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Impact Of Human Activities On Biodiversity And Conservation: An Overview

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ABSTRACT -

Human activities that harm biodiversity have reached increasingly higher thresholds in the modern era. Human actions that significantly negatively influence ecosystems and biodiversity include forestation, overfishing, pollution, and climate change. These activities have resulted in a reduction in the diversity of life on Earth. Biodiversity provides enormous ecological, social, and economic benefits and is critical for maintaining natural balance. To counterbalance the negative impacts of human activity on biodiversity, conservation efforts are required to protect species and their habitats, conserve genetic variety, and support the sustainable use of natural resources. Conservation operations can be carried out in various ways, including protected areas, environmentally sound farming and fishing methods, and the execution of environmental regulations. The consequences of this biodiversity decline are far-reaching impact, including ecosystem resilience, resource availability, and the ability to respond to environmental change. The severity and root causes of habitat degradation and biodiversity loss must be determined. Furthermore, priority areas for conservation efforts may be identified, and the establishment of environmental regulations must be considered. The main purpose of this research paper is to determine human activities; impact on biodiversity and the necessary conservation strategies.

Keywords: - Deforestation, Climate Change, Ecosystem, Biodiversity, Environment.

INTRODUCTION

The impact of changing climate is likely to have an influence on biodiversity. Biodiversity transformation is instinctive. Forests play a crucial role in preserving ecological balance by regulating climate, preventing soil erosion, and sustaining soil fertility. They also shelter wild animals.[1]Many people do not think about the impairment they are producing on biodiversity. However, without biodiversity, there would be no human subsistence so it is essential to imagine the impact on biodiversity due to human activities. If there are no modifications in the use of resources on earth by the human beings, there will concede to be a declension of biodiversity until human lives can no longer be replenished. Due to human activities, biodiversity has been seriously affected which results changing in their lifestyles and causing the damage to habitats for species. Due to human activities, it severely impacts on biodiversity which results into causing the damage to habitats for species. It is essential for humans to recognize the impact of their actions on biodiversity and understand the importance of preserving the remaining biodiversity on our planet.

Through new government policies and proper education we can preserve the biodiversity due to this way human population will be able to sustain life on earth for a longer time period.[2] Everyone in the world rely on natural ecosystems to dispense their sources for a healthy and secured life [Millennium Development Goal(MDG), 2010]. Humans have made unrivaled modifications in ecosystems in recent decades to meet their expanding populations and booming economy. Human activities have taken the universe to the edge of a significant wave of species extermination, moreover threatening our own well-being. The pressures on environment will increase globally in coming decades unless human activities change which seriously affect on biodiversity. [3]

Importance of Biodiversity

All species arrange few kind of functions to an ecosystem. All the species can store the energy, generate and decompose the organic material, help to reuse water and nutrients throughout the ecosystem and help to regulate the climate. These introspectively approaches are necessary for biosphere function and human survival. Disparate is the ecosphere better accomplished to combat environmental stress and inevitably is more efficient. The deprivation of a genus is thus probably to decrease the potentially of the system to conserve itself or to retrieve from damage or disruption. Just like a genus with high innate disparity, an ecosphere with high biodiversity may have a greater chance of reconciling to environmental change. In other words, the more species entailing an ecosystem, the more reliable the ecosystem is likely to be. For daily life, biodiversity is first resource for human beings. One important component of biodiversity is crop disparity, which is also called agro biodiversity. Biodiversity is used as an inception of substance for cultivating improved varieties, such as bio pesticides, bio fertilizers etc. During the primitive time period Wild plant species have been used

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[1]P. Leelakrishnan, *Environmental Law In India p.no.* 39 (Lexis Nexis Baatterworths Wadhwa, *3rd Edition*, 2008)

[2] Trisha Hostette, "Human Impact on Biodiversity", 2015. available at https://www.goshen.edu/bio/Biol410/bsspapers05/Trishahostette.htm (last visited on January 15, 2023).

[3] Alxandar Ramadoss, "Biodiversity Conservation through Environmental Education for Sustainable Development - A Case Study from Puducherry, India" Vol. 1, Issue 2, International *Electronic Journal of Environmental* Education 98 (2011)

for medicinal purposes. For example, opprobrium comes from the cinchona tree which is used to cure the malaria, digitalis from the foxglove plant which is used to cure the heart diseases including congestive heart failure and morphine from the poppy plant used to treat incredible pain. Over 70% of the promising anti-cancer drugs come from plants in the tropical rainforests according to the National cancer Institute. It is estimated that of the 2,50,000 re known plants species, only 5,000 have been investigated for possible medical applications.[4]. Biodiversity also serves crucial direct functions in supporting and maintaining human health. Real products have long been conceded as an important baseline of beneficially adequate medicines and more than 60% of the world's human inhabitants depend perfectly on plant medicine for predominant health care.[5]

Major Causation for the loss of variety of life on earth

The decline in Earth's biodiversity is a pressing concern with far-reaching consequences for ecological stability and human well-being. This loss is driven by a combination of interrelated factors, both human-induced and natural. Among the primary reasons are environmental pollution, destruction of natural habitats, overuse of biological resources, changes in climate, population explosion, and the strain exerted by economic development.

