RETHINKING REDD+

A CENTRE FOR SCIENCE AND ENVIRONMENT ASSESSMENT

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FOREWORD

Deforestation and forest degradation have been globally acknowledged to contribute significantly to greenhouse gas emissions. The most prominent global mechanism to tackle deforestation and forest degradation is called Reducing Emissions from Deforestation and Forest Degradation or, in short, REDD+. REDD+ was conceptualized as a mechanism to incentivize forest conservation in tropical developing countries by providing them access to carbon markets. Since its inception, it has been a widely debated topic in the global forestry sector, and continues to evoke mixed views. The supporters of REDD+ see it as a tool to mobilize financial resources for forest conservation and monitor deforestation and forest degradation. Others have been skeptical about its ability to contribute significantly to climate change mitigation. Concerns have been expressed that REDD+ will impose restrictions and costs on forest-dependent communities which will not be adequately compensated for, amidst the larger emphasis on its environmental objectives.

Since its formalization in 2007 at the United Nations Conference of Parties (CoP) on climate change held in Bali, Indonesia, more than 300 REDD+ initiatives have taken off across the world, with mixed results. However, a decade later, there is no convincing evidence to establish the contribution of REDD+ in halting or reversing global deforestation trends. In fact, figures on tree cover loss released at the 2018 Tropical Forest Forum in Oslo, Norway show that 2016 and 2017 have been the worst years for tropical forests since 2001. The results have got the forest fraternity scratching their heads to figure out where their efforts have gone wrong. The credibility of REDD+ has been questioned again.

Despite continued skepticism, REDD+ has been enshrined in the Paris Agreement, and is transitioning from smaller, isolated projects to larger, jurisdictional programmes. To understand how the mechanism is unfolding in developing countries, Centre for Science and Environment (CSE) has studied the development of REDD+ in India, Kenya and Tanzania. The objective of the study was to assess if the implementation of REDD+ was translating into sustainable forest management and livelihood benefits, and to bring out the ground-level issues and challenges in its implementation. In February 2018, CSE also convened a two-day international workshop on REDD+ at its Anil Agarwal Environmental Training Institute (AAETI) campus in Rajasthan, India. Experts on REDD+ were invited to share their perspectives and experience on REDD+ and also brainstorm on some fundamental issues and challenges regarding REDD+. Valuable insights were obtained from this meeting, which further helped hone the draft of this report.

Our research shows that, in its current design, REDD+ has largely failed to achieve its objectives. Large-scale finance for REDD+ has been a major issue as carbon markets have not materialized and international funding commitments for REDD+ have been much lower than expected.While a number of REDD+ projects have been successful in achieving emissions reduction, their implementation costs have been high and benefits for local communities from such projects have been minimal. As REDD+ transitions into larger, jurisdictional programmes without adequately addressing issues of tenurial and carbon rights, there are genuine concerns that it will reverse the ongoing paradigm shift in forest governance in developing countries towards decentralized, community-owned and managed forests.Within the UNFCCC framework too, REDD+ does not provide clear incentives for a number of tangible and non-tangible benefits beyond carbon that forests provide.

Meanwhile, new research has shown that halting the loss of forests and restoring them has the potential to contribute over one-third to the total climate change mitigation targets. This should boost forest-based mitigation strategies. While deforestation has received higher emphasis in the REDD+ discourse, the role of forest degradation in climate change is being increasingly taken into account. Global interest in forest and landscape restoration is growing, reflected in the Intended Nationally Determined Contributions (INDCs) of several developing countries. Simultaneously, another study has found that indigenous peoples and local communities are capable of achieving equivalent forest conservation outcomes by investing only a fraction of the total money spent on conservation by all other agencies. These findings, coupled with the lessons from the REDD+ implementation experiences, should have implications for how REDD+ should be designed and financed.

Our overall assessment is that REDD+ can work if it is owned by communities and becomes carbon sequestration plus. One of the most effective ways of making it happen would be to treat REDD+ as carbon sink enhancement projects, which are bottom-up, working with and improving the practices of forest-dependent communities for sustainable forest management. On the one hand, such projects can provide large-scale environmental and livelihood benefits. On the other hand, they will also generate a large number of forest carbon credits which will distort the carbon market. Therefore, these projects cannot be left to the mercy of markets, and a non-market approach is needed to finance them. The creation of a separate sink mechanism under the non-market mechanism of Article 6 of the Paris agreement and integrating REDD+ within the sink mechanism can be a potential solution.

I hope the report provides useful inputs to make REDD+ a ''win–win'' situation for forests as well as forest-dependent communities, as it was originally meant to be.

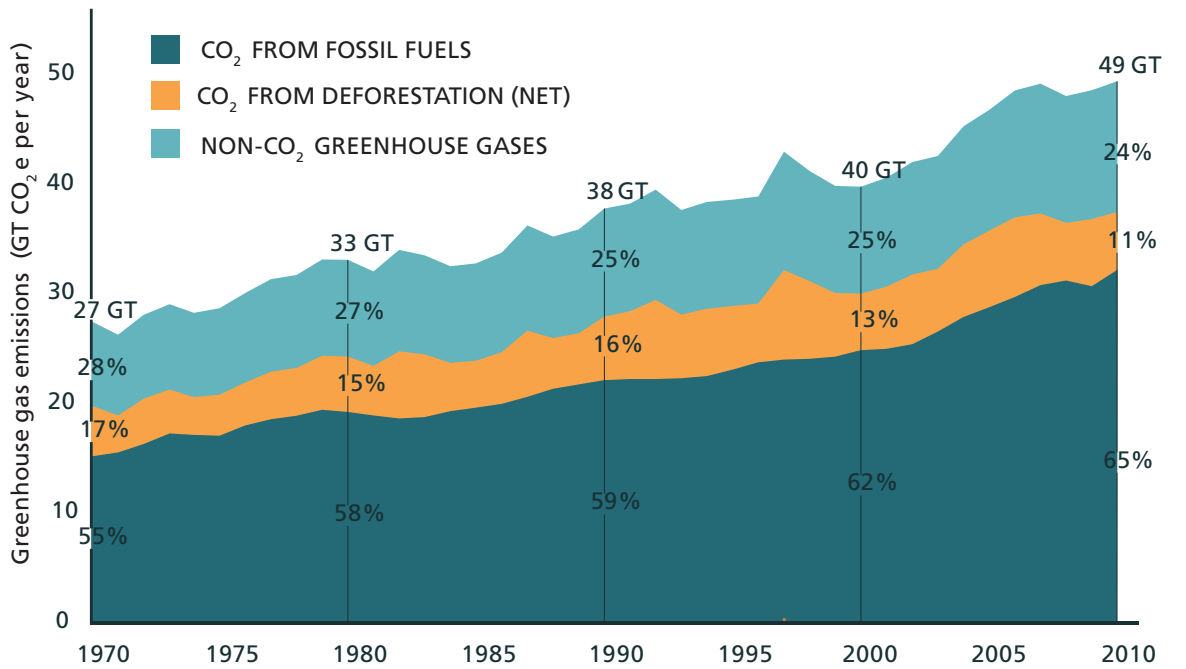
Chandra Bhushan

1. BACKGROUND

Deforestation and degradation of natural forests are among the major drivers of climate change. The total global GHG emissions in 2016 were 49.3 billion tonnes of CO_2 equivalent (CO_2e) with CO_2 emissions accounting for 32.1 billion tonnes.[1] Forests play an important role in the global carbon cycle, by sequestering carbon in regrowth forests, thereby reducing atmospheric carbon, and emitting it when deforestation and degradation happens, thus increasing atmospheric carbon. Deforestation is estimated to account for more than 10 per cent of the total GHG emissions, as shown in *Figure 1: Annual GHG emissions from 1970–2010.*[2]

Deforestation is a worldwide problem particularly intensified along the tropics. Tropical forests are spread over about 15 per cent of the world's land surface and contain about 25 per cent of the terrestrial biosphere carbon.[3] But they are being rapidly lost or degraded, resulting in the emission of CO_2 into the atmosphere. It has been estimated that the world lost more than 167 million hectares (mha) of tropical forests from 1990–2015 at the rate of 6.7 mha per year.[4] Net emissions from tropical deforestation have been estimated to be close to 11 billion tonnes of CO_2 annually from 1990–2007.[5] At the existing pace of deforestation, the world is likely to lose another 289 mha of forests from 2016–40, resulting in 169 billion tonnes of CO_2emissions, unless concerted efforts are made to reduce deforestation.[6] Additionally, the degradation of tropical forests is estimated to release between 2.2 to 5.39 billion tonnes of CO_2 emissions annually.[7]

Figure 1: Annual GHG emissions from 1970–2010



Source: Center for Global Development, 2016

Containing this loss will, therefore, result in enormous gains in the global fight against CO_2 emissions. In fact, tropical forests are believed to have potential to mitigate GHG emissions by 24–30 per cent; and their contribution to the emissions is much lower than that.[8]

Forest resources directly support livelihoods of 90 per cent of the 1.2 billion people living in extreme poverty and are home to nearly 90 per cent of the world's terrestrial biodiversity.[9] Indigenous communities held down by poverty depend on forests for various tangible and intangible ecosystem services. Therefore, loss of forests jeopardizes efforts to allevate poverty, making climate change hit the poorest hardest. Hence, reducing deforestation and degradation is one of the most direct action to build the resilience of these communities to climate impacts.

