

## ENVIRONMENTAL CONSERVATION AND PRESERVATION BASED ON ECOLOGY MAINTENANCE

**Dadi Dadi**

Universitas Galuh Ciamis, Indonesia

**Bagus Kukuh Udiarto**

Badan Riset dan Inovasi Nasional Indonesia

Email: [dadi@unigal.ac.id](mailto:dadi@unigal.ac.id)

### **Abstract**

Every organism has its own environment and will do whatever it takes to live. However, over time it is hazardous to some coexisting organisms, particularly people and nature. Ecosystem is also a coherent entire and comprehensive order between all environmental factors that influence one another. The purpose of this paper is to investigate conservation and environmental preservation in light of ecological maintenance. This study employs a qualitative, descriptive methodology. In the midst of the threat posed by the global environmental catastrophe, the study's findings indicate that environmental conservation has become a genuine topic of discussion. Because the environmental issue is considered to be the most significant concern of this century, affecting both current and future generations. Experts have determined that the environmental crisis has resulted in a variety of natural disasters, climate change, global warming, a decline in the quality of life, and the imminent annihilation of the planet. Therefore, people throughout the world are continually searching for a global solution to this dilemma. It is essential to formulate environmental conservation policies based on the current state of events.

**Keywords:** Ecology, Ecosystem, Conservation, Preservation, Environment.

### **A. INTRODUCTION**

Every living thing will depend on each other and every living thing will try to maintain it in their respective ecosystems so that they reach a stable condition until the climax (Utina, 2015). This stable condition will be obtained by every living creature when all their needs are met and reciprocity between living things runs smoothly (Prasetyo, 2017). However, every year humans experience a very high population increase which is accompanied by technological developments that are also increasing rapidly (Setianingsih & Ersina, 2015).

Humans are a part of nature that must preserve the ecosystem's balance to ensure its survival. Humans have assumed until now that they are not a part of nature, hence they are free to utilize everything in nature. The environment influences human life, and human life influences the environment (Syarif, 2017). The existence of humans cannot be divorced from their environment. Thus, the environment becomes a vital component of human life in order to fulfill its requirements (Maghfur, 2010). Despite the fact that the environment is one of the natural resources utilized by all living creatures. Natural resources are an indivisible component of an ecosystem, which is a system of interdependent relationships between living organisms and their environment. Massive

use of current natural resources without consideration for their long-term consequences causes environmental degradation (Effendi et al, 2018).

The advancement of science and technology, as well as the rapid expansion of industry at this period, have their own beneficial and harmful effects (Rusdina, 2015). The negative consequence is environmental degradation. There are two causes of environmental damage: natural influences and human activity elements. Natural elements include natural calamities and unpredictability of the weather. Natural disasters such as floods, landslides, tsunamis, volcanic eruptions, and earthquakes are not only hazardous to human and animal life, but also to the ecosystem (Widodo et al, 2021). Human activities that are not environmentally friendly, such as logging and forest conversion, mining, as well as air, water, and soil pollution, contribute to the human activity factor (Nurjaya, 2009).

Natural resources that have been the main supporter of national development need to be considered for sustainable management in order to meet the interests of current and future generations (Wulandari & Ilyas, 2019). For this reason, various policies, efforts, and sustainable activities have been implemented to maintain the existence of natural resources as capital in national development in order to realize the welfare of the entire nation while maintaining the carrying capacity and functions of the environment (Pongtuluran, 2015).

Until now there are still various damages, pollution, and natural disasters due to the management of natural resources and the environment that overrides the sustainability of environmental functions (Sinarmata et al, 2021). This is a challenge in improving the function of the environment as the provision of natural resources for national development. Currently, the problems faced in natural resource management and environmental sustainability are increasingly complex because the impacts of climate change are already felt and are expected to increase if not anticipated through adaptation, mitigation and conservation activities (Arsyad & Rustiadi, 2008). This activity is an effort or action to maintain the existence of natural resources continuously both in quality and quantity, so as to save the use of natural resources and treat them based on natural law (Arida & Sunarta, 2017).

When it is being developed, the order of the surrounding environment as well as the social environment should constantly be taken into consideration so as to avoid a variety of different forms of catastrophes. Instilling an understanding of the concepts of ecology and environmental ethics is one way to increase people's awareness of how important it is to preserve the environment and protect it (La Fua, 2014). Therefore, the level of one's participation in the protection of the environment will correspond directly to the level of one's comprehension of the idea of ecology as well as the level of one's understanding of environmental ethics. On the other hand, a person's level of participation in the process of maintaining the environment is proportional to how well they comprehend ecological principles as well as environmental ethics (Yuono, 2019).

