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Agroforestry for achieving post 2020 global biodiversity and climate adaptation and mitigation targets

Preparedness and Lessons from India

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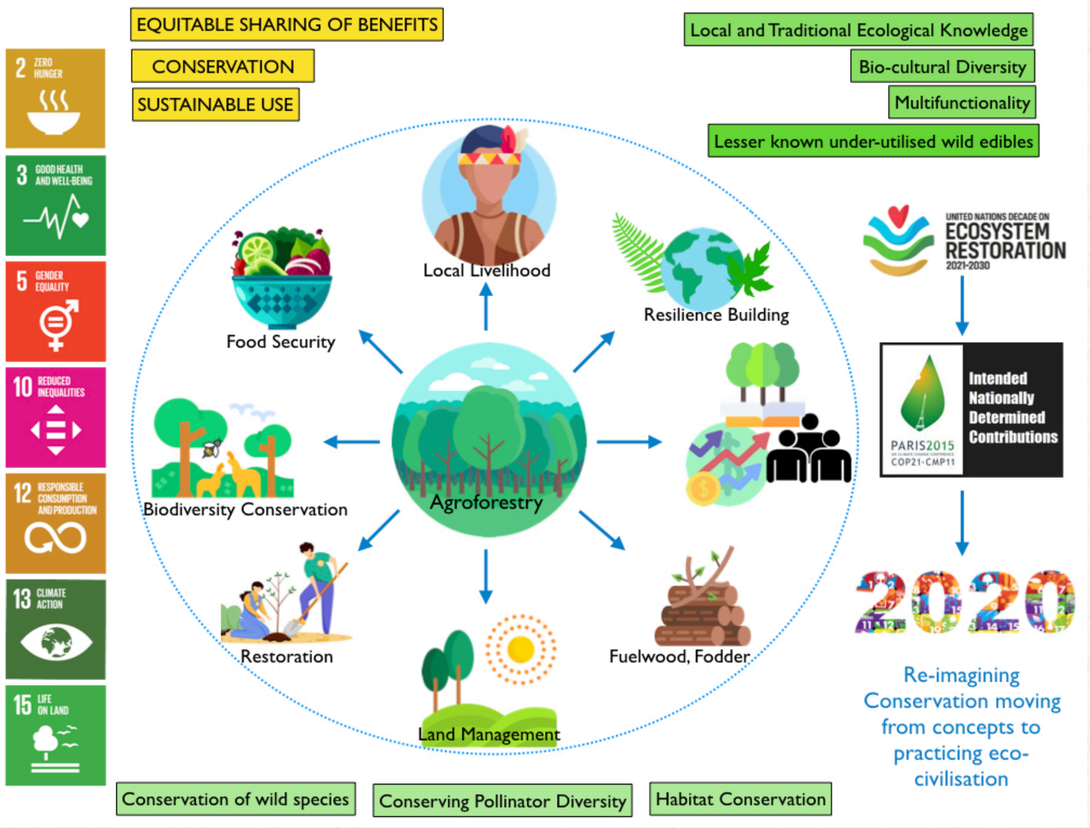
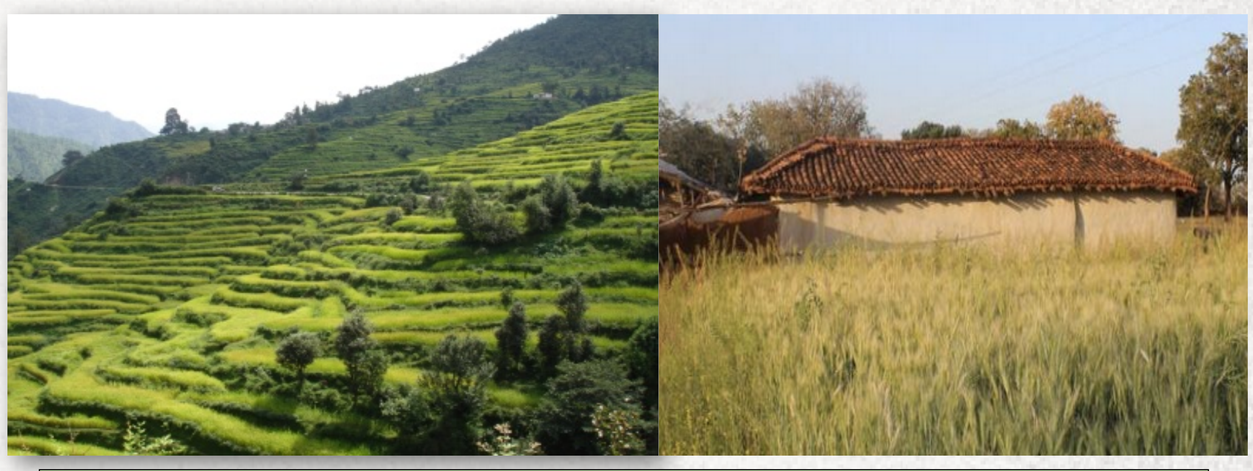


