

# NUTS AND BOLTS FOR INDIA'S REDD+ CALCULUS

R. B. LAL, MADHU VERMA, SWAPAN MEHRA, PRIYANKA BATRA

*Indian Institute of Forest Management (IIFM), Bhopal,*

Dr. R. B. Lal, Technical Forestry and Forest Economics Expert and Director, Indian Institute of Forest Management (IIFM), Bhopal, India, ([rblal@iifm.ac.in](mailto:rblal@iifm.ac.in))  
Dr. (Mrs.) Madhu Verma, Professor, Environment and Developmental Economics, IIFM, Bhopal, India, ([mverma@iifm.ac.in](mailto:mverma@iifm.ac.in))  
Mr. Swapan Mehra, CEO and Founder Iora Ecological Solutions Pvt. Ltd., New Delhi, ([swapan@ioraecological.com](mailto:swapan@ioraecological.com))  
Ms. Priyanka Batra, Consultant, IIFM-TIFAC-IIASA Project, IIFM, Bhopal, India ([pri.batra@gmail.com](mailto:pri.batra@gmail.com))

## 1 Introduction

CO<sub>2</sub> Emissions due to industrialisation, deforestation and other drivers of economic development are prime reasons for disturbing the carbon harmony of the planet due to which natural climate change is accelerating and becoming an uncertain phenomenon. This anthropogenic contribution of CO<sub>2</sub> needs to be reduced in order to balance climate change. In this delicate carbon cycle of the nature, forests play a vital role both as a source and sink and are hence key in earth's fight against climate change. Forests are massive carbon storehouse with storage of eighty percent of earth's above-ground and forty percent of below-ground terrestrial carbon (FAO 2005).

Apart from cost effective carbon sequestration and storage, forests have high ecological, cultural and economic value.

Alarmingly around 20% of global anthropogenic greenhouse gas is contributed by deforestation and forest degradation on account of poor management of the earth's forests. This is second only to the global transportation sector in terms of emissions (IPCC 2007). The current global deforestation has been estimated to be at 13 million ha/yr for 1990-2005 as stated by Food and Agriculture Organisation (2005) of the United Nations.

Hence, there is an urgent need to provide incentives to arrest the alarming rate of deforestation and provide a helping hand to nature to balance the carbon concentration in the atmosphere. REDD+ could be one such mechanism aimed at creating financial incentives to reduce deforestation and forest degradation.

### 1.1 Understanding REDD+

REDD+ stands for Reducing Emission from Deforestation and (Forest)

Degradation. Deforestation is the permanent removal of forests and withdrawal of land from forest use. Forest degradation refers to negative changes in the forest area that limit its production capacity and resilience. The “+” in REDD+ signifies addition of carbon stock to existing forests through Sustainable Forests Management (SFM) and Afforestation and Reforestation (A/R)<sup>1</sup>.

REDD+ is a market based mechanisms which intends to use financial incentives such as REDD+ credits and funds in order to reduce the emissions of greenhouse gases from deforestation and forest degradation. Although the original objective of REDD+ is to reduce greenhouse gases but it also has a potential to deliver several "co-benefits" like biodiversity conservation, livelihood generation, and hence poverty alleviation.

REDD+ credits offer an opportunity to utilise funding from developed countries to reduce deforestation in developing countries. The REDD+ regime is at the moment in its infancy, with tremendous efforts worldwide to prepare developing nations' capacity to host projects, carry out monitoring and verification and to develop mechanisms for equitable distribution of benefits to all stakeholders in the forest lands. Foremost amongst

these stakeholders are forest dependent communities.

The purpose of this paper is to provide an analysis of the REDD+ mechanism and to exhibit the essentials of this mechanism and application potential in India's preparedness to utilise the REDD+ opportunities.