GLOBAL FOREST CARBON BUDGET

Carbon storage in world's forests has been estimated at 638 GT for 2005, which is more than the amount of carbon in the entire atmosphere.[10] Out of this, almost half (321 GT) of carbon is stored in vegetation. Out of the total 2,200 GT of carbon in terrestrial ecosystems across the world, about 325 GT are in active circulation—125 GT are being exchanged through land and about 100 GT are being exchanged through forests.[11]

The world's established forests removed 8.8 billion tonnes of CO_2 every year from the atmosphere—which is equivalent to nearly a third of the 28 billion tonnes of fossil fuels emitted annually across the world—between 1990–2007.[12] However, during the same period, tropical deforestation resulted in the release of almost eleven billion tonnes of CO_2e per year. Thus, globally, the net forest carbon sink amounted to just 1.1 billion tonnes (or 4.07 billion tonnes CO_2e) per year (see *Table 1: Global forest carbon budget*). This is equivalent to one-seventh of average emissions from fossil fuel burning and cement production over the period measured.[13]

Table 1: Global forest carbon budget

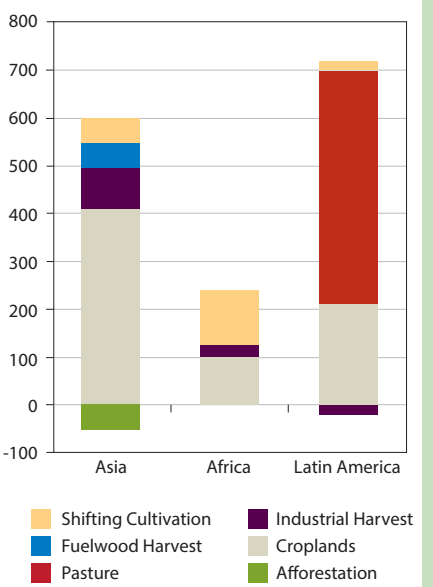
Sinks in biomes	**Annual sequestration (in billion tonnes)**	
	Carbon	**CO_2e (Carbon x 3.67)**
Boreal forest	0.5	1.84
Temperate forest	0.72	2.64
Tropical intact forest	1.19	4.37
Total sink in global established forests	2.41	8.84
Tropical regrowth forest (on previously deforested lands)	1.64	6.01
Tropical gross deforestation emissions	2.94	10.8
Tropical land use change emissions	1.3	4.77
Global gross forest sink	4.05	14.86
Global net forest sink = Total gross forest sink – Tropical gross deforestation emissions	4.05 – 2.94 = 1.11	4.07
Total sink in global established forest – Tropical land use emissions)	2.41 – 1.3 = 1.11	4.07
Global forest sink = Total sink in global established forest + Tropical regrowth forests – Tropical gross deforestation emissions	2.41 + 1.64 – 2.94 = 1.11	4.07

Source: Yude Pan et al, 2011

WHAT CAUSES EMISSIONS FROM DEFORESTATION AND DEGRADATION?

The causes of deforestation are multiple, complex and vary across countries. Industrial timber and land needs, large-scale agriculture, and pressures from indigenous communities on forests for wood, food, fuel and farmland have been major causes of deforestation and degradation. The drivers of the demand for agricultural land vary globally. In Africa, it is primarily small-scale subsistence farming. In South America, it is large-scale farming enterprises, producing beef and soy for export markets. In Southeast Asia, the major driver is somewhere between the two, with plantation produce such as palm oil, coffee and timber causing major forest losses (see *Figure 2: Sources of emissions from forests*).

Figure 2: Sources of emissions from forests



Source: Houghton, 2010

A BRIEF HISTORY OF REDD+

To address the forest factor of climate change, various initiatives have been undertaken at the international level. REDD+ is a culmination of these efforts.

Its core philosophy can be traced back to the Kyoto Protocol in 1997 with the genesis of REDD+ lying in the notion of carbon trading and the Clean Development Mechanism (CDM). The mechanism of CDM created opportunities for developing countries to trade their Certified Emission Reductions (CERs) or carbon credits with the developed countries. However, CDM recognized only a very limited role of forests as carbon sinks and allowed only afforestation and reforestation (A/R) projects for trading. The failure of CDM in addressing the emissions from forestry sector led to the emergence of REDD+ in subsequent negotiations.

REDD+, in its earlier version as RED (Reducing Emissions from Deforestation), entered the lexicon of global climate discourse during the CoP11 in Montreal in 2005, in the form of a submission from a group of nations called 'Coalition for Rainforest Nations' led by Papua New Guinea. The submission proposed that developing countries should be incentivized to protect their forests by making them worth more standing than cut. This would be done by providing them access to carbon markets. The proposal received wide support from UNFCCC Parties and the CoP established a contact group embarking upon a two year

Table 2: Evolution of REDD+

Stages of REDD+	Year and forum	Scope
RED	2005, CoP 11 in Montreal	Reducing emissions from deforestation; only changes from forest to non-forest land cover types are included
REDD	2007, CoP 13 in Bali	As above, plus forest degradation or the shift to lower carbon stock densities within forests included
REDD+	2008, CoP 14 in Poznan	As above, plus enhancement of carbon stock, sustainable forest management and forest conservation included

Source: REDD Desk, Minang et al, 2009

process to explore options for RED. This decision resulted in a wide range of Parties and observers over this period submitting proposals and recommendations to the Subsidiary Body on Scientific and Technical Advice (SBSTA) to reduce GHG emissions from global forest losses.

The concept was officially adopted during CoP13 at Bali in 2007 with further elaboration to include forest degradation along with deforestation, recognizing it as an equally important issue. Therefore, CoP13 changed the concept from RED to REDD. The scope of RED was limited only to changes from land cover types as 'non-forest' or 'forest', whereas with the inclusion of forest degradation in REDD, the scope was increased to include the changes in forest carbon stock densities.

The Bali Action Plan (BAP) drawn out at the CoP13 gave a future roadmap for development of REDD+ and also recognized the 'complexity of the problem, different national circumstances and multiple drivers of deforestation and forest degradation' and emphasized that 'needs of local and indigenous communities should be addressed' while implementing these measures. Some countries, including India, advocated the expansion of the scope of REDD to recognize the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in reducing emissions in developing countries. This was duly accepted by the SBSTA and it expanded its scope by renaming it as 'REDD+'.

Political and financial agendas have shaped the architecture of REDD+ as it stands today. Different ideological narratives like the green growth approach of market liberals, the governance concern of institutionalists, the ecological value of forests put forth by environmentalists, and 'the rights over resources' concerns of social proponents have influenced this path of transition.[14]

In 2008, as a response to CoP13 decisions, the Food and Agriculture Organization (FAO), United Nations Development Programme (UNDP) and United Nations Environment Programme (UNEP), launched the UNREDD programme to support developing countries for taking up pilot REDD+ projects.

REDD+ was also a key point of discussion during the subsequent CoPs (see *Table 3: A brief history of REDD+).* In 2013, CoP19, held in Warsaw, Poland adopted seven decisions of the Warsaw Framework that provide the fundamental architecture for REDD+. The current approach for REDD+ initiatives has three phases of implementation, as outlined under the Warsaw Framework.

Table 3: A brief history of REDD+

Year and location	Meeting name and key point(s)	Major highlights
1988	Intergovernmental Panel on Climate Change (IPCC) established	
1992	Rio Earth Summit—UNFCCC established	Avoided deforestation (AD) became a hot topic of discussion
1995 (CoP1 Berlin)	First CoP to the (UNFCCC) in Berlin—UNFCCC entered into force	
1997 (CoP3 Kyoto)	Adoption of Kyoto Protocol—REDD was off the UN table and relegated to voluntary markets, where it continued to evolve at the pilot scale under real-world conditions	Article 3: Provision related to forest sinks
2001 (CoP7 Marrakech)	Marrakech Accord—Rules laid down for meeting the targets set out in the Kyoto Protocol	Adoption of rules for LULUCF activities
2005 (CoP11 Montreal)	Papua New Guinea and Costa Rica propose the idea of issuing carbon credits from REDD and avoiding deforestation in developing countries. Subsequently, the SBSTA and workshops coordinated by SBSTA started their reviews	RED proposed for negotiations
2007 (CoP13 Bali)	The Bali Roadmap was adopted: 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	Development from REDD to REDD+
2009 (CoP15 Copenhagen)	Member states took note of the following statement, which was included in the Copenhagen Accord: ''We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of greenhouse gas emission by forests and agree on the need to provide positive incentives to such actions through the immediate establishment of a mechanism including REDD+, to enable the mobilization of financial resources from developed countries.''	Reconfirmation of the importance of REDD+
2010 (CoP16 Cancun)	Following up on the Copenhagen Accord, the Cancun Agreements were adopted, which included respect by developing countries for indigenous populations, and also development of working milestones to determine monitoring methods through the efforts of SBSTA	Provides a framework and proposal on specific work to implement REDD+
2011 (CoP17 Durban)	Benchmarks for measuring progress in reducing emissions from deforestation also provides guidance on systems for providing information on how all the safeguards are being addressed and respected	Approved technical guidelines for reference levels
2012	REDD+ finance workshop and a technical paper in preparation for CoP19 (Doha)	
2013 (CoP19 Warsaw)	Climate talks and a REDD+ Framework—a comprehensive package of seven technical and finance decisions that provide the fundamental architecture for REDD+ to be implemented	UNFCCC agrees on a REDD+ Rulebook for jurisdictional REDD+
2015 (CoP21 Paris)	Paris Agreement—recognizes ''common but differentiated'' responsibilities between rich and poor countries	Agreement explicitly endorses REDD+.

Source: Zwick, 2015

- **Phase I—Readiness:** Development of national strategies or action plans, policies and measures, and capacity-building
- **Phase II—Implementation:** Implementation of these plans, policies and measures
- **Phase III—Results-based actions:** Results-based actions for reducing deforestation and forest degradation are supported at the national level, and results are fully measured, reported and verified

REDD+ received further boost in CoP21 when the Paris Agreement explicitly stated that countries that are willing and able to reduce emissions from deforestation should be financially compensated for doing so. Article 5 of the Agreement, the most relevant for REDD+, states the following:

1. Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1(d), of the Convention, including forests; and
2. Parties are encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for: policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries; and alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests, while reaffirming the importance of incentivizing, as appropriate, non-carbon benefits associated with such approaches.

