# Tree plantations waste money, harm the environment: New study

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New Delhi: Poorly designed or badly enforced policies to promote and incentivise tree plantations in an effort to fight climate change risk wasting public money by releasing more carbon than natural forests and destroying biodiversity, found a recent study in Nature Sustainability.

When forests grow, they absorb the carbon--a greenhouse gas whose emission is mainly responsible for climate change--from the atmosphere, functioning as a ‘carbon sink’.

Realising the importance of forests and trees in curbing global warming, global initiatives such as the World Economic Forum’s to plant a trillion trees; and the United Nations Bonn Challenge to bring 350 million hectares of the world’s deforested and degraded land into restoration by 2030; all promote tree plantations, the study said.

Rather than restoring natural forests, such campaigns are promoting plantation of a single type of tree (monoculture) or a limited number of species. These plantations typically have significantly less potential for carbon sequestration and biodiversity promotion, found the study published on June 22, 2020.

"For example, nearly 80% of commitments to the Bonn Challenge involve planting monoculture tree plantations or a limited mix of trees that produce products such as fruit and rubber rather than restoring natural forests," it found.

The potential benefit shrinks further if planted trees replace natural forests, grasslands or savannahs--ecosystems that have evolved to support unique, local biodiversity, said the study, which is the first of its kind to rigorously analyse the potential effects of financial incentives provided to landowners to plant trees--a policy used in many countries for mass tree-planting efforts.

The findings are especially relevant for India, where a national programme that promotes compensatory monoculture plantations has become a simple tool to fell natural forests for non-forest purposes including industrial and development projects.

Subsidies for afforestation can turn problematic

For the analysis, scientists looked at Chile's law of providing subsidies for afforestation--75% of afforestation cost and support for management. One of the world's longest-running afforestation subsidy policies, it remained in effect for over 38 years between 1974 and 2012, and is likely to be reintroduced.

The government subsidies in Chile further reduced native forest cover by encouraging the establishment of plantations on shrublands or marginal agricultural lands where forests might have naturally regenerated, the study revealed through anecdotal evidence.

Why is this study relevant to India?

To fight climate change, the country has pledged to get 33% of its geographical area under forest cover by 2022, compared to the existing 24%. To promote tree plantations, several state governments including Gujarat, Tamil Nadu and Maharashtra have, over the past decade, tried to come up with subsidies and incentives.

Under current law, the Indian government collects money from industries in lieu of the natural forest diverted for their projects. This money is later given to states for compensatory afforestation under the Compensatory Afforestation Fund Management & Planning Authority (CAMPA) of the Union environment ministry. The heavily funded programmes under CAMPA are replacing natural forests with monoculture plantations, along with several other challenges, IndiaSpend reported in June 2019.

However, the Indian government counts such plantations as forests.

A January 2020 study by researchers from the Columbia University and The Nature Conservancy, US, in collaboration with the Nature Conservation Foundation, Mysuru, assessed the ability of natural forest species and single-species (monoculture) plantations to capture and store carbon over a long period.

They found that although mono-dominant plantations could match natural species-rich biodiverse forests in terms of carbon capture and storage potential in wet seasons, the latter were more stable and hence more reliable in their ability to capture carbon over the years, particularly during droughts.

Collectively, the findings of this study highlight that monoculture or species-poor plantations cannot replace the climate-regulating functions provided by natural forests, Anand Osuri of the Nature Conservation Foundation and a co-author of the January study, wrote on January 21, 2020, in Conservation India, a non-profit portal that focuses on nature conservation.

Thus, even as India's overall forest cover is reported to be increasing, the expansion of plantations at the cost of natural forests could result in less effective climate change mitigation overall, Osuri wrote.

During 2015 to 2018, plantations of five or fewer species comprised 53% of the 235,000 hectares planted for reforestation, said the January study using the government CAMPA plantation data obtained from the e-Green Watch portal, of India's environment ministry.

Global campaigns could make a real difference if they focus on restoration of degraded forests along with introducing strong subsidy restrictions, such as prohibitions against replacing native forests with tree plantations, said the Nature Sustainability study.

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