## **1.2 The REDD+ Concept**

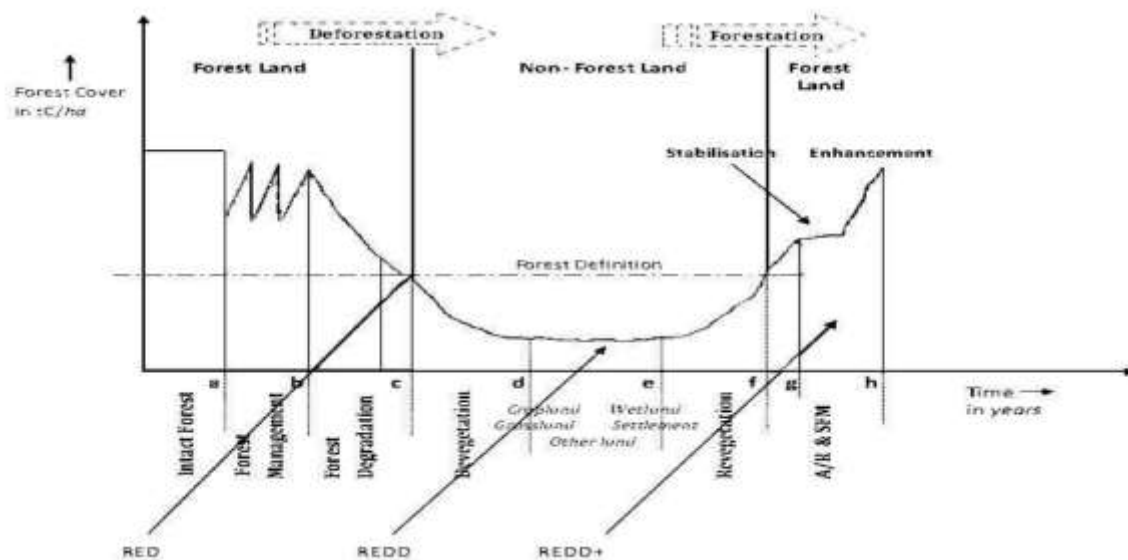
REDD+ evolved in response to a growing recognition of the need to preserve the standing forest stocks and infact promote growth of forests to sequester carbon. It would also provide forest communities and private owners, access to the market for forest ecosystem services<sup>2</sup>. It has a prime focus on biodiversity conservation and community participation. This approach shows substantive results and leads to re-building of stock and flow resources of the ecosystem, thus addressing the issue in totality. Clean Development Mechanism (CDM) under the Kyoto Protocol also has A/R projects but they are purely driven by the markets and the ambit of both the approaches is completely different<sup>3</sup>. So far A/R CDM contributes to only 1% of the total projects registered under CDM (UNEP Riso Centre nd). Post Kyoto Protocol i.e. after the first commitment period gets over in 2012, the future of CDM is

uncertain where as REDD+ mechanism is expected to have a promising future.

The REDD+ concept is illustrated in the forest transition curve in Figure 1 which explains the management and strategic intervention to regain and enhance the forest stocks. Improper forest management on intact forest leads to its deforestation, RED can be a strategic solution to regain the forest if it is affected only by deforestation. If such

forests continues to degrade then the devegetated, degraded land at point 'd', can be intervened with REDD strategy which can recover the forests upto 'g'. However REDD+ intervention should be preferred as it would recover the forest stocks to 'h' i.e. not just stabilise but also enhance and maintain the forest cover through afforestation, reforestation and sustainable forest management practices.

**Figure 1**  
**The Forest Transition Curve**



Source: Adapted from Lasco (2010)

### 1.3 Description of REDD+ Design Variables

REDD+ projects are characterised by key components or the design variables which are the building blocks on which the

various frameworks can be evolved depending upon the nation's suitability. They provide the flexibility to design the framework in a manner that is effective, efficient and easy to implement considering the nation's economy and polity as the success of REDD projects

depends on the level of involvement of the community.

**Reference level:** It defines the reference period and scale against which the activities within scope are measured (Parker et al 2008). It helps in understanding the additionality<sup>4</sup> as they define the business as usual over a predefined scale. The baseline approach is critical to the success of a REDD mechanism because it affects the quantity, credibility, and equity of credits generated from efforts to reduce forest carbon emissions (Griscom et al nd).

Generally three approaches to the geographical scale of REDD accounting and incentive mechanisms are discussed: direct support to projects (sub- national level), direct support to countries (national level), or a hybrid approach combining the two. (Wertz-Kanounnikof and Angelsen 2009) Given the diversity of national circumstances, it is essential to be flexible in selecting approaches and relevant action levels for consideration.

**Equity:** It deals with the allocation of incentives and benefits to the primary stakeholders of the REDD+ projects. A mechanism needs to be devised for the appropriate benefit sharing, productivity and income distribution in degraded forest reserves which would greatly influence the impact across the countries.

The approaches for distribution can be vertical (bottom up approach that benefits different stakeholders along the REDD+ structure), horizontal (distribution among the communities) (Mayers et al 2010).

**Financing:** It can be through direct-market or a hybrid / market-linked mechanism or voluntary funds like Official Development Assistance (ODA). In the market linked approach the nation's cap and trade target is not met. Market linked mechanisms like Norway has proposed more recently that an auctioning of emissions allowances at the international level could be used as a source of finance for REDD. A 2% levy on Assigned Amount Units (AAUs)<sup>5</sup> could generate an income between USD 15 and 25 billion per year (Parker et al 2008: 15 22).

**Monitoring, Assessment, Reporting and Verification (MARV):** This component is the critical link for the success of the project. Monitoring of the carbon stocks, rural livelihoods etc. can be done using satellite based imagery which would be transparent, standardised and verifiable.

**Implementation:** Implementation can occur at three levels National, Sub national and nested combining both. It is acknowledged that for the initial preparedness phase the sub national level implementation is the best approach

leading to a National level in the long term after host countries have developed requisite capacities.