AFS for Food security, land tenure security, enhanced farm-based incomes, terrestrial and soil biodiversity, carbon sinks, hydrological functions, wildlife corridors, reduced soil erosion, microclimate improvement, increased nutrient retention and cycling,



Traditional Agroforestry Systems in Western Himalayas and Central India

- Traditional agroforestry systems (AFS) across different agro-climatic zones of India have historically supported millions of smallholding farmers.
- Agroforestry spans in 13.75 million ha. Area of the country and in the biennial State of Forest Report (ISFR) of India for 2019, AFS are considered trees outside forests (TOF), spanning over 293,840 sq. km or 8.94% of the total geographical area of the country.
- Decrease emissions by 33–35% from the 2005 levels by the year 2030 by increase in non-fossil fuel by 40%, along with sequestering 2.5-3 billion tonnes of additional carbon by added tree cover by 2030

Enabling Conditions to meet climate and post 2020 biodiversity targets through AFS

- In India's INDC there is no mention of AFS still it will play a critical role in national carbon mitigation targets as AFS is of the sub-missions of the Green India Mission under the National Action Plan on Climate Change (NAPCC)
- India has National Agroforestry Policy that shows commitment to promote AFS a mere 30% increase in area under AFS is projected to significantly reduce India's total emissions by 2050.
- SAARC Regional Coordinated Programme on Agroforestry (SARCOPA), 2016 facilitated and technically supported by the World Agroforestry Center (ICRAF) and SAARC Agriculture Centre (SAC)
- Effective implementation of Mahatma Gandhi Rural Employment Gurantee Scheme (MGNREGS) as biggest PES of the world

Agroforestry System in key agreements and reports

Kyoto Protocol, 2005	Includes agroforestry as an important sustainable land management approach for climate change adaptation and mitigation
REDD+	Agroforestry potential to support indigenous communities for livelihood benefits while mitigating climate change demonstrated.
IPCC III Assessment Report	Prospects of AFS for providing solutions to myriad issues while at the same time delivering a variety of social, financial and environmental profits for human well-being acknowledged
IPCC Special Report Climate and Land, 2019	AFS quoted as an emerging vital solution to climate adaptation and mitigation through efficient land management

Traditional agroforestry systems accepted/adopted across different agro-climatic zones of India

Type of AFS	Agro-ecological adaptation
Agri-silvicultural systems	
Shifting cultivation, Chena, Taungya, Bewat, dhya, dippa, erka, jhum, kumara, peenda, pothur, podu, rep syrti, zabo	In tropical forest areas in North-East India
Plantation-based cropping system	Mainly humid tropical parts of India
Scattered trees on farms, parklands	All regions, especially semiarid, and arid regions
Shelterbelts and windbreaks	In wind-prone areas, especially coastal, arid, and alpine regions
Boundary Planting and live hedges	Common across all agroclimatic zones
Woodlots for soil conservation	In hilly areas, along sea coast and ravine lands
Industrial plantations with crops	Intensively cropped area having plantation on bunds
Silvi-pastoral systems	
Silvi-pastures	Sub tropics and tropics with bio-edaphic sub- climaxes
Horti- pastoral	In hilly and non-hilly orchards for soil conservation
Tree on rangelands	Commonly observed
Plantation crops with pastures	Mostly humid and sub-humid regions with less grazing pressure on plantation lands
Seasonal forestry Grazing	Semi- arid and mountainous ecosystems
Agro-silvi-pastoral systems	
Home gardens	Popular across the country
Others	
Aqua forestry	Low lands
Apiculture with trees	Commonly practiced across the country

Constraining Conditions to meet Climate & post 2020 Biodiversity Targets through AFS

- Gap in country-specific targets and their technical capabilities to measure agroforestry carbon stocks and report to the UNFCCC
- Lack of uniform methodologies for creation of databases to monitor tree and soil carbon stocks
- Water scarcity, lack of interactive governance, rights of farmers and ownership issues along with insufficient financial support to rural farmers for agroforestry
- Standardising Monitoring, Reporting and Verification (MRV) protocols

Suggestions and way forward

- Providing AFS place in REDD+ and NAMAs with inclusion under Green India Mission
- Agro-climate zones specific research on improving TOF models for biomass calculation
- Developing agroforestry pilots for REDD+ for mainstreaming AFS
- Setting target to restore degraded AFS and improve the systems by at least 50% in the coming five years
- ITEK systems to improve AFS for achieving NDCs and post 2020 global biodiversity targets

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