A Community Guide to

Climate Change and REDD+

Communication Material to Create Awareness among Community Forestry Stakeholders

Centre for People's Forestry

About CPF

Centre for People's Forestry is a Civil Society Organisation registered in August 2002. CPF works for the rights and livelihoods of forest dependent communities with due regard to conservation. It believes that the claim to conservation, control and management of the forest resources belong to the forest dwelling and dependent communities and their livelihoods should be the primary concern of all forestry programmes.

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Acronyms

AAP	Analytical and Assessment Phase
AWG-KP	Ad Hoc Working Group on Further Commitments for Annex 1 Parties under the Kyoto Protocol
AWG-LCA	Ad Hoc Working Group on Long-term Cooperative Action under the Convention
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CBD	Convention on Biodiversity
CC	Carbon Credits
CCX	Chicago Climate Exchange
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CFC	Chlorofluorocarbons
CIF	Climate Investment Funds
Co2	Carbon Dioxide
COC	Carbon Offset Credit
COP	Conferences of the Parties
CRC	Carbon Reduction Credit
ERPA	Emission Reductions Purchase Agreement
FAO	Food and Agriculture Organisation
FCA	Forest (Conservation) Act
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Programme
FRA	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
FPC	Forest Protection Committees
FSI	Forest Survey of India
GHG	Greenhouse Gas
GoI	Government of India
Gt	Gigatonne
GWP	Global Warming Potential
HRD	Human Resource Development
ICFRE	Indian Council of Forestry Research and Education
IFA	Indian Forest Act
INCCA	Indian Network for Climate Change Assessment
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
JFM	Joint Forest Management
LULUCF	Land Use, Land-Use Change and Forestry
MNRE	Ministry of New and Renuewable Energy
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MoEF	Ministry of Environment and Forestry

MoTA	Ministry of Tribal Affairs
MRV	Monitoring, Reporting and Verification
NAPCC	National Action Plan on Climate Change
NFP	National Forest Policy
NGO	Non-Governmental Organisation
NRSA	National Remote Sensing Agency
NTFP	Non-Timbre Forest Produce
PES	Payment for Environmental Services
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+	Reducing Emissions from Deforestation and Forest Degradation in Developing Countries, and the role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries
R-PPs	Readiness Preparation Proposals
SAARC	South Asian Association for Regional Cooperation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SCF	Strategic Climate Fund
TERI	The Energy and Resource Institute
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	UN Collaborative Programme on REDD
VSS	Vana Samrakshana Samithi

Content

Acronyms

Introduction to Climate Change

Compiled by Dr. Sunkari Satyam, CPF

1. Introduction to Climate Change

1.1 Understanding Climate Change in relation to Environment

Environment, according to the Oxford dictionary, is surroundings or conditions in which a person, animal, or plant lives or operates[1]. Environment, therefore, refers to the sum of total conditions which surround man at a given point in space and time[2].

The emergence of environment as an issue of growing public concern and political attention has its roots in the conservation movement, which focused primarily on conserving nature and natural resources. Now the term 'environment' embraces a much broader range of issues, the quality of life in urban areas, the health effects of pollution and contamination of the food chain, and threats to the earth's life-support system through such global phenomena such as climate change, ozone depletion and the accelerated loss of biodiversity.

The natural environment is of crucial importance to social and economic life of man. Today, however, human pressure on the natural environment is greater than before in terms of magnitude and efficiency in disrupting nature and natural landscapes[3]. Increasing human population as a pressure element is initially resulting in increasing exploitation of land and further effects on urbanisation, industrialisation, intensive agricultural practices, mass tourism and extensive infrastructure development. The consequences of population explosion and other related activities are decreased species diversity which led to loss of species of flora and fauna. The loss of habitats directly linked to the overall deterioration of the world's air and water quality[4].

The natural environment is inextricably linked with agriculture and forestry. Since agriculture traditionally depends on sound environmental conditions, farmers have a special interest in the maintenance of natural resources and for centuries maintained a mosaic of landscapes, which protected and enriched the natural environment. The practice adopted by agriculture exploit the world's fresh water in two ways – firstly by increasing the demand for water and secondly by changing the chemical composition of water[5]. The chemical composition of water depends on the use of fertilizers and pesticides for more production in agriculture. Thus, modern agriculture is responsible for significant damage to natural habitat causing loss of wildlife, soil degradation and reduction of forest.

Hence, society and other interrelated developmental activities such as demands on food, energy resources, technology and waste have impacted on environment. As a result of impact on environment, the consequences are deforestation[6], soil erosion, increase in temperature, depletion of Ozone layer, changing forest and natural conditions, loss of biodiversity and disruption in the ecosystem and loss of ecological and economic productivity.

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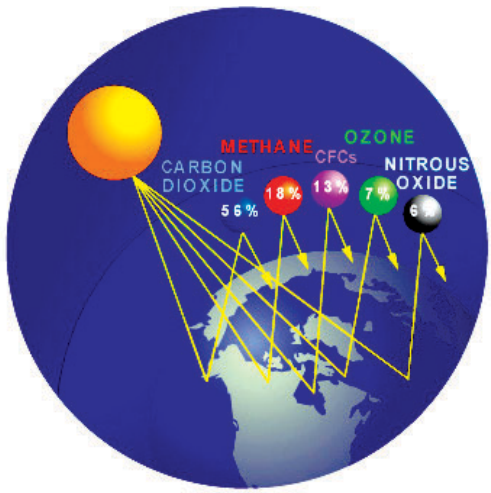
1. *Soanes, Catherine (2001), The Compact Oxford Reference Dictionary, Oxford University Press. New York, p.274.*
2. *Deb, C. Swapan, (2003). Environmental Management, Jaico Publishing House, Mumbai, p. 3.*
3. *Ibid, p.82.*
4. *Ibid, p.85-86.*
5. *Ibid, p.88.*
6. *Deforestation is large-scale cutting of tropical forest to bring land under crop cultivation makes rain water to drain immediately. In brief, clearance of forests by logging or burning for agriculture and leading to more pressure on forest as a result the percentage of rains will fall down (Deb, C. Swapan, 2003, p. 66.).*

1.2 Understanding Climate Change

Human activities change the properties of the atmosphere. Air pollutants are emitted into the atmosphere from a large variety of sources. The sources of air pollution can be grouped according to the types of sources or numbers and the spatial distribution of sources. On the basis of the types of sources, air pollution can be divided into two groups, first one is natural sources and second one is anthropogenic sources[7].

Natural sources include wind-blown dust, pollen grains, sea-salt nuclei, volcanic eruptions, forest fire, microbial activities, etc. Anthropogenic sources include a wide spectrum of man-made sources of air pollutions, which can be further sub-classified into four categories, a. Industrial sources, b. Domestic sources, c. motor vehicles and d. agricultural sources[8].

The scientific community found that Greenhouse Gas[9] (GHG) emissions resulting from human activities such as fossil fuel burning, livestock rising, deforestation and paddy cultivation are mainly responsible for the rise in GHG concentrations.



Source: www.koshland-science-museum.org...causes02.jsp

Greenhouse Gases

Increase in anthropogenic activities since the advent of industrialisation in the mid-18th century has led to cumulative accumulation of GHGs in the earth's atmosphere (IPCC, AR4, 2007). Increased concentrations of GHGs and the overall warming of the atmosphere has resulted in changing rainfall patterns, disruption in hydrological cycles, melting of ice caps and glaciers, rise in sea levels, and increase in frequency and intensity of extreme events such as heavy precipitation and cyclonic activities. These have in turn had serious impact on sustainability of water resources, agriculture, forests and ecosystems, affecting the well being of billions of people on earth. If emissions continue to rise at their current pace and are allowed to double from their pre-industrial level, the world will face an average temperature rise of around 3°C this century. Serious impact is associated with this scenario, including rise in sea-levels, shifts in growing seasons, and an increasing frequency and intensity of extreme weather events such as storms, floods and droughts.

1.3 Origin of Climate Change Concern

The United Nations (UN) Conference on the Human Development was held in Stockholm in 1972. It was the UN's first major conference on environmental issues[10]. The Conference confidently put the environment on the global agenda and stated its inextricable link with development. The conference also proclaimed the inter-connectedness of peace, international cooperation, poverty eradication and development as the essential underpinnings for efforts to protect our environment. The Stockholm conference also pioneered the democratisation of international politics by bringing in civil society into the debate on the environment[11]. The Stockholm Conference dealt largely with 'local' concerns of air and water pollution and chemical toxicity. It is also observed, in addition to pollution problems of industrial sector, that situation of global environment is still deteriorating due to a swelling population and wasteful resources, destructive patterns of consumption and production had not abated[12].

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7. *Ibid, p. 61.*
8. *Ibid.*
9. *Greenhouse gases – the various air pollutants emitted into the atmosphere act as greenhouse, which allows the short-wave incoming solar radiation to come in but does not allow the long wave outgoing terrestrial infrared radiation to escape, thus keeping the earth's warmer. The gases with the properties of greenhouse are called greenhouse gases such as carbon dioxide, methane, nitrus oxide, and chlorofluoro-carbons. (Deb, C. Swapan, 2003, p. 64.)*
10. *The United Nations, Stockholm Report (1972) of Conference on the Human Environment, http://www.unep.org. Access date: 31/8/2010.*
11. *Lead India, (2002), Rio, Johnnesburg and Beyond: India's Progress in Sustainable Development, Orient Longman, Hyderabad. p. xiii.*
12. *Ibid, p.17.*

Twenty years after the Stockholm Conference, the United Nations Conference on Environment and Development, known as the Earth Summit, was held in Rio de Janeiro in June 1992. The conference was brought great advancements in our understanding of the impact of human activities on the environment. This was principally through significant scientific efforts, and the impact on society of such catastrophic disasters as Sevaso[13], Bhopal[14], the Exxon Valdez[15], Chernobyl[16] and others. In response to an urgent call by the UN General Assembly to formulate "a global agenda for change"[17], the Brundtland Commission published a report titled *Our Common Future*[18]. New issues on the environment had emerged by the time of the Rio Conference. There was growing evidence that the use of fossil fuels produced increasing concentrations of carbon dioxide, which along with the production of other GHGs could lead to global warming with its many implications. This finding was based entirely on scientific work, and led to the formation of the United Nations Framework Convention on Climate Change (UNFCCC). There was clear evidence of ozone depletion in the atmosphere due primarily to ozone-unfriendly chlorofluorocarbons (CFCs – a GHG); these disclosures also led to multilateral discussions and time-bound efforts to phase out the use of such chemicals and substitute them with eco-friendly products. The evidence of serious and continuing deforestation led to the formulation of non-binding forest principles[19].

At Rio de Janeiro Conference, scientists warned that biodiversity was significantly vanishing, and pointed out its importance to all aspects of human existence – in food and agriculture, in health and pharmaceuticals, and as a genetic base, created by nature over long periods of time with myriad variations, whose value lay in enabling ecological sustainability through a delicate interplay of the various components of the ecosystem[20].

The Earth Summit produced international environmental treaty, namely, The United Nations Framework Convention on Climate Change. The objective of the treaty is to stabilise GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The treaty itself sets no mandatory limits on GHG emissions for individual countries and contains no enforcement mechanisms. In that sense, the treaty is considered legally non-binding. Instead, the treaty provides for updates (called "protocols") that would set mandatory emission limits. The principal update is the Kyoto Protocol, which has become much better known than the UNFCCC itself.

1.4 United Nation's Initiatives on Climate Change

Since the UNFCCC entered into force, the parties have been meeting annually in Conferences of the Parties (COP) to assess progress in dealing with climate change, and beginning in the mid-1990s, to negotiate the Kyoto Protocol to establish legally binding obligations for developed countries to reduce their GHG emissions.

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[13] . *The Seveso disaster (Italy, 1976), is a dioxin contamination affected a densely populated area and it provoked by a small chemical factory (ICMESA) owned by the Swiss multinational Roche. The Seveso disaster has become a symbol in the European public sphere of the struggle to regulate industrial activities. the source is taken from: Laura Centemeri, CES/OSIRIS – University of Coimbra (Portugal), "***Remembering the Seveso disaster. The controversial construction of a "discreet memory",** *ESA Conference 2009 – Lisbon, 2-5 September, RN8 - Disaster & Social Crisis, Session Remembering and Forgetting Disaster, access date:6/10/2010.*

[14] . *On December 3 1984, more than 40 tons of methyl isocyanate gas leaked from a pesticide plant in Bhopal, India, immediately killing at least 3,800 people and causing significant morbidity and premature death for many thousands more. For details: Edward Broughton, The Bhopal disaster and its aftermath: a review, http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1142333/, access date: 6/10/2010.*

[15] . *The tanker* Exxon Valdez, *en route from Valdez, Alaska to Los Angeles, California, spilled approximately 10.9 million gallons of its 53 million gallon cargo of Prudhoe Bay crude oil. The oil would eventually impact over 1,100 miles of non-continuous coastline in Alaska, making the* Exxon Valdez *the largest oil spill to date in U.S. waters. (March 24, 1989), source: http://www.eoearth.org/article/Exxon_Valdez_oil_spill, access date: 6/10/2010.*

[16] . *At 1:23 AM on April 26, 1986, two explosions ripped through the Unit 4 reactor of the Chernobyl Nuclear Power Plant in the Ukraine. The aftermath of this disaster has brought about many changes to the region's flora, fauna, and human populations. http://www.eoearth.org/article/Environmental_effects_of_the_Chernobyl_accident, access date. 6/10/2010.*

[17]. *Lead India, (2002), quoted from: World Commission on Environment and Development, http://www.rri.org/envatlas/supdocs/brundt.html*

[18] . *Lead India, (2002), quoted from: World Commission on Environment and Development,* Our Common Future *(Oxford University Press, 1987).*

[19] . *Lead India, (2002), p. xv.*

[20] . *Ibid.*

COPs and their Outcomes

COP	Location and Time	Major Outcomes
COP 1	Berlin, Germany; March, 1995	Voiced concerns about the adequacy of countries' abilities to meet commitments under the Convention. These were expressed in “Berlin Mandate”, which established a two-year Analytical and Assessment Phase (AAP), to negotiate a "comprehensive menu of actions" for countries to pick from and choose future options to address climate change which for them.
COP 2	Geneva, Switzerland; 8 to 19 July, 1996	The parties accepted the scientific findings on climate change proffered by the IPCC in its second assessment (1995), rejected uniform "harmonised policies" in favour of flexibility and called for "legally binding mid-term targets."
COP 3	Kyoto, Japan; December, 1997	Kyoto Protocol was adopted which outlined the GHG emissions reduction obligation for Annex I countries, along with what came to be known as Kyoto mechanisms such as emissions trading, Clean Development Mechanism (CDM) and Joint Implementation (JI). Most industrialised countries and some central European economies in transition (all defined as Annex B countries) agreed to legally binding reductions in GHG emissions of an average of 6 to 8% below 1990 levels between the years 2008–2012, defined as the first emissions budget period.
COP 4	Buenos Aires; November, 1998	Parties adopted a two-year "Plan of Action" to advance efforts and to devise mechanisms for implementing the Kyoto Protocol, to be completed by 2002.
COP 5	Bonn, Germany; 25 October to 5 November, 1999	It was primarily a technical meeting, and did not reach major conclusions
COP 6	The Hague, Netherlands; 1 3 to 25 November, 2000	Negotiations of COP 6: Bonn, Germany; 17–27 July, 2001 The discussions evolved rapidly into a high-level negotiation over the major political issues. These included major controversy over the United States' proposal to allow credit for carbon "sinks" in forests and agricultural lands, satisfying a major proportion of the U.S. emissions reductions in this way, disagreements over consequences for non-compliance by countries that did not meet their emission reduction targets, and difficulties in resolving how developing countries could obtain financial assistance to deal with adverse effects of climate change and meet their obligations to plan for measuring and possibly reducing GHG emissions. In the negotiation meeting, agreement was reached on most of the major political issues, to the surprise of most observers, given the low expectations that preceded the meeting.
COP 7	Marrakech, Morocco; 29 October to 10 November, 2001	An Adaptation Fund was set up in this meeting. The date of the World Summit on Sustainable Development (August–September 2002) was put forward as a target to bring the Kyoto Protocol into force. Negotiators wrapped up the work on the Buenos Aires Plan of Action, finalising most of the operational details and setting the stage for nations to ratify the Kyoto Protocol.