## **2 The Status of REDD+**

### **2.1 Till Copenhagen**

Realising the critical role played by forests in climate change mitigation, REDD was proposed by Papua New Guinea and Costa Rica at the Conference of Parties-11 (COP) to the United National Framework Convention on Climate Change (UNFCCC) at Montreal in 2005 which was supported by other eight countries (Parker et al 2008: 15 22). Subsidiary Body on Scientific and Technical Advice (SBSTA) received proposals and recommendations on REDD and at COP 13, Bali Action Plan contained detailed deliberations on 'emission reduction as a comprehensive approach to mitigate climate change'. This was the beginning of an intense negotiations on issues related to reducing emissions and inclusion of REDD in the international climate change mitigation regime. To facilitate this Ad-Hock Working Group on Long Term Cooperative Action under the convention (AWG-LCA) was established and it hoped to present a conclusive framework by next COP at Copenhagen (The COP 15) Resultantly REDD topped the agenda

for negotiations at the COP 15. However the negotiations stalled and there was no formal adoption of decisions, instead a group of Heads of States representing the major emitting countries and main negotiating groups accounting for approximately 80% of the global GHG emission, negotiated the "Copenhagen Accord" (Averchenkova 2010).

This accord was noted by the COP and Conference of Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP/MOP)<sup>6</sup> as a political declaration and has no legal standing with the UNFCCC process. The Accord iterated the importance of REDD+ mechanism and mobilisation of financial resources from developed countries to developing countries for promoting forest conservation and enhancement of carbon stocks.

However, AWG-LCA in COP 15 recognised REDD+ as a key strategy whose implementation should be country driven and in accordance with the national circumstances and capabilities of the country with due respect to nation's sovereignty. It should also be consistent with the national sustainable development needs and goals (Averchenkova 2010).The AWG-LCA has also stated broader guidelines for REDD+ implementation as: (i) need for national forest emission level; (ii) Monitoring,

Reporting and Verification (MRV) should be robust and transparent; (iii) a national action plan / strategy in line with

the country's low carbon emission strategy. Table 1 gives an overview of the post Copenhagen status of REDD+

**Table 1**  
**Status of REDD+ Post Copenhagen**

<b>Progress achieved in Copenhagen</b>	<b>Outstanding issues</b>	<b>Implications for developing countries</b>
<ul style="list-style-type: none"> <li>• Establishment of REDD+ mechanism</li> <li>• Finalisation of COP text</li> <li>• Principles for implementation</li> <li>• Actions that host countries should undertake have been listed</li> <li>• Commitment on finance by developed countries</li> </ul>	<ul style="list-style-type: none"> <li>• Role of market finance</li> <li>• Sub-national measures</li> <li>• Governance arrangements</li> <li>• Amount of financing to be allocated, although USD 3.5 billion was pledged as initial support over the next two years</li> </ul>	<ul style="list-style-type: none"> <li>• Clarity on what is necessary to participate in REDD+</li> <li>• Preparation for REDD+ implementation can be started</li> <li>• Financing will be provided</li> </ul>

Source: Averchenkova (2010)

The negotiations at Copenhagen (both by AWG-LCA and the development of the Accord) put REDD+ on prime position in the global climate change mitigation agenda. New and additional resources from developed countries in the amounts “approaching USD 30 billion” for the period 2010-12, with balanced allocation between adaptation and mitigation, is pledged, with USD 100 billion per annum envisaged from 2020 onwards under Copenhagen Green Fund (Averchenkova 2010).

## 2.2 Oslo Conference

Several nations met at the Oslo Climate and Forest Conference on 27 May 2010<sup>7</sup> to provide a voluntary, non-legally

binding framework for the interim REDD+ Partnership, within which the Partners may develop and undertake collaborative REDD+ efforts. This voluntary partnership intends to support the development of a formal UNFCCC REDD+ process. The developed nation partners to this partnership intend to provide funding for national REDD+ readiness activities in developing nations. Already by the end of the COP 15, six donor nations had committed USD 3.5 billion for such activities over the period 2010-12. By the end of the Oslo conference this number had scaled up to USD 4 billion. Developing nation partners are in the process of implementing REDD+ activities directed

towards developing capacity and the right strategy. This includes developing monitoring systems, and mechanisms to ensure involvement of local communities and all relevant stakeholders and equitable distribution of benefits amongst them.

### **2.3 Fifth BASIC Ministerial Meeting at Tianjin, China**

The BASIC<sup>8</sup> countries participated in the Fifth BASIC Ministerial Meeting<sup>9</sup> on 10<sup>th</sup>-11<sup>th</sup> October 2010 with representatives from Yemen, Argentina, Grenada, Ethiopia, and Egypt, as observers for the meeting called as the “BASIC-Plus” approach. The main focus was on the path to be adopted for the coming COP at Cancun, Mexico from 29<sup>th</sup> November to 10<sup>th</sup> December 2010. They emphasised that Cancun should pave the way for a legally binding outcome in the next COP i.e. COP 17 in South Africa as per the mandate of the Bali Roadmap. It was stated that the fast track fund scaled upto USD 4 billion in Oslo would be vital in determining the success at Cancun. Transparency, technology transfer, equity, trade and climate change were the agenda for the meeting. The sixth BASIC Ministerial meeting on Climate Change would be held in India in February 2011.

