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Why frenzied tree planting is no answer to ecological restoration

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Early monsoon clouds, grey as elephant skin, span the skies overthe hillock where we are planting tree saplings. From 500 saplings stacked in black plastic sleeves, I select and heave two overto nearby soil pits prepared to receive them. These are not just any trees, I think, as I slit open the covers, without disturbing the roots. These are very particulartrees. A korangupila or Cullenia exarillata sapling and a wild nutmeg or Myristica dactyloides, picked from the 120 tree species in the stack, all native to this very place in the Anamalai Hills of the Western Ghats. A land of evergreens, a tropical rainforest, a place the great hornbills, lion-tailed macaques, and thousands of other lifeforms call home. As if echoing my thoughts, the loud bark of the hornbill sounds from the mist-breathing rainforest patch in the distance, where a 15-strong troop of macaques also lives. It's our 21st year attempting to ecologically restore the tropicalrainforest. The slope we are planting on lies open to the sky with only a few trees — a rainforest in tatters. Like other Z such remnants in the landscape, it has had a long history of being logged, converted to plantations, abandoned, overrun by weeds, and suffering decades of neglect. Today, our team, a dozen strong, is getting its hands dirty trying to bring back the forests that once graced the land. Some are pitting with crowbars, one scatters organic manure on the freshly excavated moist soil. A few are removing invasive weeds like lantana, carefully retaining any native rainforest plant growing alongside. Others distribute saplings, or squat besides the pits planting, mulching, and tagging the plants with biodegradable flagging tape for later monitoring.

Hours later, we visit one of our older sites restored two decades earlier. Where previously deforested open land and smothering tangles of weeds sprawled, now diverse trees over 50 feet tall stand like columns. Some young trees are flush with clusters of brightred leaves, others sprout theirfirst crops of fruit. The harsh chattering alarm call of a giant squirrel sounds from the canopy where a troop of dark Nilgiri langurs munches its way through the foliage — both species having returned to the site in the last few years as the rainforest reclaimed the land. A million trees Ecologicalrestoration involves the careful planting of the right species in the right places in the right mix and right manner. Unfortunately, many large-scale tree planting programmes carried out today ignore each of these vital criteria even as they make headlines for having used hundreds orthousands of volunteers to plant lakhs or millions of saplings over hundreds of hectares, sometimes in a single hour or day. A case in point is Telangana's Haritha Haram programme that aims to plant 2.3 billion tree seedlings in four years. The programme also adopts the recent fad of lobbing seed balls (seeds embedded in balls of soil) across the State, one district vying for a record of 20 million. Telangana has a diverse range of natural ecosystems including grasslands, tree savannas, dry thorn forests, and deciduous forests, with hundreds of native plant species, from grasses and shrubs to trees. Yet, the official website of the project lists just a hundred tree species, including many invasive alien species such as Prosopis juliflora (mesquite), acacia wattles, casuarina, and ornamental trees. These species are not just inappropriate for Telangana, some are downright harmful. Yet, millions of seedlings are being planted and millions of seed balls tossed around, unmindful of whetherthe right species are being planted or even whethertrees should be planted in that ecosystem at all. Large-scale record-breaking tree planting makes news, not forests. Which explains why politicians, bureaucrats, and celebrities throng these events, while botanists,

ecologists, and indigenous people are conspicuously absent. Besides failing to monitor or nurture the large numbers planted, such tree planting can cause more harm than good.

Across India, tree planting efforts sufferfrom five main problems: planting trees in the wrong places, planting the wrong species and species mix, planting too few species, failing to consider seed provenance, and planting without considering the rights of local people. Rich deserts The most egregious harm comes when people plant trees in areas that do not naturally support many trees: open natural ecosystems (ONEs). India has a remarkable diversity of ONEs from the hot desert dunes of Jaisalmerto the cold desert steppes of Spiti and Ladakh; from the thorn scrub and savanna woodlands of the Deccan Plateau to the ravines of the Chambal; from the dry grasslands of Banni to the wet grasslands of Kaziranga; from the montane grasslands of the Western Ghats to the alpine meadows of the Himalayas. ONEs span about 3,29,000 sq.km. or 15% of India's land area, according to a recent study by ATREE, a Bengaluru-based NGO, and maps by scientists M.D. Madhusudan, Abi Vanak, and Abhijeet Kulkarni. These open natural ecosystems, mislabelled 'wastelands', are ecosystems in their own right, home to many specialised and endangered plants and animals. Two of India's most endangered bird species — the great Indian bustard and Jerdon's courser — are birds of open drylands. When tree plantations, including alien orintroduced trees, smother open grassland and scrub, native plant and animal species decline and disappear. Tree planting in ONEs can also affect local hydrology and reduce water availability. Native grasses and dryland plants are adapted to use little waterin keeping with localrainfall patterns and infiltration, while helping recharge groundwater. But tree plantations in such areas can increase water uptake and transpiration, depleting the watertable. Forthese reasons, open natural ecosystems deserve protection, including from tree planting. The ATREE study estimates that about 6,452 sq. km. or half the ONEs in Telangana could suffer from inappropriate tree planting. Across India, 51% of ONEs are similarly threatened.