COP 8	New Delhi; 23 October to 1 November, 2002	Adopted the Delhi Ministerial Declaration that, amongst others, called for efforts by developed countries to transfer technology and minimise the impact of climate change on developing countries.
COP 9	Milan, Italy; 1 to 12 December, 2003	The parties agreed to use the Adaptation Fund established at COP7 in 2001 primarily in supporting developing countries better adapt to climate change.
COP 10	Buenos Aires, Argentina; 6 to 17 December, 2004	Parties discussed the progress made since the first COP 10 years ago and its future challenges, with special emphasis on climate change mitigation and adaptation.
COP 11	Montreal, Quebec, Canada; 28 November to 9 December, 2005	The event marked the entry into force of the Kyoto Protocol.
COP 12	Nairobi, Kenya; 6 to 17 November, 2006	The parties adopted a five-year plan of work to support climate change adaptation by developing countries, and agreed on the procedures and modalities for the Adaptation Fund. They also agreed to improve the projects for CDM. The BBC reporter Richard Black coined the phrase "climate tourists" to describe some delegates who attended "to see Africa, take snaps of the wildlife, the poor, dying African children and women."
COP 13	Nusa Dua, in Bali, Indonesia; 3 to 15 December, 2007	Agreement on a timeline and structured negotiation on the post 2012 framework (the end of the first commitment period of the Kyoto Protocol) was achieved with the adoption of the Bali Action Plan. The Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) was established as a new subsidiary body to conduct the negotiations aimed at urgently enhancing the implementation of the Convention up to and beyond 2012.
COP 14	Poznan, Poland; 1 to 12 December, 2008	Delegates agreed on principles for the financing of a fund to help the poorest nations cope with the effects of climate change and approved a mechanism to incorporate forest protection into the efforts of the international community to combat climate change.
COP 15	Copenhagen, Denmark; 7 to 18 December, 2009	The goal of this meeting was to establish an ambitious global climate agreement for the period from 2012 when the first commitment period under the Kyoto Protocol expires. Ministers and officials from 192 countries took part in the Copenhagen meeting and in addition there were participants from a large number of civil society organisations. As many Annex 1 industrialised countries are now reluctant to fulfill commitments under the Kyoto Protocol, a large part of the diplomatic work that lays the foundation for a post Kyoto agreement was undertaken up to the fifteenth COP.
COP 16	Cancún, Mexico; 29 November to 10 December, 2010	The meeting represented key steps forward in capturing plans to reduce GHG emissions and to help developing nations protect themselves from climate impacts and build their own sustainable futures. These included, among others, establishing clear objectives for reducing human-generated GHG emissions over time, encouraging participation of all countries in reducing these emissions, ensuring the international transparency of the actions taken by countries, mobilising the development and transfer of clean technology, mobilising and providing scaled-up funds and protecting the world's forests, which are a major repository of carbon.
COP 17	Expected to be held in Durban, South Africa from 28 November to 9 December 2011	

United Nations Environment Programme

The United Nations Environment Programme (UNEP) was set up at the Stockholm Conference in 1972. The UNEP works with countries to strengthen their ability to adapt to climate change, move towards low-carbon societies, improve understanding of climate science, and raise public awareness of the earth's changing climate. The sub-programme is closely aligned with the Green Economy Initiative, which promotes cleaner investments and technologies as opportunities to reduce emissions, protect our planet's biodiversity and ecosystems, and alleviate poverty through green job creation. All of UNEP's work on climate change is shaped by the negotiation processes of the UNFCCC[21]. The Climate Change sub-programme focuses on strengthening the ability of countries, particularly the developing countries, to integrate climate change responses into national development processes. The sub-programme has four key goals such as Adapting to climate change, Mitigating climate change, Reducing Emissions from Deforestation and Forest Degradation (REDD+) and Enhancing knowledge and communication[22].

1.5 Government of India's Initiatives on Climate Change

India is a party to UNFCCC. It signed this multilateral treaty on June 10, 1992 and was the 38th country to ratify it on November 1, 1993. The Government of India (GoI) has been very active in the climate change negotiations and has also taken up many steps to implement the Convention, even though India does not have any commitment for GHG emissions reduction. However, India has initiated steps to achieve energy efficiency, fuel switching, afforestation, and use of renewable energy technology as a part of national planning process[23]. Climate change concerns do have important implications for national economy. India has planned to integrate climate change policies with national sustainable strategy.

The Ministry of Environment and Forestry (MoEF) is the nodal agency in the GoI for climate change issues and policy formulation. It has taken various steps towards meeting the Convention requirements, such as constitution of a Working Group on the UNFCCC to deliberate upon measures and positions that should be taken regarding the various issues emerging out of the climate change negotiations[24]. A separate group on the Kyoto mechanisms has also been constituted. MoEF has also been supporting a number of programmes and projects at the regional and the national levels, which would have a mitigating impact on GHG emissions[25].

The GoI has taken initiatives in five broad areas such as Science and Research, Policy Development, Policy Implementation, International Cooperation and Forestry[26].

Science and Research

In the area of Science and Research, as climate change initiative, Government of India has launched Indian Network for Climate Change Assessment (INCCA), a Network of 120 research institutions and 250 scientists and planned and conducted major conferences, and taken research initiatives on Himalayan Glaciers Monitoring Programme to scientifically monitor the Himalayan glaciers, Launch of Indian satellite to monitor GHGs (India to join elite club of countries to do so) and research on India's forest and tree cover as a carbon sink[27].

Policy Development

As a Policy Development area, the initiatives are profile of GHG emissions, Planning Commission-led group set up to develop strategy for India as a low carbon economy to feed into twelfth plan process, State Action Plans on Climate Change (Delhi becomes first State to release Climate Change Action Plan) and National Policy on bio-fuels to promote cultivation, production and use of bio-fuels for transport and in other applications[28].

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[21]. *http://www.unep.org/climatechange/, United Nations Environment Programme – Climate Change, access date/12/10/2010.*
[22]. *Ibid.*
[23]. *Shukla, P.R., Subodh K Sharma and P. Venkata Ramana, 2002, Climate Chamge and India – Issues, Concerns and Opportunities, Tata Mc Graw-Hill Publishing Company Limited, New Delhi. P.2.*
[24]. *Ibid. p.4.*
[25]. *Ibid.*
[26]. *http://moef.nic.in/index.php, India: Taking on Climate Change, 6th January, 2010. Access date/12/10/2010.*
[27]. *Ibid.*
[28]. *Ibid.*

Policy Implementation

India's climate change concern as Policy Implementation is primarily covered in the National Missions under National Action Plan on Climate Change (NAPCC). The eight National Missions include Solar Energy, Enhanced Energy Efficiency, Sustainable Habitat, Water, Sustaining the Himalayan Ecosystem, 'Green India', Sustainable Agriculture and Strategic Knowledge for Climate Change. India conducted first National Conference on Green Building - Materials and Technologies to stimulate green building sector. India has also proposed to build 30 solar cities with aim of 10% deduction in projected demand of conventional energy through a combination of energy efficiency and renewable and made energy efficiency standards for appliances. Other initiatives are fuel efficiency norms plan for fuel economy norms for vehicles and CDM Programme (India assessed as Best CDM Country; Indian projects to neutralise 10% of emissions by 2012)[29].

International Cooperation

In international cooperation, India planned to host Rio+20, Convention on Biodiversity (CBD) in 2012 to mark 20th anniversary of Rio and already conducted UN Climate Technology Conference and SAARC Environment Ministers Conference. Other international initiative is India's Submissions to UNFCCC Report documenting India's 12 proactive submissions to UNFCCC[30].

Forestry

The final area of the India's climate change concern is forestry. The programmes are preparation of State of Forests Report 2009 (report shows continued rise in India's forest cover), launch of CAMPA, and a programme for forest conservation, Green India Mission (New mission under NAPCC to fast-track reforestation) and capacity building in forestry scheme for HRD for forest personnel, and intensification of forest management scheme to improve forest management, infrastructure, fires, among others. Finally, Inclusion of forestry within Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) is also part of climate change activity. Under this initiative, forestry related activities included as part of India's flagship employment guarantee scheme to fast-track reforestation.

India's commitment to UNFCCC is reflected in the various initiatives taken up, at the national and international levels, for sustainable development and climate change. Sustainable development issues are the core concern of Indian planning process. Climate concerns have important implications for national economy especially the energy system. In recognition of the great importance of climate change to the future of the country and rest of the world, India has undertaken additional significant actions.

[29]. *Ibid.*
[30]. *Ibid.*

Forestry and Climate Change

Compiled by B. Jalaja, CPF

2.1 Understanding Climate Change in Relation to Forestry

Forest ecosystems are critical for environmental sustainability, quality of life of local communities and national economies. Forests[31] cover approximately 30% of the earth's land surface. Forest is determined both by the presence of trees and the absence of other predominant land uses. Areas under reforestation that have not yet reached but are expected to reach a canopy cover of 10 percent and tree height of 5 m are included, resulting from human intervention or natural causes, which are expected to regenerate.

They provide critical ecosystem goods and services such as regulating regional rainfall and flood defense and supporting high levels of biodiversity. They are home to 350 million people and over 90% of those living on less than $1 per day depend to some extent on forests for their livelihood. They provide fuelwood, medicinal plants, forest foods, shelter and many other services for communities.

- Climate change can cause changes in temperature and rainfall which are critical to forests.
- Modifications of temperature and precipitation can weaken the forest and increase the frequency and intensity of infestation and fire; particularly if the trees are already under stress and thus susceptible to dieback.
- Extreme events associated with climate change, such as windstorms and wildfire, could put even healthy forests at risk.
- In general, warmer and wetter will enhance forest growth, while warmer and drier will likely be detrimental to growth in dry lands. If drying is significant, grasses will often replace forests in natural systems.
- Climate change is likely to shift natural forests toward the poles.

Forests and Livelihoods

More than one billion people rely heavily on forests for their livelihoods. More than two billion people, a third of the world's population, use biomass fuels, mainly firewood, to cook and to heat their homes. Hundreds of millions of people rely on traditional medicines harvested from forests.

Forests and climate change

Climate[32] is probably the most important determinant of vegetation patterns globally and has significant influence on the distribution, structure and ecology of forests. The Third Assessment Report of IPCC8 concluded that recent modeling studies indicate that forest ecosystems could be seriously impacted by future climate change. Forest ecosystems[33] identified as being particularly vulnerable to the impacts of climate change include: mangroves, boreal forests, tropical forests, cloud forests and dry forests.

Climate change-induced changes in forest eco-systems include:

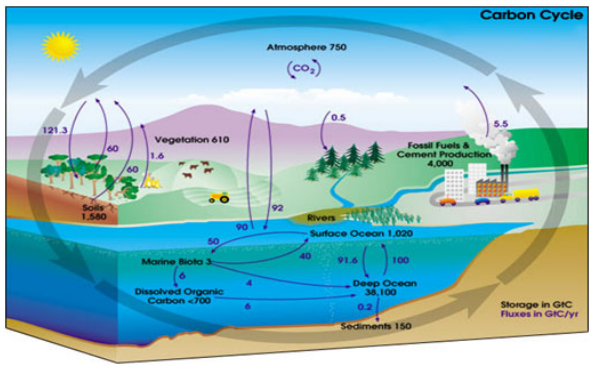
31. *UNFCCC, 2001: "Forest" is a minimum area of land of 0.05-1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10-30 per cent with trees having the potential to reach a minimum height of 2-5 meters at maturity in situ.*
32. *Impact of climate change on forests in India. N. H. Ravindranath1, N. V. Joshi1, R. Sukumar and A. Saxena*
33. *Adaptation of forests to climate change a discussion paper, Roger A. Sedjo. 1616 P St. NW Washington, DC 20036*

- Change in composition of the species
- Increased net primary productivity
- Increased soil erosion
- Increased incidence of Fires

These have implications for the livelihoods of people who depend on forest resources for their livelihoods.

2.2 Forests and Carbon

Forestry is at the centre-stage of global climate change negotiations because forests play an important role in the global carbon cycle. Forests have the potential to be managed to reduce atmospheric concentrations of CO2 and thus mitigate climate change. Maintaining resilient forest ecosystems could contribute not only to reduced emissions, but also to adaptation to future climate change. Forests have a dual role of acting either as: "Carbon sinks" - removing carbon dioxide from the atmosphere (they store large quantities of carbon in vegetation and soil, exchange carbon with the atmosphere through photosynthesis and respiration) or as "Sources of Carbon" - they release carbon when they are disturbed by human or natural causes such as wildfires, use of poor harvesting procedures, forests cleared and burned for conversion to non-forest uses. These activities release large quantities of carbon emissions and other GHGs into the atmosphere.



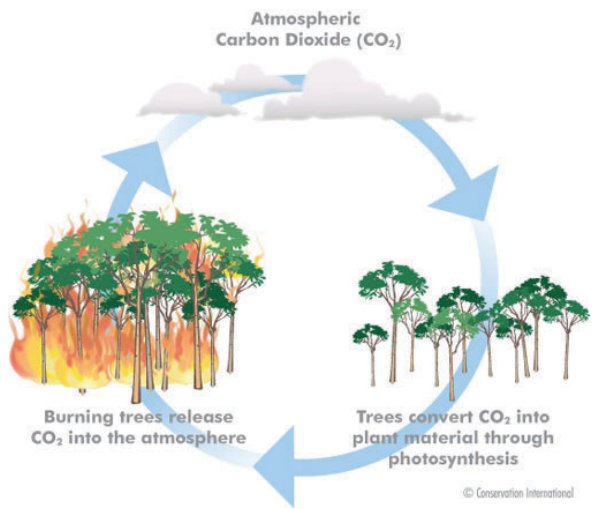
Source: carbon cycle facts, information, pictures encyclopedia.com

Forests as Carbon Sinks

Forests present a significant global carbon stock. World's 45% of world territorial carbon is stored in the forests only. This is valuable service that forests provide lowering the carbon dioxide concentrations in the atmosphere.

There[34] are six places in the forests where carbon is stored:

1) Above ground live tree biomass (all tree components stems to top, leaves, and bark)
2) Non-tree above ground coarse woody biomass (small diameter trees, multi-stemmed shrubs)
3) Coarse woody debris (fallen trees woods, stems, etc.)
4) Organic litter and duff (leaves, small sticks and other litter)
5) Inorganic mineral soil
6) Underground live tree biomass (coarse and fine roots)



Source: ation.orgSiteCollectionImagesCharts_Graphscarbon_cycle_diagram.jpg

Global forest vegetation stores 283 Gt of carbon in its biomass, 38 Gt in dead wood and 317 Gt in soils (top 30 cm) and litter. The total carbon content of forest ecosystems has been estimated at 638 Gt for 2005, which is close to the amount of carbon in the entire atmosphere (around 762 GtC). The amount of carbon stored in the forests varies from region and forest type. Tropical forests are important to climate change; they provide a range of other benefits such as rainfall for agriculture, flood prevention and biodiversity. Tropical forests can store 50% more carbon per hector than temporal and boreal forests. But they are currently destroyed at rapid rate.

34. *Source: REDD online course: Forests and climate change.*

Forests as Source of Carbon

Forests also contribute to the climate change problem when the carbon is stored in the forests is released into atmosphere through deforestation and forest degradation. Forestry as defined by IPCC, accounts for around 17% of global GHG emissions - the third largest source of anthropogenic GHG emissions after energy supply and industrial activity.

The effects of deforestation and forest degradation on the carbon cycle

- Carbon stored in living and dead plant material is released as CO2 by burning or decomposition.
- Carbon is released from the oxidation of the soil.
- Sequestration of CO2 from vegetation to litter, deadwood and soil is reduced. Carbon stored in forest soils is often equalant to or greater than, carbon stored in above ground biomass.
- Carbon is lost in the longer term through the breakdown of harvested wood at a rate dependent on the nature of the end product.

2.3 Deforestation and Degradation

Deforestation

Deforestation[35] implies the long-term or permanent loss of forest cover and areas of forest converted to agriculture, pasture, water reservoirs and urban areas. It involves the loss of ecosystem services or changes in species composition due to various factors including overexploitation, plant parasites, exotic species invasion, pollution, or fires.

Source: http:www.merinews.comuploadthumbimage12384409829 30.jpg

The global forest sector produces an estimated 5.8 Gt CO2 annually from deforestation. Around 96% of which is estimated to come from developing countries in the tropics (60% of sequestration from forestation is in the temperate and boreal regions. However, temperate forests do not sequester as much CO2 as is released in emissions through tropical deforestation). Deforestation in tropical regions generally emits significantly more CO2 than forests elsewhere in the world. Deforestation is occurring rapidly in the tropics, where an estimated 13 million hectors per year (a net loss about 7.3 million hectares per year for 2000-2005 - an area the size of the England) are converted to other land uses each year. Deforestation is estimated to have been the cause of 20% of annual GHG emissions in the 1990s. Cultivating forests after deforestation further contributes to climate change as climate change oxidises 25 to 30% organic matter in upper matter of soils and releases GHG like methane in to atmosphere.

Degradation

Degradation refers to reduction of canopy cover or carbon stocking within the forest through logging, fire, wind, felling or other events[36]. Degradation occurs when the carbon stock of a forest is reduced below its natural capacity, but not below the 10% cover threshold. This means that "degradation" refers to activities that destroy up to 90% of the forest. In other words this does not involve a reduction of the forest area, but rather a quality decrease in its condition, this being related to one or a number of different forest ecosystem components like the structure, function, species composition or productivity normally associated with a natural forest type expected on that site. Hence, a degraded forest delivers a reduced supply of goods and services from the given site and maintains only limited biological diversity. Biological diversity of degraded forests includes many non-tree components, which may dominate in the under-canopy vegetation.

35. *According to* ***Decision 11/CP.7 (UNFCCC, 2001):*** *the direct human-induced conversion of forested land to non forested land.* ***FAO 2001:*** *The conversion of forest to another land use or the long-term reduction of the tree canopy cover below the minimum 10 percent threshold.*
36. ***FAO, 2000***

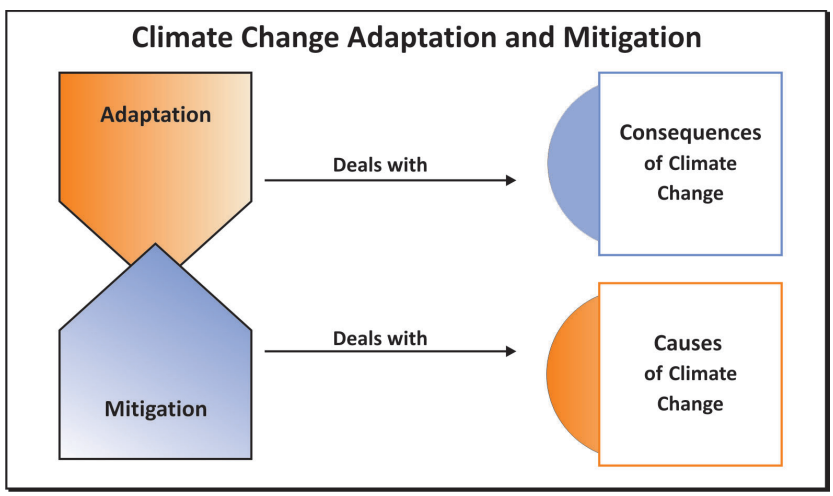
Degradation takes different forms particularly in open forest formations deriving mainly from human activities such as overgrazing, overexploitation (for fuelwood or timber), unsustainable logging practices repeated fires, or due to attacks by insects, diseases, plant parasites or other natural sources such as cyclones. The magnitude of emissions from forest degradation represents at least 30% of total emissions from the forest sector.