The Paris Agreement has, therefore, widened the scope of forestry and REDD+ in the climate change arena.

BRIEF OVERVIEW OF GLOBAL REDD+ FINANCE

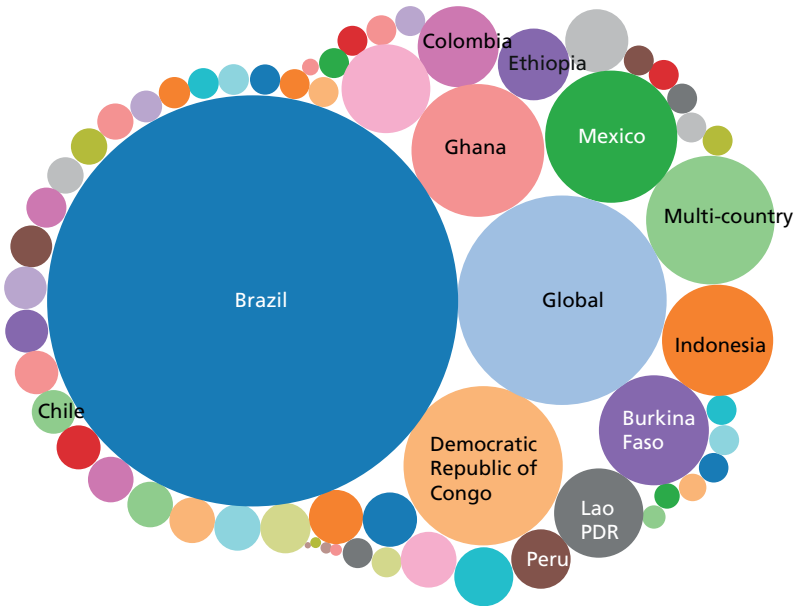
There is a wide variation in the cost of avoiding deforestation. According to the Stern Report, the cost of avoiding deforestation in eight tropical countries responsible for 70 per cent of the global emissions from deforestation is about US $5 billion per annum initially.[15] Maryanne Grieg-Gran updated the Stern Report and estimated the cost of avoiding deforestation to be about US $6.5 billion.[16] Kindermann and others (2008) estimate that halving global emissions from deforestation between 2005 and 2030, corresponding to a reduction in emissions of 1.7 to 2.5 GT of CO_2, would require financial flows of US $17–28 billion per year to the developing countries responsible for these emission reductions.[17]

The actual flow of REDD+ finance has, however, been quite low. Global aggregate pledges and investments for REDD+ totalled more than US $9.8 billion from 2006–14. However, more than 56 per cent of these pledges were made between 2006 and 2010, averaging just US $796 million annually since 2010. The slowdown in the political momentum behind REDD+ and the global economic crisis have been held responsible for the poor quantum of REDD+ finance commitments after 2010. The private sector, according to some experts, was expected to provide much of the REDD+ finance. However, its share has not exceeded 10 per cent of the total finance commitments during 2006–14.[18]

Currently, REDD+ finances are flowing out of both bilateral and multilateral agencies, with public sources being the largest contributors. Till date, much of this funding has been directed towards REDD+ readiness activities. The largest share of global REDD+ finance, close to 70 per cent, has come from the Norwegian International Climate and Forest Initiative (NICFI). While most of its funding is to bilateral partners such as Brazil and Indonesia, NICFI

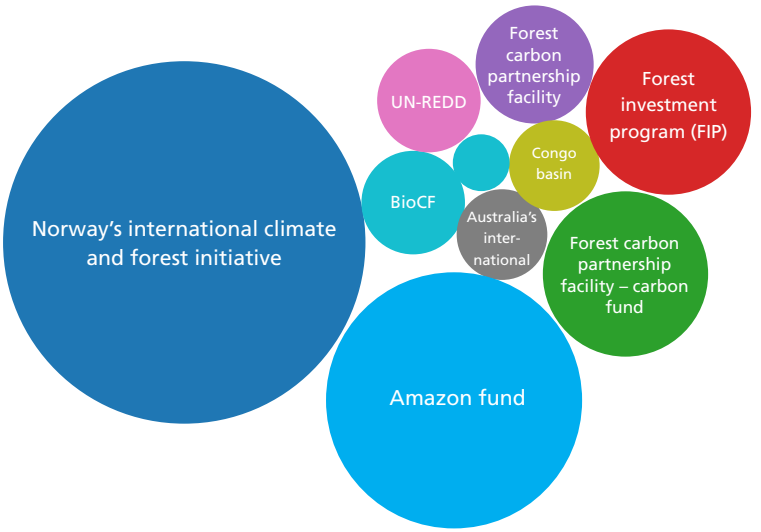
has also pledged support to multilateral partners such as World Bank's Forest Carbon Partnership Facility, Forest Invest Programme, Amazon Fund, Biocarbon Fund etc.[19] The major donors and agencies supporting REDD+ initiatives and the major recipient countries of REDD+ finance are listed in *Figure 3: Relative size of funding by recipient country* and *Figure 4: Relative size of donors for REDD+.*

Figure 3: Relative size of funding by recipient country



Source: Climate Funds Update, 2016

Figure 4: Relative size of donors for REDD+

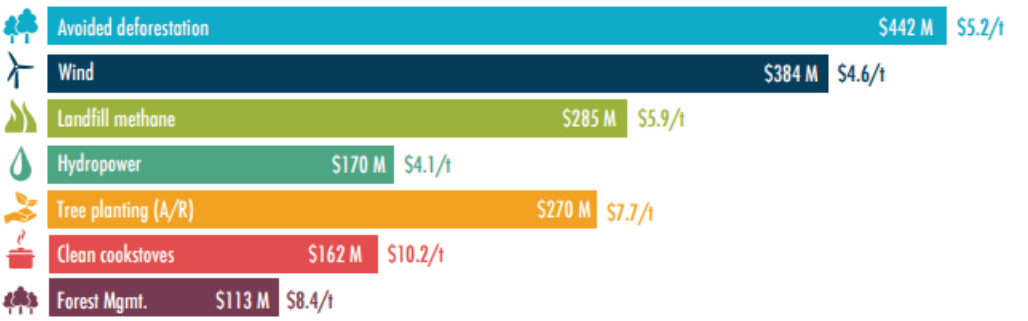


Source: Climate Funds Update, 2016

Other than these sources of finance, REDD+ credits have also been traded in the voluntary carbon markets and have, in fact, constituted the largest component of the total voluntary offsets from 2007–14 (see *Figure 5: Carbon offsets in the voluntary markets*).

However, the volume of REDD+ credits in voluntary markets has significantly declined in 2015 and 2016 (see *Table 4: REDD+ in voluntary markets*). The decline has coincided with the fall in the total volume of voluntary offsets in other sectors too. While the exact reasons are difficult to pinpoint, experts have speculated that the establishment of compliance markets which absorb some of the demand for carbon offsets could be responsible. Some experts also speculate that the volume of REDD+ offsets in the voluntary markets will continue to decrease as more REDD+ credits are used to meet INDC commitments of countries in the future.

Figure 5: Carbon offsets in the voluntary markets



Source: State of Voluntary Markets, 2015

Table 4: REDD+ in voluntary markets

Year	Volume of REDD+ offsets (million tonnes of CO_2e)	Value of REDD+ offsets (million US $)	Average price (US $ per tonne of CO_2e)
2013	22.6	94	4.2
2014	25	115	4.6
2015	11.3	37.5	3.3
2016	9.7	40.74	4.2

Source: Compiled from Annual reports of State of Voluntary Markets

THE OPPORTUNITY COST OF REDD+

REDD+ was conceptualized as a global Payment for Ecosystem Services (PES) system to make forests worth more standing than as suppliers of agricultural or crop land, pastures, unsustainable harvest of forest products etc.[1] Since its inception, several studies have established that reducing emissions from forest land-use change would be less expensive than reducing emissions from other sectors.[2] The 2006 Stern review was among the first estimation of REDD+ costs, with just US $5 billion required annually to compensate the opportunity cost of forest protection in eight developing countries. Most of these estimates were based on the opportunity costs of foregone alternative uses of forests, i.e., the

estimated value of goods produced or harvested from such alternative uses, also considered the drivers of deforestation and forest degradation. Opportunity cost was also envisaged to compensate the costs of switching to more environmentally benign practices.[3]

The approach of using opportunity cost in REDD+ benefit calculations has been widely debated in global forestry fora. Some experts have argued that only legally permitted change or use of forests should be compensated and illegal activities should not be rewarded. In cases where land-use change is legally allowed, it is not clear how forest-dependent communities could be compensated when the change of land-use or harvest of forest resources is for subsistence needs, especially local food security.[4] Opportunity costs are also unclear in instances where tenurial rights are not clear, though local communities might have customary rights over the forests. Concerns have been expressed that such an approach could result in "environmental blackmail" or perverse incentives.[5] Several experts have also argued that opportunity costs alone do not reflect the true costs of REDD+, and the costs of policy reforms, or those of law enforcement to halt and monitor illegal deforestation, need to be built into the estimates of the real costs of reducing deforestation.[6]

More than a decade after the concept was introduced, the costs of REDD+ have proven to be much higher than generally recognized. The global carbon market and international actors with obligations to reduce emissions were expected to fully fund REDD+. However, a large number of REDD+ initiatives were found to be subsidized by local government and non-government actors.[7] The implementation and transaction costs of REDD+ have been high too, ranging from 33 per cent to 40 per cent in the CSE's case studies. Direct payment to forest users facing restrictions remains rare,[8] as the cost of setting up and implementing a payment system is believed to be higher than imposing direct restrictions on deforestation. For instance, Brazil, the largest emitter of emissions from deforestation, reduced its deforestation by 80 per cent in the decade following 2004 through a set of policy reforms, law enforcement, and monitoring. Studies estimate that these measures cost the Brazilian government around US $2 billion over nine years, which is considerably lower than the costs of compensating all land users for forgone uses.[9]

Meanwhile, finance for REDD+ continues to be a contentious issue. Increasingly, a consensus is forming among the forestry fraternity that a global carbon market is unlikely to materialize and the prices offered in carbon markets will not adequately compensate the opportunity costs of foregone forest uses.[10] In India, for instance, fuelwood collection is believed to be the primary driver of forest degradation. CSE calculated the minimum carbon price needed to replace fuelwood with LPG stoves in India. Carbon will have to be priced at a minimum of US $22.6 per tonne of CO_2e, whereas the average price of carbon in voluntary markets has been just US $4.5 per tonne of CO_2e.

