

# Restoration of Ecosystem – An Arena for Global Priority

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## ABSTRACT

*Ecosystems provide seemingly endless goods and services we depend upon to survive. They are responsible for the production of oxygen, food, clean water, medicines, etc. and store carbon from the atmosphere, regulate the climate, protect our shorelines, purify air and water, and provide aesthetic beauty and an array of recreational activities. In a world overwhelmed by human disturbances, the degradation of nature is more and more widespread. The decline of biodiversity along with the loss of ecosystem functions and services is a threat to nature and human life. However, the growing awareness of the value of nature has given rise to an increasing interest to restore these precious natural ecosystems and the services they provide.*

*Keywords: Ecosystem, Biodiversity, Restoration*

### A. Introduction

The pertinent question which hovers in the mind of present generation of human being is - what would happen if one day, all our environmentally destructive activities stopped? Planet Earth would start healing itself, ecosystems are in a constant state of evolution. Restoration Ecology is different from Conservation Biology; it's inter-disciplinary, bio-geographic-specific discipline, field-oriented, long-term activity, focusing on the restoration of environment and ecology. It aims at facilitating and speeding-up the recovery of lands and waters after their degradation by humans.

### B. Objective of the Study

To comprehend and research the concept of Restoration of Ecosystem.

### C. Literature Review

Modern restoration ecology began in 1900s when conservationist, Aldo Leopold began promoting the movement. The capacity for habitat restoration is rapidly being exploited to justify the reintroduction of ecosystem engineers (Law et.al., 2017). Currently, world faces

converging environmental crises that are inextricably linked: the accelerating destruction of nature and climate change, driven largely by unsustainable production and consumption. A man-made sixth mass extinction is underway wherein half of the species on earth could go extinct by 2050. On an average, two vertebrate species disappear yearly. We live in Anthropocene, an epoch marked by drastic transformations caused by humans to natural environment. Since then, nature is increasingly subjected to many pressures and disturbances. Human activities, both purposeful and unintentional, affect the products and services provided by many of the ecosystems on which we rely, and by entering into this connection of changing ecosystems, we accept responsibility to our neighbours and future generations (Hilderbrand et.al,2005). Restoration procedure usually starts with a particular purpose in mind, which is to achieve certain objectives (Palmer,2006). There are numerous generic guidelines for restoration, but more specialised research are needed to match management to local circumstances (Wunderle, 1997).

### Global viewpoint

Ecosystem degradation is a global phenomenon. It is expected that by 2050, 95% of Earth's land will be degraded. A whopping 24 billion tons of soil have already been eroded by unsustainable agricultural practices. UN Decade on Ecosystem Restoration, aims at addressing the enormous task of restoring degraded habitats across the planet. Against a backdrop of ecological crisis, this declaration is a chance to revive our life support system – the natural world. There is no doubt this is an ambitious plan. But it must be translated into action. Humanity is at a crossroads, 3.2 billion people suffer from negative impacts to the ecosystems. (i.e loss of about 10 percent of the global annual GDP).In order to improve this situation, the Bonn Challenge has been established to restore roughly 350 million hectares of degraded ecosystems this decade.

### Indian context

Almost 2/3rd of our terrestrial forests are outside of protected areas. India has a target of restoring 26 million hectares of degraded lands by 2030. India has worked to protect and conserve its natural resources by implementing certain acts such as: The Wildlife Protection Act, Forest Conservation Act, Biological Diversity Act, Wildlife Crime Control Bureau, National Tiger Conservation Authority, etc. Community level movements in conservation efforts like The Chipko Movement ,The Silent Valley Movement ,The Jungle Bachao Andola Movement, etc and projects to return ecosystems to their natural state( Western Ghats), Sita Sagar Lake (Madhya Pradesh) , Mandali Lake, (Maharashtra), Inventorisation of Water bodies in Mumbai Metropolitan Region , Mira-Bhayandar, (Maharashtra), Karnataka's Bandipur forest reserve, have been carried out.

