards nonhuman life, promoting a kinship-based ethic that aligns with global calls for biocentrism and ecocentrism (Taylor et al., 2016). By protecting natural habitats within both urban and rural areas, Indonesia upholds the intrinsic value of its diverse ecosystems, ensuring that conservation policies benefit all life forms, not solely human populations. This approach reaffirms a moral obligation to protect biodiversity, implementing values that are increasingly recognized globally as crucial for sustaining ecological and social resilience (Taylor et al., 2020).

3.4 Practical need for biocentrism in conversation

The practical need for biocentrism in conservation arises from the limitations of anthropocentric approaches, which often prioritize human needs and interests above environmental well-being. While pragmatist philosophers argue that once people understand the environmental facts, anthropocentric values should be sufficient to inspire action, environmental history suggests otherwise. Despite decades of global environmental

summits, such as the Stockholm Conference and Rio Earth Summit, and the emergence of sustainable development as a global priority, humanity has continued to drive toward ecological crisis. This historical trend underscores that anthropocentric values alone may lack the depth needed to inspire meaningful conservation action and transformative policies. Biocentrism, by expanding moral consideration to nonhuman entities, provides a richer ethical foundation for conservation that is not solely based on human utility. Researchers argue that purely human-centered arguments for conservation offer, at best, a utilitarian rationale, which may fail to inspire visionary proposals, such as the "nature needs half" initiative, which advocates protecting at least 50% of Earth's ecosystems (Locke, 2013; Taylor et al., 2020). Such ambitious proposals, endorsed by the European Parliament and backed by a growing movement, reflect values that recognize biodiversity's intrinsic worth beyond its role in human well-being (European Parliament, 2020). This perspective is crucial for addressing large-scale ecological issues, as those with biocentric values have historically led the conservation movement, driven by a sense of moral responsibility toward all forms of life (Taylor et al., 2020).

Adopting biocentric values in conservation would allow for visionary initiatives, such as granting legal rights to natural entities (Chapron et al., 2019). These concepts challenge traditional conservation practices, where natural resources are often valued based on economic benefits to humans. Yet, as shown by UNESCO's biosphere reserves and the EU's Natura 2000 network, incorporating biocentric perspectives into policy can build more inclusive models of protected area management that balance human needs with biodiversity preservation (Taylor et al., 2020). This balance is essential for reducing conflicts between conservation goals and human livelihoods, especially in cases where human relocation or changes in land use may be necessary to protect critical habitats (Pimm et al., 2014). In Indonesia's protected areas, where biodiversity and human communities coexist, the biocentric approaches can promote ethical conservation policies that respect both human rights and ecological integrity. By integrating biocentrism into conservation policies and international frameworks, such as the IPBES and Convention on Biological Diversity, can implement the development of environmentally sustainable and equitable societies. Previous studies argue that the current anthropocentric frameworks often fall short in protecting ecosystems, as they are largely based on the concept of ecosystem services that benefits humans (Kopnina, 2016; Piccolo, 2017; Washington et al., 2017). Shifting toward biocentric values would encourage conservation policies that prioritize biodiversity conservation as a moral obligation rather than solely a practical necessity. Biocentric thought, by promoting intrinsic respect for nonhuman life, could reshape conservation policy at local, national, and global levels, building a collective responsibility to preserve the ecological systems essential for all life on Earth (Taylor et al., 2020).

3.5 Biocentrism: Hopes and concerns

Biocentrism, as an ethical framework that recognizes the intrinsic value of all living beings, brings both hopes and concerns regarding its application in environmental conservation and societal attitudes. Biocentrism, like ecocentrism, seeks to shift focus from a human-centered view of nature to one that values all life forms for their own sake, emphasizing a moral duty to protect all species and ecosystems, regardless of their utility to humans. The works of Aldo Leopold and J. Baird Callicott have laid foundational principles in ecocentric and biocentric thought, advocating for a holistic approach to ecology that recognizes the interconnectedness and mutual dependencies of life within ecosystems. By focusing on the collective well-being of ecosystems, biocentrism can drive policies and actions that transcend short-term, human-centered interests and build long-term sustainability. The primary hope associated with biocentrism is its potential to create a moral foundation that emphasizes the inherent worth of all life, potentially leading to more robust and comprehensive conservation strategies. By valuing organisms and ecosystems for their roles within the natural world rather than their economic value,

biocentrism encourages protective actions that are not solely driven by human benefit (Guczalska, 2023). This shift could support a wide array of ecological benefits, such as the preservation of biodiversity and the protection of vital habitats, and can help to counter destructive anthropocentric practices that prioritize short-term gains over ecological health. Proponents argue that biocentrism provides an ethical framework that can promote more sustainable, harmonious interactions between humans and the environment, building respect for all life forms and protecting ecosystems from exploitative practices (Taylor et al., 2020).