The experiences that have emerged make it clear that the budgets for REDD+ will have to be a lot more realistic than they are now to reflect its true costs. We need greater consensus on the applicability of the opportunity cost approach. The approach should definitely be used for forest-dependent communities and smallholders who voluntarily agree to forego alternative land uses. REDD+ budgets also need to factor in the costs of implementation, monitoring, policy reforms, etc. These will, in turn, be decided by the nature of tenurial arrangements, issues of legality of deforestation and degradation drivers, etc.

2. REDD+ IN INDIA

India has a moderate forest and tree cover over about 24.39 per cent of its total geographical area.[1] Interestingly, India has the largest population in the world, about 300 million, dependent on forests for livelihood and sustenance. Therefore, the country provides a very big and complex playground for REDD+ implementation.

INDIA'S POSITION ON REDD+

The Government of India sees REDD+ as a mechanism that ''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.'' Further, the Indian Council of Forestry Research and Education (ICFRE), India's observer organization to the UNFCCC, has suggested a comprehensive approach towards REDD+ as carbon saved is equivalent to carbon added in order to achieve stabilization and conservation of forest cover and the country's carbon stocks. As India has a long and moderately successful history of forest conservation, the government has been advocating in UNFCCC that the country should be compensated for reducing deforestation, and stabilizing and enhancing its forests cover under the REDD+ mechanism. The approach by India, presented at CoP12 in 2006 at Nairobi, has been named ''compensated conservation which is intended to compensate countries for maintaining and increasing their forests as carbon pools as a result of conservation and increase or improvement in forest cover backed by a verifiable monitoring system.'' This approach was finally recognized in the Action Plan 1, CP Para 1(b) (iii) at CoP13 2007 held in Bali.

India has also contended that carbon sequestration is not the main benefit of REDD+; the ecological and economic benefits accruing to the communities are more critical. India sees REDD+ efforts as a way to capture, record and compensate the added value of conservation like social capital, biodiversity and other ecosystem services. Therefore, the country has taken the lead in efforts to incentivize conservation as a whole rather than incentivizing only the reduction in deforestation. The country's decision in 2014 to include forest cover in its formula for allocating national revenues across states has been termed as the first ''ecological fiscal transfer'' for forest conservation in the world.[2]

CARBON SEQUESTRATION IN EXISTING FORESTS OF INDIA

India, like other developing countries, has not remained untouched by the problem of deforestation and degradation. Relentless withdrawal of biomass, mainly in the form of fuelwood, forest diversions to developmental projects, encroachments etc. have led to deforestation and degradation of Indian forests. However, private plantations and agroforestry have been contributing to the 'forest cover', compensating for natural forest losses. In fact, the land use, land-use change, and forestry (LULUCF) sector in India is estimated to offset 252.5 million tonnes of CO_2e annually, i.e., 12 per cent of India's GHG emissions.[3] Forestry sector in India is, therefore, believed to be making a positive contribution to climate change mitigation.

Table 5: Change in the carbon stock of forests in India

	Carbon stock in forest-land (MtC)			Net change (MtC)			Per cent change in carbon stock from 1994–2015
Year	**1994**	**2004**	**2015**	**1994–2004**	**2004–15**	**1994–2015**	
Biomass above ground	1,784	2,101	2,220	317	119	436	24.43
Biomass below ground	563	663	695	100	32	132	23.44
Deadwood	19	25	29	6	4	10	52.63
Litter	104	121	131	17	10	27	25.96
Soil	3,601	3,753	3,969	152	216	368	10.21
Total	**6,071**	**6,663**	**7,044**	**592**	**381**	**973**	**16.02**

Source: Forest Survey of India, SFR 2010 and 2015

The Forest Survey of India has been periodically assessing carbon stock in Indian forests since 1994. It has been estimated by the agency that overall, 973 million tonnes of carbon (MtC) were fixed over a period of 21 years.[4] So, the average annual increase in carbon sequestration was 46.34 MtC, which translates to 170.04 $MtCO_2e$. Hence, on an average, about 170 $MtCO_2e$ has been sequestered annually in the last 20 years (1994–2015) through growth in the existing forests. *Table 5: Change in the carbon stock of forests in India* gives a summary of forest carbon estimated for India.

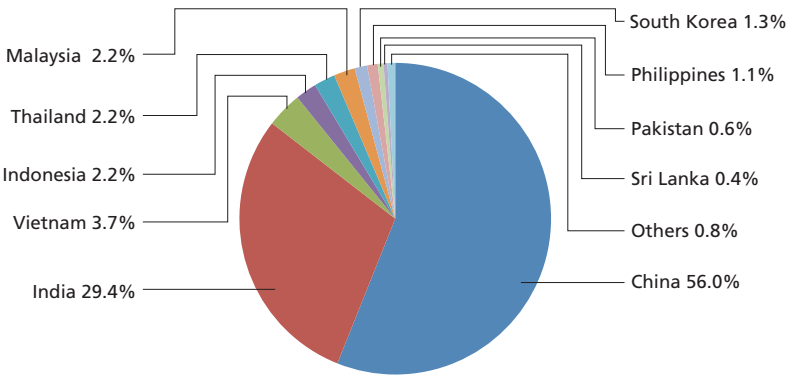
SCOPE OF IMPROVEMENT IN THE CARBON STOCK OF INDIAN FORESTS

There are various national- and state-level forestry schemes in India such as National Afforestation Programme, Integrated Forest Management Programme etc., which have been supporting state forest departments in creating forest plantations and maintaining forest growing stocks. Under the INDCs of India submitted to UNFCCC, the country proposes to create a carbon sink of 2.5–3 billion tonnes of CO_2 by 2030 through the forestry sector (additional forest and tree cover).[5] Green India Mission (GIM), one of the eight missions under the National Action Plan on Climate Change (NAPCC) rolled out in 2008 by the Central government, has been touted as the key initiative to achieve this target. It aims at afforestation and quality enhancement of 10 million hectares of degraded forestlands, improving ecosystem services, enhancing forest-based livelihood of three million forest-dependent households, and enhancing annual CO_2 sequestration by 50–60 Mt by 2020.[6] The implementation of other policies such as National Afforestation Programme, National Agro-forestry Policy, Joint Forest Management, Compensatory Afforestation etc. are also expected to contribute to the INDCs.

Clean Development Mechanism (CDM) in India

India's record of adopting climate innovations like the CDM compares favourably with other countries. Many industrial and natural resource management projects in the country have identified CDM as an opportunity for obtaining payments for activities in which they were already engaged. Thus, many energy efficiency and renewable energy projects became

Figure 6: Relative share of India in CDM projects operational in Asia



Source: Centre on Energy, Climate and Sustainable Development, 2016

Table 6: Top Asian countries by carbon finance value 2007–14

	Value (million US $)	Volume in $MtCO_2e$
India	205	56
China	154	45
Cambodia	40	43
Indonesia	36	13
Malaysia	31	2.6

Source: Ecosystem Marketplace, 2016

part of the CDM, making it the dominant form of carbon market activity in India. India is the world's second largest supplier of certified emissions reduction (CERs) after China. By March 2015, India had been cumulatively issued 13 per cent (or 202.1 million) of the 1,540.8 million CERs issued around the globe since 2001. Moreover, India had the second largest number of CDM projects—2,048 of the 864,045—registered with the CDM executive board (CDM-EB).[1]

Twenty four CDM carbon forestry projects have been started in India under the Kyoto Protocol on Climate Change.[2] However, these projects have also had their share of controversy because of the following issues:

- Projects have been complex, inflexible and time-consuming by design, leading to lack of awareness and participation amongst stakeholders.
- Afforestration/Reforestation (A/R) CDM projects have accrued high opportunity costs and low and uncertain carbon revenues, making them unviable. Therefore, many a time the projects have been criticized for having negative net present values. Also, given that these projects are implemented on private land, carbon revenues are seldom able to keep pace with the fluctuations of real estate markets.
- Projects have promoted monocultures of fast growing species like Eucalyptus that are ecologically unsustainable.

However, given that India's paper industry has allowed many contract models of farm forestry, CDM A/R projects have provided a window for involvement of the private sector in the fight against climate change.

INDIA'S FOREST GOVERNANCE FRAMEWORK VIS-À-VIS REDD+

Forestry is a concurrent subject under the Constitution of India, which means both the Central as well as state governments can legislate on it. As a result, national government and various state governments have been enacting various forest-related Acts, formulating policies and implementing programmes for controlling, managing and improving the state of forests in their respective domains. This has made the forest governance regime in the country very complex, as elaborated in *Table 7: Forest-related laws, policies and schemes in India*.

