

doi: <https://doi.org/10.20546/ijcrar.2017.506.009>

Evolution of Indian Forestry-A Review

Teena Agarwal*, Pratibha and Priyanka Danai

Banasthali University, Niwai, India

*Corresponding author

Abstract

Forests are the sources of the life on the earth. Forest ecosystem sustains all kind of the life from abiotic to the biotic on the planet. Forest are always the sources of the essential ingredient of the life, but as the human progress increase the decline in the forest also starts, this degradation of the forest enhances rapidly, so for the saving of the all the biota on the earth it is necessary o save the forest on the earth.

Article Info

Accepted: 05 June 2017
Available Online: 20 June 2017

Keywords

Deforestation, Degradation,
Conservation, Forest products.

Introduction

The word of forest is a Latin word “foris” that means outside. The word “forest” is understood as “a dense growth of trees and shrubs covering a large area”. Definition of forest is divers its diversity in terms of types, species composition and services it provide etc. Forest types differ widely, determined by factors including latitude temperature.



MAP: 1 Distribution of the forest

A legal definition is different from an ecological definition. Recent study of various definitions of forests (Lund, 2012) found that more than 800 different definitions and wooded area were use round the world with some countries adopting several such definitions at the same time: Forest are emphasized because they are major reservoirs of terrestrial biodiversity and contain about 50% of global terrestrial biomass carbon stocks (IPCC, 2007; FAQ, 2000). Emissions from deforestation and degradation remain a significance source of annual greenhouse gas emissions in the atmosphere (IPCC, 2007) and therefore conservation, appropriate management (Fig. 3) and restoration of forests will make a significant contribution to climate change mitigation. Forests have certain natural capacity to adapt climate change because of their biodiversity. Some animals have plays an important roles in ecosystem and organization of forest, such as dispersal of seed, pollination, etc (e.g., Elmquist *et al.*, 2003) (Fig. 1).

Forests are one of the most important natural resources of the earth. Approximately 1/3rd area of earth is covered by the forests (Fig. 2). Forests are the house of large variety of life such as plants, mammals, birds, insects,

and reptiles etc. Forest have abundant microorganism and fungi, they help of decomposing dead organic matter thereby enriching the soil. Approximately 4 billion hectares of forest cover the earth's surface, roughly 30% of total earth area.

Forest ecosystem has two components-

- 1) Non-living (abiotic) component- climate, soil type etc.
- 2) Living (biotic) component- plants, animals and other life forms.

Plants include the tree, shrubs, climbers, grasses and herbs in the forest. Depending on the physical, geographical, climatic and ecological factors, there are different types of forest like evergreen forest and deciduous forest (Helms, 1998) (Figs 5 and 6).

The term forest implies 'natural vegetation' of the area, existing from thousands of years and supporting a variety of biodiversity, complex ecosystem (CBD). Plantation is different from natural forest as these planted species are often same type and doesn't support a variety of natural biodiversity (FAQ, 2006). Forests provide various natural services and products. Many forest products are used in day-to-day life. Besides, these forests play important role in maintaining ecological balance and contributes to economy (Gunderson, 2000).

Ecological role of forest

- Forests act as hydrologic flow modulators.
- Forests help in maintaining microclimate in area.
- Forests absorb suspended particles in air thereby reducing pollution.
- Forests also help in the process of soil formation by causing weathering of rock.
- Forests provide forest food which has great medicinal value and used by local people in respective season.
- Dead plants decompose to form humus, organic matter that hold water and provide nutrient to soil.
- Forests provide an environment for many species of plants and animals.
- Plants provide habitat to different types of organism. Birds build their nests, animals and birds live in

hollows, insects and other organisms live in various part of plant.

- Plants provide protective canopy that lessens the impact rainfall in soil, thereby seducing soil erosion. Roots help hold the soil in place.
- Plants clean the air, conserve heat at night. Plants act as a excellent sound absorber.
- Forests clean the environment by muffling noise, buffering strong winds and stopping dust and gases.
- Some species of trees have ability to return nitrogen to soil through root decomposition or fallen leaves. Such trees are planted to increase nitrogen content of soil.
- Forest cover an area plays important role in amount of precipitation received by area. Thus play an important role maintaining water cycle of the area.

