The Carbon Market as an Emerging Livelihood Opportunity for Communities of the Himalaya

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Climate change induced by increased greenhouse emissions is real and has begun to affect us all. Human activities have increased the concentration of carbon dioxide in the atmosphere from 280 parts per million (ppm) to 372 ppm in less than two centuries and global temperatures by 0.6^0 C in the past century.

Evidence of this global crisis include the rise in global sea levels by 20 cm, which poses a threat to millions living in coastal areas, and the melting of the world's snow packs and glaciers; while in many mountain areas the yield of apples has decreased due to inadequate chilling.

Countries of the world are seeking an international commitment to reduce CO_2 and other greenhouse gas emissions worldwide. The Kyoto Protocol is an attempt to set up an international process to address the problem of increasing CO_2 in the atmosphere. It provides an economic process that puts a value on not emitting CO_2 and enables countries to trade carbon emissions. Carbon trading is a mechanism to pay for an ecosystem service.

Towards a fuller valuation of forests to justify conservation

Seeking positive linkages between conservation and economic growth is an important approach in modern forestry. The approach began with the age-old system of sustainable harvesting of timber, where timber was extracted from forests in amounts equal to annual increments while allowing the capital to remain intact. Later, the focus shifted to include economic activities such as the harvest of non-timber forest products (NTFPs) from forests, with the idea that if money could be generated from NTFPs (such as resins, fibre, and mushrooms), there would be no need to cut down forests.

Recently, forest ecologists have begun to think about generating money from standing forests by valuing ecosystem services and developing payment mechanisms based on these services. The provision of payment for carbon sequestration and other ecosystem services represents this approach. Carbon sequestration is the process whereby atmospheric carbon is absorbed into carbon sinks such as oceans, forest, and soil. It is cited frequently as an ecosystem service that forests can provide since it can be measured and traded. However, there is a need to expand the purview of credits and trades by including other ecosystem services of forests such as soil formation, retention of soil and water, and overall hydrological regulation and direct climate effects. A fuller valuation of forests is necessary if forests are to be better conserved by local people.

Forests should be able to generate enough money to make people interested in their conservation.

Over the past decade, progress has been made in developing carbon markets as part of the efforts to implement the United Nations Framework Convention on Climate Change (UNFCCC). The market is still developing, but recent worldwide initiatives suggest that forestry offsets could play an increasingly important role in achieving the emission reduction targets agreed by signatories to the Kyoto Protocol. In addition to the market regulated by UNFCC, several other developing private markets aim to regulate their environmental impacts, such as emissions of greenhouse gases (GHG). Many companies in the US and Canada are involved in the trade of carbon credits with the ultimate aim of developing a workable market mechanism for carbon. A new market trading centre – the Chicago Climate Exchange – facilitates carbon trading. Through this, companies can exchange (buy and sell) carbon credits. Carbon as a commodity can be traded at national and international levels between US$ 8-10/tonne without any transportation or quality control.

The Inter-governmental Panel on Climate Change (IPCC) has identified a gap of approximately 800 million tonnes per year between the emission of GHG and the committed reduction by signatory countries to the Protocol. Nearly 25% of the annual atmospheric increase of about 8 billion tonnes of carbon is a consequence of deforestation, which depletes carbon sinks. Therefore, the conservation of forests, including those under the control of local communities in developing countries, is an important component of the overall global climate strategy. Forest sinks represent a cheaper and easier solution to the build-up of atmospheric carbon. However, carbon sequestration by existing forests, including those managed by local communities, is not eligible for carbon trade under the present structure of the Kyoto Protocol.

Uttaranchal's community forests

In the Western Himalaya of India, the state of Uttaranchal (UA) occupies a special place in the participatory management of common resources because of its Van Panchayats (VPs), which represent one of the largest and oldest institutions in India based on collaboration between the state and the community. Introduced in the 1930s and now in operation in more than 12,000 villages occupying nearly 30% of the total forest area of the state, the VPs are governed by a committee almost without any external financial or technical assistance.

Nature of 'Kyoto: Think Global, Act Local'

Under the project, 'Kyoto: Think Global, Act Local' presently underway in several countries of the developing world (including India, Nepal, and East and West Africa), efforts are being made to enable local communities to measure and monitor carbon sequestration in their community forests and to make a claim for payment for carbon services. The project, being coordinated by ICIMOD in Nepal and Uttaranchal, aims to explore the possibility of community forest management systems in carbon saving and capacity building of the local communities to involve them in the carbon trade. This work is being carried out by ICIMOD's partner in Uttaran-chal, the Central Himalaya Environment Association (CHEA). Results show that communities can be trained to use technology to measure carbon sequestration rates in their community forests. This approach results in lower transaction costs as it does not overly rely on experts' time. When payments for carbon sequestered are made, local communities are able to retain more benefits, which would otherwise go to pay experts.

Value of C-sequestration by community forests

Preliminary data on C-sequestration collected from the VPs in Uttaranchal indicates that the C-sequestration rate varies between 2 t/ha/yr to 4.0 t/ha/yr depending on the condition of the forest. Taking a mean of 3 tC/ha/yr, community forests in Uttaranchal alone (having an average forest size close to 80 ha per VP and numbering about 12,000 out of approximately 15,000 villages in the state) sequester approximately 2.88 metric tonnes of carbon a year. The value of the carbon saved is about Rs 1.29 billion at the rate of US$ 10 per t carbon. The soil biomass carbon pool is as large as the biomass pool, for which estimations are under progress.

Carbon market opportunity

If trained communities are able to submit proposals of a similar nature through the assistance of intermediary organisations, one VP alone could receive up to Rs 1.08 lakhs (US$ 2200) per annum for carbon sequestered. Marginalised people of Uttaranchal depend heavily on natural resources, particularly on the forests as a source of energy and for their enterprises. It is not possible to conserve forests for long without enabling the poor people to access modern, efficient energy sources such as LPG, solar energy, and electricity. The funds generated through the sale of carbon can be used to replace the present subsidy on fuelwood by modern energy sources and can encourage communities to save their forests for use as a 'carbon sink'. A special portion of the fund generated from the sale of carbon can be used for developing eco-friendly enterprise such as ecotourism and the infrastructure required for it, and developing organically grown food for niche markets.

Elisabeth Kerkhoff

Forest trees contribute to storing carbon