

The potential of community managed

The “Kyoto: Think Global Act Local” initiative is an international project. It was set up to assess the potential for communities such as those in the state of Uttarakhand, India, to benefit from carbon trading.

Members of village forest councils were trained to measure how much carbon their forests store per year. They are now looking for more “buyers” for their carbon, while continuing to manage their forests sustainably.

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Every year, about 8 billion tonnes of carbon are released into the atmosphere, contributing to global warming and climate change. According to some estimates, around one quarter of this is due to deforestation. This also means the loss of forests which could store carbon. Conservation of forests is therefore an important strategy for dealing with climate change. Forests are a much cheaper and easier way to store carbon than industrial capture and storage.

But the capture and storage of carbon by existing forests, (a process known as carbon sequestration) is not eligible for carbon trade under the Kyoto Protocol. This is mainly because it is difficult to accurately measure and verify carbon gains. Under the Kyoto Protocol, only afforestation (plantation on land where forests did not exist) and reforestation activities (plantation on land which was cleared before 1990) are eligible for carbon trade. However, avoiding deforestation by conserving forests is a more effective solution to the atmospheric rise of carbon dioxide. An existing mature forest in the Himalayan region, for example, stores approximately 200 to 300 tonnes of carbon per hectare. While plantations would bind carbon rapidly, they may take 40-50 years to accumulate such an amount.

Think global, act local

The “Kyoto: Think Global Act Local” initiative, financed by the Netherlands Ministry for Development Co-operation, involved research teams in eastern and western Africa, and in the Himalayas. The aim of this project was to assess the potential for communities involved in sustainable forest management in developing countries, to benefit from the Clean Development Mechanism and carbon trading. It also aimed to explore the value of community-based forestry management as a climate adaptation strategy. Measurements were made over a five year period, at 26 sites, spread over seven countries, aiming to demonstrate the increase in carbon stocks that result from such management.

Carbon trading

The Kyoto Protocol commits industrialised countries to reduce their emissions of greenhouse gasses. Through the system known as Clean Development Mechanism (CDM), a project to reduce emissions can be set up in a developing country, and the carbon “saved” there can then be “credited” (expressed as carbon dioxide equivalents). Developed countries are entitled to purchase these credits as a way of meeting their own obligations. The resulting trade in carbon credits is intended to encourage investments in various emission-reducing technologies.

In the Himalayan region, the project aimed to explore the capacity of community forests in carbon storing. Its objective was to develop simple but reliable measurement methods that can be carried out by communities. By training communities to take measurements, costs are lowered. In India, activities were carried out in the mid elevations (1700-2100 m) of Kumaon Hills, in the state of Uttarakhand. This region, like much of the Indian Himalayas, is under constant pressure from the subsistence farming activities of the local population, resulting in fragile ecosystems. Livelihood choices are limited, and extreme weather events have further worsened the situation for the people of the Himalayan region. Traditional agriculture is heavily reliant on forests, needing a considerable amount of inputs from them. Forests provide a significant amount of fodder, sustaining a large livestock population. Leaf litter is also used to produce farmyard manure. It has been estimated that 2-15 hectares of forest area might be required to sustain the productivity of each hectare of cropland. The impact of climate change in the region is already having harsh and decisive consequences.

In Uttarakhand, the history of community participation in forest management goes back almost a century, when local people made collective efforts to protect their forests. The concept of managing the forest through community participation emerged in the mid-1920s following agitation against the British colonial government’s control over forest resources. Van Panchayats (VPs), a village level forest council, emerged in Uttarakhand following the Van Panchayat Act in 1931, which allowed handing over management responsibility of designated community forests to the elected body of VPs. Most of the VPs were initiated on degraded sites under the control of the State Revenue Department. The VPs have been sustainably managing their forests for decades without any outside financial support. At present, Uttarakhand has 12 064 VPs, covering more than half a million hectares.