Deforestation

Deforestation is very broad term, which consists of cutting of trees including repeated lopping, felling, and removal of forest litter, browsing, grazing and trampling of seedlings. It can also be defined as the removal or damage of vegetation in a forest to the extent that it no longer supports its natural flora and fauna (UNFCC-Marrakech Accords).

Forest degradation and fragmentation

Forest degradation is different form deforestation. Degradation is used to mean the destruction in quality of specific aspects of forest. Prolonged degradation can wipe out a forest. Degradation can result in a decrease in tree cover, change in their structure or a reduction in the number of species that can be found there. If acid rain destroys trees in a vast area, it can be called forest degradation. Forests are exploited since early times for humans to meet human demand. The permanent destruction of forests is called deforestation.

Degradation can also result in forest fragmentation, and fragmentation can also result in degradation. This is when a large forest ends up divided into many smaller patches. This is particularly not healthy for larger forest animals, as they thrive well in large areas rather than pieces of forest (FAQ 2001).

Reforestation

Reforestation involves the replanting or regeneration of areas of forest which have previously been damaged or destroyed.

Sometimes forests are able to regenerate naturally if sufficient trees remain nearby and seeds can be dispersed into the deforested areas via animals or wind. However, areas of forest which have been severely degraded are unlikely to be able to regenerate naturally and need to be

replanted by hand using native tree species (Helms 1998) (Figs. 7-9).

Afforestation

The conservation measure against the deforestation is afforestation. The development of forest by planting trees on waste land is called afforestation (Fig. 10).

