



CAN THE EMERGING CARBON MARKET SAVE EAST AFRICA'S FORESTS?

The root cause of deforestation throughout East Africa is a fairly simple economic matter: trees are worth more cut down than they are standing. Felled trees can be sold as timber or charcoal, and the cleared land used for agriculture, which brings immediate benefits to land users. Standing trees, by contrast, are economically valuable, for example as water catchment areas which produce drinking water and hydroelectric power, but those values are often spread across society at a very large scale. Individual landowners in forested areas receive no remuneration within the marketplace for providing downstream services such as water, no matter how valuable that water is to society as a whole.

This basic economic dilemma, which lies at the heart of so many environmental problems, is termed a 'market failure'. This means that the marketplace, as conventionally structured, fails to produce things which are valuable; landholders who 'produce' forests do not get rewarded in financial or economic terms by those who consume water (for example, downstream farmers or urban municipalities).

In this year of terrible drought, Kenya has once again been reminded of the consequences of this market failure with respect to the links between water (and hydroelectricity) provision and forest conservation. At the global scale, though, a much greater market failure has become the defining environmental issue of our time: climate change.



Climate change is, as noted by many experts such as the British economist Sir Nicholas Stern, probably the greatest market failure in the history of humanity. Climate change is essentially driven by the accumulation of heat-trapping or ‘greenhouse’ gases in the atmosphere. These gases, particularly carbon dioxide, are by-products of industrial activities that depend on burning fossil fuels (e.g. oil and coal). Such industrial activities provide the economic foundations of modern human societies, enabling the generation of wealth on a massive scale, which of course provides incentives to develop more and more energy-intensive industrial activities. Unfortunately, as humanity has discovered in recent decades, the emissions of greenhouse

gases into the atmosphere as a by-product of these activities has major shared costs associated with it, in terms of the many well-chronicled effects of rising global temperatures and the earth’s changing climate. But because the benefits of emitting greenhouse gases through industrial activity are generally captured privately, by individuals or companies, while the costs are shared at the global scale, the incentives that are generated at present tend to favour continuing release of emissions into the atmosphere. This is the underlying nature of the challenge of reversing climate change: to totally redesign the rules governing markets from global to national to local levels, so that these incentives will be changed.

Top left and right:
East Africa's forests scenes

Pictures by:
Fred Nelson

A fundamental element of changing people’s incentives, and thus their behaviour, lies in developing systems that reward actions which reduce greenhouse gas emissions. These rewards can come from either public agencies or private markets, but the key lies in attaching economic value to actions that reduce greenhouse gas emissions. This is the key to solving the problem of global climate change.

In this context, forest conservation is central to the climate change issue. Forests absorb carbon dioxide from the atmosphere by ‘breathing’ in carbon dioxide and ‘exhaling’ oxygen, and storing that carbon in their biomass (wood) and in the soil. Thus when forests are cut down their absorptive capacity



is lost and the carbon stored in living trees is released back into the atmosphere (for example when forests are burned to clear land). Deforestation and related land use changes account for around 17% of all global carbon emissions, making deforestation the second-most important contributor to global warming after energy production and transportation.

The Kyoto Protocol, which expires in 2012 and is being renegotiated at the global climate summit in Copenhagen, Denmark, in December this year, employs a range of market-based mechanisms in its framework for regulating global carbon emissions and trying to bring about global reductions. One of these is the so-called 'Clean Development Mechanism', whereby the richer countries - which have high levels of per capita carbon emissions - can buy 'credits' from poorer countries. The idea behind this is that it will be possible to reduce global emissions more quickly by encouraging the least costly overall emission reductions, wherever they may occur. If poor countries can achieve reductions - measured through the metric of one tonne of carbon dioxide-equivalent - then they can 'sell' those emission reductions as 'credits' or 'offsets' to buyers.



One thing is almost certain, the carbon market will play a major role in shaping the way forests are used, managed, and conserved in East Africa in years to come

Buyers of carbon reduction credits include wealthy countries which are obligated to reduce their emissions under the Kyoto Protocol, as well as companies that are subject to national or regional-level regulations and are thus seeking to reduce their net emission levels. In addition, a 'voluntary' carbon market has emerged in recent years. This voluntary market comprises individuals or companies, or even municipal governments, mostly in Europe and North America, which seek to offset their own carbon emissions for ethical or, in the case of companies, marketing purposes (i.e. being able to claim corporate 'greening' practices as demanded by many consumers).

As a result of these changing global regulations, in the form of the Kyoto Protocol and now its likely successor treaty, and changing personal ethics and preferences related to carbon emissions, the global carbon market has grown rapidly in the past five years. By 2008, the global carbon market, which did not even exist a decade ago, was worth around \$120 billion.

Despite this rapid growth, carbon credits or offsets generated by forest projects remain a relatively small proportion of this overall carbon market. Forest projects are, in many respects, difficult ways to produce carbon offsets despite the importance of forests in the global carbon cycle. Forest projects must deal with issues relating to 'permanence', which means ensuring that the reductions in emissions that occur when forests are conserved or re-grown are not temporary, for example if the forest were subsequently burned or cut down. There is also the question of 'leakage', which means ensuring that forests conserved in one locale do not simply lead to deforestation activities moving to another area, resulting in zero net reduction in forest loss and carbon emissions. In general, the marketplace for carbon emission offsets has to date shown

a preference for emission reductions that come from, for example, the adoption of alternative fuel sources.