The project started in two VPs, Dhaili and Toli, and later extended to other VPs. The forest area they cover is found at an average altitude of 1850 m. Dhaili covers 60 hectares of forest,



forests for carbon trade

and Toli a total of 103 ha. The forest is in good condition, and is dominated by chir pine (*Pinus roxburghii*) and banj oak (*Quercus leucotricophora*). Each village has about one thousand inhabitants, whose main source of income is working as daily labourers, and agriculture. The average income per family is close to the poverty line. Nearly all the families use fuelwood, with only 5 percent using gas. A family needs about 6-8 kg of dry fuelwood a day. Eighty-five percent of this is collected from the VP forests, 10 percent from trees on private lands, and 5 percent from government or reserved forest.

Five members of each VP, hereby referred to as field investigators, were selected on the basis of their willingness to participate and literacy level. The project then organised ten training sessions of two hours a day in using a GPS system for taking the coordinates and boundary marking of forests. This was followed by six additional sessions, where trainees were taught to take tree measurements in order to estimate the total biomass. Three one-day refresher trainings were given during the 2nd, 3rd and 4th year of the project.

Capacity enhancement and benefits

As a result, field level investigators learnt to use modern gadgets for biomass carbon measurement. They are now training other community members, thus hoping to lower the costs of these efforts. Aiming to see the effectiveness of the project's approach, an independent verification of carbon measuring techniques and carbon stock was conducted in Dhaili by scientists from the Kumaun University Nainital. The carbon data measured by the field level investigators varied by 5 to 11 percent from the data collected by independent verifiers.

The VP forests are sequestering carbon at the mean rate of around 3.3 tonnes per hectare per year. As the area of the Dhaili VP is 60 hectares, it is sequestering a total of 186 tonnes of carbon annually. Average prices of carbon offsets range between US\$ 5 to US\$ 28 per tonne. Using the nominal rate of US\$ 10 per tonne, the carbon stored in Dhaili is worth US\$ 1860. Toli VP, with a total area of 103 hectares, is sequestering a total of 357.4 tonnes of carbon every year, worth US\$ 3574. The situation in other VPs in Uttarakhand is similar.

Looking forward

This research has shown that communities can use forests sustainably to support livelihoods and agricultural production, but that these forests still store considerable amounts of carbon annually. Selling this carbon can provide a considerable income for the VPs. While they still only have small amounts to sell, they are now looking for alternative markets and "buyers". Community members and project staff are clear that this is just a research project for now, but it has shown that it is possible for community forests to sequester carbon, and that community members can measure it. Although the sale of carbon and flow of funds may take some time, they will not be discouraged.

The inclusion of forest conservation activities in international agreements and protocols will give incentives to the local population to get certified emission reductions for their efforts to conserve the forest. This would not only provide resources for sustainable livelihoods and improved lifestyles, but also encourage the marginalised people of the Himalayas to make a meaningful contribution to reducing global emissions and forest conservation. In the meantime, private carbon markets can be exploited. A federation of VPs has already submitted a

proposal for claiming carbon credits in private markets. One of the project implementation organisations in Uttarakhand, the Central Himalayan Environment Association (CHEA), is now carrying out a small project, trying to further increase the carbon sequestration rates. A larger project is expected to help the local population develop new income generation activities.



Photo: CHEA

Field level investigators proved they can measure carbon sequestration accurately.

Encouraging signs are also coming from the government. The National Action Plan on Climate Change has recently been adopted by the Government of India, where "sustaining mountain ecosystems" is one of the priorities. This initiative also gives an opportunity to the villagers to conserve and manage their natural resources, and present their efforts with a sound scientific base. This could also lead to payment for ecosystem services through the National Accounting System (the transfer of funds from the central to the state governments). "We look forward to recognition of our conservation efforts, which have been followed traditionally by us. The state and central government have now realised our contribution to carbon sequestration. It is time that our efforts not only be appreciated in the books, but the community should also get tangible returns for it", says Gopal Singh, one of the project's field investigators.

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