Fig.1 Forest



Fig.2 Total area covered by forest in the earth

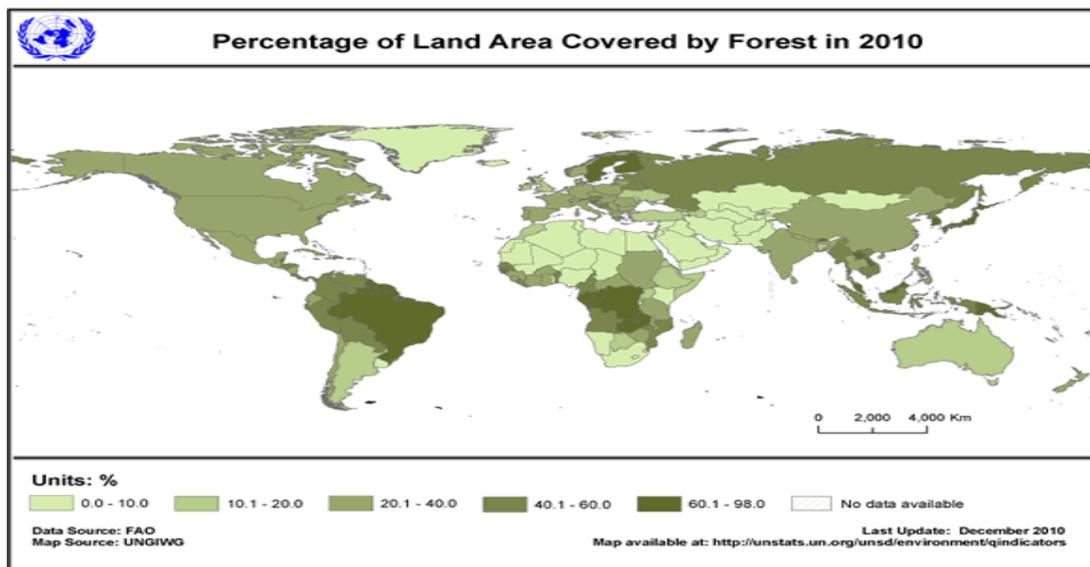


Fig.3 Carbon storage by global forest biomes

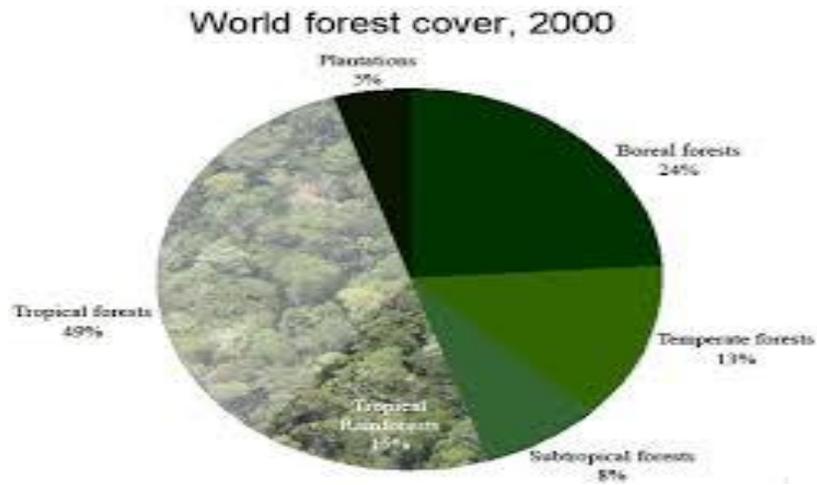


Fig.4 Evergreen forest



Fig.5 Deciduous forest



Fig.6 Global deforestation

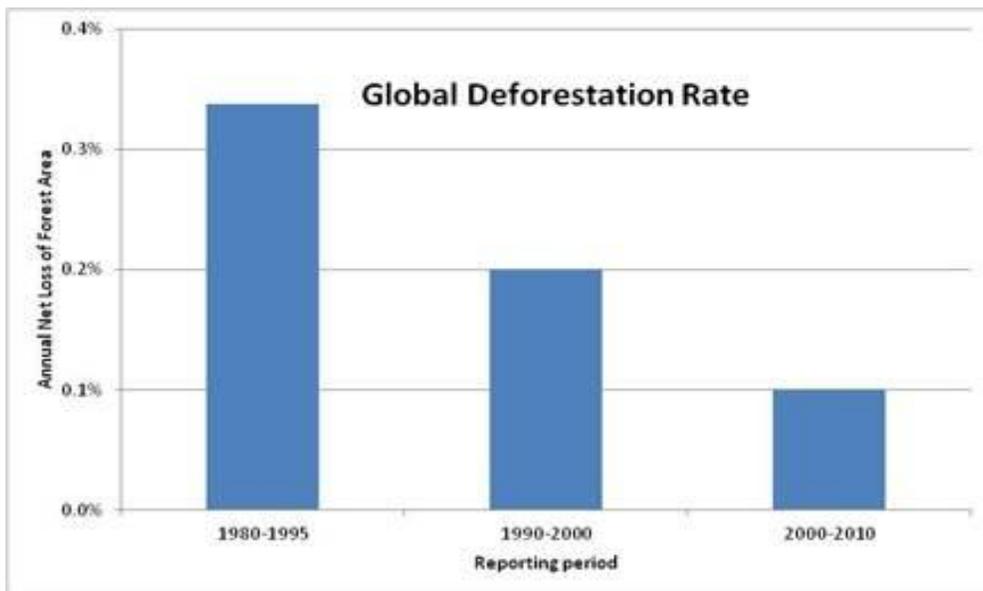


Fig.7 Tropical deforestation rates

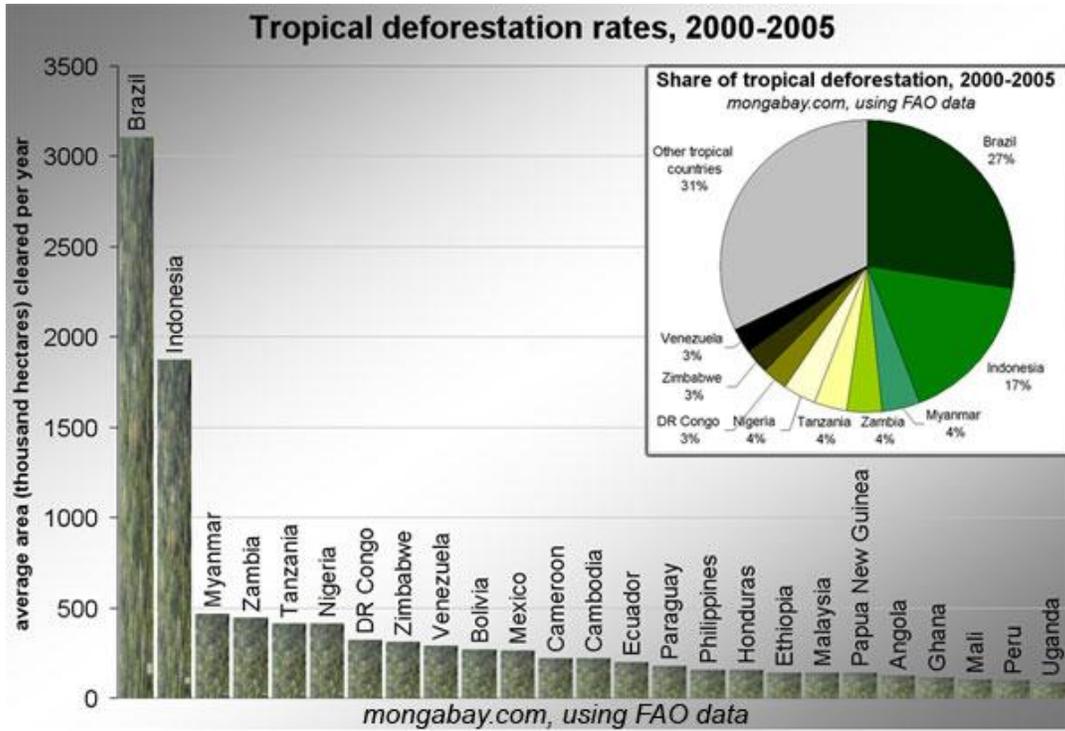


Fig.8 Deforestation



Fig.9 Reforestations and afforestation



The main objective of afforestation is control the deforestation, to prevent soil erosion, to regulate rainfall and maintain temperature, to control atmospheric condition by keeping it clean, to promote planned uses of wasteland, to protect forest ecosystem and to get benefits of forest products (Helms 1998).

Function of forests

The function of forest may broadly classify into following categories.

- 1) Protective function- forests provide protection against soil erosion, droughts, floods, noise, radiations.
- 2) Productive functions- forest provide various products like, gum resins, medicines, katha, honey, pulp, bamboo, timber, and fruits.
- 3) Regulative functions- The forest regulates the level of oxygen and carbon dioxide in atmosphere. The forests also help in regulating temperature conditions.
- 4) Forest provides aesthetics, habitat to various flora and fauna besides that it also has recreational value.

Economical importance of forests-