It should be understood about the Conservation of Natural Resources and Environment based on ecology and the environment based on the types and patterns of natural resources and the environment; analyzing and synthesizing areas and conducting regional evaluations with an approach to space, ecology, and area complexes based on the conservation of natural resources

and the environment; and analyzing and synthesizing areas and conducting regional evaluations with an approach to space, ecology, and area complexes based on the conservation of natural resources and the environment.

## **B. METHOD**

In this research, the author used a qualitative methodology. According to Miles and Huberman (1994), qualitative technique attempts to disclose the uniqueness of individuals, groups, communities, and/or organizations in everyday life in a manner that is thorough, detailed, in-depth, and scientifically credible. Qualitative research is holistically based on a natural backdrop, puts humans as research tools, conducts inductive data analysis, is more concerned with the process than the outcomes, and the conclusions of the research are agreed upon by the researcher and the research subject. The use of a qualitative technique in this research is based on the fact that the challenges examined in this study pertain to environmental conservation and preservation from an ecological perspective. In addition, the qualitative technique is more sensitive and adaptive to the numerous intensifications of shared influences on the value patterns found and changing circumstances during the investigation (Moleong, 2018).

In this study, qualitative methodology and descriptive research will be utilized. According to Arikunto (2010), descriptive research is research that examines the topic of study as a system, i.e., the object of study is viewed as a unit composed of interconnected elements, and it characterizes existent phenomena. Descriptive technique involves describing, enhancing, and interpreting the conditions of events and processes occurring in the context of the problem.

## **C. RESULT AND DISCUSSION**

### **Conservation**

Conservation refers to human efforts to conserve or protect nature. Conservation (conservation) is the act of preserving or safeguarding. Conservation literally derives from the English word conservation, which meaning preservation or protection. In the meanwhile, environmental science explains conservation as follows:

1. Efforts to increase energy efficiency in energy use, production, transmission, or distribution that reduce energy consumption result in the same level of service.
2. Protecting and managing the environment and natural (physical) resources with care;
3. Management of steady quantities during chemical processes or physical transformations;
4. Asylum efforts and long-term environmental protection;
5. A concept that the natural ecosystem of an area can be managed while retaining the genetic variety of animals.

Conservation is the overall process of managing a location such that its cultural significance is maintained (Arsyad, 2009). Conservation is the ongoing upkeep and protection of anything to prevent harm and destruction through preservation (Salim & Salim, 1991). Conservation efforts are always associated with a specific area, where the term 'area' refers to an area whose primary role is protection or agriculture (Rachman, 2012). Protected area is an area declared with the

primary purpose of safeguarding environmental sustainability, including natural resources, artificial resources, and historical and cultural assets of the nation for the sake of sustainable development. On the basis of the conditions and potential of natural resources, human resources, and artificial resources, a cultivation area is determined with the primary function of being cultivated.

Conservation can also be regarded from an economic and ecological perspective, where conservation from an economic viewpoint is the allocation of natural resources for the present, and conservation from an ecological viewpoint is the allocation of natural resources for the present and the future. Conservation is the administration of air, water, soil, and minerals to living species, including humans, in order to improve the quality of human existence, whereas management operations include surveys, research, administration, preservation, education, use, and training (IUCN, 1968). Conservation is the management of human usage of the biosphere in order for it to offer or fulfill large and regenerative advantages for future generations (WCS, 1980).

Natural resource conservation activities, including; rational use of natural resources including their reuse through recycling, as well as their protection from damage. Conservation is also a form of human activity in managing organisms and their ecosystems in such a way that their use can be sustainable. Conservation actions include protection, maintenance, rehabilitation, restoration, and improvement of populations and ecosystems to achieve sustainable use of organisms and ecosystems (Wardhani, 2011). This also relates to several basic implementations of conservation in the modern sense, namely; maintenance, repair, utilization, conversion, efficiency, recycling, and integration (Situmorang, 2011).

Management of the use of living natural resources in a sustainable and environmentally responsible manner for the benefit of present and future generations is the paradigm of conservation of living natural resources. The activities are to utilize biological resources, distribute the benefits of biological natural resources, and not to damage biological natural resources. Ecosystem restoration is an effort to restore the condition of forests or landscapes with the aim of regaining biodiversity and non-biological diversity, and creating a balance between biodiversity and ecosystems.