### **2.4 Convention on Biodiversity COP 10 at Nagoya, Japan**

The Aichi Nagoya Ministerial Meeting of the REDD+ Partnership on 26<sup>th</sup> October 2010 that took place at the COP 10 of Convention of Biodiversity (CBD) was attended by representatives from 62 nations. Increased participation was observed from countries across the globe. UK has committed to the fast track fund which now stands USD 4.5 billion. Belgium and Italy pledged to support REDD+ activities; eleven countries including USA, UK Scandinavian nations are ready to support the operational costs of REDD+ Partnership budget for 2010 and 2011 as presented in Tianjin.

The Nagoya conference agreed to an “Updating and Revision of Strategic Plan for the Post 2010 Period”. With respect to REDD+, the Strategic Plan targets reduction in the loss of natural habitat including degradation and fragmentation close to zero per cent and sustainable management practices in areas under forestry, agriculture and aquaculture to ensure biodiversity conservation<sup>10</sup>.

### **3 India’s stand on REDD+**

Indian Council of Forestry Research and Education (ICFRE, India’s observer organisation of UNFCCC) has suggested a comprehensive approach on REDD+ as carbon saved is equivalent to carbon

added in order to achieve stabilisation and conservation of forest cover and carbon stocks of the country. Forests would be stabilised and conserved when there is zero emissions or nets CO<sub>2</sub> removal from the atmosphere and the damage done from the GHG emissions is repaired through REDD+.

ICFRE has proposed that the country should be compensated for reducing deforestation, stabilising and enhancing its forests cover under the REDD mechanism. The potential policy approach presented by India has been named as “Compensated Conservation” which is intended to compensate the countries for maintaining and increasing their forests as carbon pools as a result of conservation and increase / improvement in forest cover backed by a verifiable monitoring system<sup>11</sup>.

The framework suggested by ICFRE is that of choosing national level accounting mechanism and a national baseline (1990 level), using remote sensing combined with minimum ground verification for MRV. The financial incentive should be such that a unit of carbon saved through deforestation should have the same incentive as that of a unit of carbon added through conservation and creation of different financial instruments or apportion funds under the same mechanism for different range of actions

to be implemented by the countries according to their national circumstances such as (i) Reducing Deforestation Fund (ii) Stabilisation Fund (iii) Forest Carbon Conservation Fund<sup>12</sup>.

India has announced a number of initiatives related to its preparedness for REDD+. A Technical Group has been set up to develop methodologies and procedures to make assessment and monitoring of REDD+ actions and a National REDD+ Coordinating Agency has been given in-principle approval by the Ministry of Environment and Forests (MoEF). Besides this the methodologies for National Forest Carbon Accounting are also being institutionalised. India is also the first developing country to release its Greenhouse Gas (GHG) Emissions Inventory for 2007, with the aim of enabling informed decision-making and to ensure transparency with the intent to publish its emissions inventory in a two-year cycle going forward, which is much more frequent than the requirement under its National Communication<sup>13</sup> (NATCOM) commitments. (MoEF 2010 June 30).

These national policies are in line with the AWG-LCA guidelines for REDD+ implementation. The proactive approach of the environment ministry/government has positioned India to formalise the REDD+ framework as per national



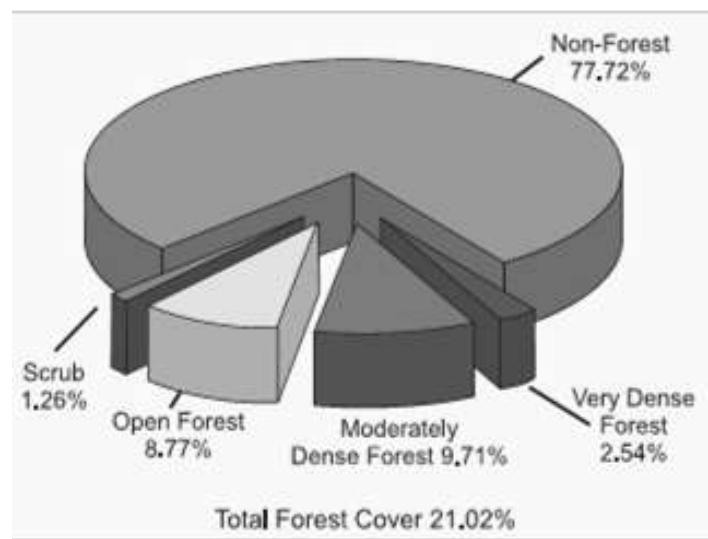
circumstances and capabilities and India is among the leading developing nation to have committed domestic actions.