2.4 Adaptation and Mitigation

Adaptation deals with the consequences of climate change while mitigation deals with the causes. Adaptation to climate change could occur naturally, through natural regeneration and tree migration, and could also be facilitated by human action. While reforestation is important and helpful for supporting reduced emissions in many places, stopping deforestation and forest degradations is more urgent from a climate perspective. It takes decades for a sapling to grow and absorb the amount of carbon that is released when a mature tree decays. Reducing deforestation and degradation is a highly cost-effective way of reducing GHG. Adaptation strategies can help people manage the effects of climate change and protect their livelihoods.

Most mitigation efforts must come from reducing the use of fossil fuels in industrialised countries. Planting new trees to sequester carbon will also play a role. But to reduce the 20% of emissions related to forests, we need a new and more effective approach to conservation. One approach is called REDD, short for 'Reducing Emissions from Deforestation and Forest Degradation'. This idea differs from previous attempts to preserve forests because it directly links financial incentives for conservation with carbon stored in forests.

Credits from reduced emissions, also called 'avoided deforestation', would be quantified. That positive quantity would then become a credit that could be sold in an international carbon market. Alternatively the credit could be handed to an international fund set up to provide financial compensation to participating countries that conserve their forest. REDD schemes allow forest conservation to compete on economic terms with the drivers of deforestation. Current economic drivers favour destructive logging practices and conversion of forest to other uses, such as pasture for livestock and arable land.



2.5 Clean Development Mechanism

The CDM (Article 12) is one of three "flexibility mechanisms" established by the Kyoto Protocol to the UNFCCC in an attempt to lower the overall cost of achieving GHG emissions targets by allowing for access to cost-effective opportunities for reducing emissions in other countries. The other two are:

- Emissions trading – known as "the carbon market" IET (Article 17).
- Joint implementation (JI) (Article 6); (Annex I Parties which have ceiling for GHG emissions (emission caps), assist other Annex II Parties)

o Annex I Parties, include the industrialised countries who have historically contributed the most to climate change e.g. USA, Japan, UK, Germany, Russia, etc.

o Annex II Parties, include primarily the developing countries like India, China, Argentina, Brazil, etc.

A protocol was adopted in 1997 at third conference of the parties held in Kyoto, and it became legally binding from 16 February 2005. In Kyoto Protocol meeting, the Parties to the Convention negotiated a set of legally binding quantitative targets for reducing GHG for 38 industrialised countries (including 11 emerging market economies). These GHG targets, usually measured as a percentage change on 1990 levels, are to be achieved on average over the first five-year 'commitment period' of 2008"2012. The national emission targets range from -8% (e.g. for the 15 Member States of the European Union at that time) to +10%

(Iceland), with the total reduction adding up to around -5%. The common 'currency' of the Kyoto Protocol targets is one metric tonne of carbon dioxide equivalent (tCO2-e).

Each of the other GHG can be expressed in this form (on a weight-for-weight basis) by multiplying by its Global Warming Potential (GWP). The Kyoto Protocol recognises six main GHGs, each with different impact on the global climate:

Greenhouse Gas	GWP (100 years)
Carbon dioxide (CO2)	1
Methane (CH4)	21
Nitrous oxide (N20)	310
Hydro-fluorocarbons (HFCs)	150"11,700
Perfluorocarbons (PFCs)	6,500"9,200
Sulphur hexafluoride (SF6)	23,900

Both JI and CDM are 'project-based' mechanisms which involve developing and implementing projects that reduce GHG emissions. The CDM is a mechanism whereby an Annex I party may purchase emission reductions which arise from projects located in non-Annex I countries. The carbon credits that are generated by a CDM project are termed Certified Emission Reductions (CERs), expressed in tonnes of CO2 equivalent (tCO2-e). In other words, CDM allows emission reduction (or emission removal) projects in developing countries to earn CER credits, each equivalent to one tonne of CO2. These CERs can be traded and sold, and used by industrialised countries to meet a part of their emission reduction targets under the Kyoto Protocol.

The purpose of CDM projects are two-fold: to assist developing country Parties in achieving sustainable development, thereby contributing to the ultimate objective of the Convention, and to assist developed country Parties in achieving compliance with part of their quantified emission limitation and reduction commitments under Article 3. Beside Parties, private firms may use the Kyoto Mechanisms (provided the Parties meet eligibility requirements for using the Kyoto Mechanisms). It is the host Party's prerogative to confirm whether a CDM project activity assist it in achieving sustainable development[37]. A Party where CDM is implemented is called as host party.

The CDM can include projects in the following sectors:

1. Energy industries (renewable and non-renewable sources)
2. Transport
3. Cement and coal
4. Agriculture
5. Chemical industries, etc.
6. Afforestation & reforestation (sinks)

37. *Source: www. cdmindia.com(website of MOEF)*

Afforestation & Reforestation

The Marrakesh Accords stipulate that afforestation and reforestation are the only Land Use, Land-Use Change and Forestry (LULUCF) categories that are eligible under the CDM. Afforestation/ Reforestation CDM is a mechanism of sequestration of carbon through forests and earning carbon credit in return. If carbon is captured and stored it can be sold in the market as credits, which are certificates that are tradable (1 tone of CO2 is about 570 INR for forestry project). The maximum use of CERs from A&R projects should be less than 1% of the 1990 emissions of the Party.

Source: http:www.equicarbon.comimgcp-rwanda-group2.jpg

Afforestation: Afforestation involves planting trees on land which was not previously forested; it is direct conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding and or the human induced promotion of natural seed resources.

Reforestation: Reforestation refers to planting trees on land which was recently cleared. It is direct conversion of non-forested land to forested land through planting, seeding or human induced promotion of natural seed resources, on land that was forested but that has been converted to non-forested land. Reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 31st December 1989.

Possible Afforestation/Reforestation Activities under CDM

- Community forestry (small scale plantation by landowners - the GHG removal of less than 8 ktCO2/year). The projects must be developed by low-income communities and individuals as determined by the host Party.)
- Agro-forestry (introduction of trees into existing agricultural systems)
- Large scale industrial plantation (monoculture or mixed)
- Forest landscape regeneration on degraded or protected lands. For example, degraded land may be restored/reforested as part of a CDM project resulting in the sequestration of carbon from the atmosphere.

The most significant difference of A/R CDM is non-permanence. In A/R CDM, CO2 once sequestered in trees could be released back into the atmosphere in an occasion of such as forest fire or die back from pests. This issue of non-permanence is addressed by creating different type of CERs, namely temporary CERs (tCERs) and long-term CERs (lCERs).

CDM Projects in India[8]

CDM projects registered at CDM Executive Board are 506, CDM projects at or after validation stage are 1,492, and CDM projects approved by India are 1,561. There are only two CDM projects implemented under A&R category:

- Reforestation of severely degraded landmass in Khammam district at Bhadrachalam, implemented by ITC Company
- Small scale cooperative afforestation CDM pilot project activity on private lands affected by shifting sand dunes in Sirsa of Haryana state.

38. *www.cdmindia.com*

2.6 Significance of Bali Conference on REDD Policy

The 2007 United Nations Climate Change Conference[39] took place at the Bali International Conference Centre, Nusa Dua, in Bali, Indonesia, between December 3 and December 15, 2007. The conference led to the adoption of the Bali Road Map for the negotiation of a new regulatory frame work for international action on climate change. The Bali Road Map includes the Bali Action Plan, which charts the course for a new negotiating process designed to tackle climate change, with the aim of completing this by 2009 to feed into a post-Kyoto (i.e. post-2012) international agreement on climate change.

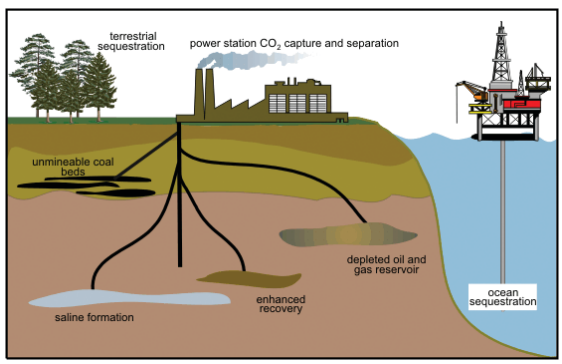
This plan acknowledged the importance of forests in addressing climate change, and the enormous potential boon REDD represents. REDD initiatives can deliver significant climate change mitigation benefits along with co-benefits. These include protecting the environmental services that forests offer, improving the livelihoods of forest-dwelling communities, clarifying land tenure rights, and support for capacity building, monitoring, reporting and institutional needs of developing countries.

2.7 Meaning of terms

Sequestration (uptake): The process of increasing the carbon content of a carbon pool other than the atmosphere. (IPCC, 2000).

The process by which carbon sinks remove carbon dioxide from the atmosphere is known as carbon sequestration. Carbon dioxide is naturally captured from the atmosphere through biological, chemical or physical processes. Artificially it is a geoengineering technique for long-term storage of carbon dioxide or other forms of carbon to mitigate/defer global warming. It has been proposed as a way to slow the atmospheric and marine accumulation of GHGs, which are released by burning fossil fuels.

CO2 may be captured as a pure by-product in processes related to petroleum refining or from flue gases from power generation. CO2 sequestration includes the storage part of carbon capture and storage, which refers to large-scale, permanent artificial capture and sequestration of industrially produced CO2 using subsurface saline aquifers, reservoirs, ocean water, aging oil fields, or other carbon sinks[40].



Source: httpblog.aapg.orggeodcwp-contentuploads200812carbon-sequestration.gif

Carbon pool: A reservoir of carbon; a system which has the capacity to accumulate or release carbon.

Carbon stock: The absolute quantity of carbon held within a pool at a specified time. The units of measurement are mass.

Carbon flux: Transfer of carbon from one carbon pool to another in units of measurement of mass per unit area and time (e.g., t C ha -1 yr-1).

Carbon sink: Any process or mechanism which removes a Greenhouse Gas, an aerosol or a precursor of a Greenhouse Gas from the atmosphere. A given pool (reservoir) can be a sink for atmospheric carbon if, during a given time interval, more carbon is flowing into it than is flowing out.

The main natural sinks are: a) Absorption of carbon dioxide by the oceans via physicochemical and biological processes, b) and Photosynthesis by terrestrial plants. Natural sinks are typically much larger than artificial sinks. The main artificial sinks are: a) Landfills and b) Carbon capture and storage proposals.

Cap and trade: a two-part regulatory system in which the 'cap' is a government imposed limit on carbon emissions, and the 'trade' is a government created market to buy and sell Greenhouse Gas credits. Companies that generate less than the allowed emissions can sell credits allowing others to emit more gases than the cap allows.

39. *UFCCC web site , COP13 adopted 15 decisions (of varying importance) and COP/MOP3 a further 13 decisions (ENB, 2007, p.1)*
40 *Source:www.Wikipedia.com*

REDD and REDD+: History, Current Scenario, and Issues

Compiled by Diana Joseph, CPF

3.1 Understanding REDD and REDD+

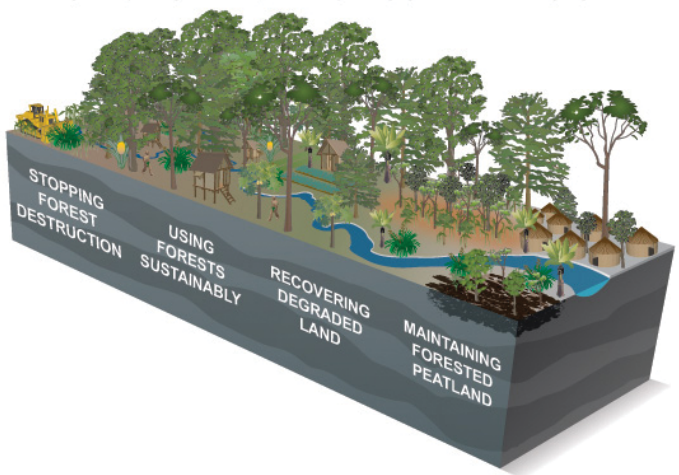
REDD (Reducing Emissions from Deforestation and Forest Degradation) is the global endeavour to create an incentive for developing countries to protect, better manage and save their forest resources, thus contributing to the global fight against climate change.

REDD+ goes beyond merely checking deforestation and forest degradation, and includes incentives for positive elements of conservation, sustainable management of forests and enhancement of forest carbon stocks.

REDD+ conceptualizes flow of positive incentives for demonstrated reduction in deforestation or for enhancing quality and expanse of forest cover. It works on the basis of creating a financial value for the carbon stored and enhanced in biomass and soil of standing forests. Countries that reduce emissions and undertake sustainable management of forests will be entitled to receive funds and resources as incentives. REDD+ approach incorporates important benefits of livelihoods improvement, biodiversity conservation and food security services.

REDD+

REDD+ helps to mitigate climate change through forests, and provides social and environmental benefits. It includes these essential components: creating incentives for not clearing standing forests, maintaining and expanding forest cover, sustainably managing forest and recovering degraded lands.



Source: http://www.conservation.org/SiteCollectionImages/infographics540x452_forest_carbon_initiative_redd.jpg

REDD/REDD+ is a policy mechanism under negotiation at the UNFCCC that proposes incentives to support the role of forests in climate abatement strategies.

3.2 The History of REDD Policy

The idea of making payments to discourage deforestation and forest degradation was discussed in the negotiations leading to the Kyoto Protocol, but it was ultimately rejected. The seeds for REDD were however sowed in the Kyoto Protocol Article 2 and Article 3 which states that all Annex 1 countries should work towards protection and enhancement of sinks and reservoirs of GHG and that the net changes in GHG emissions by carbon sink and if measured as verifiable changes in carbon stocks in each commitment period can be used to meet the reduction in carbon emission commitments[41].

41. *Adapted from the Kyoto Protocol, December, 1997* http://unfccc.int/resource/docs/convkp/kpeng.html

The Marrakesh Accords, Conference of the Parties (COP) 7, August 2001

The confusion regarding the exact role of LULUCF in meeting the carbon emission reduction targets led to a discussion and a compromise allowing for REDD activities (only afforestation and reforestation) to be used to meet targets and also generate eligible credits for trading under the CDM.

The European Commission Policy Paper

In February, 2005, in the European Commission's policy paper titled 'Winning the Battle against Global Climate Change'[42] listed medium and longer term emission reduction strategies that included 'devising incentives for developing countries to take part in international emissions reductions may also be a way of achieving wider participation by developed countries'. The communication concluded that, 'a fresh look will have to be taken at how to halt deforestation of the world's forests. Addressing this problem as a specific issue in some regions is necessary'.

The 11th Conference of Parties, Montreal, November 2005

In Montreal, November 2005, at COP 11, through representation by the Papua New Guinea and Costa Rica government, The Coalition for Rainforest Nations[43] requested an agenda item: 'Reducing emissions from deforestation in developing countries: approaches to stimulate action'. They requested UNFCCC and the Kyoto Protocol to take note of present rates of deforestation within developing nations, acknowledge the resulting carbon emissions, and consequently open dialogue to develop scientific, technical, policy and capacity responses to address such emissions resulting from tropical deforestation'. This item was discussed and the Parties agreed to initiate consideration of issue at the 24th Subsidiary Body for Scientific and Technological Advice (SBSTA) session scheduled for May 2006[44].

Source: http:www.iisd.caclimatecop11pix1walking.jpg

Subsidiary Body for Scientific and Technological Advice, 24th Session, Bonn, May, 2006

In Bonn 2006, the Subsidiary Body for Scientific and Technological Advice (SBSTA) began considering REDD. It was decided that the role of forests, scientific, socio-economic, technical, methodological issues, policy approaches and other relevant issues would be considered for discussion in the meetings that followed[45].

13th Conference of Parties, Bali 2007 - The Bali Action Plan

Several workshops to address issues in greater depth were conducted and finally in December 2007, COP13 in Bali, the Bali Action Plan was devised. The "Bali Action Plan" calls for "Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries." There were five main issues, which remained to be discussed:

1. Scope – what should be included in the definition of REDD
2. Measurement, reporting and verification
3. The rights of indigenous people
4. Financing options
5. Institutional arrangements – whether REDD activities were considered National or project level activities.

The following groups were established at Bali:

1. Ad Hoc Working Group on Further Commitments for Annex 1 Parties under the Kyoto Protocol (AWG-KP) - to negotiate future commitments from industrialised nations in the Kyoto Protocol.
2. Ad Hoc Working Group on Long Term Cooperative Action under the Convention (AWG-LCA) - to focus on developing a plan of long-term cooperation between developing and industrialised countries and to focus on the following issues: mitigation, adaptation, technology transfer and financial provision.

   The REDD policy is being discussed within both of these groups simultaneously.
3. The SBSTA, to discuss the technical aspects of REDD.

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42. *Communication from the Commission to the Council, the European Parliament, the European Economic and Social committee and the Committee of the Regions "Winning the Battle Against Global Climate Change" Feb, 2005*
43. *Formed in May, 2005, the Coalition for Rainforest nations led by Papua New Guinea, is an intergovernmental organisation with the objective of 'forested tropical countries collaborating to reconcile forest stewardship with economic development'.*
44. *UNFCCC "Report of the Conference of the Parties on its eleventh session, held at Montreal from 28 November to 10 December 2005. Part One: Proceedings." 2005*
45. *SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE (SBSTA) "Reducing emissions from deforestation in developing countries - Draft conclusions proposed by the Chair" Twenty-fourth session Bonn, 18–26 May 2006 Agenda item 6 (FCCC/SBSTA/2006/L.8)*

The 29th Subsidiary Body for Scientific and Technological Advice, Poznan, December 2008 – The introduction of REDD+

In its report SBSTA referred to 'reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries'. This change was made in response to pressure from countries like India, which wished to see 'conservation, sustainable management of forests and enhancement of forest carbon stocks' given the same level of priority in the negotiations as deforestation and forest degradation. Since then, REDD has been referred to as 'REDD+'.