A close look at the National Forest Policy (NFP) and the legislative framework makes it amply clear that an emphasis on maintaining ecological balance and environmental stability, giving high priority to meeting forest-based needs of the indigenous communities, creating a movement for increasing the forested area in the country, and regulating the diversion of forestland, are all indicators of a positive REDD+ performance. Joint forest management (JFM), calling for shared management of forest by forest-dependent communities and state forest departments, provides an opportunity to tap REDD+ benefits as well.

The Forest Rights Act of 2006 (FRA) creates another interesting playground for prospective REDD+ in India. The Act recognizes the bonafide rights of the communities, while bestowing upon them the duty to conserve forests and biodiversity. After the enactment of this landmark legislation, titles for management of more than 1.1 million hectares of forest have been given to dependent communities.[7] If contextualized properly, the Forest (Conservation) Act, 1980 and Indian Forest Act, 1927 as well as Biological Diversity Act, 2002 can also be synergized with REDD+, as can various other government policies and programmes.

Table 7: Forest-related laws, policies and schemes in India

Indian Forest Act, 1927	National Forest Policy, 1988	Biosphere Reserves Programme
Forest Rights Act, 2006	National Environment Policy, 2006	Joint Forest Management Programme
Wildlife (Protection) Act, 1972	National Afforestation and Eco-Development Board	EIA Notification, 2006
Forest (Conservation) Act, 1980	Ad hoc CAMPA and CAF Act, 2016	Green India Mission
Environment (Protection) Act, 1986	National Afforestation Programme	National Forestry Action Plan
State-level forest or wildlife related acts and rules	MNREGA, 2005 (forest related activities)	Bilateral and multilateral projects JICA, UNDP, USAID etc.
LARR Act, 2013	Multilateral conventions and regional collaborations	14th Finance Commission
Biological Diversity Act, 2002	PESA, 1996	Constitution (73rd Amendment) Act, 1992

Source: CSE, 2016

Table 8: Laws and schemes relevant for REDD+

Existing legislative framework	Features of the REDD+ framework
National Forest Policy, 1988	Protection, conservation and improvement of the existing forests
Forest (Conservation) Act, 1980	Regulation of non-forestry activities and regulation and restriction of non-forestry activities on forestland
Joint forest management and farm forestry	Meeting bona fide needs of forest-dependent communities, enhancement of carbon stock through participatory afforestation measures, and safeguarding biomass requirements of local communities
Forest Rights Act, 2006	Safeguarding forest use rights of local communities, empowering village councils to manage and protect forests and preventing diversion of forests by mandating prior consent of communities (Gram sabhas)
Compensatory Afforestation Fund Act, 2016	Compensating forest losses diverted for non-forestry purposes by plantation in and densifying degraded forests
Biological Diversity Act, 2002	Conservation, sustainable use and equitable benefit-sharing derived from biological resources with local communities
Wildlife (Protection) Act, 1972	Conservation of wildlife habitats and forests with provisions and concessions for local people
Natural resource-based livelihood schemes: Various line departments and schemes have been focusing on watershed concepts of soil and moisture conservation, afforestation etc.	Enhancement of carbon stock and benefit sharing with local communities
Rural development schemes such as MNREGA and SGSY	
Afforestation and reforestation projects of the forest department—Japan International Cooperation Agency (JICA) projects etc.	Enhancement of carbon stock and sustainable forest management
14th Finance Commission	Allocation of state funds according to forest covers
Panchayat (Extension to Scheduled Areas) Act, 1996	Local communities managing and deriving benefits from local natural resources including forests

Source: CSE

INDIA'S STRATEGY ON REDD+

In August 2018, the Ministry of Environment, Forest & Climate Change (MoEF&CC) released a document on India's national REDD+ strategy. The document outlines the implementation framework for REDD+ in India in compliance with the UNFCCC agreements. Some key features of the REDD+ strategy are as follows:

- **Scope of REDD+ coverage:** Includes both forests and trees outside forests in accordance with FSI's definition to include ''all lands, more than one hectare in area, with a tree canopy density of more than 10 per cent irrespective of ownership, land use and legal status''. The potential of carbon sequestration by grasslands, and coastal sea grasses, etc. to act as carbon sinks has been acknowledged and proposed to be included in REDD+ once methodologies have been developed to monitor changes in these ecosystems.

- **Scale of REDD+ implementation:** The strategy adopts a sub-national approach where REDD+ will be implemented in a physiographic zone comprising more than one State. State governments can collaborate and develop REDD+ action plans in physiographic zones.
- **Addressing deforestation and degradation:** The strategy targets unplanned drivers of deforestation and degradation. These include anthropogenic removals of forest biomass (fuelwood, fodder, small timber, NTFP) for consumptive uses, encroachment of forest land for agriculture and housing, unregulated livestock grazing; natural forest fires, illegal mining, etc. The strategy proposes to address them by providing fuelwood alternatives to local communities, income generation activities, and by ensuring sustainable management of local forest resources through preparation and implementation of community-centered micro-plans. Building a cadre of community foresters has also been suggested to ''develop belongingness'' among community youth in forest protection programmes.
- **Fund-based approach:** REDD+ finance would be mobilized from domestic sources such as 14th Finance Commission, Compensatory Afforestation Fund, Green India Mission, etc. The deficit in financing will be sourced through external funding from bilateral and multilateral agencies, etc. The national government will develop separate set of guidelines for the flow of financial incentives from Central government to state governments and from state governments to local communities.
- **Institutional mechanism for REDD+:** At the national level, a governing council will coordinate and monitor REDD+ implementation. Another body, a technical working group, will advise the governing council on matters related to safeguards, policy, finance, management and capacity building.

  At the state level, REDD+ cells will be constituted in each state forest department comprising top forest officials in the state, REDD+ experts and one representative from a prominent NGO. These cells will prepare forest reference emission levels, develop State REDD+ action plans and oversee REDD+ implementation by local communities. Local communities will be responsible for protecting, regenerating and managing forests, and also share the responsibility of measuring forest carbon with the state forest departments.

Overall, REDD+ strategy does provide the roadmap for implementation in the country to an extent. However, the biggest concern with the strategy is its top–down approach. For instance, the committees and cells proposed at the national and state level are responsible for developing REDD+ action plans, and the role of local communities is limited to discharging the tasks of forest protection and management. There is negligible representation of local communities in these committees and cells.

Land ownership in sub-national REDD+ will be diverse, ranging from private or communal lands to lands owned by government agencies other than forest departments. The provision for much-needed convergence and collaboration between different government departments and other stakeholders is missing from the strategy.

The strategy deliberately ignores the Community Forest Resource (CFR) areas recognized under the Forest Rights Act of 2006. The Act not only safeguards local community rights over forests, but puts them at the centre of decision-making in CFR areas. However, the strategy limits the technical and financial resources for REDD+ activities including capacity building to forest department-controlled committees only such as Joint Forest Management Committees (JFMCs) and Eco-Development Committees (EDCs). This leaves the question of whether and how REDD+ finance would be channelized to CFR areas unanswered.

The strategy is also silent on carbon rights. The mechanism for flow of incentives from Central government to state governments to local communities leaves the impression that all forest carbon would be owned by the Central government, and not linked to land and forest rights. This threatens to re-centralize forest governance, as explained later in this report.

REDD+ INITIATIVES IN INDIA

India has the legal framework and enabling policy environment for REDD+. Unlike many tropical developing countries, it also has the technical capabilities to carry out Monitoring, Reporting and Verification (MR&V) of GHG emissions, an important component for REDD+ under UNFCCC. However, full-fledged REDD+ projects have not yet started in the country. There have been a few projects and initiatives by non-government players in the country related to REDD+ to work as pilots as well as to study feasibility of large-scale initiatives. *Table 9: REDD+ projects in India* captures a snapshot of such initiatives.

Table 9: REDD+ projects in India

Implementing agency	Name of the project
Implementation projects	
Mawphlang Welfare Society	Synjuk Umiam Sub-watershed Community Forestry Federation (also called East Khasi Hills REDD+ project)
Wild Life Trust of India	Garo Hills Wildlife Corridor Project
Meghalaya State REDD+ Cell	Umket RAID project
Readiness projects	
ICFRE (Indian Council for Forest Research and Education)	Uttarakhand REDD+ pilot project
TERI (The Energy Research Institute)	Preparedness for REDD+
Tetratech ARD	USAID-funded 'India Forest Partnership for Land Use Science' programme, or 'India Forest +'
NEHU (North-Eastern Hill University)	REDD+ strategy in Northeast India; CFANE: (Community Forest Alliance for Northeast)
Regional Centre North East India for National Afforestation and Eco-Development Board (RCNAEB), MoEF&CC	Feasibility study of REDD+ projects in the Northeast; capacity building regarding REDD+
Regional Centre for Development Cooperation	Saintala Forest Range of Balangir district
	Gandhamardan–Bargarh
Japan International Cooperation Agency	Evolving REDD+ readiness initiative under JICA assisted forest sector projects.
International Centre for Integrated Mountain Development, Nepal	Regional REDD+ initiative in Bhutan, India, Myanmar, Nepal
Indira Gandhi National Forest Academy	Cell for REDD+ in relation to global warming and climate change