### 3.1 Current State of Indian Forests

India is one of the twelve mega bio diverse countries and ranks 10<sup>th</sup> in the list of most forested nations of the world (FAO 2005) with 23.84% (78.37 million ha) of its geographical area under forest<sup>14</sup> and tree cover (FSI 2009). The net increase in the forest and tree cover since

2007 is 0.18 million ha despite the growing pressure on the forests resources. The present Indian forest cover as per canopy density<sup>15</sup> is illustrated in Figure 2. These forests have been divided into 14 physiographic zones, with the north eastern part of the country endowed with very dense and moderately dense forests which comprise of more than fifty percent of total forest cover of India (FSI 2009).

**Figure 2**  
**India Forest Cover (by area)**



Source: (FSI 2009)

India's forests serve as a major sink of CO<sub>2</sub>. The trend of the biomass carbon stock of the country is explained in Table 2. Kishwan et al (2009) has estimated that the annual CO<sub>2</sub> removals by India's forest and tree cover (138.15Mt CO<sub>2</sub> eq.) is

enough to neutralise 11.25 % of India's total GHG emissions at 1994 levels which is equivalent to offsetting 100% emissions from all energy in residential and transport sectors; or 40% of total emissions from the agriculture sector.

**Table 2**  
**Biomass Carbon Stock Estimate of Indian Forests**

<b>Source</b>	<b>Year</b>	<b>Carbon stock estimate</b>
Richards and Flint 1994	1880	7.94 Mt C
Richards and Flint 1994	1980	3.97 MtC
Ravindranath et al 1997; Haripriya 2003; Chhabra and Dadhwal 2004	1986	8.58 to 9.57 GtC (First estimate available of forest carbon (biomass and soil carbon))
Kishwan et al 2009	1995-2005	6.7MtC
FAO 2005	2005	10.01 GtC
IISc 2006	2006-2030	8.79 to 9.75 GtC

Source: Adapted from Kishwan et al (2009)

However, 41% of the forest cover of the country is degraded. Realising the need for conservation and regeneration India is putting key emphasis on developing capacity to promote forest conservation. It has a National Action Plan on Climate Change (NAPCC) which has eight sub-missions which strategise low carbon economy for the country. One of the sub-mission “Green India Mission” focuses on the forestry sector and has an overarching goal to double the afforested and forested land of the country to 20 million ha by the next decade. This would increase the above and below ground biomass in 10 million ha of forests/ecosystems, resulting in increased carbon sequestration of 43 million tons CO<sub>2</sub> (e) annually (National Mission for Green India 2010)

India has a very strong and rapidly growing afforestation programme. The afforestation process was accelerated by the enactment of Forest Conservation Act of 1980, which focussed on the reduction of clearing and degradation of forests by developing mechanism with centralised control of the rights to use forest land and made compensatory afforestation mandatory in case of any diversion of forest land for any non-forestry purpose (National Mission for Green India 2010). During the late 1980’s there was a paradigm shift observed in the forest management, bottom-up approach was adopted which was reflected in the National Forest Policy (1988) with participatory and democratic involvement of communities in the protection and management of forests. This policy strengthened the efforts to address

deforestation and degradation of the forest land. It advocated the concept of Joint Forest Management (JFM) which was adapted through a Government of India resolution in 1990. Different types of JFM Committee (JFMCs)<sup>16</sup> were created depending on the forest area and forest cover. Their composition required inclusion of representatives from all social and economic classes (Jadhav 2009). These communities are responsible for the management of forests and have a right to benefit sharing in addition to the usufruct rights over the forests. The state of Madhya Pradesh has the highest number of JFMCs with a total of 14,428 JFM committees managing forest area of 5.94 million ha. But with 200 million people dependent on the forests nationwide for their livelihood, the resource is under constant threat of deforestation (FSI 2009), which adds to India's GHG emissions.

### **3.2 Deforestation and Degradation of stocks**

The forests in the country have been disturbed significantly through logging, clear felling, grazing, fire etc. With the growing population, pressure on forest is increasing considerably as a result of which unsustainable harvesting practices are followed to meet their daily energy

and livelihood needs leading to rapid depletion of forest stock.

