The Problem of Permanence

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THE PROBLEM OF PERMANENCE

→ Something that worries many people about offsetting emissions with trees is how can you guarantee that they will last long enough? Trees take time to absorb carbon, extracting it slowly from the atmosphere as they grow. But saplings are vulnerable to bad weather, neglect and damage by animals. Older woodlands and forests face the risk of fire, pests and disease, which could release the carbon back into the atmosphere. And how can we be sure even if a forest is protected now, it won't be logged or cleared at some point in the future?

Because some offset schemes have been poorly run, with saplings dying or other problems, many people have concluded that it is impossible to guarantee the permanence of trees. But failed schemes shouldn't blind us to the fact that humans have been successfully growing trees and managing woodlands and forest for thousands of years. However, climate change is too grave and urgent a problem for us to afford to waste time and resources on efforts that will fail to deliver. Nor should we forget that forestry-based schemes tend to be remote, and most purchasers of offsets will never see the trees they are funding nor the carbon they are saving, so there is a vital issue of trust and credibility.

What we need is a realistic assessment of the risks, and reliable ways to ensure permanence.

But first what we should note is that permanence is not an issue unique to forestry-based offsets. Wind turbines or hydropower generation facilities can break down. Villagers can reject more efficient stoves brought in through an offset project and return to traditional carbon-intensive ways of cooking, and so on. There are risks with all forms of offsetting. (Although one unique aspect of forests is that they can regenerate of their own accord, and recapture lost carbon.)

And while we need to take the risks seriously, we also mustn't exaggerate them. The risk of fire, for example, varies enormously with where the project is based, the types of tree used, forest management procedures, etc. In the Pacific Coast forests of the northern US and Canada, the average frequency of fires is in the order of hundreds or thousands of years. Meanwhile, the Scandinavians and others have devised effective fire control regimes. Many of the risks of tree planting schemes can be minimized at the design stage – by planting in low fire risk areas, by using disease-resistant species, taking steps to minimize pests, etc. Schemes based on preventing deforestation should include steps to reduce the possibility of fire, disease, etc., especially where these have been increased by human activities in or around the forests.

But there will always remain an element of risk. Forest ecologists, in fact, regularly quantify the frequency and severity of damage from fire, pests and disease for different forest types. Companies growing trees for commercial purposes and public organizations protecting and managing natural forests and woodlands regularly use this information in their planning. We can also use this information to estimate how much of a forest or plantation might be lost over a given period of time, and discount it when calculating a carbon offset.

There are a number of other techniques we can use to mitigate the risk of trees being destroyed, or to compensate for the risk. Insurance is an obvious one. There are already specialized insurance products for commercial forestry and these could possibly be adapted for carbon offsetting. Liability agreements are another, where the buyer and seller make a legally binding agreement to replace any carbon credits lost through fire, disease, etc.

Another approach would be to pool the carbon credits from a number of schemes, and hold a certain portion back in reserve should there be damage to one of the projects. This a bit like banks having to hold a certain amount of capital in reserve to cover their market and credit risks.

Other steps can be taken to reduce specific risks. For instance, if there is a danger that local people could damage a forest in a quest for firewood, they could be provided with other sources of fuel, or more efficient cooking stoves, or part of the forest could be set aside for producing firewood sustainably.

Humans are good at managing risks. It is one of the factors that make us such a successful species. There is much that we already know about managing risks in general, and those of forestry in particular, that we can bring to bear in operating carbon offset schemes. If we factor the risk of impermanence into our calculations, we not only make our offset schemes more robust, they will be more credible as well.

ABOUT ZEROFOOTPRINT

→ Zerofootprint is a socially responsible enterprise whose mission is to apply technology, design and risk management to the massive reduction of our environmental footprint. We operate both in the for-profit and charitable domains through two entities, Zerofootprint Software and Zerofootprint Foundation using shared technology.