Pollution –

One of the leading contributors to biodiversity loss is pollution. Over time, living organisms have evolved in balance with their natural environments. However, in recent decades, increasing levels of pollution have disrupted this balance. Air pollution—caused by emissions of harmful substances such as carbon dioxide, sulfur dioxide, ammonia, and fine particulate matter—affects the respiratory health of animals and plants. In some cases, pollutants contribute to acid rain, which alters soil pH and damages sensitive ecosystems like forests and freshwater bodies. Water pollution is equally dangerous, as the release of untreated industrial waste, agricultural chemicals, and plastic debris into rivers, lakes, and oceans leads to oxygen depletion, destruction of aquatic habitats, and death of marine species. Soil pollution caused by excessive use of pesticides, heavy metals, and industrial chemicals degrades land quality and eliminates the microorganisms vital for healthy ecosystems.[6]

Habitat Loss –.

Current geographical and structural characteristics of natural habitats are results of long and complex adaptation process of ecological systems to specific environmental factors. These characteristics have strong interlinks with species which use their services in domain of air quality, fresh water, nutrients availability, shelter, etc. Through the process of evolution, habitats have experienced various influences affecting their stability and survival, leading to the development of a certain degree of resilience against environmental challenges. However, enormous modification in spatial features and quality of integral components of habitat

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[4] Alok Kumar Chandarakar, "Biodiversity Conservation in India: Technical Report", (2012). available at https://www.reseachgate.net/publication/277124537 (last visited on 25 January, 2023).

[5] Kevin J. Gaston and John I. Spicer, *Biodiversity: An Introduction* 93 (Blackwell Publishing company, second edition, 2004)

[6] Vijeta Singh, Shikha Shukla and Anamika Singh, "The principal factors responsible for biodiversity loss", *Open Journal of Plant Science.* available at https://www.peertechzpublications.com/articles/OJPS-6-126.php

change their aptitude to balance and to furnish main ecological services. Dealing with the deprivation of natural habitat is one of the main tasks and challenges of contemporary society because This activity is responsible for the global biodiversity crisis, which underpins the very survival of humankind.[7]

Overexploitation of preferred species-

Species are exploited for the purposes extending from food to medicines, shelter and fiber. In a world seemingly focused on depleting natural resources, overexploitation has emerged as the second leading threat to the survival of global bird, mammal, and plant species. Numerous of the species are threatened by hunting in tropical regions, though others are also endangered in mild and arctic zones by fishing, killing of wild animals, and other forms of exploitation. Exploitation is also the third most crucial driver of freshwater fish devastation events, behind the effects of habitat loss and introduced species. Numerous of the best-known effects of manipulation on populations involve the cases of hunting, fishing, logging, and related activities .[8]

Climate change-

Climate change has been emphasized as severe threats to biodiversity which are probably to be antagonistic for biodiversity. Modification in precipitation and temperature are two important facets of climate flexibility that are probably to have a direct and serious effect on India's biodiversity.

The United Nations Scientific Consortium has reported that the impacts of climate change on biodiversity are expected to grow in both scale and frequency as carbon dioxide levels and global temperatures rise, with extreme events such as heatwaves and storms becoming more frequent and intense. Increasing temperature will consequence water quality to decline and have negative impacts on aquatic organisms, with the probability of some species becoming extinct.[9]

Global Population and Economic Pressures-

The expeditious increase of human population is putting a remarkable exertion on our environment. Countries are developed continually day by day which results into environment pollution and exhaust its resources. So the situation is now that the developing countries are under pressure to engage economically and their industrial advancements are damaging as well. The stipulations that this growth places on our universal environment are threatening the future of sustainable life on planet[10]

The global human population, currently at 5.2 billion, has doubled since the early 1950s. This record shows that number of human beings impose expanding pressure on the earth's biological resources. The universal allocation of society has been modifying acutely.[11]

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[7] Boris Radić and Suzana Gavrilović, "Natural Habitat Loss: Causes and Implications of Structural and Functional Changes" 1 (2020). available at at: https://www.researchgate.net/publication/342794137

[8] John D. Reynolds and Carlos A. Peres, "Overexploitation", 253-255, available at https://www.researchgate.net/publication/235760582

[9] D. K. Soni and Farid Ansari, "Climate change and biodiversity; impacts, vulnerability and mitigation in Indian perspective: A review" 9 (1) *Journal of Applied and Natural Science* 633-634 (2017).

