Eco-Business

Drought-hit forests may worsen climate change

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Forests help to slow the challenge of climate change, don't they? Only if climate change doesn't fell the forests first.

There could be big problems with national and international plans to plant forests to deal with climate change. One of them is uncertainty about how climate change is going to deal with the forests.

In six new studies of what might be called the plantation carbon conundrum, independent groups of researchers warn that:

- As land surfaces warm rapidly, would-be foresters might see their investments literally going up in smoke
- Poorly-designed policies could deliver plantations that end up absorbing far less carbon than anyone hoped for, and at a cost to natural wilderness and biodiversity
- In temperate zones, rising temperatures and extended drought could mean that many trees will die
- How effectively newly planted forests absorb atmospheric carbon depends on a suite of factors: among them tree species, the history of the land newly-planted, and the type of soil around the roots
- Because natural forests directly or indirectly support four out of every five species living on land, the loss of tree canopy is already changing the numbers and variety of global wildlife

- And finally, as temperatures go up, the appetite of the most prolific species for atmospheric carbon could dwindle – meaning that forests planted to slow climate change will be increasingly ineffective.

That the loss of natural forests worldwide is a driver of global heating and climate change has never been in doubt. And climate scientists continue to count tomorrow's forests as part of the answer to the threat of catastrophic climate change.

But researchers have already warned that a vow to plant one trillion trees is not of itself a readymade answer, and that national plans to conserve existing forest are less than effective.

So the challenge for foresters and ecologists is to decide what works best – and what would not. Researchers in the US argue in the journal Science that governments and policymakers need a masterplan to confront the risks forests face from the consequences of rising temperatures: drought, fire and insect disturbance.

Flying blind

Forests and other natural ecosystems absorb about one-third of all the greenhouse gas emissions that human actions release each year. New forests must be part of the answer, but only if the new timber goes on and on absorbing carbon.

"There's a very real chance that many of those forest projects could go up in flames or to bugs or drought stress or hurricanes in the coming decades," said William Anderegg of the University of Utah, who led the study. "Without good science to tell us what the risks are, we're flying blind and not making the best policy decisions."

The other papers look at aspects of the hazard, and of well-intentioned policies to combat climate change. The Bonn Challenge aims to restore an area of forest eight times the size of California, but 80 per cent of the commitments so far involve plantations of single species or of exploitable species: fruit, for instance, and rubber on what might have been natural forest land, grassland or savannahs that support biodiversity.

Californian and Chilean researchers report in the journal Nature Sustainability that they looked at the role of long-running Chilean government subsidies in afforestation and found an uncomfortable result: exotic species flourished at the expense of native wilderness.

"Chile's forest subsidies probably decreased biodiversity without increasing total carbon stored in aboveground biomass," they conclude, bluntly. And one of the paper's authors, Eric Lambin of Stanford University, spelled it out: "That's the exact opposite of what these policies are aiming for."

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