- **Timber**- Wood used for commercial purposes like for making furniture and other items like boats, bridges and other day to day uses.

- **Fuel wood**- The wood is used as fuel for cooking and other purposes by poor people.
- **Raw material for wood based industries**- Forest provide raw material for various wood based industries like paper and pulp, sports goods, furniture, match boxes etc.
- **Food**-Fruits, roots, leave of plants and trees along with the meat of forest animals provide the food to the tribal people.
- **Miscellaneous products**- Miscellaneous products like, resin, gums, oils, medicines, katha, honey are provided by forest.

References

- AFG. 2010. *Australian Forest Growers Policy Statements: 4th Edition*.
- AFS. 2011a. Australian Forestry Standard Limited.
- AFS. 2011b. *Forest Management and Forest Products Chain of Custody Certification – Recognition of all accredited forest certification schemes is good practice – AFSL Paper*, Australian Forestry Standard Limited.
- AFSL. 2007. *Australian Standard: Chain of custody for certified wood and forest products*, Australian Forestry Standard Limited.
- Australian Forests. 2008. *History: Harvesting and Milling*.
- BRS. 2008. *Australian Forest Profiles*. Fact Sheet. Bureau of Rural Sciences (BRS), DAFF.
- Cannon, R.J.C. 2007. The implications of predicted climate change for insect pests in the UK, with