[10] Rahul Mital and Dr.Chandi Gupta Mittal, "Impact of Population Explosion on Environment" 1 *The National Journal* 1 (2013). available at http://weschool.rtmonline.in

[11]"A Report to the National Science Board –Loss of Biodiversity Global Crises Requiring International Solutions" page no.4. Available at https://www.nsf.gov/nsb/publications/1989/nsb0989.pdf

Impact of Biodiversity Loss Due to Human Activities

Community rely on biodiversity in their constantly lives, in ways that are not consistently manifest or appreciated. Human health basically relys upon biosphere materials and services (such as availability of fresh water, food and fuel sources) which are mandatory for good human hale and productive sustenance. Biodiversity loss can have powerful candid if ecosystem services are no longer sufficient to meet social needs. Incidentally, variation in ecosystem services influence livelihoods, earnings, local relocation and so on. Although, biological heterogeneity of microorganisms, flora and fauna maintain comprehensive benefits for biological, health, and pharmacological sciences. Deprivation in biodiversity may restrict the discovery of implicit treatments for many ailments and health problems.[12]

Concurrent climate alteration is the result of expanding climatic greenhouse gas concentrations, which is caused mainly by combustion of fossil fuel (coal, oil, natural gas), and by desertification, land use alterations, and cement production. Such enormous variations of the global carbon cycle has only been feasible because of the accessibility and formation of advanced technologies, fluctuating in application from fossil fuel expedition, extraction, dispensation, refining, and agitation in power plants and automobile engines and advanced farming practices.18% of all greenhouse gas emissions found in the atmosphere are due to livestock according to the 2006 United Nations/FAO report.

Hypothetical environmental impacts caused by increasing atmospheric carbon dioxide concentrations are rising universal air temperatures, modify hydro geological cycles resulting in more constant and severe droughts, storms, and floods, as well as ocean level uprise and ecosystem derangement .[13]

Indian Laws on Biodiversity

Forest Conservation Act 1980:

India, known for its rich biodiversity, has put in place several laws to conserve its natural ecosystems and ensure sustainable use of resources. Among the foundational legislations is the Forest (Conservation) Act of 1980, which was enacted with the primary purpose of checking deforestation and maintaining ecological balance. Due to rapid and unregulated deforestation, the natural cycles were disrupted, affecting biodiversity and climate patterns. The Act restricts the use of forest land for non-forest activities unless prior approval is obtained from the Central Government. Any person who contravenes the provisions of Section 2 of the Act, or abets such a contravention, may be punished with simple imprisonment for a term extending up to fifteen days.[14]

[12] "Biodiversity and Health", available at https://www.who.int/news-room/fact-sheets/detail/biodiversity (Last visited on 2nd June 2023

[13] "Human Impact on the environment", available at https://www.vedantu.com/biology/human-impact-on-the-environment

[14] Forest Act 1980, s. 3A

Fisheries Act 1897:

Another important statute is the Indian Fisheries Act of 1897, which addresses the protection of aquatic biodiversity, especially fish species in India's inland and territorial waters. The Act makes it a punishable offence to use explosives, poison, or other harmful substances to kill or catch fish. Section 9 of the Act specifically penalizes any person who introduces poison, lime, or other noxious substances into water bodies with the intent of catching or killing fish. Offenders may face imprisonment for up to two months or a fine up to two hundred rupees, or both. Though this law is colonial in origin, it remains significant in deterring destructive fishing practices that can cause long-term damage to aquatic ecosystems.[15]

Mining and Mineral Development Regulation Act 1957:

The Mines and Minerals (Development and Regulation) Act of 1957 serves as the primary legislation for regulating the mining industry in India. The Act outlines the procedure for acquiring mining leases and licenses, ensuring that mining activities are carried out in a controlled and environmentally sustainable manner. While the Act primarily governs commercial and industrial aspects of mineral extraction, it also plays a crucial role in biodiversity conservation by controlling activities that can lead to habitat destruction, soil erosion, and pollution. Its implementation helps mitigate the adverse impacts of mining on forests and wildlife.