Bonn, June 2009 – The introduction of the negotiating text

There were three meetings in Bonn, Germany in mid 2009. In one of these meetings a negotiating text was prepared by the Chair of the AWG-LCA incorporating the ideas and proposals submitted by the Parties. The aim of the negotiating text was to facilitate the negotiations among Parties on the fulfilment of the Bali Action Plan towards the agreed outcome to be adopted at Cop15 in Copenhagen in December 2009. However, the talks in Bonn were more focussed on reaching consensus and ensuring that all the issues and interests were included. The negotiating text was expanded from 56 pages to some 200 pages. In a series of meetings held between August to November 2009, the negotiating text was consolidated, made clearer and concise and a draft decision text prepared for consideration at the COP 15 to be held at Copenhagen in December.

3.3 Current Status of REDD Policy

Outcomes of the 15th Conference of Parties, Copenhagen, December 2009 on REDD+

The Governments could not reach to a complete agreement on REDD+ at the COP15 held in Copenhagen, Denmark in December 2009. The negotiations ended in confusion with the noting of a Copenhagen Accord developed by just a few government Parties towards the end of the two week long COP 15. Key draft decisions on REDD+ were identified for discussions and negotiations towards a legally binding instrument to be carried out at COP16 in Mexico. Consensus was reached on the following issues for REDD+ implementation.

Scope

Issue: Recognising the role of forests in developing countries towards addressing climate change, an international mechanism under the UNFCCC was being negotiated initially with the scope to incentivise activities which reduce emissions from deforestation and forest degradation, or as it was known then in shorthand as REDD. However, subsequent discussions in 2009 on the possible scope of this mechanism widened to include incentivising the enhancement of existing forest carbon stocks or REDD+. While there were also proposals that REDD+ should incorporate the role of agriculture as a threat to forests, or REDD++ as it was coined by proponents, current discussions have remained limited to REDD+.

***Present status*:**

Developing country Parties should contribute to mitigation actions in the forest sector by undertaking the following activities: (a) Reducing emissions from deforestation; (b) Reducing emissions from forest degradation; (c) Conservation of forest carbon stocks; (d) Sustainable management of forest; (e) Enhancement of forest carbon stocks. The draft decision also requests the SBSTA to undertake a work programme to identify land use, land-use change and forestry activities in developing countries, in particular those that are linked to the drivers of deforestation and forest degradation, to identify the associated methodological issues to estimate emissions and removals resulting from these activities, and to assess their potential contribution to the mitigation of climate change, and report on the findings to the Conference of the Parties at a future session.

This was an important compromise reached between those who wanted REDD+ to be solely about deforestation and those who want it to expand to other land uses.

Safeguards

Issue: Incentives for avoided deforestation and removals could impact the culture and livelihood of forest dependent communities, and add to their marginalisation in decision making and the sharing of benefits. Discussions on this topic, particularly on ensuring safeguards for the protection of rights, environmental integrity, and governance took centre stage on the road to Copenhagen. Since then, it is now widely accepted that a REDD+ mechanism can only be successful if safeguards and co-benefits such as the conservation of biodiversity and ecosystem services, and the alleviation of poverty especially among forest dependent communities, are realised.

Present status:

a) The actions undertaken complement or are in consistent with the objectives of national forest programmes and relevant international conventions and agreements.

b) Transparent and effective national forest governance structures, taking into account national legislation and sovereignty.

c) Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples.

d) Full and effective participation of relevant stakeholders, including in particular indigenous peoples and local communities.

e) Actions those are consistent with the conservation of natural forests and biological diversity, ensuring that actions are not used for the conversion of natural forests, but are instead used to incentivise the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits.

f) Actions to address the risks of reversals.

g) Actions to reduce displacement of emissions.

What remains undecided for the safeguards is the strength of the wording used to commit Parties to apply them when undertaking REDD+ activities.

Phased Implementation

Issues: There was among countries on the implementation of REDD due to differences in resources, capacity, etc. The phased approach model was one of the options suggested. There is a growing consensus on a three-phased approach to REDD+ actions, which could be overlapping:

Phase 1: Countries prepare a national REDD+ strategy through participatory consultations, start capacity building in Monitoring, Reporting and Verification (MRV) and begin demonstration activities.

Phase 2: More advanced readiness, where the focus is to develop and implement policies and measures to reduce emissions as provided in the national REDD+ strategy.

Phase 3: Full UNFCCC 'compliance'. At this level, countries are compensated solely for quantified reduced emissions and removals, subject to rigorous MRV.

Present status:

Activities undertaken by Parties [should][shall] be implemented in phases, beginning with the development of national strategies or action plans, policies, measures and capacity-building, followed by the implementation of national policies and measures, and national strategies or action plans and, as appropriate, sub-national strategies, that could involve further capacity-building, technology transfer and results-based demonstration activities, and evolving into results-based actions [that shall be fully measured, reported and verified]

Reference level and scale

Issue: Related to scope, reference levels and scale are critical to the measurement of actual carbon removals and carbon benefits, especially if these are to be verified, priced and traded. The difficulty of measuring carbon benefits lies in the absence of clear baseline data (because this data is not available, or technical and financial barriers limit the ability to measure baseline figures). On the other hand, scale (national or sub-national) is relevant to the level of accounting and crediting of benefits. National reference levels are ideal to prevent in-country leakage. However given the lack of capacity and weak governance in many forest nations, establishing a national REDD+ system can take time and a lot of resources to operationalise, and as such would discourage immediate private investments in projects. Hence in the interim, several countries are opting for sub-national scale REDD+ activities

Present status:

While the negotiating text will be discussed further on the issue of scale and reference level, SBSTA prepared a methodological guidance adopted by the COP that "*requests*" developing country Parties to "establish, according to national circumstances and capabilities, robust and transparent national forest monitoring systems and, if appropriate, sub-national systems as part of national monitoring systems" and "*Recognises* that developing country Parties in establishing forest reference emission levels and forest reference levels should do so transparently taking into account historic data, and adjust for national circumstances." There is no consensus on need for quantitative goal on deforestation by parties.

3.4 Issues in REDD+

There were no substantive agreement on quantitative global/country targets, MRV guidance and the funding mechanism for REDD+.

Global/Country Targets

Options were initially identified during negotiations for a global target to reduce deforestation by 50 percent by 2020, by 25 percent from current levels by 2015, or halt it entirely by 2030. However, as a global target to reduce deforestation has serious implications on MRV and the principle of common but differentiated responsibility between developed and developing countries, the proposal to declare a global/country target has thus not reached consensus.

MRV Guidance

MRV stands for Monitoring, Reporting and Verification. REDD performance will have to be measured and verified in each country in terms of reduced CO2 emissions and or the conservation, sustainable management and enhancement of forest carbon stocks. MRV requires countries to build reference levels against which emissions reductions can be measured. The challenge remains on how a REDD-Plus mechanism can be linked to the issue MRV.

Funding Mechanism for REDD+

There are two positions in this debate, supporting two different proposals on how the money to pay for forest protection under REDD+ is supposed to be raised. One proposal is to do it through the establishment of funds; the other proposal is through the use of a "market" for "carbon permits and credits", which means through the buying and selling of credits for reduced emissions that allow industrialised countries to reduce their emissions. Although governments are yet to agree on a final agreement under the UNFCCC, it is likely that both types of financing will be used to finance REDD+ so both these mechanisms will be discussed here as they have special implications for indigenous peoples.

The following principles have been identified in draft decision to guide the implementation of REDD+ activities[46]:

- Their contribution to the objective set out in Article 2 of the Convention.
- That REDD+ activities be country-driven and voluntary or put forward voluntarily (these are options in brackets).
- That such activities are undertaken in accordance with national circumstances and capabilities of the country and respect sovereignty.
- That REDD+ activities are consistent with national sustainable development needs and goals.
- That they facilitate sustainable development, reduce poverty and respond to climate change in developing country Parties.
- That such activities promote broad country participation.
- That they be consistent with the adaptation needs of the country.
- That REDD+ activities are results-based.
- That such activities promote sustainable management of forests.

46. *Adapted from the Decision 1-13/CP.15. http://unfccc.int/documentation/decisions/items/3597.php?such=j&volltext=/CP.15#beg*

3.5 REDD Issues, Concerns and Challenges

The Scale for REDD+

A key question in the negotiations concerns the level (scale) at which accounting should be done and incentives offered for REDD activities. Three proposals on the geographical level or scale of REDD accounting and incentive mechanisms are under discussion: direct support to projects (sub-national levels), direct support to countries (national level), or a hybrid ('nested') approach combining the two.

Sub-National Approach: Under a sub-national approach, REDD activities would be implemented in a defined geographical area or at a project scale, by individuals, communities, NGOs, private companies or national or local governments. As with all the three approaches, crediting REDD activities would require internationally agreed rules for MRV, a system for payment and institutional arrangements at both the national level (a designated national authority or similar approving all projects) and the international level (a supervisory body and a centralised project and credit registry).

A sub-national or project approach allows for early involvement and wide participation and is attractive to private investors. However, it may suffer from leakage (increased emissions outside project boundaries) and cannot address the broader forces driving deforestation and forest degradation.

National Approach: Governments taking a national approach would establish a national system for MRV, and would be rewarded for emission reductions relative to an established reference level. Reductions would be rewarded through allocation of tradable carbon credits, by financial transfers from a global fund or other mechanisms. No direct credits would be issued internationally for activities that reduce emissions at the sub-national level. Consistent with its circumstances, each participating country would be responsible for implementing policies and measures to reduce emissions from deforestation and forest degradation over its entire territory in order to access international incentives. These might include a system to provide credits (Payment for Environmental Services, or PES) to local communities.

A national approach allows pursuit of a broad set of policies addresses domestic leakage and creates country ownership. In the short to medium term, however, a national approach will be feasible for only a few countries, as it does not work well in situations susceptible to governance failures; it may also be less likely to mobilise private investment or local government involvement.

Nested Approach: In a nested approach, procedures for MRV and reference levels would need to be harmonised between sub-national and national levels. An arrangement for credit sharing between the two levels could be modelled on the existing Joint Implementation mechanism under the Kyoto Protocol. At the end of each accounting period, the country would have to deduct all issued and committed sub-national credits from national credits that reflect the country-wide emission reductions. Should the national level fail to deliver carbon benefits, independently validated and verified sub-national activities would still be credited.

A nested approach is the most flexible mechanism. It allows countries to start REDD efforts through sub-national activities and gradually move to a national approach, or for the coexistence of the two approaches in a system where REDD credits are generated by projects and governments, thus maximising the potential of both approaches. However, the nested approach presents the challenge of harmonisation between the two levels.

3.6 Financial Mechanisms for REDD+

There are two financial mechanisms being discussed for REDD+.

Financing through Market Mechanisms

The idea behind the proposed "market solution" is to finance REDD projects by selling carbon credits that are created when forests are protected.

The carbon market is the key mechanism by which the countries who signed the Kyoto Protocol seek to lower the impact of climate change. Each country is allowed to emit a certain amount of carbon each year. If the country emits less, they have "extra carbon permit" which they can sell to other countries; if they emit more they have to buy carbon permits from other countries to compensate for the excess carbon they released. Or they pay someone else in a developing country, where there are no limits yet on emissions, to reduce theirs. This claimed reduction creates carbon "credits" which also allow industrialised countries to burn more fossil fuel than what they are allowed under the international climate agreement. One carbon permit or credit is equal to one ton of carbon, and carbon permits and credits are traded between "buyer" countries, or companies, and "seller countries", or companies.

Financing through Funds

A fund is mechanisms by which different people, companies or governments pool money in order to jointly finance a program, a project, a business or an institution. Funds can be public money (World Bank, or national governments) or it can be private money (from a bank, or foundation or company). Funds for REDD could be created at the global level, or at the regional level (like for Asia, for Africa, etc.).

Public Funds

Several international organisations have already set up funds or programs, through which they intend to support REDD. The World Bank has established the Forest Carbon Partnership Facility and the Forest Investment Programme (FIP). The UN has established the UN Collaborative Programme on REDD, or UN-REDD.

A few countries too like Australia and Norway have committed to provide financial support to implement REDD. Australia has committed to provide 185 million US Dollars funding for the next five years mainly for Indonesia, Papua New Guinea and the FCPF of the World Bank. Norway too has launched its International Climate and Forest Initiative and will provide 600 million US Dollars annually for the next 6 years to support the UN-REDD programme and other projects.

Private Funds

There is a steadily increasing number of private funds set up by nature conservation agencies (like Nature Conservancy, Conservation International, World Wide Fund for Nature US, Centre for International Forestry Research, etc.) and by private foundations and companies.

An example of a project working on REDD which is supported by private funds is the Rainforest Project, launched by Prince Charles of Great Britain. It is funded by 12 big companies such as the mining company Rio Tinto and banks like Morgan Stanley, Goldman Sachs, Deutsche Bank.

There has not yet been any agreement on how REDD-plus is to be financed but listed below are some of the financial mechanisms in practice for REDD-plus.

The World Bank

The World Bank launched the Forest Carbon Partnership Facility at Bali in 2007 to build the capacity of developing countries in tropical and subtropical regions to reduce emissions from deforestation and forest degradation and to tap into any future system of positive incentives for REDD. Thirty-seven REDD countries (14 in Africa, 15 in Latin America and the Caribbean, and eight in Asia and the Pacific) have been selected in the partnership. Eleven of these countries (Argentina, Costa Rica, the Democratic Republic of Congo, Ghana, Guyana, Indonesia, Kenya, Mexico, Nepal, Panama and the Republic of Congo) have so far submitted Readiness Preparation Proposals (R-PPs), which were reviewed by Ad hoc Technical Advisory Panels and the Participants Committee. The World Bank is conducting due diligence on these proposals with a view to entering into readiness grant agreements of up to $3.6 million to assist these countries conduct the preparatory work they have proposed. Fourteen financial contributors have committed about $165 million to the FCPF ($115 million to the Readiness Fund and $50 million to the Carbon Fund).

The World Bank is also financing three REDD-type projects through its Bio Carbon Fund. There is also the FIP which is part of the World Bank's Strategic Climate Fund (SCF), which in turn comes under the Climate Investment Funds (CIF) which funds REDD-type projects.

UN-REDD

The UN-REDD was set up by UNDP, UNEP and FAO in September 2008. It is running pilot projects in Bolivia, Democratic Republic of Congo, Indonesia, Panama, Papua New Guinea, Paraguay, Tanzania, Viet Nam, and Zambia. To-date, the UN-REDD Programme's Policy Board has approved a total of US$42.6 million for eight of the Programme's nine initial pilot countries. These funds help to support the development and implementation of national REDD+ strategies. National programmes in four UN-REDD pilot countries (DRC, Indonesia, Tanzania and Viet Nam) are now in their implementation phase.

The Paris-Oslo Process / Interim REDD-Plus Partnership

Under the Copenhagen Accord, six countries (US, UK, Australia, Norway, Japan, and France) committed to provide over US$ 4 billion to jumpstart activities on REDD+ for the next three years. In May 2010, more than 50 countries met in Oslo and agreed to formally establish an "Interim REDD-Plus Partnership" which shall utilise the pledged fund to assist developing countries to reduce GHG emissions from deforestation, forest degradation, and the enhancement of forest carbon stocks for the period 2010-2012. The event was also attended by UNDP, UNEP, World Bank, as well as representatives from indigenous peoples and civil society.

The Interim REDD+ Partnership is transitional and is an effort to catalyse early action on REDD+. There is an understanding amongst participating Parties that the Interim Partnership shall be subsumed under the official international REDD+ mechanism for which Parties are in the process of finalising under the UNFCCC. It was decided in subsequent meetings that immediate action was to be expedited, among others, towards establishing a voluntary REDD+ database and registry for REDD+ activities and financing to improve coordination and transparency. It was also decided that a set of workshops shall be organised promoting North/South-South exchanges on key REDD+ issues, in particular identifying gaps and overlaps in REDD+ financing.

REDD in India, Issues and Green Indian Mission

Compiled by P. Bruslin Mento, CPF

4.1 REDD in India

Deforestation is the single largest source with 17% of global GHG emissions. In this context, reducing emissions from deforestation and forest degradation has assumed global significance in the climate change debate, as it is considered to be a cost-effective mitigation option. This could also generate additional conservation and livelihoods benefits.

India recognises that conserving, expanding and improving the quality of our forests is a major national priority. This has enormous domestic and transnational mitigating benefits. Not only is it a cost-effective and efficient way to mitigate the effects of climate change but it also improves India's water security, safeguards rich biodiversity and provides livelihood security for millions of Indians.

The current forest and tree cover in India is estimated to be 78.37 Million Hectares (Mha) accounting for 23.84% of the geographic area of the country. Out of this, the forest cover is about 69.09 Mha, which constitutes 21.02% of the geographical area of the country. Though India has only 2% of the global forest area, it is faced with the demands of 16% of the world's human and 18% of world's cattle population. Despite these pressures, India has been able to maintain its forest cover and address the issues of deforestation. However, unsustainable exploitation of forest resources has resulted in the degradation of the forests which has been estimated at 40% for the past two decades.

Despite massive afforestation and assisted natural regeneration programme to generate degraded area, the extent and proportion of the degraded area has remained almost the same indicating that the pressures on forests remain unabated. The degradation of India's forest has a serious impact on the livelihoods of forest dependent communities as it results in loss of products and services from the forests.

4.2 Causes of Deforestation and Degradation in India

As mentioned earlier, India has addressed the issue of net deforestation, though there is still diversion of forests for agriculture (under shifting cultivation) and for other developmental purposes. Though there is a provision for compensatory afforestation in the case of diversion of forests for developmental purposes, its implementation is lacking in rigour. Major drivers of deforestation and degradation and their underlying causes are discussed below.

Direct causes

Demand and supply gap in fuelwood, timbre and fodder

There is a substantial gap between the demand and supply of major forest products. This leads to a vicious circle where the unsustainable exploitation of forests contributes to their degradation which, in turn, reduces the supply of products and services.