However, biocentrism faces several concerns, particularly regarding its practicality and acceptance in human-centered societies. Biocentric principles can be challenging to adopt widely, especially in communities where anthropocentric perspectives dominate, valuing nature primarily for its resources and economic contributions to society (Guczalska, 2023). Additionally, biocentrism's call for equal moral consideration of all life forms often leads to tensions with human development and cultural practices. For instance, in agricultural and urban planning contexts, prioritizing the rights of ecosystems and species may conflict with development goals and societal needs for food, housing, and industry (Comstock, 1995). This tension is evident in debates over sustainable development, where human needs and environmental protection are often at odds, creating ethical dilemmas that question the feasibility of fully biocentric approaches. Moreover, critics argue that biocentrism lacks clear guidelines for resolving conflicts between the needs of different species or ecosystems, especially in complex situations where intervention may be necessary to maintain ecological balance. While biocentrism supports the idea of non-interference with natural processes, in practice, human intervention is sometimes required to prevent species extinction or to restore degraded ecosystems. Such cases reveal limitations within biocentric ethics, as it struggles to provide clear directives in scenarios where inaction could lead to irreversible ecological damage. So, while biocentrism holds promise for providing an ethic of respect and protection for all forms of life, its implementation raises questions about feasibility, cultural acceptance, and the resolution of ecological conflicts. The approach requires a significant cultural and ethical shift, moving away from a human-centered worldview to one that considers the intrinsic worth of all life. For biocentrism to gain traction, proponents may need to balance its principles with practical strategies that address both human and environmental needs, potentially integrating biocentric values with adaptive and sustainable development frameworks (Guczalska, 2023).

3.6 Recommendations

Indonesia's environmental governance should integrate ecocentric and biocentric principles into its laws and regulations, placing ecosystem health and biodiversity protection at the core of all conservation and land-use policies. This integration requires clear policies that restrict human activity in sensitive ecosystems and encourage sustainable resource management. In parallel, comprehensive environmental education programs should be implemented across educational levels to instill these values early on, while fostering community engagement in conservation efforts to strengthen local stewardship and raise awareness of nature’s intrinsic value. Additionally, increasing government funding and forming partnerships with non-governmental organizations are essential to expand conservation resources, particularly for marine ecosystems and under-assessed terrestrial protected areas. Enhancing resources for Protected Area Management Effectiveness (PAME) evaluations will ensure better management of conservation zones. To address conflicts between conservation goals and community livelihoods, conflict resolution mechanisms should be established, including alternative livelihood programs like eco-tourism and sustainable agriculture that align with conservation aims. Urban planning must also adapt to incorporate biocentric principles, employing strategies such as green urbanism, biophilic design, and protected green spaces to mitigate the ecological impact of cities and support urban biodiversity. Lastly, adopting legal frameworks that

recognize the rights of nature could provide a stronger ethical and legal foundation for biodiversity conservation, reinforcing the protection of ecosystems and species by acknowledging their intrinsic value beyond human utility.

4. Conclusions

The shift from anthropocentrism to biocentrism and ecocentrism in Indonesia's protected-area management reflects an evolving recognition of the intrinsic value of nature, aligning with global conservation ethics that prioritize biodiversity for its own sake rather than solely for human benefit. As one of the world's most biodiverse countries, Indonesia faces unique challenges in balancing economic development with ecological preservation. The integration of deep ecology and biocentrism into Indonesia's environmental policies can help address these challenges by promoting a sustainable coexistence between human activities and natural ecosystems. However, practical issues, including limited resources, conflicts of interest, and varying levels of environmental awareness, pose challenges to adopting ecocentric policies on a national scale. Effective implementation requires not only policy reform but also a shift in public perception and increased environmental education to foster an ethic of respect for all life forms.

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Appendix 1. Area of forest regions and marine conservation areas in indonesia based on the decree of the minister of environment and forestry, 2017-2022

Year	Water Area (Ha)	Land Area (Ha)	Total Conservation Area (Ha)	Protected Forest (Ha)	Limited Production Forest (Ha)	Permanent Production Forest (Ha)	Convertible Production Forest (Ha)	Total Land Area of Forest Region (Ha)	Total Land and Water Area of Forest Region (Ha)
2017	5,321,321	22,108,831	27,430,152	29,661,315.37	26,787,910.7	29,220,318.67	12,822,778.99	120,601,155.7	125,922,474.7
2018	5,321,321	22,101,271	27,422,592	29,661,015.37	26,787,910.7	29,202,047.67	12,847,548.99	120,599,794.7	125,921,113.7
2019	5,321,321	22,088,573.4	27,409,894.4	29,578,158.29	26,772,377.04	29,215,611.55	12,840,981.68	120,495,703	125,817,022
2020	5,321,321	22,088,573.4	27,409,894.4	29,578,158.29	26,772,377.04	29,215,611.55	12,840,981.68	120,495,703	125,817,022
2021	4,763,621	22,596,999.4	27,360,620.4	28,975,933.29	26,537,181.04	30,803,322.78	12,938,748.68	121,852,186.2	126,615,806.2
2022	5,321,321	22,086,347.4	27,407,668.4	29,560,152.29	26,802,781.04	29,228,418.28	12,794,164.68	120,471,864.7	125,795,306.2

(BPS, 2024)

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