The objectives of natural resource conservation that will be carried out are (1) Maintaining the quality of the environment by taking into account the aesthetics and needs of ecotourism as well as the results and (2) Maintaining the continuation of the use of plant, animal and other useful materials, by creating a balanced cycle between planting or propagation by new individual growth or renewal of material. Therefore, the conservation carried out also includes the protection of living systems, the preservation of genetic resources and the sustainable use of flora and fauna.

### **Ecology and environment**

Ecology has progressed throughout the course of human history. Ancient manuscripts by Hippocrates, Aristotle, and other thinkers contain references to ecological issues, even though the term ecology had not yet been used. Stauffer (1957) defines ecology as the entire study of the connection between organisms and their environment. In the 18th and 19th centuries, many prominent scientists contributed concepts to this discipline, but they did not use the term "ecology."

In the 1700s, Antony van Leeuwenhoek, who is most renowned for his contributions to microscopy, also pioneered the study of food chains and population regulation (Egerton, 2013). According to his writings, English botanist Richard Bradley understood the subject of biological productivity effectively (Egerton, 2013). These three fields are essential to contemporary ecology (Utina, 2015).

Ecology is also known as the science of the reciprocal relationship between living things with each other and with non-living things around them. Living things in the case of agriculture are plants, while the environment can be in the form of water, soil, nutrients, and others. But nowadays ecology is better known as "the study of the structure and function of nature". Even ecology is known as the study of the household of living things. Ecology is a new discipline from Biology which is a physical link and biological processes as well as forms that bridge between natural and social sciences (Pinontoan & Sumampouw, 2019).

At first ecology was part of the biological sciences (life sciences), which was divided into two based on the division of vertical layers and taxonomic layers (keratan). Vertical layers, for example: morphology (the study of the outer shape of the body), anatomy (the study of the inside of the body), physiology (the study of the physiology of living things), genetics (the study of heredity), ecology (the study of the houses of living things), histology (the science of microscopic tissue), embryology (the study of embryonic development), evolution (the study of the development of living things from the simple to the perfect), teratology (the study of the possibility of a baby being deformed in the womb), organology (the study of organs), ontogeny (the science of the development of living things from embryo to maturity), and so on. Meanwhile, based on taxonomic layers, for example: mycology (study of fungi), microbiology (science of microorganisms), entomology (science of insects), ornithology (science of birds), botany (science of plants), zoology (science of animals), bacteriology (study of bacteria), virology (science of viruses), and so on.

Ecology has a very broad scope, initially only studying living things, from living things that have the simplest (low) level of organization to the most complex (high) level of organization which includes:

1. **Molecule.** A molecule is a collection of elements that form a chemical compound. Molecules will make up cell organelles, such as: plasma cell membranes which are composed of protein molecules.
2. **Organism.** An organism is a living body or living thing, which is a collection of organ systems that make up an individual.
3. **Population.** Population is a group of living things of one species that live in the same habitat. Habitat is the place where an organism lives. In the population, interactions occur between species, such as: breeding, mating, protecting each other, and so on.
4. **Community.** Species diversity is the variety of different types of organisms that make up a community. While the community is a collection of populations of various species of living things that interact with each other and occupy the same environment.

The concept of ecology itself is the relationship and dependence between all components of the ecosystem that must be maintained in a stable and balanced (homeostatic) condition. Homeostasis is the tendency of biological systems to resist change and stay in balance. Ecosystems are able to maintain and regulate themselves as well as their constituent components, namely organisms and populations. Thus, the ecosystem can be considered a cybernetic in nature (Armawi, 2013).

There are two approaches used in studying plant ecology, namely autecology and synecology. Autecology (species ecology) is the study of the life history of a plant species, its behavior, and its adaptation to the environment; while synecology (community ecology) is the study of groups of plant organisms that are united in one unit and interact with each other in certain areas (Jayadi, 2015). There is also an ecological division according to their habitat, namely:

- Marine or marine ecology, one of the marine ecology is tropical marine ecology.
- Estuary ecology, Estuary is part of the aquatic environment which is a mixing area between sea water and fresh water originating from rivers, other freshwater sources (fresh water canals and freshwater pools).
- prairie ecology

The notion of the human environment or often called the environment, is actually rooted in the application of ecology. The environment is a study of human attitudes and behavior with their responsibilities and obligations in managing the environment. The definition of the environment according to Law Number 23 of 1997, is a living system which is a unitary space with all objects, conditions, power and living things including humans and their behavior that affects the continuity of life and the welfare of humans and other living creatures.