Source:kia.comsolarcookingimages554Collecting_Fuelwood_in_Guatemala.jpg

Demand and supply gap of various forest products[47]

	Demand (MT)	Sustainable Supply (MT)	Gap/unsustainableHarvest (MT)
Fuel wood	228	128	100
Fodder(green and dry)	1594	741	853
Timbre	55	41	14

Shifting cultivation

Shifting cultivation affects 10Mha of forest area across 16 States especially in the north eastern part of the country. The estimates of people involved in this practice ranges between 3 and 26 million (MoEF 2006). They undertake subsistence agriculture and harvest various other products from forests for meeting their livelihood needs. While originally this practice was in harmony with the regenerating capacity of forests, an increasing population and decreasing rotation cycle (from 20 to 4 years) over the years has contributed to in its unsustainability. Further, as the productivity of these lands has gone down, people have resorted to clearing larger areas to meet their needs.

Forest fires

Fires affect a large area of forests in the country. It is estimated that 1.45 to 3.73 Mha of forest area is affected annually by fires (WWF 2003; Bahuguna and Upadhyay 2002). Most of these fires are man-made, created to facilitate the extraction of NTFPs, ensure a good yield of grass, or to clear forests for shifting cultivation. In some parts of the country, fires are a result of socio cultural and religious practices. Very often fires spread to large areas; the traditional system of fire control using fire lines has serious limitations.

Diversion of forests

Diversion of forests for developmental activities has had a major impact on India's forests cover and its quality. Though diversion has drastically come down with the implementation of Forest (Conservation) Act of 1980, there is still a significant amount of area being diverted for non forestry purposes. It has been estimated that 0.2 Mha of forest area was diverted between 2005 and 2008 (IndiaStat, undated).

47. *Source: TERI estimates and compilations*

Underlying causes

Population

The population of the country has increased more than threefold, from 300 million in the late 1940s to over a billion at present. This has induced large scale land use changes including diversion of forest land for agricultural purposes and also led to degradation of the remaining forests due to over exploitation.

Poverty

It has been estimated that 27.5% of India's population lives below the national income poverty line (UNDP, undated); most of them depend directly or indirectly on forests for their livelihoods. It puts an immense pressure on the forests leading to forest degradation which in turn impact their livelihoods. Hence it is vicious circle of community impoverishment, fuelling degradation and vice versa.

Skewed development

India has registered an average economic growth of 7% over last one decade. While large infrastructure projects like dams, roads, special economic zones have been implemented, the benefits of this development have not trickled down to large part of rural India. Further, this has affected forests and other natural resources in two ways. One, large areas of forest have been diverted for the above mentioned projects. Seconds, lot of people have been displaced from their village commons without much compensation (MoEF 2006). The loss of their earlier livelihood opportunities, in turn, has put pressure on forests, resulting in its degradation.

Impact of past forest management policies

The initial forest policies in India accorded priority to commercial exploitation and state custodianship and management. The situation changed only in the 1980s when conservation and meeting the subsistence needs of local communities were given priority over other objectives. However, by this time damage had already been done in terms of declaration of vast tracts of forest lands as state forests without adequate settlement of rights, alienation of local people from forests and forest management, large scale deforestation and diversion of forest land for non-forestry purposes.

4.3 Legal and Institutional Response to REDD+ in the Indian Context

The key parameters of assessing REDD readiness are an effective legal and policy framework, robost institutional arrangement for implementation, capacities for MRV, and secure tenure and community rights. As the forest sector is influenced by activities and policies in other sectors (such as, agriculture, watershed, energy, rural development and so on), an effective cross-sectoral linkage is also an important consideration. These parameters have been assessed for the efficacy and gaps for REDD+ readiness.

Policies and Laws

There are a number of laws and policies which impact forest management in the country. However, it would be useful to analyse only key policies and laws which have brought paradigm shift in forest management and are impartant from REDD plus perspective. Key policies related to the forestry sector include National Forest Policy, 1988; Joint Forest Management Resolution, 1990; National Environment Policy, 2006; Scheduled Tribes and other Traditional forest Dwellers (Recognition of Forest Rights) Act, 2006 along with the recently adopted NAPCC. The different laws related to the forests and biodiversity in India include India Forest Act (IFA), 1927; Forest (Conservation) Act (FCA), 19980; Wildlife (Protection) Act,1972; and Biological Diversity Act,2002. A brief analysis of these is given below.

Indian Forest Act, 1927

The Indian Forest Act (IFA), 1927, was the first comprehensive act governing the forest sector, and it serves till date as the basis for forest administration in the act do not address contemporary issues related to forestry management in the country, for example, people's participation is not supported. It does not reflect the preogressive changes in the forest policy of country.

Forest (Conservation) Act, 1980

This legislation was enacted to control the diversion of forest land for non-forestry purpose and to slow down deforestation. Under this legislation, the approval of the central government is required for diversion of forest land above 1 ha for non-forstry purposes. The user agency has to pay for compensatory afforestation as well as an aount equal to the Net Present Value of the forests diverted. It has substantially brought down diversion of forests for non-forestry purposes.

National Forest Policy, 1988

National Forest Policy, 1988, marked a paradigm shift in forest management from regulatory to participatory. It implied a shift from the earlier revenue-oriented forest management to the current convervation-oriented management. It puts emphasis on management of forests. Meeting the subsistence needs of the local communities, maintenance of environmental stability and restoration of ecological balance have been identified as the major objectives of forest management under have been indentified as the major objectives of forest management under the NFP. This policy laid the country that is being now viewed internationally as one of the cornerstones for a successful implementation of REDD+.

Joint Forest Management Guidelines, 1990

Joint Forest management (JFM) Guidelines were issued in 1990 to facilitate involvement of local communities in the management of forests. Since then 10000 Forest Protection Committees (FPCs) have been constituted across the country which manages 28% of the total forest area (MoEF and WII 2005). JFM has positive impacts in terms of improvement in vegetation cover and income of communities in many areas across the country . REDD Plus activities could potentially be carried out with the help of these FPCs. However, issues related to tenurial security, gender equity, ownership of NTFPs in scheduled areas and financial sustainability need to be addressed (TERI 2004 a and b; MoEF and WII 2005).

National Environment Policy, 2006

In the recent past, the National Environment Policy, 2006, recognised that forest laws and formal institutions have undermined traditional community rights and disempowered communities, and 'such disempowerment has led to the forests becoming open access in nature, leading to their gradual degradation in a classic sence of 'Tragedy of Commons" (MoEF 2006)'. The Policy advocates recognition of traditional rights of communities to 'remedy a serious historical injustice'.

Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (Henceforth referred to as Forest rights Act (FRA)) seeks to rectify some of the anomalies that have resulted from the notification of tribal and other lands as state forests without the settling of Rights. FRA was notified into force on 31 December 2007 and has provision of tenure and other rights to individuals and communities. There are however, several complex and unresolved issues in the content and implementation of the Act like complexities involved issues in differentiating between justified and unjustified claims. This is impartant from the REDD+ perspectives; should it be implemented in a timely and satisfactory manner, it would aid the implementation of REDD+ and satisfactory manner, it would aid the implementation of REDD+ and allow for a just distribution of finances received for REDD+.

National Action Plan on Climate Change, 2008

The Green India Mission under the NAPCC 2008, advocates bringing one-third of the geographic area of the country under forest cover, through afforestation of wastelands and degraded forest areas. A key programme to facilitate this is the Greening India Programme, under which 6 Mha of degraded forest area would be afforested with the participation of FPCs. The mission also recognises the need for effective conservation of biodiversity both within and outside Protected Areas (Pas). While this is an impartant policy statement, the guidelines for its implementation are awaited. As of now, the money collected under NPV and compensatory afforestation (refer to Forest (Conservation) Act), has been reallocated for the afforestation activities under the NAPCC.

Laws regarding Conservation of Biodiversity

Concerns have been raised in the international for a about the potential impact of REDD+ activities on biodiversity. India has legislative provisions to address many of these concerns; Wild Life (Protection) Act, 1972 (amended in 2001 and 2002) and Biological Diverity Act,2002. the Wild Life (Protection)Act, provides for protection of wild animals, birds, plants and their habitats, and setting up of protected areas. Approximately 4.7% of the total geographical area of the country is under in situ conservation of habitats and ecosysytems under the provisions of this act (MoEF 2008).

The Protected Areas (specially the national parks and sanctuaries) in the country are based on an exclusionary approach to conservation. The Biological Diversity Act, 2002 aims at conservation of biological resources and associated knowledge as well as facilitating access to them in a sustainable manner and a just proccess. It is, However , limited in its functional scope and implementation.

Cross-Sectoral Linkages

Source: httpgrowthforall.orgwp-contentuploads200711watershed-development.jpg

As mentioned earlier, cross-sectoral linkages between forestry and other sectors are important from the REDD+ perspective. Furthermore, in the absence of an integrated land-use policy and development planning in the country, the policies and programmes of various sectors/governments, ministries have inadvertent impacts on the forestry sector. The linkages between some of the important programmes such as watershed development, MNREGS, agriculture and energy programmes in analysed below.

Watershed development

Watershed development is one of the major development of the country with significant financial investments. It has been reported that 6.2 Mha of rainfed land was under watershed treatment with an estimated cost of USD 175 million in the financial year 2001-02 (Sharma unddated). It has been proposed to increase this amount to USD 2000 million per annum to complete the watershe dtraetment by 2020 (DoLR 2006).

Source: httpgrowthforall.orgwp-contentuploads200711watershed-development.jpg

While afforestation activities have been part of watershed development in the country since the beginning of the programme, its implementation has been poor due to the weak coordination between the watershed development agencies an dthe state forest department. This coordination needs to be strengthened for optimal utilization of resources and for increasing the forest cover.

Mahatma Gandhi National Rural Employment Guarantee Scheme

MNREGS is one of the biggest development schemes of the country with an allocated budget of USD 7820 for the year 2009-10. (Roy Choudhry 2009). This schemes was operationalised in 2006 and covers the entire country with the objectives to enhance 'livlihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year to every household' (MoRD 2008). Permissible works under the scheme include land development, afforestation and horticulture activities. At present 8% of total MNREGS funds are being utilized for drought proofing, which include the plantation activities. It has been proposed to utilized for drought proofing, which include the plantation activities. It has been proposed to utilize 20% of MNREGS fund for plantation activities (Matta, undated). If this money is utilised for plantation activities, it could afforest and manage 3.91 Mha of degraded land every year in the country; it could afforest large of degraded forest land and wastelands of the country in a decade.

Agriculture

Under central agriculture Programme, some of the national level activities like National Horticulture Mission and National Bamboo Mission are being undertaken to improve the livelihoods of the farmers and simultaneously trying to increase the vegetative cover of the country.

Energy programme

The energy programme has direct impact on the forest management in the country. It is estimated that 65% of rural and 22% of urban population, constituting 40% of total population of the country depends upon fuelwood for cooking purposes (NSSO 2001). It puts an immense pressure on forests and is one of the major reasons for degradation of forests. The Ministry of New and Renuewable Energy (MNRE), GoI, has been promoting improved cook stoves which could significantly save fuelwood and thus could reduce pressure on the forests. There is a huge potential of 85 million cook stoves in the country which could save 17 MT of fuelwood every year. But this programme needs to be technically and financially strengthened. Also, expansion of services of cleaner cooking fuels like LPG inrural areas could not only help in reducing pressure on forests but would also have health benefits (Aggarwal, Paul, and Das 2009).

Similarly, cultivation of Jatropha on wastelands for biofuel production has an impact on forest management. India aims to replace 5% of petro-diesil with biofuels by 2012. It will require plantation of 2.29 Mha of area with Jatropha curcas (Planning commission 2003). These lands are used as pastures and for collection of fuelwood. Their diversion will put an additional pressure on the forests. Hence, there has to be better linkages among various programmes to fulfil various needs.

Tenure and community rights

Indian Forest Act, 1927, recognises three types of forests: reserve forests (RF), village forests (VF) and protected forests (PF). Since village forests are a special type of reserve forests given to communities for management, legally, there are only two categories: reserve and protected forests. However, there is another category in the forest records known as 'unclassed forests' which is yet to be calssified in reserve or protected forests. Reserve, protected and unclassed forests cover 51%, 31% and 18% of forest area respectively (FSI 2005). These categories have decreasing access and rights and increasing protection from reserve to unclassed forests.

Most of the forest land is owned by the state. It is estimated that around 97% of the total forest land is owned by the government and 3% is owned by private entities and communiities (MoEF 2006). But there is increasing role of communities in the management of forests. Around 28% of the forest area is managed by communitites in collaboration with Forest Department under JFM programme.

Similarly, there are issues related to recognition of individual and community rights over forest lands especially in the 18% unclassed forest land in the north eastern states. It is estimated that area owned by private entities and community actually could be upto 10% (Khare, Sarin, Saxena *et al*. 2000).

Efforts have been initiated to undo 'historical injustice' and recognise rights of individuals and communities through Forest Rights Act of 2006. It has been reported that till October 2009, 2.49 million claims have been filed under the Act out of which 0.56 million titles have already been distributed (MoTA 2009). But the process of recognising forest rights need to be expedited and made more participatory and transparent.

Monitoring, Reporting and Verification (MRV)

Forest cover in the country is assessed on a biennial cycle on digital interpretation of satellite imagery and intensive ground truthing and accuracy assessment. Also, about 69.2 million ha of forest area has been inventoried for growing stock by FSI during 1965-2000. This represents over 80% forest area of the country. Since 2002, FSI had adopted a new National Forestry Inventory that it designed. At present the country has been divided into 14 physiographic zones and 60 districts randomly selected from these zones on probability proportional to size are inventoried every two years. In each cycle for field inventory, 8000 sample plots are laid; a national estimate of growing stock can be generated on a two-year cycle. This National Forestry Inventory can possibly be utilized and/or modified for specifics related to REDD-related MRV.

India is already working towards the Second National Communication to the UNFCCC which provides an assessment of forest carbon stock (in biomass and soil). FSI has been involved in calculating the above and below ground biomass, while ICFRE and IIRS jointly are calculating the soil organic carbon. While these can be potentially useful for developing a present baseline (as opposed to a historic base year), there would be a need for consolidation and modifications of efforts to address REDD-related specificities.

Assuming an agreed-upon criterion for degradation, monitoring degradation using high-resolution satellite imagery increases the cost of monitoring. It could be carried out with more extensive ground truthing which can be comparatively less expensive and also could provide employment to local forest dependent people who can be trained to participate in field surveys and forest inventories (with the forest department). Engaging forest dependent communities for monitoring activities would have the added benefit of mobilizing their support for forest protection.

4.4 India's Approach to REDD

India avocates a comprehensive approach to REDD which has been termed as a REDD+ approach. This approach argues for compensating countries not only for 'reducing deforestation 'but also for' conservation, sustainable management of forest and increase in forest cover' (ICFRE 2007). The basic principle of this approach is that unit of corbon saved is equal to one unit of carbon added. In its submission to UNFCCC in August 2009, India has elaborated REDD as 'Reducing Emission from Deforestation (A&R)' which further substantiates its comprehensive approach (MoEF 2009).

India advocates a mechanism outside the purview of CDM, with a national level accounting for REDD. Indian approach on financing REDD activities has changed from strict fund based approach to a mix of market and fund based approaches; a central funding should compensate for maintenance of forest carbon stocks whereas money fror compensating change in carbon stocks due to decrease in deforestation and degredation or increase in forest cover) could be generated by selling carbon credits in the international markets (MoEF 2009).

4.5 How will India benefit from REDD+?

India stands to gain a lot from a global REDD+ mechanism. It has specifically opened the possibilities for the country to expect compensation for its pro-conservation approach and sustainable management of forests resulting in even further increase of forest cover and thereby its forest carbon stocks.

Our sustained efforts for conserving and expanding our forest and tree resources have the possibility of being rewarded for providing carbon service to the international community in addition to providing traditional goods and services to the local communities. The incentives so received from REDD+ would be passed to the local communities involved in protection and management of the forests. This will ensure sustained protection of our forests against deforestation. It is estimated that a REDD+ programme for India could provide capture of more than 1 billion tonnes of additional CO2 over the next 3 decades and provide more than USD 3 billion as carbon service incentives under REDD+.

How will the REDD+ programme impact local communities, tribal communities and forest dwellers?

REDD+ will benefit local communities as it explicitly safeguards their rights and those of indigenous peoples. India is committed that monetary benefits from REDD+ will flow to local, forest dependent, forest dwelling and tribal communities. This is ensured for three reasons:

- First, in the Indian context, the REDD+ is intended to be an additional co-benefit to the goods and services already accruing to and being enjoyed by the local community, and, therefore, it comes as a bonus without compromising on the existing benefits.

- Second, India's own acts, guidelines, executive instructions and orders at central and state level additionally ensure that REDD+ will not adversely impact on the traditional and legal rights of the local communities over forests, but on the other hand will ensure more monetary benefits flowing them.

- Third, all international REDD+ deliberations and negotiations recognize and respect national legislations relating to safeguards for the rights of indigenous peoples and local communities, and aim to promote their participation in implementation and monitoring of REDD+.

4.6 What is India's Position on REDD and REDD+ in the ongoing global negotiations?

India believes REDD needs to be seen in the broader context of REDD+, not in isolation or in a truncated form since reduction of deforestation, and conservation and improvement of forests are two sides of the same coin, and so should be treated at par.

- Fairness requires that a unit of carbon saved by checking deforestation should be treated the same as a unit of carbon added due to conservation and afforestation measures. In essence, India has been insisting on following a comprehensive and holistic approach in realizing the full potential of mitigation in forestry sector.

- India's stand was finally accepted in 13th Meeting of the COP 13 at Bali when elements of conservation, sustainable management of forests and enhancement of forest carbon stocks were added to the then existing text of reducing deforestation and forest degradation as part of Bali Action Plan.

4.7 Is India ready to implement REDD+?

Based on the parameters discussed above it can be inferred that India is ready to embark on REDD Plus path based on its efforts and technical capabilities. However, India needs to address a few issues and gaps to be considered REDD Plus ready.