Source: CSE

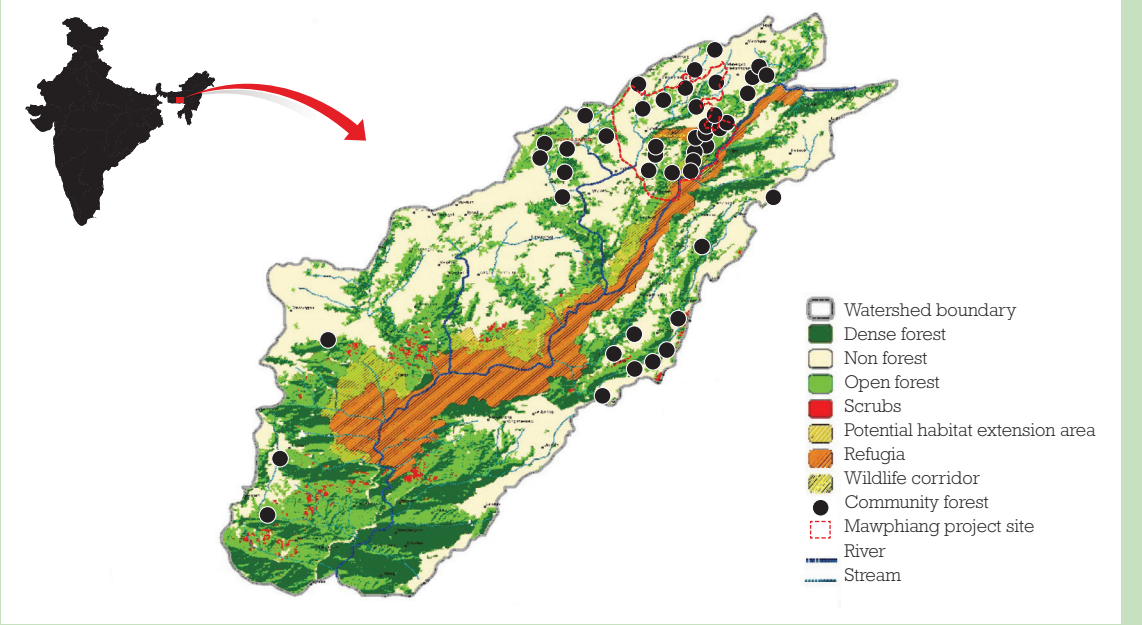
EAST KHASI HILLS REDD+ PROJECT, MEGHALAYA

The Khasi Hills REDD+ Project implemented by Mawphlong Welfare Society for restoring and conserving Meghalaya's hills forests through community action is perhaps the only significant REDD+ project in India. It covers 4,357 households representing a population of 25,411 in Meghalaya, an east Himalayan state. The project is located in the Umiam River Watershed, characterized by an annual precipitation in excess of 10,000 mm (highest recorded annual rainfall in the world). However, the project area still faces prolonged dry periods, which can sometimes be characterized as drought; deforestation is one of the contributing reasons for the same. The area has a number of traditionally conserved sacred groves with strict community regulations. These are almost untouched primary forest areas. One of the prominent among them is the Mawphlang sacred grove, which is also a famous Shillong tourist destination.

The project area is very rich in biodiversity. The region is classified as a global biodiversity hotspot under the Eastern Himalayan Endemic Bird Area. The region is also a hotspot of amphibian biodiversity. The project is spread over 10 *himas* (village kingdoms), 62 villages, and 27,139 hectares of land.[8] Out of the 10 himas, the better performing ones are Lyngyong Hima, Mawbeh Hima, Saura Hima and Myliem Hima. The major forest types include sub-tropical pine forests, mixed evergreen cloud forests, grasslands and savannas.

The project was started in 2005 and was aimed at watershed restoration through forest restitution activities. Initially, the project was under the aegis of Community Forestry Alliance, Northeast (CFANE), formulated by the Northeast Hill University in 2010. To begin with, the

Map 1: East Khasi Hills REDD+ project area



Source: Community Forest International, 2015

REDD+ pilot project was supported by McArthur Foundation in two villages with 74 families. Community Forestry International (an international non-profit) and forest officials gave technical support and the project funding was routed through the Bethany Society to comply with Foreign Currency Regulation Act, 2010 (FCRA) requirements.

The villages currently under the Mawphlang initiative opted for the REDD+ carbon project in 2011. The chief community facilitator, Bah Tambor, claims that he had to go to 82 meetings in two months to convince villagers about the Mawphlang project before they agreed to join hands. Some villages refused to join the initiative during the process. Before the project started, the community was managing the conservation of the area on its own and, therefore, the project provided extra incentives on what was already being done.

Objectives of the project include:

1. Building community capacity to implement resource planning systems and mitigation activities in order to reverse deforestation and degradation trends impacting 9,270 hectare of dense forests (under REDD+).
2. Assisting communities in the implementation of a variety of forest monitoring, protection, and restoration activities that facilitate the regeneration of 5,947 hectare of degraded forest lands (under assisted natural regeneration or ANR).
3. Implementing soil and water conservation measures to check soil erosion and to improve the hydrological function of the Umiam sub-watershed through payment of ecosystem services (PES) or carbon sales.
4. Enhancing the economic status of participating households by targeting the lowest-income forest-dependent families. Supporting sustainable enterprise development among local communities through microfinance and sustainable farming and forestry systems by PES or carbon sales.
5. Improving environmental services, including the protection of endangered flora and fauna found in the area through PES or carbon sales.

Management and monitoring systems

A system of punitive measures has been developed locally to deal with those found guilty of damaging forests. For minor offences like torching (not affecting a number of trees) and stealing, villagers decide the punishment, which is usually community service or ostracizing the offender. In severe cases, the offender is handed over to the police for action by conventional judiciary. There is a popular belief that if the sacred groves are damaged, the offender will die. For this reason, the members of the community report on each other in case of any offence, and have also started a guide system to counsel tourists.

The project has adopted six different methodologies for monitoring forest conditions:

- Forest surveys
- Satellite image monitoring
- Environmental indicators monitoring
- Biomass surveys
- Photo monitoring
- Community-based monitoring

Only the above-ground biomass with more than 5 cm diameter at breast height (DBH) is measured for biomass and carbon assessments. For dense and open forests, quadrants of 10 x 10 m and 20 x 20 m were laid respectively. A total of 60 plots have been laid out and

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East Khasi Hills REDD+ project region has also been classified as a global biodiversity hotspot

measurements are taken annually as well as for a period of five years. The information from the carbon plots is fed into the allometric equation. The project authorities have witnessed an increase in the forest area and quality.

Using the global positioning system (GPS), the project area has been fed into the satellite and the change in forest cover and area is analyzed by comparing the pre- and post-project imagery. A comparison with an updated SPOT image, Landsat, or other imagery is done every five years to assess the changes in dense and open forest. The baseline is set at 2010, was reset in 2016, and will be reset again in 2021. As per the baseline, the annual rate of deforestation (dense forest changing to non-forest) is 2.8 per cent and degradation (dense forest changing to open forest) is 0.1 per cent. The target is to bring down the annual rate of deforestation to 1.9 per cent. Biodiversity indicators, and river and stream flows are also monitored by the project team. A series of photo-monitoring positions throughout the project area have also been established. Every year, at the end of the rainy season, photos are taken and compared with the previous photos to assess changes in forest structure and rate of regrowth. Twenty sites each of dense and open forests are thus monitored.

The team of Plan Vivo and their project in Nepal, and Rupantaran and the Bio-climate Fund were involved in the process of verification and validation respectively. The first verification was done in 2012 and a second one in 2017. Certificates are issued based on the results of the biomass survey and the photo-monitoring.

ALTERNATIVE SOURCES OF ENERGY IN EAST KHASI HILLS PROJECT AREA

Project authorities have been experimenting with utilizing carbon revenue and other project funds to distribute various alternate energy sources to participating households. However, the project does not claim to cover even 5 per cent of the households through its substitutes for fuelwood like LPGs or alternatives to cooking like rice cookers. Till now, they have only served demonstrative purpose to resolve the reluctance of the users in adopting them.

Charcoal is a major source of fuel in the project area and households often buy it from nearby towns. The cost of charcoal varies between Rs 7–9 per kg, and the average household spending on it is Rs 1,000 per month for a family of six–seven members. Many villagers are reluctant to adopt LPGs as they feel that the cylinders are not safe though the purchase of LPG also costs the same or even lesser at the rate of Rs 700 a cylinder. However, the cost of acquisition of the cylinder is about Rs 7,000. This also acts as a barrier to the use of LPG. The distribution of these cylinders is discussed with the village headman before finalizing.

Drivers of deforestation

The following drivers of deforestation have been identified in the East Khasi Hills REDD+ project:

i. Fuelwood collection: Given that this is a wet region with annual precipitation in the range of 10,000 mm, the major energy requirement is that of heating. On an average, a Khasi household requires 15–30 kg of fuelwood. The major sources of fuelwood are the forests and charcoal purchased from sellers or made by the villagers themselves. It was observed during the CSE study that the project has to account for leakages that take place because of the purchase of charcoal from outside suppliers. Most of the suppliers are from the West Khasi Hills, where large-scale charcoal production takes place. However, the most detrimental process is charcoal-making by the villagers themselves, as it leads to more consumption and emissions. The production of charcoal varies from village to village. In some cases, like Sohra Hima, 40 per cent of the villagers make their own charcoal. Charcoal is also used in ferroalloy factories.

ii. Mining and quarrying in the region: Sale and long leases of private land have been major issues regarding conservation in the area. Given that the community controls land through customary laws, private companies employ the easy route of bribing headmen to buy land. Land for 150 cement plants and the corresponding limestone mining has been obtained in this manner in the Cherrapunji region.

iii. Quarrying: Shillong is a growing city, hungry for sand and gravel. District councils do not interfere in quarrying of sand and gravel, which leads to haphazard mining, leading to landslides and soil erosion. Stone quarrying is done in two ways. Rich miners use crushers, while poorer people do it manually on private lands.

iv. Hillside mining for sandstone: This is done on community lands. It can be done everywhere except agricultural land and riverine areas. Even open forests are prone to hillside mining. This causes degradation of forests, which is being tackled with practices like early

closure or ANR. Additionally, catchment and settlement ponds are being requested from mine owners.