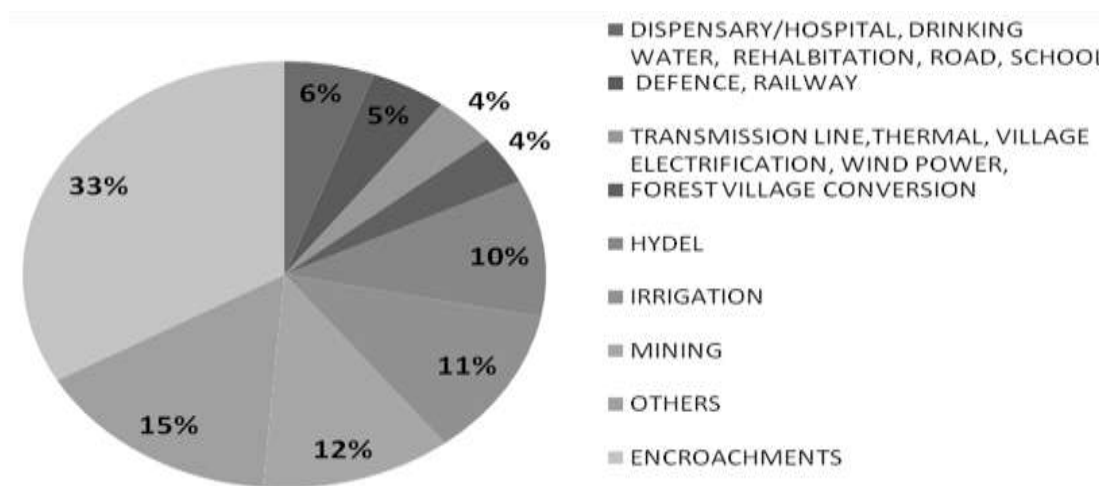
Joshi and Singh (2003) have identified important parameters for degradation of forest land. (i) Change in forest composition due to practice of traditional agriculture methods like shifting cultivation, over- grazing of forests land and frequent forest fires eventually affects the species composition of the forest and their ability to regenerate. (ii) Low productivity of the forests linked with unsustainable harvesting methods practiced due to increasing biotic pressure, results in decreased growing stock of the forests and ultimately degrades the natural resource.

The fast growth of the Indian economy is putting additional demands on the forests land for infrastructural and industrial development with increased requirement of diversion of forests land for the purpose of hydro electric projects, mining etc. (FSI 2009). Figure 3 explains category wise land diversion since 1980 till present under Forest Conservation Act of 1980. During last three decades 33% of forest land has been diverted due to encroachments, which can be attributed to increase in population, human needs and industrialisation. Hence it becomes even more important that the forests stocks are conserved and enhanced so that they support livelihood of the people

and also help in mitigating the climate change

**Figure 3**

**Land Diversion under FC Act 1980: Category Wise (1980-2010)**



Source: Based on data from MoEF, GoI (2010)

#### 4 Calculus of REDD+

The costs need to be considered using extended calculus to internalise all kinds of hidden and less tangible costs. Table 3

provides an illustration of such costs that need to be accounted while developing a REDD+ framework and project, else the value of REDD+ intervention would be over estimated.

**Table 3**

**Costs of REDD+**

Component	Costs
Opportunity Costs <sup>17</sup>	Across Africa, Central America, SE Asia, and South America they amount to USD 30,000–250,000 per 100 ha (Grieg-Gran 2008).
Implementation Costs	Such costs typically range from USD 400 to 1500 per 100 ha (Nepstad et al 2007, Grieg-Gran 2008).
Monitoring Costs	Vary from USD 0.5 to 550 per 100 ha depending on the required precision of carbon stock and area change detection, which is directly depended on the scale of economy . (Hannes et al 2009)
Capacity Building Costs	The Eliasch Review (2008) estimates that reforms and capacity building within 40 REDD+ nations would cost up to USD 4 billion over 5 years.

Source: Adapted from Hannes et al (2009)

To demonstrate REDD+ successfully the framework needs to be established, based on which the data would be required for deciding the baseline (through simplistic and prognostic modelling), rate of deforestation, amount of emission displacement, forest area and carbon stock change (through remotesensing, aerial photogrammetry and land based truthing), deciding project boundaries, re-analysis of the past data to make it compatible and standardised. These would also be few components to estimate the cost of the project.

Hannes et al (2009) have estimated the cost of ground based Indian National Forest Inventory (NFI) and additional biomass assessment of 67.7 million ha project area with 7,000 NFI plots and additional 1,400 plots was to be < USD 10 per 100 ha. The average cost for acquisition and analysis cost for monitoring services ranges from USD 0.50 per 100 ha for optical, medium resolution sensors to 272 USD per 100 ha using optical very high resolution sensors and USD 455 per 100 ha using airborne Synthetic Aperture Radar.

Thus it is evident that use of high end technology for higher accuracy and greater precision level would escalate the costs drastically. The information base, market and institutional mechanisms need

to be linked such that the transaction costs can be minimised and REDD+ project becomes cost effective. Once the interventions are being made for generating REDD+ benefits, various other ecosystem services like watershed, landscape beauty and biodiversity may also come as natural fallout for which a bundled package may then be negotiated in the international market.

Although REDD+ is a global PES mechanism (TEEB 2009), PES for other ecosystem services which are the natural fall out of REDD+ mechanism, should also be established as it would create alternate livelihood options for the forest dependent communities, help in resolving issue of ownership and lead to sustainable use of the resource. It would also increase the resilience capacity of the resource and would be a successful demonstration of environment conservation with sustainable development

## **5 Challenges of REDD+**

The REDD+ frameworks seeks to reward best practices in forestry conservation. Wertz-Kanounnikof and Angelsen (2009) has very well summarised the three challenges of implementing REDD+ to deliver carbon mitigation outcomes that are effective, efficient and equitable (3Es). This implies that the emission

reductions should be real, to be assessed via stringent and scientific MRV. Secondly the emission reductions should be cost effective, in order to achieve its intended purpose, reducing emissions with a marginal cost of abatement lower than reducing emissions at their source and also assuring equitable distribution of REDD+ benefits amongst all stakeholders with particular emphasis on forest dependent communities This is to ensure that rights and livelihoods of poor communities are not infringed and also to promote long term sustenance of the REDD+ activity. REDD+ cannot be achieved without clarifying rights to land, forests and carbon<sup>18</sup>. All three of these objectives need strong technological and institutional interventions to achieve.