- emphasis on non-indigenous species. In: H Fairweather and A Cowie (eds), *Climate change research priorities for NSW primary industries*, NSW Department of Primary Industries, Orange.
- CSIRO, 2009. *An analysis of greenhouse gas mitigation and carbon biosequestration opportunities from rural land use*. Report, National Research Flagships, Sustainable Agriculture, Pp 172.
- CSIRO. 2011. *Flight path to Sustainable Aviation: Towards establishing a sustainable aviation fuels industry in Australia and New Zealand*. Report for CSIRO National Research Flagships, May 2011.
- DAWR. 2015. *Australia's Forests at a Glance*. Report for Agriculture and Water Resources.
- DAWR. 2010. *Forest certification in Australia*, Department of Agriculture and Water Resources.
- DAWR. 2013. *Australian State of the Forests Report: Five yearly report 2013*.
- DECCEE. 2010. *Australia's emission projections*. Department of Climate Change and Energy Efficiency, Australian Government, Pp 34.
- DCCEE. 2010a. *Who the Kyoto Protocol Impacts*, Department of Climate Change and Energy Efficiency.
- DCCEE.2010b. *Kyoto Protocol*, Department of Climate Change and Energy Efficiency.
- DCCEE. 2010c. *More about the Kyoto Protocol*, Department of Climate Change and Energy Efficiency.
- DPI. June 2012. *Harvested forests provide the greatest ongoing greenhouse gas benefits*, Department of Primary Industries New South Wales.
- DSE. Victorian Government Department of Sustainability and Environment (DSE).
- Fairweather, H. and Cowie, A. 2007. *Climate change research priorities for NSW primary industries*. NSW Department of Primary Industries, Orange.
- FAO. 2010a. *Key findings: Global Forest Resources Assessment 2010*, Food And Agriculture Organization of the United Nations.
- FAO. 2010b. *Moving forward: Selected achievements of the FAO Forestry Programme 2008-2009*. Food and Agriculture Organization of the United Nations. <http://www.fao.org/docrep/013/i1775e/i1775e.pdf>
- FEF. 2008. *Historical posters, Project Forest: A Teaching and Learning Resource*, Forest Education Foundation.
- Fire and Rescue NSW. NSW Fire Brigade, *Climate change creating major challenges for fire services*, <http://www.fire.nsw.gov.au/page.php?id=777>
- FSC. 2010. *Become FSC Certified*. Forest Stewardship Council Australia.
- FSC. 2011. *Global FSC certificates: type and distribution*, Forest Stewardship Council Australia, pp. 2, 4.
- Halkett, 2008. *Trees that call Australia Home*. Potts Point Publishing.
- IFA. Institute of Foresters of Australia website. Leys, A.J. 2011. *Carbon forestry in the New Zealand social landscape: Post introduction of an Emissions Trading Scheme (ETS)*. Report for the J.W. Gottstein Memorial Trust, Australia.
- MPWC. 2005. *Who is involved?* Montreal Process Working Group.
- PEFC. 2011. *PEFC Council Information Register*. Programme for the Endorsement of Forest Certification.
- PIRSA. 2008. *Forestry matters! A Forest Education Resource*, Department of Primary Industries and Resources South Australia.
- Robinson, M. and Kile, G. 2007. *Forests, wood and Australia's carbon balance*. Report for Forest and Wood Products Research and Development Corporation and CRC for Greenhouse Accounting.
- Underwood, R. and Bradshaw, J. (Eds) 2000. *Conservation and use of Western Australian Forests – The perspective of WA foresters*. Published by IFA.
- UNFCCC. 2011a. *Kyoto Protocol*, United Nations Framework Convention on Climate Change.
- UNFCCC. 2011b. *Parties to the Kyoto Protocol*, United Nations Framework Convention on Climate Change.
- VAFI. Victorian Association of Forest Industries website.

How to cite this article:

Teena Agarwal, Pratibha and Priyanka Danai. 2017. Evolution of Indian Forestry-A Review. *Int.J.Curr.Res.Aca.Rev.* 5(6), 61-68. doi: <https://doi.org/10.20546/ijcrar.2017.506.009>