v. Land-use conversion of forestland: Land use conversion into agricultural lands is another major reason of deforestation. Average land holding in the region is less than one acre (0.25 hectare). The practice of extensive and shifting agriculture (*jhum*) has declined in the project area as farmers have focused their agriculture on more fertile soils located in valley bottoms and on lower slopes, however some forest clearing is still done on steeper slopes. The practice of forest clearing for commercial broom grass production has also impacted forests in some project areas.[9] During the field visit, land-use conversion of forestland was observed, especially in the ANR areas, but as per the field staff many of them tend to vacate the encroachments when the forests grow as it becomes difficult to continue doing agriculture due to the problem of pests.

vii. Fodder and timber collection: Only about 30 per cent households rear cattle, but they are dependent on forests for grazing. Timber is used extensively for constructing houses and cattle sheds. Most of the timber is obtained from private and clan (RAID) forests.

viii. Forest fires: Forest fires are a major reason for destruction of forestland. These are of two types—ground fires and crown fires. Active monitoring of forest fires by communities is a key component of the project (see *Table 10: Drivers of Deforestation and measures undertaken against them*).[10]

There is no compulsion for abstinence from extraction of biomass from the forest. The project includes villages into its ambit only if the village council wants to join. On their tours to a village, federation members give advice for improvement of the ecology of the region, and the village council is free to act as and when it likes. Moreover, if the village council wants, they can have a meeting to earmark areas they want to conserve.[11]

Table 10: Drivers of deforestation and measures undertaken

Driver of deforestation	Measures taken by the project
Forest fires	Preparation of fire control plans, traditional control burning, construction of forest fire lines and fire combat. Establishing regulations over agriculture fires. Social control including an incentive and penalty system have been put in place to control villagers igniting forest fires
Fuelwood collection	Providing LPGs, rice cookers, and fuel efficient stoves. Village natural resource management plans (for enhancement of fuelwood production)
Free-range grazing	Community restrictions, animal exchange programmes and stall-feeding cattle (still in a nascent phase)
Coal and other mining	Community restrictions
Hillside mining and quarrying activities	Not much action. Currently the village council allocates or leases to some individuals for use for a period of one–three years
Encroachment on forestland	Resettlement of encroachers. Introduction of agriculture improvement practices.
Charcoal making and sale	No measures taken
Erosion and loss of biomass	Vegetative check-dams and afforestation

Source: CSE

VIVEK VYAS / CSE

LPG stoves have been given to some households as an alternative to fuelwood

Impacts of the project

The various benefits of the project can be divided into sale of carbon and those accruing from addressing the drivers of deforestation (ecological and biomass benefits). The project has been registered with Plan Vivo, the certifying agency, under market registry. Carbon sequestration-related benefits are measured using carbon credits. Plan Vivo sells these carbon credits as Plan Vivo certificates. As of March 2018, the project has been issued 118,404, Plan Vivo certificates.[12] (A Plan Vivo Certificate is an environmental service certificate representing the long-term sequestration or reduction of one tonne CO_2e, plus additional environmental and social benefits.) The payments for carbon are received bit-by-bit. As per the project description document, the project has sold 10,000 to 20,000 tCO_2 each year during the period 2013–15. Results of satellite imagery show that forest loss has reduced to 2.8 per cent per annum (2006–10), which is almost a 50 per cent decrease from the previous rate of 5.6 per cent per annum over the first five years (2001–05).

The project claims to have reduced the impact of forest fires in the project area dramatically as a result of community action from 2012–17. This has also allowed vast tracts of degraded forest to regenerate and move from barren-scrub category to young secondary forest category, especially in the Wah Lyngien village, where protection and restoration efforts have made these forests dense, with trees reaching upto 8–10 m in height. The village is considering designating it a sacred forest and a permanent conservation area. The project has also achieved a net carbon benefit of 223,263 tCO_2 from 2012–16.[13] Forests in the region are rolling hill forests known to carry less carbon. Also, for the sake of simplicity, only the above-ground biomass has been considered. The result is that the final amount of carbon recorded is on the modest size. To arrive at a more optimum measurement, there are plans to measure the below-ground biomass as well.

Other benefits of the project include:

- The tribal community relates to the place as their place of birth and dignity as the sacred groves are associated with their belief system. The project helps conserve this religious space
- Incremental biomass
- Biodiversity—species count has increased
- Convergence—some funds have been mobilized for poultry and piggery through convergence and other government schemes

Distribution of benefits

The benefits of the project are distributed in two ways:

a. Cash (for community interventions like water bodies, fencing etc.)
b. Kind (in the form of LPGs, smokeless *chullahs*, electric cookers etc.).

Carbon benefits arising out of the project are used to cover the costs of mitigation activities and management. The balance is distributed through annual grants for village development, where each of the 62 villages is provided a grant of US $250 for a development project, which the community council chooses. Approximately 80 per cent of the villages have chosen to improve their drinking water supply, often by building a concrete enclosure around springs and water sources to protect them from pollution and contamination.[14]

Issues and challenges

A major challenge for the project is finding buyers of carbon credits due to the voluntary nature and unpredictability of carbon markets. The lack of sustained flow of carbon revenue also limits distribution of benefits to communities. For instance, the project has been distributing LPG stoves and rice cookers to households as alternative sources of fuel, but the coverage of beneficiaries is less than 5 per cent.

The project sells carbon credits at the average price of $5 per tonne of CO2, which cannot compensate the opportunity cost of replacing fuelwood with LPG in India (see *Table 11: Opportunity cost of replacing fuelwood with LPG stoves*). Though the price of carbon is not the central motivation for communities in the Khasi Hills project, there is a need to increase the price of carbon credits to make the project viable and profitable in the long run.

Table 11: Opportunity cost of replacing fuelwood with LPG stoves

A. Annual fuelwood consumption in India (FAO, 2015) = 385.25 million cum or 231.15 million tonnes
Total carbon in fuelwood consumed* = 231.15 x 0.45 = 104 million tonnes of Carbon
Total annual CO_2 released by fuelwood consumption = 104 x 3.67 = 381 million tonnes CO_2e.

B. Number of forest-dependent people in India = 300 million
Cost of non-subsidized LPG cylinders per family = 670 x 12 = INR 8,040
Per capita annual cost of LPG cylinder (assuming a family of four people) = Rs 2,010
Total cost required to replace fuelwood with LPG = 300 million x 2010 = Rs 603,000 million

C. Total potential emission reduction (ER) from fuelwood replacement = 381 million tonnes of CO_2e
Cost of ERs = Rs 603,000 million / 381 million CO_2e = **Rs 1,582 or** US **$22.6 per tonne of CO_2e**

The calculations are based on the 2017 price of one LPG cylinder at Rs 670 and assume that one LPG cylinder will last a family of four households for one month. The other assumption is that the government would need to provide cylinders free-of-cost to fuelwood users for at least one year to bring about a behavioural change. The calculations exclude the one-time cost of acquiring a LPG cylinder and other recurring costs such as transportation of cylinders to remote areas.

Leakage is another issue which defeats the objective of the project to some extent. The daily fuel needs in the village are quite huge and the project is yet to provide sustainable and scalable alternative sources of fuelwood for all the participating households. A field visit to the project area revealed that some households are obtaining or buying fuelwood and charcoal from forests outside the project area to meet their fuel needs.

3. REDD+ IN AFRICA

AN OVERVIEW

Forests cover 675 mha, accounting for 23 per cent of Africa's land area. The Congo basin in Central Africa hosts the second largest tropical rainforest in the world. Dry forests constitute 42 per cent of the continent's woods and are predominantly found in the Sahel, southeast and North Africa.[1] In the savannah region, wooded lands are very significant and cover approximately 350 mha, or 12 per cent of the total land.[2]

The deforestation rate in Africa has been reported to be quite high at 0.49 per cent per year, amounting to 3.4 mha annually.[3] The largest global forest loss in the last two decades has occurred in the tropics, where Africa follows South America in terms of contribution to the loss. In fact, eighteen African countries reported a loss of 19.8 mha of forests, and a net agricultural area gain of 31.1 mha, according to the 2016 *State of World's Forests* report.

Forests constitute a significant source of livelihoods with more than half of the continent's population relying directly or indirectly on them. Small-scale agricultural processes are considered the primary driver of deforestation where a majority of poor households adopt low-risk, low-return agricultural activities. With an annual growth rate of 2.55 per cent from 2010–15, Africa is projected to witness the highest population growth between now and 2050.[4] The pressure on forests will increase in the future too. Therefore, a large part of avoided deforestation is expected to happen in Africa.

REDD+ DEVELOPMENT IN AFRICA

At least 28 African countries have participated in REDD+ processes. A number of multilateral initiatives on REDD+ are also active in Africa. Among these, the UN-REDD programme, Forest Carbon Partnership Facility, Central African Forest Initiative, Forest Investment Programme and Biocarbon Fund have made progress in channelizing funds for readiness activities and, more recently, for implementation of large-scale REDD+ programmes.

There are varying estimates on the quantum of REDD+ finance in Africa. According to Climate Funds Update, an independent website tracking international climate finance initiatives, REDD+ funds in Africa totaled US $470 million, constituting 12.64 per cent of the total climate finance in Africa. Another study by Forest Trends estimates that US $543 million have been pledged to just five African countries from 2009 to 2014.[5] The largest recipient of REDD+ funds in both the estimates has been Democratic Republic of Congo.

