Reducing Carbon Emissions

through Community-managed Forests in the Himalaya

Editors
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ICIMOD

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The International Centre for Integrated Mountain Development (ICIMOD) is an independent 'Mountain Learning and Knowledge Centre' serving the eight countries of the Hindu Kush-Himalaya –  Afghanistan,  Bangladesh,  Bhutan,  China,  India,  Myanmar,  Nepal, and  Pakistan – and the global mountain community. Founded in 1983, ICIMOD is based in Kathmandu, Nepal, and brings together a partnership of regional member countries, partner institutions, and donors with a commitment for development action to secure a better future for the people and environment of the extended Himalayan region. ICIMOD's activities are supported by its core programme donors: the governments of Austria, Denmark, Germany, Netherlands, Norway, Switzerland, and its regional member countries, along with over thirty project co-financing donors. The primary objective of the Centre is to promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations.

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- *Kamal Banskota*

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Foreword

Mountain systems are seen globally as the prime sufferers from climate change. Enhancing resilience and promoting adaptation in mountain areas have thus become among the most important priorities of this decade. The present study describes an example of how mountain areas and mountain people can contribute effectively to mitigation through carbon sequestration, although compensation for their services has yet to be realised.

Climate change has become an overriding issue and its impacts are recognised to be felt globally. The fragile ecosystem of the Himalayas is exceptionally susceptible to even minute variations in climatic conditions and is likely to experience many such impacts over the coming decades. Studies suggest that mountain people in general and poor people in particular are more vulnerable to the impacts of climate change than communities in the plains. The research disscused here looks at emerging issues of climate change and how community forests can help mitigate concentrations of atmospheric carbon dioxide.

The Kyoto Protocol recognises forest management activities in industrialised countries, where CO_2 effects from the management of existing forests can be accounted for in the national green house gas inventories. For non-industrialised countries, forest management as such is not recognised; these countries can only participate in afforestation and reforestation activities, management of existing forests is excluded. In other words the Kyoto Protocol only recognises forests as carbon sinks (afforestation and reforestation) and not as carbon sources (avoiding deforestation), and thus fails to address avoiding further emissions from deforestation in non-industrialised countries. The Protocol provides no incentives to non-industrialised countries to reduce or stop deforestation or maintain healthy forests, for example through community management. Communities that manage forests in a sustainable manner contribute to stabilising atmospheric CO_2 concentrations by maintaining a carbon pool in the terrestrial ecosystem. Deforestation in the tropics accounts for 18-25% of all anthropogenic CO_2 emissions, thus the United Nations Framework Convention on Climate Change (UNFCCC) needs to address this issue urgently in order to make its efforts to reduce global emissions more effective. The present publication highlights the failure of the Kyoto Protocol to address emissions reduction at the grassroots level by excluding avoided deforestation (community forest management) as an effective emissions reduction strategy in non-industrialised countries.

Over the past several decades, the Himalayan region has witnessed a shift in the common property resource management paradigm, from one that excluded local stakeholders from forest management towards one that includes them. This devolution in authority from state to local communities has been successful in reducing deforestation and increasing biomass in common lands through formal institutions established by forest

user communities. This has been effective in helping local people meet their needs for firewood, timber, fodder, grass, and other products from the forest.

It is now time to consolidate local actions and raise the concerns of communities about receiving payments for the global benefits they render by sequestering carbon and reducing atmospheric CO_2 concentrations emitted from the industrialised world. The value of sequestered carbon is an incremental benefit for which local communities should receive payments, but so far, global rules under the Protocol exclude recognition of their efforts. Through this project in India and Nepal, described in this publication, communities managing their forests have learned about carbon sequestration and its importance to climate. These communities have realised the benefits they are contributing to mitigating climate change. They have collaborated towards this research and have developed competency in monitoring carbon in their forests using the IPCC guidelines to measure carbon. If payment for carbon from community forests becomes possible, communities will be in a position to retain larger benefits by being able to reduce transaction costs. At the same time, the incremental benefits may persuade more communities to conserve their forests with greater vigour and effectiveness.

As preparatory work is being done for the second commitment period, the UNFCCC has requested countries to submit policies on reducing emissions from deforestation. This research comes at the right time, and reflects the concerns of local communities that conserve forests and reduce global emissions but whose efforts for payment are not recognised. The time is ripe to take up this issue globally because what comes after 2012 is being debated at present.

I would like to thank all the researchers and contributors to this publication. The research project 'Kyoto: Think Global Act Local' was conducted in seven countries and was funded by the Netherlands Development Cooperation (DGIS). I thank DGIS, as well as the Technology and Sustainable Development section of the Centre for Clean Technology and Environmental Policy, University of Twente, Netherlands, who coordinated the research effort. At the field level in the Himalayan region, our two partner institutions have done a commendable job in involving local community forest user groups in implementing the research initiative. The Central Himalayan Environmental Association conducted the research in Uttarakhand, India, and the National Trust for Nature Conservation undertook the research in Nepal. Special thanks and a word of appreciation goes to the local communities in India and Nepal who helped carry out this action research initiative. Finally, I would like to thank Kamal Banskota, Programme Manager, ICIMOD, for coordinating the project and the publication of the results in this book.

Dr. Andreas Schild
Director General
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Abstract

Climate change is real and is occurring at an alarming rate. Currently, worldwide deforestation alone accounts for approximately 18-25% of global greenhouse gas emissions, yet this could be curbed quickly by avoiding deforestation. Forests act both as a carbon source and sink depending on the management regime, and hence can play an important role in stabilising atmospheric concentrations of greenhouse gases (GHGs) such as carbon dioxide (CO_2).