Wildlife Protection Act 1972:

The Wildlife Protection Act of 1972 is another key environmental statute, aimed at preserving India's wildlife and their habitats. The Act prohibits the hunting of wild animals listed in Schedules I to IV, unless specific exceptions under Sections 11 and 12 apply, such as for scientific research or human safety. Species in Schedules I and II receive the highest level of protection. In addition to protecting animals, the Act also includes provisions for safeguarding certain plant species. It mandates the establishment of protected areas like National Parks and Wildlife Sanctuaries, contributing to the conservation of critical habitats. Violation under this Act may result in strict penalties, including imprisonment for a term of up to seven years and significant monetary fines.[16]

Environment Protection Act,1986

The Environment Protection Act of 1986 was enacted in the wake of the Bhopal Gas Tragedy and represents a comprehensive framework for protecting and improving the quality of the environment in India. It aims to prevent and control environmental pollution and promotes sustainable development by encouraging the use of renewable resources. The Act empowers the Central Government to set environmental standards, regulate industrial operations, and take emergency measures in case of environmental hazards. Any person found violating the provisions of this Act may be punished with imprisonment up to five years and/or a fine up to one lakh rupees. Continued non-compliance can result in additional fines and extended imprisonment. This

[15] Fishers Act, 1897, s.9

[16] Wild Life (Protection) Act,1972, s.9

law plays a pivotal role in maintaining ecological balance and ensuring public health by regulating pollutants and fostering environmental stewardship.[17]

Together, these laws form a robust legal framework for biodiversity conservation in India. They reflect the country's commitment to safeguarding its natural heritage while striving for sustainable development. However, the effectiveness of these laws depends largely on their implementation and the active participation of the public and institutions in environmental conservation.

Research Foundation for Science v. Union of India.[18]

The Hon'ble Court highlighted the environmental dangers caused by plastic waste, especially plastic scraps and carry bags. It was observed that plastic waste has a severely detrimental impact on the environment, wildlife, and public health. Discarded plastic bags, especially those of low micron thickness, are non-biodegradable and tend to accumulate in the environment, leading to soil and water pollution. Wildlife often mistakenly consumes plastic, causing injury or death, and clogged drainage systems due to plastic waste have led to urban flooding and sanitation issues.

Considering these harmful effects, the Court held that the use of plastic carry bags having a thickness of less than 40 microns (MW) should be prohibited. The rationale was that thinner plastic bags are more likely to be disposed of improperly and are harder to recycle. By banning such low-thickness plastic bags, the aim was to reduce plastic waste at the source and promote better environmental practices. The Court emphasized the need to regulate the use and disposal of plastic to safeguard the environment and conserve biodiversity, thus reinforcing the constitutional mandate under Article 21 (Right to Life) and Article 48A (Protection and Improvement of Environment).

CONCLUSION

Due to excessive human interference in biodiversity leads to the destruction of habitat in which the animals live, which results into their elimination. The pollution caused by humans is drastically damaging our biodiversity and results in the species to die. It is primary responsibility of the human beings to preserve and protect the earth and its sustainability because most of the biodiversity resources are consumed by them. Without a large range of animals, plants and microorganisms, we cannot live on the earth because people depend on the ecosystem. Healthy and functional ecosystem play an important role in maintaining the human livelihood. Due to extinction of ecosystem it is impossible to breath in the air, to eat food.

Biodiversity is an issue which effects on human beings. Therefore, it is essential for everyone to be aware of the importance of biodiversity. Due to destruction of the forests, pollution caused by the activities of the human beings are endangering the survival of all the species.

[17] Paramjeet Singh Jaswal, Nishta Jaswal, "Environmental Law". 359 (Allahabad Law Agency 4th Edition, 2019)

[18] AIR 2005 S C 1499.

Suggestions

Biodiversity provide us many benefits. For the protection of biodiversity, it is necessary to cooperate at all the levels. Conserving biodiversity is a fundamental responsibility, and individuals can contribute by supporting institutions and electing leaders committed to its preservation.

To protect and conserve biodiversity, individuals can take several important steps:

1. Support political initiatives and policies that focus on the protection and restoration of biodiversity.
2. Engage with and promote institutions dedicated to conserving biodiversity.
3. Back local and regional projects that address biodiversity loss and work towards its recovery.
4. Choose to buy products that have a minimal negative impact on biodiversity, encouraging sustainable consumption.
5. Reduce the waste generated from consumer goods to lessen the pressure on natural resources and ecosystems.
6. Practice recycling to help reduce the demand for raw materials, decrease pollution, and conserve natural habitats.
7. Educate children and the community about biodiversity, ecosystems, and the threats they face to foster awareness and encourage conservation efforts.

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