India has progressive policies and laws in place to address the issues of deforestaion and degradation and to improve forest management. But the Forest Act, 1927, which is the main supporting legal instrument, needs to be replaced to effectively support changes in forest policy. Implementation of JFM programme and FRA need to be strengthened to increase role of communities in forest management by providing them a secure tenure. Issue of forest carbon rights need to be clearly defined and incorporated in policy.

India has robust institutional set-up to manage forestry programmes in the country. With some additional set-up and responsibilities, it could well be used for implementation and management of REDD+ in the country. A REDD Cell could be established in the MoEF for coordination of REDD+ activities in the country. State Forest Departments could coordinate implementation of REDD+ activities in the respective states. Though FPCs, with the help of Panchayats, appear best suited to implement REDD+ in large part of the country, traditional institutions will be much more effective in some regions like the north eastern states. A comprehensive state-wise assessments need to be undertaken to analize the efficacy of various grassroots level institutions to implement the REDD+. Also, a robust benefit sharing mechanism needs to be clearly worked out.

India has made efforts to link afforestation and forest management activities with other developmental programmes such as watershed development, MNREGS and agriculture but the linkages and implementation the grassroots level need to be strengthened. Watershed and MNREGS have huge potential for afforestation. Extraction of fuel wood for cooking purposes and growing Jatropha on wasteland as biofuel has implications for forest management in the country. Linkages need to be established with energy programme.

Individual and community rights on forest resources need to be recognised. Efforts are already on through FRA but process need to be strengthened and expedited. Communities need to be givens secure tenure in JFM areas so that they have enough incentive to invest in sustainable management of forests.

India has been regularly undertaking forest assessment on biennial basis. India has requisite technical set up and capabilities to undertake MRV of biomass and soil carbon periodically. Efforts of research organizations like FSI, NRSA and ICFRE need to be synergized for monitoring and reporting on REDD+. Capacity of grassroots level institutions could be built for participatory monitoring.

The low awareness of REDD+ process warrants a broad sensitisation and capacity building exercise for all stakeholders. Subsequently, a comprehensive REDD+ implementation strategy at the country level should be developed with participation of various stakeholders.

4.8 What is India currently doing as part of its REDD+ strategy?

India is playing a positive role and has taken a firm stance in favour of a comprehensive REDD+ approach. It has presented an ambitious Green India Mission programme under its NAPCC. India is underlying the following initiatives related to REDD+.

- India has made a submission to UNFCCC on "REDD, Sustainable Management of Forest (SMF) and Afforestation and Reforestation (A&R)" in December 2008
- A Technical Group has been set up to develop methodologies and procedures to assess and monitor contribution of REDD+ actions
- A National REDD+ Coordinating Agency is being established
- A National Forest Carbon Accounting Programme is being institutionalized
- India is hosting the COP-11 of the Convention on Biological Diversity (CBD) in 2012, to coincide with twenty years of Rio
- Study on the impact of climate change on India's forests assigned to the Indian Network for Climate Change Assessment, has been released in November 2010. In the year 2030, 8 - 56% of the forests are likely to experience a change in vegetation type with respect to those observed in 1970s. There is likely to be an increase in Net Primary Productivity (NPP) ranging from 20 – 57 %.

4.9 Green India Mission - India's New Flagship Forestry Programme

The government has put in place a National Mission for a Green India as part of the country's National Action Plan for Climate Change with a budget of Rs 46,000 crores (approx. USD 10 billion) over a period of 10 years. The overarching objective of the Mission is to increase forest and tree cover in 5 m ha and improve quality of forest cover in another 5 million ha. Thus, the Mission will help in improving ecosystem services in 10 million ha of land, and increase flow of forest based livelihood services to, and income of about 3 million forest dependent households. The Mission is innovative in several respects:

- First, it proposes a fundamental shift from our traditional focus of merely increasing the quantity of our forest cover, towards increasing its quality and improving provision of ecosystem goods and services.

- Second, the Mission proposes to take a holistic view of greening, not merely focus on plantations to meet carbon sequestration targets. There is a clear and more important focus on enhancing biodiversity, restoring ecosystems and habitat diversity.

- Third, there is a deliberate and major focus on autonomy and decentralization. The Mission will be implemented through an autonomous organisational structure with a view to reducing delays and rigidity, while ensuring accountability.

  Local communities will be at the heart of implementation, with the *Gram Sabha* as the overarching institution overseeing Mission implementation at the village-level. The Joint Forest Management Committee would be revamped as Committees of the *Gram Sabha*. This is in consonance with the fact that forests are a source of livelihood for over 200 million people in the country, and hence centrality of their participation is critical.

  A key innovation is the idea of engaging a cadre of young 'Community Foresters', most of whom will be from scheduled tribes and other forest dwelling communities, to facilitate planning, implementation and monitoring of Mission activities at local level.

Relevance of REDD+ to Community

Compiled by E. Poorna Chander, CPF

5.1 Understanding Carbon Trade

Understanding the precarious situation due to Global warming, the carbon trade came about in response to the Kyoto Protocol and 189 countries signed in Kyoto (Japan) in December 1997. The Kyoto Protocol calls for around 38 industrialised countries to reduce their GHG emissions between the years 2008 to 2012 to levels that are 5.2% lower than those of 1990.

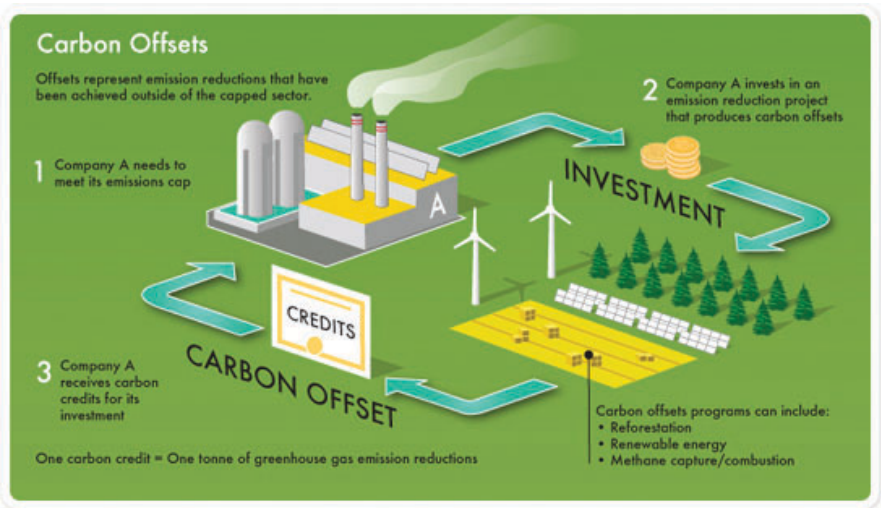
The concept of carbon credit came into vogue as part of an international agreement, popularly known as the Kyoto Protocol. Carbon Credits (CCs) is a relatively new concept, and these are bought by a buyer in the industrial sector needing to offset the Co_2 emitted in the atmosphere through their manufacturing activities. These are bought through a mediator who collects the contracts from various farmers who meet the criteria of carbon sequestration through various conservation practices. That is to say they are issued for afforestation and reforestation activities undertaken. Carbon credits are measured in units of certified emission reductions (CERs), equivalent to one tonne of CO_2 reduction.

Carbon credits are certificates issued to countries that reduce their emission of GHGs that leads to global warming. Developed countries that have exceeded the prescribed CO2 levels can either cut down emissions, or borrow or buy carbon credits from developing countries as it is considered that the major responsibility of curbing emission rests with the developed countries, which have accumulated emissions over a long period of time.

Carbon transactions are defined as purchase contracts or ERPAs (Emission Reductions Purchase Agreements) whereby one party pays another party in return for GHG emissions reductions that the buyer can use to meet its compliance – or corporate citizenship – objectives vis-à-vis GHG mitigation. Payment is made using one or more of the following forms: cash, equity, debt, or in-kind contributions[48].

5.2 Carbon Credits

Many types of activities can generate carbon offsets. Renewable energy such as wind farms, or installations of solar, small hydro, geothermal, and biomass energy can all create carbon offsets by displacing fossil fuels. Other types of offsets available for sale on the market include those resulting from energy efficiency projects, methane capture from landfills or livestock, destruction of



Source: httpwww.2g-cenergy.comimagescarbon_offsets.jpg

[48] . *http://www.carajkumarradukia.com/handbook/hbcarboncredits.doc. (access date: 1st October, 2010)*

potent GHGs such as halocarbons, and carbon sequestration projects (such as reforestation) that absorb carbon dioxide from the atmosphere[49].

There are two types of Carbon Credits, first one is Carbon Offset Credits (COCs) and second one is Carbon Reduction Credits (CRCs). The first type of activity, COCs are created from clean energy production such as wind, solar, hydro, and bio-fuels and second activity, CRCs is the collection and storage of Carbon from our atmosphere through reforestation, afforestation and similar storage efforts. COC's and CRC's are critical to reducing carbon emissions. Carbon credits create a market for reducing GHG emissions by giving a monetary value to the cost of polluting the air. A carbon project is a business initiative that gets its revenues by cutting GHGs. It creates Carbon Credits. The projects are verified by CDM or Joint Implementation projects[50].

Benefits of Carbon Credits

- Provide an additional source of revenue
- Improve the return on investments in projects
- Boost the economic feasibility of projects
- Accelerate project implementation
- Contribute to the fight against global warming.

Trade of Carbon Credits in India

The unfolding opportunity of Carbon Credits in India has caught the eye of Indian entrepreneurs. There are various projects in India in the fields such as biomass, hydropower, wind power; cogeneration for getting carbon credits now stands at 227 with the potential of 225 million CERs. It is estimated that opportunity in Carbon Credits in India is likely to the tune of Rs.15000 crores. Due to the growing industrialisation in India and particularly in Gujarat, there are tremendous opportunities in Carbon Credit business. Corporates in the region could use these opportunities to generate good amount of revenues. According to a top official of the Chicago Climate Exchange (CCX), India will "move quickly" in the future to capture a large part of the carbon credit market. Over 227 projects have received the host country approval in India alone and almost 90 of them have been registered with UNFCCC. Out of these 10% projects are from Gujarat alone. Ms. Preety Bhandari, Director, TERI said that TERI would generate 1.5 Mt carbon credits in the next 18 months. "All these projects will be generated at rural level. At an average cost of $4.5 per carbon credit, we hope to generate about Rs 31 crore by selling these credits on CCX," Ms Bhandari said. A strong pipeline and a growing willingness to strike fair deals may suggest a higher market share for India in the future. The growth prospectus and the potential of market leadership status can be achieved by India soon[51].

5.3 Carbon Pricing

The carbon price is defined as levying out taxation, cost or value on GHG emissions that fosters climate change. Its approach is to impose cost on emissions and provide incentive through emission trading and motivate large scale industries to deploy renewable energy source technology to abate GHG emissions[52]. An economic value is placed on the emission of GHG into the atmosphere from human activity. A carbon price usually takes the form of either a carbon tax or as the cost of permits in an Emissions Trading Scheme. The price is designed to create an incentive to reduce emissions[53].

In the current scenario there has been a sudden increase in emissions from GHGs owing to increase in human activity due to fast industrial development and transportation and decrease in forest coverage. It is in this context that stabilising emissions would be a better option to reduce GHGs by making carbon pricing as a necessary policy for reducing GHG emissions and thereby mitigate climate change. Establishing a carbon price is one of the most powerful mechanisms available to reduce national GHG emissions. Similarly a global benchmark is an urgent challenge for international collective action. A global approach can in theory, be created through internationally harmonised taxation or intergovernmental emissions trading, but neither is straightforward in practice. Simply because it is difficult, does not mean we should shy away from it.

We need a carbon price to stabilise global GHG concentrations at levels that limit the risk of severe future climate change damage. Annual global emissions will need to be reduced substantially in the coming decades. So paying a price for carbon emissions will slow the output.

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[49] . *http://carboncreditmart.com. (access date: 29th September, 2010)*
[50] . *https://sites.google.com/site/carbonglossary/Carbon-Guide/Carbon-Credits (access date: 27th September, 2010)*
[51] . *http://www.carajkumarradukia.com/handbook/hbcarboncredits.doc. (access date: 29th September, 2010)*
[52] . *http://fsd.monash.edu.au/environmental-sustainability/climate-change-glossary-key-terms (access date: 24th September, 2010)*
[53] . *Ibid.*

In May 2007 the World Bank's carbon finance unit released figures to show that the global carbon market last year trebled to $30 billion (U.S.) from $11 billion in 2005. The emissions trading program of the European Union is the hub of the global market, and it trebled to $24 billion in turnover last year. Kyoto's clean development mechanism works by capping emissions by rich countries, forcing them to buy permits from poor countries to emit GHGs, which some fear may raise business costs in the developed world. Yvo de Boer from the UNs climate section believes that finance flows of some $100 billion per year are likely in the years after 2012.

Concerns in Carbon pricing policy

Carbon pricing is a mandatory action on climate change as an important consideration is the potential for new policies to cause significant declines in some domestic industries, along with corresponding increases in production elsewhere in the world. The possibility of such impacts gives rise to at least two major concerns. The first concern involves the risk of damage to the domestic economy, especially to the subset of carbon-intensive industries that is particularly vulnerable to domestic carbon pricing policies. The second concern relates directly to the potential for emissions leakage, i.e., increases in GHG emissions in the rest of the world in response to the domestic policy[54].

For carbon price policy to be effective, "at least two broad policy elements are required: fairly uniform, pervasive emission pricing from taxes, permit trading, or combinations of the two; and significant government support for innovation of new, low-emission technologies, via a mixture of patents, prizes, subsidies and direct spending."

From the Stern Review is it clear that there is more to reducing the risks from global warming than making consumers pay more for plane flights or refraining from using huge cars: "Three elements of policy for mitigation are essential: a carbon price, technology policy and the removal of barriers to international change. Leaving out any one of these elements will significantly increase the costs of action."

The Cost of Pricing Carbon

To have significant impact our climate policies will need to fundamentally change the basis of our fossil fuelled economies. Climate change policy that will take us away from fossil-based fuel will cost us more, but in the long term benefit us more, and will require more changes in behaviour by firms and individuals than any other environmental policy.

Putting in place a carbon tax or cap-and-trade system will increase the cost of electricity and very likely to decrease the competitiveness of energy intensive industries. This lack of competitiveness effect can result in negative economic and environmental outcomes. For instance, some companies may move their facilities to places where there are no climate change policies. This will increase emissions at these new locations and bypass some of the emissions benefits of the cap and trade or tax policy.

The outcome of a truly global system would mean countries will not benefit proportionately from GHG mitigation policies. As a result, the costs to mitigate climate change are likely to exceed benefits for some countries, at least in the short term. Cost effective international policies insuring that countries get the most environmental benefit out of their mitigation investments will help promote participation in an international climate policy approach.

5.4 Carbon Finance

Carbon finance is the general term applied to resources provided to a project to purchase GHG emission reductions[55]. Carbon finance allows large business firms to invest in projects aimed at reducing emissions generated overtime. Basically, it is a payment to a project entity which oversees the function of emission reductions from that project, on a yearly basis or so. Generally it is like a commercial transaction wherein the projects receive money on their part for the work carried out in the form of implementation of renewable energy projects, biosequestration processes such as afforestation and reforestation and other methane reduction programmes. The stakeholders in this project would be any legal entity, public, or private, NGO, etc.[56]

Beneficiaries of Carbon finance

1. For the global community: On a large scale increased carbon funding would hopefully result in essentially lowering cost of global funding on climate change.

2. To the public and private sectors (participants in the markets): business enterprises, firms who are part of the technologically driven industry can play an active role by becoming part of the system.

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47. *Cambridge Centre for Climate Change Mitigation Research, Department of Land Economy, University of Cambridgewww.4cmr.org,(access date:15/10/2010.)*

3. For the least developed/developing countries: since large population of the world survives in these countries it becomes imminent for funding agencies to pump resources into these areas which are under a formidable risk of climate change[57].

5.5 REDD Projects across the World

REDD is a new approach to climate mitigation which gives greater recognition to the importance of protecting and sustainably managing tropical forest resources in developing countries. It is estimated that 20 % of global carbon dioxide (CO2) emissions originate from the loss of forests associated with land use and land cover change. Under REDD, developed countries are willing to provide payments to compensate developing nations for forests that are sustainably managed. A large number of REDD pilot projects have been initiated in developing countries like Indonesia, Brazil and Papua New Guinea with the support of private investors, conservation NGOs and state. Multilateral organisations have started supporting readiness activities, through readiness programmes like Forest Carbon Partnership (FCPF) of the World Bank and UN-REDD programme of UN organizations, in priority countries where deforestation rates are relatively high[11].

Case Study - 1

Community Forestry REDD Project in Oddar Meanchey, Cambodia

Cambodia's Forestry Administration, along with PACT and Terra Global Capital have recently developed the first Cambodian REDD carbon offset project. The project involves 13 community forestry groups, comprising 58 villages, which protect 67,783 hectares of forestland in the Northwestern province of Oddar Meanchey. The project is expected to sequester 7.1 million metric tons of CO_2 (Carbon dioxide over 30 years).

This project supports sustainable forest management and livelihood development in Oddar Meanchey province by providing financing through carbon credits generated through forest protection. The project not only assists rural people to gain legal tenure over local forests, it also creates a 30-year income stream that will significantly enhance household livelihoods and natural resource management capacity. The project seeks to retain and increase carbon stocks in three areas, enhancing the hydrology in the upland watersheds of the Tonie Sap Basin, as well as conserving endangered biodiversity. Carbon financing will be used to support rural communities to develop a range of livelihood activities including non-timber forest product enterprises, community-based ecotourism infrastructure, and water resource development.

Hey activities

Key activities to be supported under this project include awareness-raising and regular consultation among all stakeholders, improved coordination and communication, forest fire protection, crackdown on encroachment and illegal logging activities, forest enrichment through replanting and silviculture techniques, fuelwood savings through introduction of improved cook stoves, agricultural intensification and improvement of water supplies and development of annual carbon stock monitoring systems.