The concern to reduce concentrations of GHGs and CO_2 in order to mitigate global warming has led to the global agreement on the Kyoto Protocol. Under the Protocol, in non-industrialised or developing countries the forest is only permitted as a sink measure in the form of afforestation and reforestation activities; thus the Protocol does not address the huge emissions taking place as a result of deforestation. Forests are not recognised as sources of emissions which can be reduced by avoiding deforestation. One reason for not crediting avoided deforestation under the Kyoto Protocol is uncertainty in quantifying and controlling leakage.

Many communities in non-industrialised countries have been successful in transforming the deteriorating state of their natural forests to sustainable management, thereby avoiding deforestation and the subsequent release of CO_2 emissions into the atmosphere. Some examples of sustainable forest management practices are the Joint Forest Management policy in India, and Nepal's Community Forest Management Programme. These types of community management also result in additional carbon sequestration, but credit for these cannot be claimed under the Clean Development Mechanism (CDM).

This book reports on the work carried out by the research project, '**Kyoto**: **Think Global Act Local**', which aims to bring local sustainable forest management projects under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The book draws on work carried out since 2003 at three sites in India and Nepal. In India, the project sites were in Uttarakhand State, and in Nepal, in Ilam, Lalitipur, and Manang districts. The project gathered data to show that community-managed forests can play important roles in mitigating the adverse impacts of climate change by sequestering CO_2 from the atmosphere. The levels of CO_2 sequestered annually were quantified from six research sites using the Intergovernmental Panel on Climate Change (IPCC) guidelines. This is probably the first time that the protocol for carbon assessment in the Himalayan region has been carried out. The results show that local people can be trained to assess carbon levels in their community forests.

Community-managed forests in the Himalayan region are becoming an important carbon pool, as previously deforested areas in these forests are showing signs of regeneration. The mean carbon sequestration rate for community forests in India and Nepal is close to 2.79 $tCha^{-1}\ yr^{-1}$, or 10.23 $tCO_2ha^{-1}yr^{-1}$, under normal management conditions and after local people have extracted forest products to meet their sustenance needs. In monetary terms, forested land at existing CDM market prices for CO_2 tonnes could be worth anywhere between US$ 162.84 $ha^{-1}yr^{-1}$, at a rate of US$ 12 per tonne CO_2 and based on biomass data from India, to as little as US$ 34.45 $ha^{-1}yr^{-1}$, at US$ 5 per tonne and based on biomass data from Nepal.

With increasing areas being brought under community management, forests in large parts of the India and Nepal Himalaya are improving and becoming major carbon sinks. The methodology used by this study is important, as it enables quantification of carbon sequestration levels which is required to claim carbon credits. In view of the rise in human and livestock populations in the Himalayan region, carbon trade could be an incentive for forest conservation and management if payment for carbon from avoiding deforestation is recognised. There is little doubt that if carbon payments can be made to communities conserving their forests, this will not only increase community revenues, it will also provide incentives for better forest conservation and management, both of which have beneficial impacts on emissions reduction as well as on the sustainable development of communities and their environments.

Realising that nearly a quarter of the GHG emissions from deforestation is unaccounted by and outside of the UNFCCC, there is growing interest to include deforestation in the second commitment period after 2012. A recent development, the proposed Reduced Emissions from Deforestation (RED), if implemented, could make the UNFCCC more effective in reducing emissions and combating climate change. At the same time, RED would also recognise measures for avoiding deforestation in non-industrialised countries, which could be an incentive to further conserve and manage forest more effectively.

This book is intended to generate awareness on climate change and the role forests in general, and community forestry in particular, play in regulating climate change. The book will be relevant to professionals, researchers, policy makers, and students interested in the topic. In particular, we hope it will be useful to professionals working in community forestry projects in their endeavour to promote payment for CO_2 sequestered by community forests. The book also narrates the IPCC guidelines for measuring carbon.

This research was funded by the Netherlands Development Cooperation (DGIS). The project was carried out in partnership with the Central Himalayan Environment Association (CHEA) and the National Trust for Nature Conservation (NTNC), formerly known as KMTNC. CHEA, based in Nainital, Uttarakhand, was responsible for coordinating field activities in the sites in India, while NTNC coordinated field activities in Nepal.

Acronyms and Abbreviations

AR	afforestation and reforestation
ATHC	Atlantic thermohaline circulation
CDM	Clean Development Mechanism
CER	certified emission reduction
CFC	chlorofluorocarbon
CFM	community forest management
CFUG	community forest user group
COP	Conference of Parties
CO_2	carbon dioxide
C pool	carbon pool
chb	circumference at breast height
dbh	diameter at breast height
FUC	forest user committee
GHG	greenhouse gas
Gt C	gigaton carbon or billion tonnes of carbon
IPCC	Intergovernmental Panel on Climate Change
JFM	Joint Forest Management
KP	Kyoto Protocol
LULUCF	land use, land use change, and forestry
masl	metres above sea level
ppm	parts per million
RED	reduced emission from deforestation
SOC	soil organic carbon
TAR	Third Assessment Report
$tCha^{-1}yr^{-1}$	ton carbon per hectare per year
$tCO_2ha^{-1}yr^{-1}$	ton carbon dioxide per hectare per year
UNFCCC	United Nations Framework Convention on Climate Change
VP	van panchayat
WRI	World Resources Institute