According to Otto Soemarwoto (1991) in the book environmental law and development ecology. Environment is the sum of all the objects and conditions that exist in the space we occupy that affect our lives. The environment is a complex system that is outside the individual that affects the growth and development of organisms. The paradigm of environmental science (environmental science) is a scientific method to deal with complex human life under the order of the universe, so that it is a combination of human law and natural law based on theory, tools and applications referring to the components of human values through professional skills and scientific systematics. On the basis of this understanding, environmental science is a pure monolithic science.

The emergence of ecology is certainly very helpful in the process of environmental preservation, because at the beginning of the emergence of ecology or before ecology was famous, people rarely paid attention to the environment. Most naturalists don't consider shooting an animal to learn it's wrong. In addition, in the 19th century, the tradition of treating wildlife as a renewable natural resource continued. Until the twentieth century began, such events helped develop a new perspective on nature. One view is purely pragmatic: in order to exploit various natural resources, they must sometimes be conserved. The second view or what is called preservationism involves a change in a more fundamental way of thinking where the idea that nature has intrinsic value and must be protected for the sake of nature itself. Both views are an important part of today's environmentalism. Based on the explanation above, we can conclude that the presence of ecology greatly influences human thinking in terms of environmental conservation. After the emergence

of ecology, humans no longer carry out poaching and of course this has an impact on the population of these animals. It also proves that ecology has a close relationship with environmental conservation.

There are also research results that conclude that a person's participation in preserving the environment can be influenced by understanding the concept of ecology and environmental ethics. This means that the higher the understanding of ecological concepts and the higher the environmental ethics, the higher one's participation in preserving the environment. Conversely, the lower the understanding of ecological concepts and the lower the environmental ethics, the lower one's participation in preserving the environment. The results of the study are in accordance with the opinion of Otto Soemarwoto that understanding the concept of ecology is the survival of living things that prioritizes the reciprocal relationship between humans and other living things on earth. Environmental ethics is a human concern for the environment that is not centered on individuals with moral status. Humans should not destroy the environment because they have morals.

As stated by Otto Sumarwoto, environmentally friendly behavior is an act or human action in protecting the environment so that its sustainability is maintained. Participation can be done by means of self-conscious efforts to maintain or improve the quality of the environment so that survival can be maintained. Changes in participation in the environment can use nature according to their needs without destroying the environment. From the discussion of the theory above, it is stated that the understanding of the concept of ecology and environmental ethics possessed by humans will be related to human participation in conserving the environment.

#### D. CONCLUSION

Consumption that is wasteful as a result of the effect of contemporary technology, which is founded on the philosophy of materialism-positivism, has also brought quite a major impact on the continuation of transgeneration in the future. This is due to the fact that humans have depleted and controlled natural resources without taking into account the role that the environment plays in maintaining life. It is possible to increase awareness in the fight to carry out conservation actions by having a deeper understanding of ecological ideas as well as having an understanding of environmental ethics. In the realm of conservation, activities can also include the intelligent use of natural resources, the preservation of environmental quality through consideration of the aesthetics, requirements, and outcomes of ecotourism, and the preservation of the continuation of the use of plant, animal, and other useful materials through the establishment of a breeding and planting cycle that is in balance with one another. through the creation of new people or the recycling of old materials.

#### REFERENCES

1. Arahman, A., Afifuddin, M., & Yusuf, S. (2018). Studi konservasi bangunan cagar budaya di dalam kawasan rencana pengembangan pelabuhan bebas Sabang. *Jurnal Arsip Rekayasa Sipil dan Perencanaan*, 1(1), 43-52.