Hence, the foremost challenge is to develop an internationally accepted (not uniform) framework for developing countries that meets the stringent requirement of MARV of the emission reductions and increase in the carbon stock.

There is a possibility that the focus area of the project would be carbon rich area as the cash would flow for performance on the carbon stocks, hence the biodiversity conservation and other benefits percolating from REDD+ would be side stepped.

A major challenge is to devise a mechanism for equitable distribution of the benefits among the forest dependent communities and other stakeholders. Quantifying contribution of respective stakeholders is a major challenge. With the growing population and the increasing pressure on the forest resources, the baseline stock, once it has been demarcated for the REDD+ activities, needs to be kept intact from human interventions.

Another noteworthy challenge is how the protected areas (PAs)<sup>19</sup> are treated within this context. Some high carbon/high biodiversity ecosystems may be located in legally-defined PAs, giving the impression that the carbon they store is safe and that they would not offer additional sequestration benefits. While this is true for well-managed PAs, many sites remain vulnerable to degradation through encroachment, poaching and other illegal activities (Leverington et al 2008). This reflects inter alia the significant financing gap that exists for many PAs (TEEB 2009).

Thus the right institutional framework and governance must take into account the interdependency of the efforts of the government and the local communities, who are the prime stakeholders in the REDD+ mechanism, in the conservation activities.

Lastly REDD+ project comes with a liability; the forests are prone to disturbances due to fire, pest and disease attacks etc. which can release large amount of carbon into the atmosphere, more than it sequesters. This leakage has to be accommodated by creating a buffer mechanism that would keep some credits aside and the loss due to natural disturbance would be recovered from the buffer amount (this technique is being followed by Voluntary Carbon Standard (VCS)<sup>20</sup> wherein the amount of credits kept aside are based on the risk ratings of the project).

## **6 Implementation & Recommendations**

The developed countries should not just fund aid to the developing nations but also enable in the technology transfer to meet the challenges of MARV. Within developing countries this can be made more effective, implementable and efficient with better governance and cross sectoral cooperation from various sectors like woods industry etc to help in addressing deforestation drivers.

Strengthening of the community and the governance mechanism by capacity building and demonstration activities should simplify the impediments in way of successful implementation of the REDD+ projects. The knowledge of REDD-plus is very weak India; this information gap can be filled by engaging the stakeholder through consultations and other participatory methods and through existing democratic institutional structures institutions like JFM and gram panchayats.

Safeguarding the rights of the marginalised stakeholders is essential so that their right to livelihood is not threatened. This can be inbuilt by introducing accountability and transparency among the community people and the government. Substantial co-benefits of REDD+ activities supplement the livelihood opportunities, which can be further enhanced by establishing Payment for Ecosystem Services (PES) mechanisms which incentivise other benefits like livelihood opportunities, biodiversity conservation, etc through valuation.

## **SUMMARY**

To get ready with a sound case of REDD+ it is critical to check the ground reality and generate desired information on various physical data pertaining to forest cover, degradation and deforestation rate, socio-economic dependence on forest stock etc. and costs like

opportunity costs, transaction costs, implementation and capacity building costs of setting up REDD + projects. There is an urgent need to put our own house in order first such that India is well prepared and proactive in the international negotiations process to claim REDD + benefits. The paper attempts to provide a list of essentials for India's REDD + readiness for Cancun COP 16, so as to enable India to get advantage of international climate financing.

**DISCLAIMER:** The views and opinions presented in this paper are solely that of the authors and bear no resemblance to that of the organisation.