Enhancing forest carbon stocks

This project provides regeneration contracts to all participating CF Management Committees (CFMC) to restore their degraded forests through silvicultural treatments including multiple-shoot cutting, clearing around seedlings, enrichment planting, water harvesting, and other methods. Restoration contracts are based on CFMC management plans, providing employment opportunities, materials, and funding CFMC operations. Increase in carbon stocks in regenerating forests would provide additional income into community funds that could be used for livelihood and infrastructure development activities.

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[55] . *http://wbcarbonfinance.org/Router.cfm?Page=FAQ&ItemID=24677#9 (access date: 29th September, 2010)*

[56]. *http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCARBONFINANCE/0,,contentMDK:21848927~menuPK:4125939~pagePK:64168445~piPK:64168309~theSitePK:4125853,00.html#What_is_Carbon_Finance (access date: 28th September, 2010)*

[57]. *http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCARBONFINANCE/0,,contentMDK:21848927~menuPK:4125939~pagePK:64168445~piPK:64168309~theSitePK:4125853,00.html#What_is_Carbon_Finance (access date: 29th September, 2010)*

[58] . *http://www.teriin.org/events/CoP15/Forests.pdf (access date: 2nd November, 2010)*

Case study - 2

Pilot project on Community Based REDD Mechanisms for Sustainable Forest Management for Sustainable Forest Management in Semi-Arid Areas – the Case of Ngitilis in Shinyanga Region, Tanzania

Ngitilis are reserved natural pastures for the purpose of provision of fodder, fuel and construction materials, and soil restoration. The overall goal of the project is to reduce GHGs emissions through sustainable forest management and carbon market incentives. Its purpose is to assist 250 Ngitlis owners in 10 villages of Shinyanga rural and Kahama districts to establish a robust local institutional framework that effectively manages the restored Ngitilis to capture benefits arising from REDD.

Restoration of Ngitilis has social, economic and environmental contribution in improving peoples' livelihood in Shinyanga. The Shinyanga REDD pilot project focuses on strengthening and supporting local communities to continue managing their Ngitilis in a sustainable manner using carbon incentives resulting from REDD. The four-year project (2010-2013) is financed by the Ministry of Foreign Affairs of the Government of Norway.

Key project outputs of the project involve formalizing and capacitating institutional framework for REDD implementation at community level, establishing baseline scenario for potential carbon source, developing and implementing measures for addressing drivers of deforestation and forest degradation, establishing mechanisms for benefit sharing and empowering groups, and monitoring, evaluating and documenting project performance and impacts.

Benefits to participants and environment in Shinyanga include formalising Ngitili groups, improving management of Ngitilis leading to increased carbon stock, increasing household income and revenue from REDD and other income generating activities, increasing land productivity and crop production from adoption of improved agronomic and land use pattern, increasing access to alternative and efficient energy technologies and services, reducing amount of fuelwood use and improving livelihood for communities in project sites.

Case Study - 3

Benefit sharing mechanisms of JFM in India

Benefit sharing of JFM – North India

The study found some important benefit sharing among community participants in the project of Joint Forest Management. Primarily, fuelwood in the form of dry and fallen twigs and leaves from the forests is now available to participating communities. The proportion of the harvest that goes to the communities share varies across States. Some States like Gujarat, Haryana and Punjab have banned grazing completely, other States have allowed for rotational grazing. These practices have helped the regeneration and survival of vegetation in forests, and in increasing supply of fodder grasses. All NTFP, barring few nationalised products, are now available to the people free of royalty in all states. People have a right to collect even the nationalized products like Kendu leaves, Sal seeds etc. VFCs are also entitled to a share in the timber harvest in varying proportions. There are provisions for contribution to Village Development Fund from a portion from people's share from final harvest proceedings. There has been a significant shift in the labour utilisation patterns in communities across various States owing to the increased supply of fodder and fuel wood, this is more significant with respect to women[1].

Joint Forest Management in Andhra Pradesh

During 1992 Government of Andhra Pradesh adopted, Joint Forest Management (JFM) as a strategy for protection, improvement and development of forests with the involvement of local communities by forming them into Vana Samrakshana Samithies (VSS). People living on the fringes of the forests were encouraged to form VSS to protect and rejuvenate degraded forest areas. Implementation of JFM in Andhra Pradesh through institutionalisation of VSS) to protect and rejuvenate forest areas has increased benefits to community in terms of returns from forest produce and ecological services rendered by the forests. There are around 6580 VSS formed till date, with 16.58 lakh hectares of degraded forest been brought under JFM, of which around 5.38 lakh hectares has been reclaimed so far by taking up regeneration work, including soil and moisture conservation and other gap planting works. 13.05 lakh VSS members, including 6 lakh women are actively participating in JFM. It is also noticed that the government under JFM gives 100 percent usufruct rights to the VSS villagers on usufructs from the forest with a condition that the village community should keep apart money required for regeneration and management of the forest on a sustainable basis and VSS gets 50 percent of the net revenue realized from *beedi* leaf collected by the member. 25 percent of the fine collected from forest offences apprehended by VSS is given to VSS members.

Village development is another thrust area of VSS and focus is on improving drinking water, roads, building community halls, improving women's economic status by contributing to women's groups etc. Success stories from different parts of the state indicate how people led efforts in JFM have led to increased productivity, increase in the water table, generation of adequate employment and an improvement in socioeconomic conditions.

5.6 Expected Benefits to Community

The Community Forestry Carbon Offset project, Oddar Meanchey, Cambodia has been instrumental in promoting sustainable forest management and livelihood development through carbon credits generated through forest protection. It is expected that within a time period of 30 years, member of the community would gain legal tenure rights over local forests. There is a potential to increase carbon stocks in these areas, enhancement of hydrological systems in the upland watersheds of Tonie Sap basin, as well as conservation of biodiversity. Carbon financing will be an important support structure for rural communities to develop a range of livelihood activities which includes NTFPs, eco-tourism and water resource management[1].

One of the anticipated benefits for smallholders benefiting in carbon stock schemes is the monetary gain that could be achieved through carbon trading. Currently, carbon credit exchange rate ranges anything between US 1 dollar and US dollar 38 per tonne of Carbon. (FAO, 2001b). Results from the case studies in Senegal and Sudan elucidate that there is an enhanced resource base ready for future generations and that there would be a monumental increase in crop, timbre and livestock yields. Direct benefits accruing to local smallholders are expected to occur at the field level primarily through increased soil fertility, crop yields and sustainable livelihoods[2].

59. *http://www.communityforestryinternational.org/whats_new.html*
60. *http://www.fao.org/docrep/007/y5738e/y5738e0a.htm*

Concerns and Challenges in REDD+ Implementation

Compiled by P. Bruslin Mento, CPF

United Nations negotiations on Reducing Emissions from Deforestation in Developing countries are in fast forward mode, both in the negotiating halls and on the ground. This is partly because of the considerable sums of money being discussed – figures of tens of billions of dollars per year are the norm. Yet many critical questions remain unanswered. Will REDD help to mitigate climate change or actually negate efforts that have been made so far? Who will really benefit from REDD funds? How might trading in forest carbon credits impact on REDD-related policies and projects?

From a climate change point of view, the overall goal is to stabilize the atmospheric concentration of CO2 at as low a level as possible. This can partly be achieved by stopping deforestation, which is responsible for some 18% of carbon emissions to the atmosphere. But REDD is not intended to stop deforestation. A detailed analysis shows that 'reducing emissions from deforestation' is actually a dramatically different approach that could have significant negative impacts on people, on biodiversity and even on our climate.

Firstly, in current REDD scenarios it is perfectly plausible that deforestation could be allowed to continue at or return to unacceptable rates, with prolonged damage to biodiversity and the risk that forests will be tipped into a process of dieback. This is because the atmospheric concentration of CO2 can also be reduced by *deferring* deforestation: even if deforestation rates return to their original level after a certain period, there will still have been a beneficial effect on CO2 concentrations. This rather undermines one of the key arguments used to promote REDD: that it will be good for biodiversity.

In addition, REDD could also be used to reward those engaged in logging and industrial agriculture, whilst ignoring those countries and communities that have low deforestation rates. This is because REDD is primarily intended to create financial incentives that will prompt those engaged in deforestation to switch to managing standing forests. Most calculations of how much REDD will cost focus on the profits that would be forfeited by those engaged in deforestation. This 'opportunity cost' approach also implies that REDD will be used to channel public funds, through facilities such as the World Bank's Forest

Carbon Partnership Facility, to pay the polluter. REDD is also likely to provide lucrative opportunities for those with money to invest, including forest carbon finance companies.

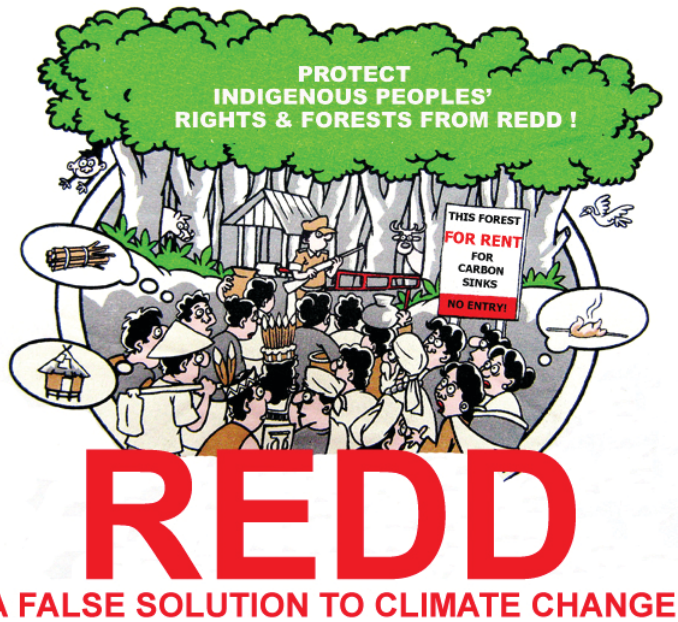
6.1 The 'Cost' of REDD

These opportunity cost calculations, and others that look at the potential income that could be generated from simply conserving carbon stocks (in countries with low rates of deforestation, for example) have another major drawback. They give the impression that completely stopping deforestation would be prohibitively expensive. But this is *only* the case if those engaged in deforestation are compensated. It would be more useful to focus on the opportunity costs to government revenue streams, jobs and value-added industries. This approach would still provide the necessary positive incentives to governments considering changing their policies with respect to deforestation.

Winners and Losers

Critically, REDD will also hamper much-needed efforts to mitigate climate change so long as it is based on a definition of forests than includes plantations. Plantations are not forests. Large-scale monoculture tree plantations cause serious environmental, social and economic problems. Furthermore, plantations store only 20% of the carbon that intact natural forests do. It thus seems inconceivable that the UNFCCC would sanction any process that allows natural forests to be replaced with plantations. Yet this is exactly what is being proposed in REDD. Some countries even support a 'net deforestation' approach: this would allow them to continue logging and cutting forest to make way for agricultural commodities (including agrofuels) in some areas, whilst conserving forests and/or extending plantations in others.

A further major concern is that REDD could actually negate existing efforts to mitigate climate change if it is funded by the sale of forest carbon credits on the international compliance markets.



Source: http://earthpeoples.org/blog/?tag=redd-cdm-amazon

If REDD is funded through carbon offsetting it will undermine current and future emissions reductions agreed to by industrialised countries. Allowing countries with carbon intensive lifestyles to continue consuming inequitably and unsustainably, by permitting them to fund cheaper forest carbon 'offsets' in developing countries, diverts critical resources and attention away from measures to address fossil fuel consumption and the real underlying causes of deforestation.

REDD also refocuses attention on a key moral and legal dilemma – to whom, if anyone, do forests belong to? And who has the rights to sell forest carbon credits? It is certainly clear that in the absence of secure land rights, Indigenous Peoples and other forest-dependent communities have no guarantees that they will receive any form of REDD 'incentive' or reward for their extensive forest conservation efforts.

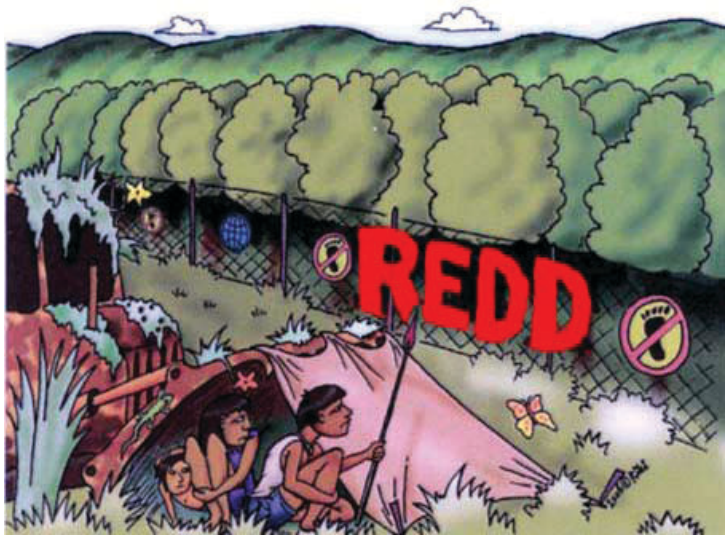
Whether national or project-based, REDD policies will trigger a rapid expansion in lands set aside for REDD projects. In many countries, governments and others are likely to ignore the customary and territorial rights of Indigenous Peoples, as they seek to protect an increasingly valuable resource from 'outside' interference, violently or otherwise. The simple fact that forests are becoming an increasingly valuable commodity means that they are more likely to be wrested away from local people. Previous experiences, with the Clean Development Mechanism, voluntary carbon offset projects and payments for environmental services schemes, indicate that there is little reason for optimism, especially for already marginalized communities living in the forests.

6.2 The Consequences of Market-based Approach to REDD

Commodifying forest carbon is also inherently inequitable, since it discriminates against people, and especially women, who previously had free access to the forest resources they needed to raise and care for their families, but cannot afford to buy forest products or alternatives. Any REDD projects that deny local communities and Indigenous Peoples access to forests risk having grave impacts on poverty and the achievement of the Millennium Development Goals.

Indigenous Peoples and forest-dependent communities may also find it hard to benefit from REDD even if they actively wish to participate in REDD projects. Firstly, if they are not engaged in unsustainable deforestation they may not qualify for REDD incentives. Secondly, they may be disadvantaged by uncertainties or conflicts over land tenure (and these conflicts are even less likely to be resolved in their favour if forests increase in value). Thirdly, because of the uncertainties associated with deforestation projects (because of storms or forest fires, for example) project managers are likely to find themselves saddled with the projects' risks and liabilities. They may also find themselves responsible for finding upfront funding and operational costs to tide them over until they are paid at the end of the project period. Either way, larger and richer organisations operating to economies of scale can deal with these difficulties much more easily, than indigenous peoples and local communities, who may therefore find themselves in a poor negotiating position right from the start. They may also have to address language barriers and hire or find assistance to deal with the technical complexities involved in establishing, monitoring and verifying REDD projects.

An additional suite of risks arise if REDD is to be funded through compliance carbon markets. Many observers assume that REDD is synonymous with carbon trading and offsetting, but this is not the case (so far, at least). Although using the markets to fund REDD has been favoured by a majority of governments (or was, before the global financial crisis erupted onto the global scene) it has still been a contentious issue.



Source: www.wrm.org.uy/subjects/REDD.html

Nevertheless, the full range of risks associated with using carbon offsetting to fund REDD has not been properly considered. In addition to the fundamental problem of equating forest and fossil carbon it could:

- Hold REDD hostage to the vagaries of markets and the activities of speculators, and generally lead to funding that is unstable and unpredictable.
- Reduce developing countries' sovereignty over their natural resources, by prioritising investment decisions that focus on maximising profits and allowing foreign investors to buy up forest 'services'.
- Allow richer, industrialized countries to continue polluting and divert resources and attention away from measures that could address the real underlying causes of deforestation.
- Foster an 'armed protection' mentality that could lead to the displacement of millions of forest-dependent people, including by force.
- Facilitate corruption and poor governance in countries with tropical forests, because of the large sums of money proposed and the complex nature of the financial mechanisms likely to be involved.
- Prioritize 'least cost'measures, which increase the likelihood of environmentally and socially damaging activities and push liability for failed projects onto local communities.
- Flood carbon markets, reducing the price of carbon and thereby stalling other climate change mitigation programmes.
- See most funding channelled to countries such as Brazil and Indonesia, which have high deforestation rates or large areas of forest cover.
- Be so complex and have such high transaction costs that only the largest companies operating to economies of scale are able to participate.

6.3 Methodological Problems with REDD

In addition to concerns about financing, it has long been known that there are numerous methodological problems associated with deforestation projects. Although there have now been some technological improvements (especially in satellite imaging technology), most of these problems and associated risks remain, meaning that REDD might fail even if the large sums of money being discussed are raised and distributed.

An enduring problem is whether REDD can address 'leakage' concerns. A project-level approach, for example, could mean that deforestation activities simply shift to another area in the same country (depending on the specific causes of deforestation in that country). One obvious solution to this predicament is to focus efforts at the national level and to involve as many countries as possible. Even so, a question still remains about possible leakage from tropical forests to boreal and temperate forests. Ultimately, the only real solution is to remove the underlying causes of deforestation.

6.4 REDD and the Underlying Causes of Deforestation

Measuring degradation is also problematic, but important. If degradation is not included in REDD, great quantities of carbon could be lost without the system recognising it. In some countries, such as those in the Congo Basin, losses from degradation tend to be much higher than those from deforestation. However, the fact that degradation data may be less reliable – and is more expensive to acquire – is likely to discourage carbon finance investors, which may mean negotiators choose to exclude degradation in order to accommodate carbon trading. This dilemma seems to be yet another cogent practical argument for using publicly rather than privately sourced finance.