Nature-based solutions for sequestering carbon, can bring more than a third of the way to emission reductions needed by 2030. Cyclone Tauktae and Yaas documents a climate trend in the Tropics, amphibious defenders against extreme climate events. Coastal vegetation and natural features, can provide protection from storm surges, strong winds, and cyclones (1999 Odisha cyclone). Partnering with tribal as their place-based knowledge is crucial. According to The Nature Conservancy, combining the climate mitigation benefits of natural climate solutions with their co-benefits can break through financing barriers for example,Calcutta

where 8,000 hectares of wetlands help to treat the sewage from its 10 million citizens, reduced the need for constructing treatment plants, while producing substantial amounts of fish and vegetables and multiple other benefits. Mobilizing capital is crucial for India to attain its UNFCCC, Nationally Determined Contributions targets. Climate finance is a powerful tool to increase green investment.

#### D. Methodology

The article is written using secondary research material and from the data available on the internet.

#### E. Results

- Multiple datasets show that the climate system is warming, surface temperatures are rising by about 0.2 °C per decade, with 2020 reaching a temperature of 1.2 °C above pre-industrial, which has impacted ecosystem.

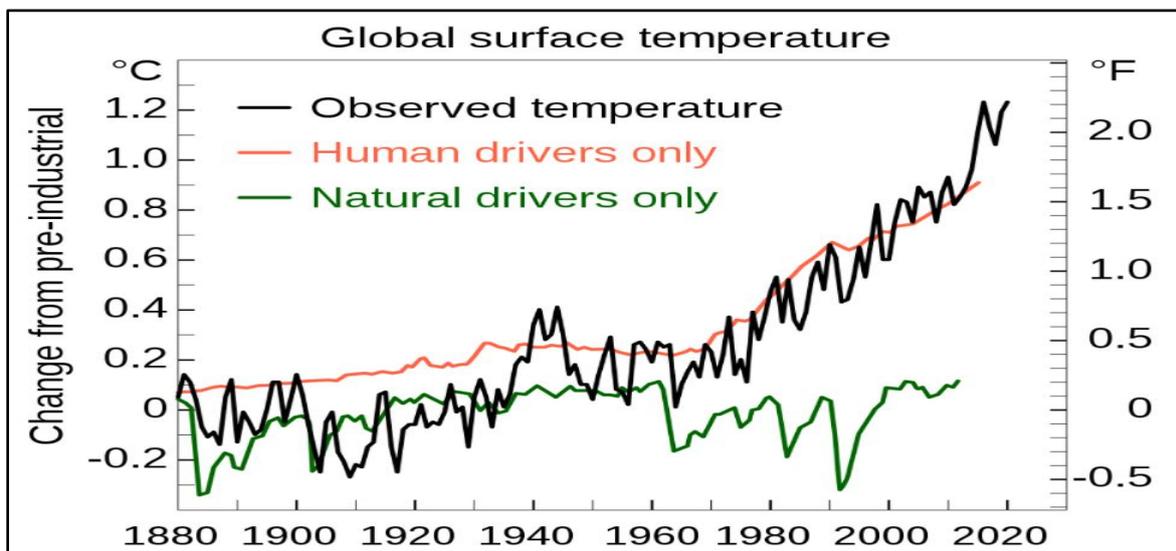


Fig 1: Global Surface Temperature

- The global carbon project shows addition to CO<sub>2</sub> since 1880 caused by different sources.