2. Arida, N. S. N. S., & Sunarta, N. (2017). Pariwisata berkelanjutan. *Pariwisata Berkelanjutan*.
3. Arikunto, S. (2010). Metode penelitian. *Jakarta: Rineka Cipta*.
4. Armawi, A. (2013). Kajian filosofis terhadap pemikiran human-ekologi dalam pemanfaatan sumberdaya alam (philosophical studies of human ecology thinking on natural resource use). *Jurnal Manusia dan Lingkungan*, 20(1), 57-67.
5. Arsyad, S. (2009). *Konservasi Tanah & Air*.
6. Arsyad, S., & Rustiadi, E. (Eds.). (2008). *Penyelamatan tanah, air, dan lingkungan*. Yayasan Pustaka Obor Indonesia.
7. Effendi, R., Salsabila, H., & Malik, A. (2018). Pemahaman tentang lingkungan berkelanjutan. *Modul*, 18(2), 75-82.
8. Egerton, F. N. (2013). History of ecological sciences, part 47: Ernst Haeckel's ecology. *Bulletin of the Ecological Society of America*, 94(3), 222-244.
9. La Fua, J. (2014). Aktualisasi Pendidikan Islam dalam Pengelolaan Lingkungan Hidup Menuju Kesalehan Ekologis. *Al-TA'DIB: Jurnal Kajian Ilmu Kependidikan*, 7(1), 19-36.
10. Maghfur, M. (2010). Pendidikan lingkungan hidup dan masa depan ekologi manusia. In *Forum tarbiyah* (Vol. 8, No. 1, pp. 57-71). Fakultas Tarbiyah IAIN Pekalongan.
11. Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. sage.
12. Moleong, L. J. (2018). Metode penelitian kualitatif, cetakan ke-37. *Bandung: PT. Remaja Rosdakarya*.
13. Nurjaya, I. N. (2009). Menuju Pengakuan Kearifan Lokal dalam Pengelolaan Sumberdaya Alam, Perspektif Antropologi Hukum. *Jurnal Kertha Wichaksana*, 15(2).
14. Pinontoan, O. R., & Sumampouw, O. J. (2019). *Dasar Kesehatan Lingkungan*. Deepublish.
15. Pongtuluran, Y. (2015). *Manajemen sumber daya alam dan lingkungan*. Penerbit Andi.
16. Prasetyo, L. B. (2017). Pendekatan ekologi lanskap untuk konservasi biodiversitas. *Bogor: Fakultas Kehutanan, Institut Pertanian Bogor*.
17. Rachman, M. (2012). Konservasi nilai dan warisan budaya. *Indonesian Journal of Conservation*, 1(1).
18. Rusdina, A. (2015). Membumikan etika lingkungan bagi upaya membudayakan pengelolaan lingkungan yang bertanggung jawab. *Jurnal Istek*, 9(2).
19. Salim, P., & Salim, Y. (1991). *Kamus bahasa Indonesia kontemporer*.
20. Setianingsih, S., & Ersina, S. (2015). Penataan Tepian Sungai Cenranae Dengan Pendekatan Ekologis Di Kota Sengkang. *Nature: National Academic Journal of Architecture*, 2(1), 27-35.
21. Simarmata, M. M., Sudarmanto, E., Kato, I., Nainggolan, L. E., Purba, E., Sutrisno, E., ... & Karim, A. (2021). *Ekonomi Sumber Daya Alam*. Yayasan Kita Menulis.
22. Situmorang, J. R. (2011). Pemasaran hijau yang semakin menjadi kebutuhan dalam dunia bisnis. *Jurnal Administrasi Bisnis*, 7(2).
23. Soemarwoto, O. (1991). *Ekologi lingkungan hidup dan pembangunan*.

24. Stauffer, R. C. (1957). Haeckel, Darwin, and ecology. *The Quarterly Review of Biology*, 32(2), 138-144.
25. Syarif, E. (2017). Environmental Management in Local Wisdom Perspective of Karampuang People, Sinjai District, South Sulawesi. *Sainsmat: Jurnal Ilmiah Ilmu Pengetahuan Alam*, 6(2), 154-161.
26. Utina, R. (2015). *Ekologi dan Lingkungan Hidup*. UNG Press.
27. Wardhani, M. K. (2011). Kawasan konservasi mangrove: suatu potensi ekowisata. *Jurnal Kelautan: Indonesian Journal of Marine Science and Technology*, 4(1), 60-76.
28. Widodo, D., Kristianto, S., Susilawaty, A., Armus, R., Sari, M., Chaerul, M., ... & Mastutie, F. (2021). *Ekologi dan Ilmu Lingkungan*. Yayasan Kita Menulis.
29. Wulandari, A. S. R., & Ilyas, A. (2019). Pengelolaan Sumber Daya Air di Indonesia: Tata Pengurusan Air dalam Bingkai Otonomi Daerah. *Gema Keadilan*, 6(3), 287-299.
30. Yuono, Y. R. (2019). Melawan Etika Lingkungan Antroposentris Melalui Interpretasi Teologi Penciptaan Sebagai Landasan Bagi Pengelolaan-Pelestarian Lingkungan. *Fidei: Jurnal Teologi Sistematis dan Praktika*, 2(1), 186-206.