In conclusion, efforts to reduce emissions from deforestation and degradation, being discussed in the post 2012 negotiations, must be replaced with a mechanism to stop deforestation. Governments are already committed to this under the Climate Change Convention and in other agreements such as the Convention on Biological Diversity.

Renewed efforts to achieve this goal should be founded on the ecosystems approach, climate justice and the rights and role of Indigenous Peoples and local communities. They should also address biodiversity and poverty effectively and challenge the underlying causes of deforestation directly, nailing down demand-side drivers in importing countries and resolving governance, poverty and land tenure issues in forested countries. It is particularly important that stopping deforestation is seen as more than just a carbon counting exercise; and that plantations are removed from the equation.

6.5 Who Should Manage Multilateral Funds

In so far as funding is required to stop deforestation, financing should be invested in national programmes and infrastructure that directly support alternative rights-based forms of forest conservation, sustainable management, natural regeneration and ecosystem restoration, such as community-based forestry.

Funding – from whatever source – should address the needs of developing countries, but should not directly increase the financial value of forests. Benefits to governments could be tied to national commitments to cease commercial deforestation and to restructure logging, pulp and paper and other industries, possibly over a number of years.

Source: http://earthpeoples.org/blog/?tag=redd-cdm-amazon

6.6 Other Ways of Raising or Using Forest Carbon Funds

It is important to bear in mind that financing is not everything. There are other important and relatively cheap options that could help to prevent deforestation, including deforestation bans and moratoria and a global forest fire fighting fund and expertise bank, to assist countries unable to prevent or stop forest fires.

It could also be useful to focus on developing transition funds that would help developing countries match lost tax revenue streams, jobs and value-added industries. This approach could provide the necessary positive incentives to governments considering changing their policies with respect to deforestation, but would be additional to the costs associated with tackling the underlying causes of deforestation.

Carbon markets cannot be used to fund efforts to stop deforestation: they will simply negate existing efforts to reduce reliance on fossil fuels. There are alternative sources of funds that do not rely on voluntary assistance or on carbon trading, such as taxing fossil fuel use and diverting fossil fuel energy subsidies in industrialised countries. These would be true win-win options, since they would also, in themselves, work to reduce greenhouse gas emissions. They would also provide a predictable source of transition funding.

Furthermore, all funding should be grant-based only: any concessional loans could mean that developing countries are pushed into increasing their debt burden because of climate change, a problem for which they are not responsible. Neither the World Bank nor the Global Environment Facility (so long as it is unduly influenced by the World Bank) should be permitted to drive this process forward. Instead, a transparent, accountable and participative fund-based mechanism should be established within the UN.

The UNFCCC negotiations are a last chance to take action to stop the worst excesses of climate change. The REDD proposals currently on the table are intended to generate profits for polluters, not to stop climate change. They must be replaced with a commitment to stop deforestation once and for all.

6.7 Case study of Cachoeira reserve in the state of Paraná, Brazil

In Brazil, people with some of the world's smallest carbon footprints are being displaced-so their forests can become offsets for SUVs.

IT WAS AN unusual deal that landed trees in Cachoeira reserve in the state of Paraná at the center of the debate. Between 2000 and 2002, the US-based Nature Conservancy struck an alliance with three of the planet's leading carbon emitters: General Motors, Chevron, and American Electric Power. Together the corporations gave the environmental group $18 million to purchase 50,000 acres of Brazilian Atlantic forest, much of which had been degraded by grazing. Three reserves were created: Serra do Itaqui, financed with $5 million from AEP; Morro da Mina, paid for with $3 million from Chevron; and Cachoeira, underwritten by $10 million from GM. (GM's role in the project survived the company's bankruptcy, which means that No. 129 is now partially owned by you and me.) SVPS was brought in to manage the reserves, which together form one contiguous forest known as the Guaraqueçaba Environmental Protection Area. You'll see Guaraqueçaba promoted on the Nature Conservancy's website as an example of corporate partnerships that make "an invaluable contribution to the preservation of the planet's biodiversity." What you won't see is what the companies get out of the deal: the potentially lucrative rights to the carbon sequestered in the trees.

The trees in the Cachoeira reserve could never offset even a fraction of GM's total carbon footprint-a single Hummer H2 (which the company started producing the same year it signed on to the Guaraqueçaba project) would require about 50 trees to offset. All three companies, as it happens, had aggressively lobbied the Clinton administration against signing the 1997 Kyoto climate accord and stayed mum when President Bush withdrew from it. But they hedged their bets, figuring that the Brazilian forests could be turned into offsets to sell in places (like Europe) where Kyoto's emission limits did *apply*, or could be held in reserve in case the US ever established its own limits.

By the time the companies were ready to begin preparing their credits for sale, however, the UN had refused to allow "avoided deforestation" projects-those that buy forestland and then promise not to cut the trees-as an offset for industries seeking to buy their way out of emission limits. Credits generated from projects like Guaraqueçaba were excluded from the international carbon market launched by Kyoto, a market that now accounts for more than $126 billion in offset transactions. The offsets could be sold, however, in the United States, where the $700 million domestic carbon offset market is unregulated (and where prices are generally half those of Kyoto-regulated offsets).

THERE IS ANOTHER vexing question inherent in preserving forests: What happens to the people who use the land? Efforts to protect biodiversity in the dwindling wildlands of the world have increasingly run into a discomfiting tension between the impulse toward absolute preservation and the needs of people-many of them indigenous-who have lived sustainably in forestlands for decades or centuries. Such tensions are playing out in the new economics of carbon offsets.

For many generations, the Guaraqueçaba forest was home to the Guarani Indians, but their dominion waned as the Brazilian government encouraged subsistence farmers to settle and clear the land. Today the two populations coexist, living alongside the reserves or in communities nearby and relying on what remains of the forest for everything from food to building materials. There are more than a dozen villages around the three reserves, linked by dirt roads and river tributaries traveled by canoe. Most are home to just a few dozen people living in structures of wood and reeds. Jonas de Souza is a 33-year-old farmer who grew up a quarter of a mile from the forest that is now part of the GM-funded Cachoeira reserve. His family grows bananas, cocoa, and coffee on a small plot. He remembers hunting for small prey-roast paca, a large rodent, is a local delicacy-and collecting seeds and hearts of palm. But now, signs have gone up at the edge of the forest: No hunting, fishing, or removal of vegetation. A state police force, the Força Verde, or Green Police, patrols the three reserves, as well as a larger state-sanctioned preservation area, to enforce the restrictions.

"Now," says de Souza, "I don't have the right to go out and do what I used to do when I was 12, 14, 15 years old. I'd grab my fishing rod and get a fish to bring to my family or to feed myself. You don't have the right to walk into the forest to go and cut a heart of palm to eat. I'll get arrested and I'll be called a thief."

By excluding villagers from the forests, says Jutta Kill, a researcher with the Forests and the European Union Resource Network who has spent months interviewing locals about the project, the reserves are pulling out the communities' lifeline. "In this area," she says, "everyone is cash poor but no one goes hungry. If you take the forest away, you take away everything. The preservation projects here are designed to generate offsets for the largest polluters, and they're doing it by cutting off people from the land." Few of the people here have motors on their boats, she notes; even fewer own cars. People with some of the smallest carbon footprints on Earth are being displaced by companies with some of the biggest.

Back in Curitiba, Chang, the state forestry expert, told me that the conservation groups were trying to create a "zero disturbance" environment in their forests. "Maybe that's a little obsolete," she said. "Maybe you [should] have 90 percent conservation, not 100 percent. That way you could include the community of people who live there." But that could undermine a system based on assigning a stable, reliable, and tradable value to a living ecosystem.

"The carbon idea is not really tangible to people in the community," Miguel Calmon, the Nature Conservancy's director of forests and climate in Latin America, acknowledges. Calmon says the conservation groups initially sponsored training programs for local community members in alternate sources of income-cultivating honeybees, organic bananas, local crafts-but the money ran out. Now, he says, the rules are clear: "You can't go into these private reserves. That land is not their land anyway. If you used to go [into the forest] from your house across the road, now you can't. That land is already owned."

The supply of forests for offsetting pollution in developed countries is, potentially, almost infinite. There are an estimated 90 billion tons of carbon in Brazil's forests alone, and billions of tons more are sequestered in Indonesia, the Democratic Republic of Congo, Malaysia, Papua New Guinea, and other nations with substantial tropical forests, which are considered the most vulnerable to deforestation. The world has a major stake in keeping all that carbon where it is. The question now being debated in Washington and Copenhagen is whether the fate of the forests—and their people—will rest on the ability of industries to pay for preserving distant trees rather than reducing emissions closer to home.

REDD+ Lead in the Cancun Agreements

Compiled by P. Bruslin Mento, CPF

7. REDD+ Lead in the Cancun Agreements

Interpretation on the REDD+ Decisions in Cancun

The Cancun Agreements provide important guidance for all actors – countries, NGOs, multilateral institutions - who are helping countries prepare for REDD+ in the "fast-start" period through 2012. Like much of the Cancun Agreements, the REDD+ text was derived from text that has been in discussion for years. There are two major differences from previous drafts. First, the agreement now clearly states that REDD+ is not only about reducing emissions but *halting* and reversing forest loss. This is important as it emphasises that REDD+ actions must result in maintaining existing forests and carbon stocks. Second, the agreement encourages *all* countries to find effective ways to reduce the human pressures on forests that result in GHG emissions. This element is important as it, correctly, puts part of the responsibility of slowing, stopping and reversing forest cover loss and associated emissions on those countries and actors (e.g., companies and consumers) that create the demands that drive deforestation (e.g. demands for timber, oil palm, soy, and cattle).

Primarily, the Cancun REDD+ text provides countries with guidance on REDD+ readiness. For example, the agreement recognises that a phased approach will likely be necessary – from plans and implementation (phase 1 and 2) to results-based activities (phase 3) – and lists the systems and information that developing countries need to undertake REDD+ activities. These include a national plan, a national reference emission level, a robust and transparent national forest monitoring system, and a system for providing information for how safeguards – such as respecting indigenous peoples' rights – are being addressed and respected.

In addition, Annex 1 to the REDD+ agreement provides more details about the principles and safeguards that actors undertaking activities and providing finance will need to respect, even in the "fast-start" finance period. While the language in the text could have been stronger, it represents a significant shift in the type of language included in UNFCCC

The Cancun text on Policy approaches and positive incentives on issues relating to REDD+:

Affirming that, in the context of the provision of adequate and predictable support to developing country Parties, Parties should collectively aim to slow, halt and reverse forest cover and carbon loss, according to national circumstances, consistent with the ultimate objective of the Convention, as stated in Article 2,

Also affirming the need to promote broad country participation in all phases described in paragraph 73 below, including through the provision of support that takes into account existing capacities,

68. Encourages all Parties to find effective ways to reduce the human pressure on forests that results in greenhouse gas emissions, including actions to address drivers of deforestation;

69. Affirms that the implementation of the activities referred to in paragraph 70 below should be carried out in accordance with annex I to this decision, and that the safeguards referred to in paragraph 2 of annex I to this decision should be promoted and supported;

70. Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances:

(a) Reducing emissions from deforestation;

(b) Reducing emissions from forest degradation;

(c) Conservation of forest carbon stocks;

Contd...

documents to date and is one of the most significant aspects of the text.

Finally, the last paragraphs of the Cancun REDD+ agreement reflect some of the learning from REDD+ programs in the past year. Developed countries are being asked to coordinate financing and activities in each REDD+ country, as currently activities sometimes overlap or conflict. The text also recognises the role of international organisations and other stakeholders in both the implementation and coordination of REDD+ activities.

Unanswered Questions

Though this agreement represents a step towards a fully-fledged REDD+ framework, there are important questions left unanswered. These will need to be addressed before REDD+ actions can be recognised and supported in the UNFCCC context. These include:

Definitions: While the REDD+ agreement includes five recognised activities – i.e., reducing

emissions from deforestation and forest degradation, conservation and enhancement of forest carbon stocks, and sustainable management of forests – most of these activities are still undefined by the UNFCCC. For example "forest degradation" has not yet been defined, let alone "sustainable management of forests" and "conservation". Without definitions it is not possible to measure progress or pay for performance, which is central to the REDD+ discussions.

Reference Emission Levels: Additionally, more guidance is required for countries to develop national Reference Emissions Levels (RELs). These RELs will determine the potential compensation a country could receive from REDD+ for a given level of activity. For example, if a country sets their REL too high, they may generate emission reductions though they have taken few actions to achieve them. In Annex 2 to the REDD+ agreement, the Subsidiary Body for Scientific and Technology Advice has been given the mandate to develop modalities for REL development.

Safeguards: The agreement requests that countries develop an information system to track how safeguards are addressed and respected for REDD+. This is an important operational step for making the safeguards applicable. However, more detail is necessary on what information will be captured, how that information will be shared and for what purpose. The REDD+ decision text does not include language with regard to any institution within or outside of the UNFCCC (e.g., the registry or Green Climate Fund board) that would use the information to make decisions. The institutional questions need not be answered for the "fast-start" finance period. However, what information needs to be collected and shared is an area where fast-start finance actors (multilateral institutions, countries, etc.) have identified the need for further harmonization. In order to do so, these actors will need to better understand this issue and start the process of standardizing information. This should take place in the coming

6 In accordance with national circumstances, national forest reference emission levels and/or forest reference levels could be a combination of sub-national forest reference emissions levels and/or forest reference levels.

7 Including monitoring and reporting of emissions displacement at the national level, if appropriate, and reporting on how displacement of emissions is being addressed, and on the means to integrate sub-national monitoring systems into a national monitoring system.

(d) Sustainable management of forest;

(e) Enhancement of forest carbon stocks;

71. Requests developing country Parties aiming to undertake activities referred to in paragraph 70 above, in the context of the provision of adequate and predictable support, including financial resources and technical and technological support to developing country Parties, in accordance with national circumstances and respective capabilities, to develop the following elements:

(a) A national strategy or action plan;

(b) A national forest reference emission level and/or forest reference level6 or, if appropriate, as an interim measure, sub-national forest reference emission levels and/or forest reference levels, in accordance with national circumstances, and with provisions contained in decision 4/CP.15, and with any further elaboration of those provisions adopted by the Conference of the Parties;

(c) A robust and transparent national forest monitoring system for the monitoring and reporting of the activities referred to in paragraph 70 above, with, if appropriate, sub-national monitoring and reporting as an interim measure,7 in accordance with national circumstances, and with the provisions contained in decision 4/CP.15, and with any further elaboration of those provisions agreed by the Conference of the Parties;

(d) A system for providing information on how the safeguards referred to in annex I to this decision are being addressed and respected throughout the implementation of the activities referred to in paragraph 70, while respecting sovereignty;

72. Also requests developing country Parties, when developing and implementing their national strategies or action plans, to address, inter alia, drivers of deforestation and forest degradation, land tenure issues, forest governance issues, gender considerations and the safeguards identified in paragraph 2 of annex I to this decision, ensuring the full and effective participation of relevant stakeholders, inter alia, indigenous peoples and local communities;

Contd...

year. While SBSTA was also given this mandate in Annex 2, the stakeholders and experts that should be involved in these discussions are likely to reside outside of the UNFCCC process.

The Phased Approach and Links to NAMAs: The current text describes a phased approach to REDD+, but it does not make links between the phases and recognition of Nationally Appropriate Mitigation Actions (NAMAs) and the support linked to NAMAs. This leaves a number of unanswered questions, including whether actions in the early phases (and the financing supporting them) would be included in the NAMAs registry if taken after the "fast-start" finance period, and if so how they would be measured, reported and verified. Additionally, it is not clear how countries will move between phases and whether there will be a time table for moving between phases once the country has identified a starting point and received support. Finally, the "results-based" approach promoted as the final phase will need to be clarified.

Finance: The developed countries are urged to support - using bilateral and multilateral channels – phase 1 and 2 activities and to improve their reporting of their support. However, the question of financing for phase 3 was not agreed to in Cancun. This is likely due to the outstanding methodological questions about what the "results-based" approach would actually include. While this may have been disappointing for those who expected a signal that a market-based approach will be used to generate REDD+ finance, several countries were strongly opposed to this approach.[1]

As with many of the decisions agreed to in Cancun, now the hard work begins on implementing the framework. However, all actors involved in the readiness and fast-start activities now have clearer guidance of what the framework will include and what work needs to be done. The progress REDD+ countries make in implementing readiness activities, as well as methodological work by SBSTA, will be important next steps on the road to next year's meeting in South Africa.

73. Decides that the activities undertaken by Parties referred to in paragraph 70 above should be implemented in phases beginning with the development of national strategies or action plans, policies and measures, and capacity-building, followed by the implementation of national policies and measures and national strategies or action plans that could involve further capacity-building, technology development and transfer and results-based demonstration activities, and evolving into results-based actions that should be fully measured, reported and verified;

74. Recognizes that the implementation of the activities referred to in paragraph 70 above, including the choice of a starting phase as referred to in paragraph 73 above, depends on the specific national circumstances, capacities and capabilities of each developing country Party and the level of support received;

75. Requests the Subsidiary Body for Scientific and Technological Advice to develop a work programme on the matters referred to in annex II to this decision;

76. Urges Parties, in particular developed country Parties, to support, through multilateral and bilateral channels, the development of national strategies or action plans, policies and measures and capacity-building, followed by the implementation of national policies and measures, and national strategies or action plans, that could involve further capacity building, technology development and transfer and results-based demonstration activities including consideration of the safeguards referred to in paragraph 2 of annex I to this decision, taking into account the relevant provisions on finance including those relating to reporting on support;

77. Requests the Ad Hoc Working Group on Long-term Cooperative Action under the Convention to explore financing options for the full implementation of the results-based actions8 referred to in paragraph 73 above, and to report on progress made, including any recommendations for draft decisions on this matter, to the Conference of the Parties at its seventeenth session;

78. Also requests Parties to ensure coordination of the activities referred to in paragraph 70 above, including of the related support, particularly at the national level;

79. Invites relevant international organizations and stakeholders to contribute to the activities referred to in paragraphs 70 and 78 above.

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