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### Notes

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- <sup>1</sup> SFM: the aim of SFM is to maintain and enhance the economic, social and environmental value of all types of forests for the benefit of present and future generations. ( "Forest governance and climate-change mitigation" : A policy brief prepared by ITTO and FAO) "Afforestation" is the direct human-induced 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 sources (UNFCCC). "Reforestation" is the direct human-induced conversion of non-forested land to forested land through planting, seeding and /or the human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land. For the first commitment period, reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 31 December 1989 (UNFCCC).
- <sup>2</sup> An ecosystem is an ever-changing complex of living things interacting with the non-living environment. The benefits people obtain from the ecosystem are called as Ecosystem Services. As per Millennium Ecosystem Assessment classification, the services can be classified as provisioning services where goods are produced and provided by the ecosystem like food, water, fiber, etc.; regulating services, as benefits are obtained from regulation of the ecosystem processes. Climate regulation, flood control, water purification are some of the examples of regulating services; the non material benefits from the ecosystem like aesthetics, spiritual, educational, recreational services etc are the cultural services provided by the ecosystem that enrich the quality of life; most important services of the ecosystem are the supporting services that are needed to produce all other services like nutrient cycling, soil formation and primary productivity in the ecosystem.
- <sup>3</sup> CDM is governed by Kyoto Protocol, which is an update to UNFCCC. Over a decade ago, most countries joined an international treaty -- the UNFCCC -- to begin to consider what can be done to reduce global warming and to cope with whatever temperature increases are inevitable. More recently, a number of nations approved an addition to the treaty: the Kyoto Protocol, which has more powerful (and legally binding) measures. ([http://unfccc.int/essential\\_background/items/2877.php](http://unfccc.int/essential_background/items/2877.php))
- <sup>4</sup> Additionality: Project activity is additional if GHG emissions are reduced below those that would have occurred in the absence of the registered project activity. (adapted from CMP/2005/8/Ad1, p16 para43)
- <sup>5</sup> Assigned Amount Units (AAU): Parties with commitments under the Kyoto Protocol (Annex B Parties) have accepted targets for limiting or reducing emissions. These targets are expressed as levels of allowed emissions, or "assigned amounts," over the 2008-2012 commitment period. The allowed emissions are divided into AAUs. ([http://unfccc.int/kyoto\\_protocol/mechanisms/emissions\\_trading/items/2731.php](http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php))



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- <sup>6</sup> COP, CMP/MOP: They serve as the governing bodies of the UNFCCC and the Kyoto Protocol respectively.
- <sup>7</sup> REDD+ Partnership document (<http://www.oslocfc2010.no/pop.cfm?FuseAction=Doc&pAction=View&pDocumentId=25017>)
- <sup>8</sup> BASIC countries or G4 are a bloc of four major developing countries comprising of Brazil, South Africa, India and China formed by an agreement on 28<sup>th</sup> November 2009 to act jointly at Copenhagen Climate Summit at COP 15 ([http://en.wikipedia.org/wiki/BASIC\\_countries](http://en.wikipedia.org/wiki/BASIC_countries)).
- <sup>9</sup> (<http://moef.nic.in/downloads/public-information/Fifth-BASIC-Ministerial-Meeting-on-Climate-Change.pdf>)
- <sup>10</sup> CBD Cop 10 Nagoya , Japan ([http://www.redd-monitor.org/2010/11/03/what-came-out-of-the-convention-on-biodiversity-meeting-in-nagoya-on-redd/?utm\\_source=feedburner&utm\\_medium=email&utm\\_campaign=Feed%3A+Redd-monitor+%28REDD-Monitor%29](http://www.redd-monitor.org/2010/11/03/what-came-out-of-the-convention-on-biodiversity-meeting-in-nagoya-on-redd/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+Redd-monitor+%28REDD-Monitor%29)).
- <sup>11</sup> (FCCC/SBSTA/2007/Misc.2)
- <sup>12</sup> (<http://unfccc.int/resource/docs/2007/smsn/ngo/031.pdf>)
- <sup>13</sup> NATCOM: India's National Communication to UNFCCC. India is a Party to the United Nations Framework Convention on Climate Change (UNFCCC). The objective of this Convention According to the Article 4.1 of the UNFCCC, all Parties to the Convention, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, need to periodically report to the Convention a National Communication, the elements of which are described in the Article 12 of the Convention. (<http://www.natcomindia.org/flashmain.htm>)
- <sup>14</sup> Forest cover: Forest Cover as per India State of Forest Report includes all lands having trees with canopy density 10% and above and with area 1 ha or more.
- <sup>15</sup> Very dense forest cover: canopy density >70%; Moderately dense forest cover : canopy density 40-70%.; Open forests: canopy density 10-40%; Scrub land: canopy density <10% (India State Forests Report, 2009)
- <sup>16</sup> JFMCs: Joint Forest Management Committees There are three types of JFMCs namely VFC, FPC and EDC. VFC: Village Forest Committee are established in degraded forest regions (crown density less than 0.4), FPC: Forest Protection Committee are established in dense forest regions (crown density equal to or more than 0.4), EDC: Eco Development Committees are established in protected forest regions like National Parks and Sanctuaries
- <sup>17</sup> Opportunity costs: They represent the highest alternative land-use of the area under deforestation threat, including net revenue from the conversion itself.
- <sup>18</sup> ("Forest governance and climate-change mitigation" : A policy brief prepared by ITTO and FAO)
- <sup>19</sup> Protected Areas: An area notified under the Indian Forest Act or other State Forests Act, having limited degree of protection. In PA all activities are permitted unless prohibited.
- <sup>20</sup> VCS: The VCS Program provides a robust, new global standard and program for approval of credible voluntary offsets. VCS offsets must be real (have happened), additional (beyond business-as-usual activities), measurable, permanent (not temporarily displace emissions), independently verified and unique (not used more than once to offset emissions). (<http://www.v-c-s.org/about.html>)