Tree planting in forests can go wrong, too, as best seen in India's flawed compensatory afforestation, where plantations are established ostensibly to compensate forforests destroyed for development projects. A November 2017 report by Community Forest Rights–Learning and Advocacy (CFR-LA), a group working on forestrights issues, examined 2,479 compensatory afforestation plantations in 10 States listed in the Government's EGreen Watch website, and found that 70% were on forest lands instead of non-forest lands. This signifies a double-loss: the original forest is wiped clearfor built infrastructure, while double the area in a new 'afforestation' site is scoured by earthwork, trenches, and concrete structures, only to introduce alien and inappropriate trees neither native to the original destroyed forest norto the ecosystem in the new location. In effect, three times the area of some of India's mostremarkable forests are being destroyed or disturbed at taxpayer expense in the name of compensatory afforestation. Planting the wrong species and species mix is legion in tree planting programmes. The species planted are often alien, such as eucalyptus, mesquite, senna, and wattles, orinclude naturalised species such as gulmohar or neem. Even where planters claim to use native species, they are generic native species found widely elsewhere in India (such as amla, banyan, orjack)ratherthan those native to the ecosystem at the planting location. Worse, the seeds or seedlings are not sourced from local ecosystems or appropriate seed zones, butrandomly sourced and trucked in from whichever nursery or market happens to sell them. Only a few tree planting programmes take the required care to identify the correct natural ecosystem and vegetation and botherto ethically source seeds orraise seedlings in local, native plant nurseries. Without people In afforestation sites, State forest departments and implementing agencies also plant a pitifully small number of tree species, usually less than 10, often

as few as two orthree. One study found that more than half of the 2,35,000 ha afforested between 2015 and 2018 used five orfewer species. To take just one random example from 2015, to offset the diversion of 103 ha of forest land forthe trans-Arunachal highway, the State planned compensatory afforestation in 310 ha of land in a village forestreserve. Both the original forest and the village reserve would have had hundreds of plant species, but the afforestation, according to details published online, planted five unnamed species at a cost of ₹28 lakh.

Tree planting programmes often fail to considerthe roles and rights of local communities, enshrined in the landmark Forest Rights Act (FRA) of 2006. The CFR-LA report found that of 52 compensatory afforestation plantations in Chhattisgarh, Jharkhand, and Odisha, all were established on community forest lands vested in the village gram sabhas by the FRA, but all were carried out without gram sabha permission. Even during the pandemic in 2020, States such as Chhattisgarh and Odisha continued such afforestation on lands belonging to and used by indigenous people, excluding them by building fences and walls. Underrules framed by the present government in August 2018, the requirement for gram sabha consent has been done away with, violating localrights and compromising traditional land use, such as forfodder and grazing. Crucially, it also fails to empower communities as agents ofrestoration. Meanwhile, destructive development projects are poised to destroy millions of native trees in some of our best forests. A science college in Dehradun set to fell over 25,000 trees, the Buxwaha diamond mine in Bundelkhand set to hack over 2.15 lakh trees, the Ken-Betwa river-linking project slated to destroy 23 lakh trees, the proposed trans-shipment terminal on Great Nicobarisland that will kill untold millions in some of India's most extraordinary forests, and the list goes on and on. Efforts to protect these existing trees in ourforests could do a lot more good than misguided tree planting. A rainforestreturns Back in the Anamalais, I mulled over our own small-scale tree planting forrainforest restoration. Overtwo decades, we had planted around 70,000 trees to restore about 100 ha of highly degraded rainforest, working hectare by hectare, chasing neithertargets nor records, but aiming to bring back a semblance of the originalrainforest ecosystem as best we could. Three local plantation companies, Parry Agro Industries, Tata Coffee, and Tea Estates India, had also stepped up to protect over 1,075 ha of existing rainforest patches within theirtea and coffee estates.

Taken together, our work was an attempt to show that protecting remaining forests was the first priority and tree planting could be done and done well, when and where it was really needed. We hoped it would serve as a model of ecologicalrestoration that would motivate others to plant ecosystems and not just trees. Ecologicalrestoration of the appropriate ecosystem — whether grassland, desert, savanna, orrainforest — is preferable to blind tree planting. For us, there was another salientreason to plantrainforest trees, year after year, decade after decade. If all went well, one day, a few decades hence, from the nearby rainforest patch, descendants of the troop of macaques would comb the canopy of the Cullenia, and future hornbills would whoosh onto the Myristica to feed on the fruits of the very trees we had planted.

Source: https://www.thehindu.com/sci-tech/energy-and-environment/why-frenzied-tree-planting-is-no-answer-to-ecological-restoration/article35759379.ece