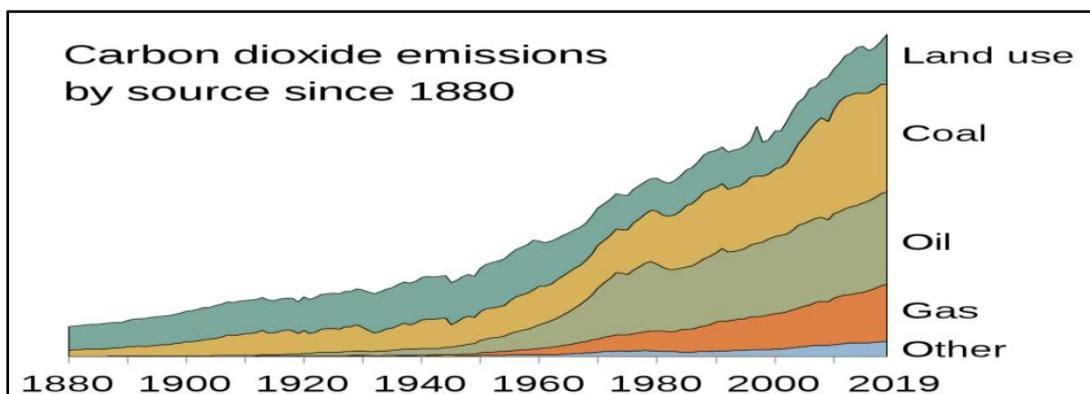


Fig 2: Carbon produced by different source

## F. Discussions, Managerial Implications and Way Forward

1. If we deviate from the Paris Agreement target to limit global warming to 1.5°C, the world could quickly find itself at a tipping point.
2. As we work to build back better from the COVID-19 pandemic, we shouldn't forget that ecosystem degradation often results in greater contact between humans, livestock, and wildlife, which in turn increases the risks of zoonotic diseases.
3. Climate change is making extreme climate events more frequent in the state and the incidences of landslides, flash floods and droughts are on the rise.
4. Measures of planning, policy, engineering measures, including afforestation; terracing; dune stabilization; agroforestry, convincing decision makers, businessmen, policymakers, and others that nature-based solutions such as these can work on a large scale for promoting nature as a solution for a wide range of societal challenges at ecological level.
5. The world can feel encouraged even during the pandemic, net-zero commitments have roughly doubled. Corporate commitments alone under the Race to Zero campaign now cover over 12% of the global economy and USD\$ 9.81 trillion in revenue.

## G. Conclusion

Rather, than reaching a tipping point, 2030 could be a world where de-carbonized industries are coupled with fertile forests and restored land. Together the world must race towards a resilient, healthy and zero carbon world.

## References:

1. Hilderbrand, R. H., Watts, A. C., & Randle, A. M. (2005). The myths of restoration ecology. *Ecology and society*, 10(1).
2. Law, A., Gaywood, M. J., Jones, K. C., Ramsay, P., & Willby, N. J. (2017). Using ecosystem engineers as tools in habitat restoration and rewilding: beaver and wetlands. *Science of the Total Environment*, 605, 1021-1030.
3. Falk, D. A., Palmer, M. A., & Zedler, J. B. (2006). Integrating restoration ecology and ecological theory: a synthesis. *Foundations of restoration ecology*, 341-349.
4. Wunderle Jr, J. M. (1997). The role of animal seed dispersal in accelerating native forest regeneration on degraded tropical lands. *Forest ecology and management*, 99(1-2), 223-235.
5. Retrieved from <https://biomeecology.com/conservation/2020/05/nature-restoration-the-time-has-come/> accessed on 10 Jan 2022.
6. Retrieved from <https://www.iucn.org/news/europe/201607/restoration-natural-ecosystems-makes-society-thrive> accessed on 20 Jan 2022.
7. Retrieved from <https://scroll.in/article/973345/climate-change-and-reduced-freshwater-supply-have-put-sundarbans-on-the-endangered-ecosystem-list> accessed on 18 Jan 2022.

8. Retrieved from <https://www.britannica.com/science/ecological-restoration/Implementation> accessed on 05 Feb 2022.
9. Retrieved from <https://theprint.in/science/western-ghats-forest-cover-improved-active-ecological-restoration/300151/> accessed on 23 Feb 2022.
10. Climate Change. Retrieved from [https://en.wikipedia.org/wiki/Climate\\_change](https://en.wikipedia.org/wiki/Climate_change) accessed on 03 Mar 2022.