Due to some of the concerns with forestry projects, and general reservations about linking forest conservation and climate change in a formal treaty, the original Kyoto Protocol agreed to in 1997 did not include forest conservation (termed 'avoided deforestation') in its regulatory scheme. In recent years, consensus has emerged that this needs to change, and two years ago at a climate conference in Bali, Indonesia, it was provisionally agreed that mechanisms to finance 'Reduced Emissions from Deforestation and Forest Degradation' (REDD) should be integrated into the next global climate agreement.

How exactly this will occur remains to be negotiated, but nations are forging ahead with initiatives to develop programmes and institutional frameworks for linking forest conservation with these expected REDD payment schemes. Among European countries, Norway has taken the lead in supporting these REDD initiatives in developing countries, including a pledge of \$1 billion to Brazil's 'Amazon Fund' and support of \$100 million over the next five years to laying the groundwork for REDD in Tanzania.

As a result of the market opportunities that carbon forestry initiatives are presenting, including both existing opportunities on the voluntary market and expectations of steep growth in the regulatory market under a future global climate regime, a range of projects is gradually emerging across East Africa. These initiatives span a diverse range of forested landscapes across the region and are marketing carbon offsets to both local and global buyers.

One of the most well-established initiatives, established in 2003, is located in southwestern Uganda. This project, operating under the



have limited ability to effectively police local patterns of forest use, and marginalising the local communities that are often best positioned to conserve forests. Land tenure security is thus a key factor in enabling local communities to capture revenues from the carbon market which will provide incentives for conservation measures.

Another basic challenge lies in the structure of the carbon market and the types of projects this market, as currently structured, tends to favour. Developing carbon forestry projects requires a range of technical tools and time-consuming processes, which tends to create substantial upfront costs, while revenues are only generated later on, after offsets begin to be generated by forest recovery.

These project development costs mean that larger-scale projects tend to be preferable to smaller, more locally adapted projects which might have greater flexibility and built-in options to learn and adapt from experience. Carbon forestry projects are also relatively risky ways of generating offsets because of the concerns noted about the permanence of forest offsets. In East Africa, governance factors such as insecure or contested land or forest tenure can increase the risk profile of projects, making them more expensive and less competitive in the marketplace.

Despite these challenges, climate change has thrust forest conservation back into the spotlight of global social and economic concerns. The emerging carbon market is essentially an effort to develop economic instruments that can translate this concern into tangible financial incentives for countries and local communities to conserve and recover forests.

While diplomats debate the content of the next global climate agreement, the market for voluntary carbon offsets already presents substantial opportunities to develop new revenue streams from forest conservation. A priority for regional conservation efforts is to learn from emerging experiments to develop initiatives in different landscapes and with diverse institutional and market arrangements.

One thing is almost certain, though: the carbon market will play a major role in shaping the way forests are used, managed, and conserved in East Africa in years to come. ●

'Plan Vivo' scheme developed by the Edinburgh Centre for Carbon Management, which is also behind the Nhambita Community Carbon Project in Mozambique, is working to support agroforestry and reforestation in Bushenyi District, resulting in over 15,000 trees being planted in the area.

In Tanzania, the Norwegian financial support for REDD pilot projects is now catalysing a range of large-scale initiatives aiming to provide local incentives for forest conservation based on carbon market revenues. The first project to be approved, led by the Tanzania Forest Conservation Group in partnership with a national community forestry network called MJUMITA, aims to develop a cooperative for communities to market local carbon forestry projects. These projects will be located in the increasingly fragmented, high biodiversity landscapes of Tanzania's Eastern Arc mountains and coastal forests. Currently local communities in these areas have few economic incentives to conserve most of these forests, which is a key driver of deforestation and forest degradation. "The ability of local communities to sell carbon credits has the potential to provide critical incentives for conservation in some of Tanzania's most threatened forest ecosystems," notes Cassian Sianga, who coordinates the Tanzania Forestry Working Group on behalf of the Tanzania Natural Resource Forum.

There is little question that the carbon market provides a major emerging opportunity to create long-term economic incentives for forest conservation at both national and local scales. Nevertheless, translating opportunity into reality will require confronting a range of challenges related to REDD and carbon markets which are increasingly the subject of international and national policy debates.

Many indigenous and forest-dependent communities around the world have been critical of global calls for REDD, largely out of fear that the carbon market will result in central governments or corporations laying claim to forests in order to capture the revenues from this new form of commerce. In other words, assigning economic value to forests may lead governments to take them away from local communities. This has emerged as a major point of global debate, particularly in relation to major forest regions, such as the Congo Basin, where local land and resource rights are weak or insecure. The fear is that if governments, including those with low levels of popular accountability, attempt to capture more carbon revenues directly by extending their control over forests, the result will be increased marginalisation or evictions of local people and a weakening of local incentives to conserve forests. In this way, REDD initiatives might work against their own interests by routing revenues to central governments which

Fred Nelson is Director of Maliasili Initiatives Ltd and works as Technical Advisor to Carbon Tanzania (www.carbontanzania.com), a non-profit company developing carbon projects in Tanzania that integrate local community benefits, indigenous forest conservation, and carbon offsets.