Most of the REDD+ action in Africa has been concentrated in the Congo basin. Some experts have argued that woodlands need to be paid equal attention, as a number of threats including agriculture, pastoralism, wood extraction and fires reduce vegetated land at a very rapid speed. A 2012 study developed a conceptual model to classify a sample of African countries based on their forest cover and deforestation rates.[6]

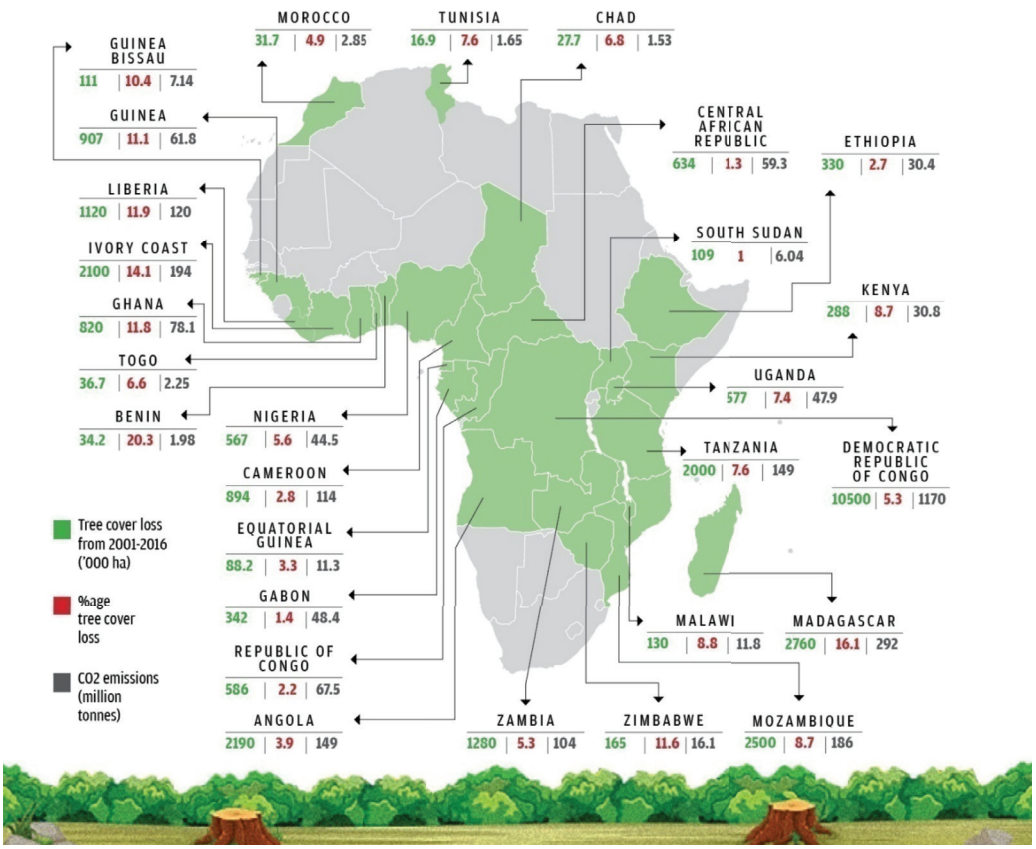
Table 12: Conceptual model for REDD+ in African countries

	Low forest cover	High forest cover
High deforestation rate	C	A
Low deforestation rate	B	D

A: Democratic Republic of Congo (DRC)
C: Nigeria, Tanzania, Zimbabwe
B: Ghana, Central African Republic, Sudan, Cameroon, Mozambique, Angola, Botswana, Senegal and others
D: No country reported in this category
Source: Mbow et al, 2012

Based on the above model, only one country, i.e., Democratic Republic of Congo fell in the 'A' category. According to Global Forest Watch, an online tool to monitor forest changes, carbon emissions as a result of tree cover loss was the highest in Congo, totalling 1.17 GT from 2001–16 (see *Map 2: Tree cover loss and carbon emissions in key REDD+ countries in Africa*). This explains why Congo has attracted the highest number of REDD+ projects. The study argued that REDD+ should be equally relevant in countries in the 'C' category, as the annual rate of deforestation in countries such as Nigeria and Zimbabwe have been as high as 5 and 2.1 per cent respectively from 2010–15, compared to Congo, which recorded deforestation rates of 0.2 per cent in the same period.[7] In countries with an extensive forest cover and low deforestation rates, the potential of achieving REDD+ objectives are considered to be greater given the low pressure on abundant resources.

Map 2: Tree cover loss and carbon emissions in key REDD+ countries in Africa



Source: Global Forest Watch, 2018, developed by CSE

As is the case with the rest of the world, the implementation of REDD+ in Africa is also taking place at two scales:

i) Smaller, isolated REDD+ projects, aiming to save endangered patches of forests implemented by non-profits or private sector entrepreneurs
ii) Jurisdictional REDD+ programmes spread across an entire district or province or landscape

Africa has taken the lead in the implementation of the latter, though it is too early to draw useful lessons from the experiences of these programmes. Meanwhile, a number of projects in the first category are considered a part of the REDD+ readiness process in these countries. Being at advanced stages of implementation, they too offer useful lessons.

An international database on REDD+ projects suggests that there are 136 forest carbon projects in 22 countries of Africa. Only 39 projects are REDD+ initiatives, while the remaining are afforestation and reforestation projects.[8] Some of these projects either intended to demonstrate REDD+ or had been in existence long before REDD+ came into being but were re-labelled as REDD+ pilots to add forest protection focus to their existing aims. These projects did not necessarily have a carbon component. For instance, Ghana launched seven pilot REDD+ projects in 2012, none of which sought to measure and trade carbon from forests. These projects fizzled out in 2015 due to lack of sufficient funding. Other REDD+ projects had a carbon element in them but became inactive after a few years owing to lack of sustained flow of revenue. Tanzania, for instance, had launched nine pilot projects in 2009 with assured funding for five years from the Norwegian embassy. However, most of these projects are currently inactive, as they failed to sell carbon credits to generate revenue after the funding from Norway ended in 2014.

Still other projects seek to generate carbon credits for sale. Eighteen smaller REDD+ projects in Africa are registered with two popular carbon standards on land use, i.e., Plan Vivo and Voluntary Carbon Standard–Climate, Community and Biodiversity Alliance (VCS–CCBA). A list of the REDD+ projects in Africa that are registered with the above-mentioned standards is provided in *Table 13: REDD+ projects in Africa registered with VCS-CCBA and Plan Vivo Foundation*.

These projects cover a total area of 3,402,675 ha in ten African countries. Interestingly, the core focus of 11 of the 18 REDD+ projects is wildlife conservation, where protected areas or large, privately owned lands form a major chunk of the total project area. REDD+ implementation in these projects primarily entails improved forest protection and the creation of alternate income generating activities for communities, who have very limited rights inside these protected areas and private lands. REDD+, in these cases, has become a mechanism to raise funds from carbon trading to further the aims of wildlife conservation. There are also some projects, especially those in Tanzania, that seek to use REDD+ to strengthen community forest management.

CSE undertook a study on the REDD+ implementation experiences of four such projects in Kenya and Tanzania. An analysis of the four projects is presented in the case studies.

Table 13: REDD+ projects in Africa registered with VCS-CCBA and Plan Vivo Foundation

S. no.	Project name	Project proponent	Country	Certifying standards	Size (ha)	Carbon credits issued
1	Beampingaratsy REDD+ Project	BNC REDD+	Madagascar	VCS CCBA	79,101	No
2	GilÃ National Reserve REDD+ Project	National Mozambican Public Agency for Parks and Reserves Conservation (ANAC)	Mozambique	VCS CCBA	127,062	No
3	HIMA (Hifadhi ya Misitu ya Asili ya jamii) REDD+ Programme	Multiple Project Proponents	Tanzania	VCS CCBA	82,754	No
4	Chyulu Hills REDD+ Project	Chyulu Hills Conservation Trust	Kenya	VCS CCBA	410,343	Yes
5	Isangi REDD+ Project	Jadora, LLC–Carbon consultancy	DRC	VCS CCBA	187,571	Yes
6	Bale Mountains Eco-region REDD+ project	Oromia Forest and Wildlife Enterprise	Ethiopia	VCS CCBA	261,053	Yes
7	Mjumita Community Forest Project (Lindi)	Multiple Project Proponents	Tanzania	VCS CCBA	41,924	Yes
8	The Makira Forest Protected Area in Madagascar	The Wildlife Conservation Society (WCS)	Madagascar	VCS CCBA	372,470	Yes
9	Lower Zambezi REDD+ Project	BioCarbon Partners	Zambia	VCS CCBA	38,781	No
10	Gola REDD+ project	Gola Rainforest Conservation LG	Sierra Leone	VCS CCBA	68,515	Yes
11	Kulera Landscape REDD+ Programme for Co-Managed Protected Areas, Malawi	Multiple Project Proponents	Malawi	VCS CCBA	169,136	Yes
12	Carbon Emissions Reduction Project in the Forest Corridor Ambositra-Vondrozo (COFAV), Madagascar	Government of Madagascar, Direction Generale des Forests	Madagascar	VCS CCBA	285,800	No
13	The Mai Ndombe REDD+ Project	Wildlife Works Carbon LLC	DRC	VCS CCBA	248,956	Yes
14	Kariba REDD+ project	Carbon Green Investments (Guernsey)	Zimbabwe	VCS CCBA	784,987	Yes
15	The Kasigau Corridor REDD Project - Phase I and Phase II	Wildlife Works Carbon LLC	Kenya	VCS CCBA	200,000	Yes
16	Sofala Community Carbon project	Envirotrade	Mozambique	Plan Vivo	9,105	Yes
17	REDD+ in the Yaeda Valley	Carbon Tanzania	Tanzania	Plan Vivo	35,000	Yes
18	Mikoko Pamoja	Mikoko Pamoja Community Organization	Kenya	Plan Vivo	117	Yes

Source: VCS and Plan Vivo database

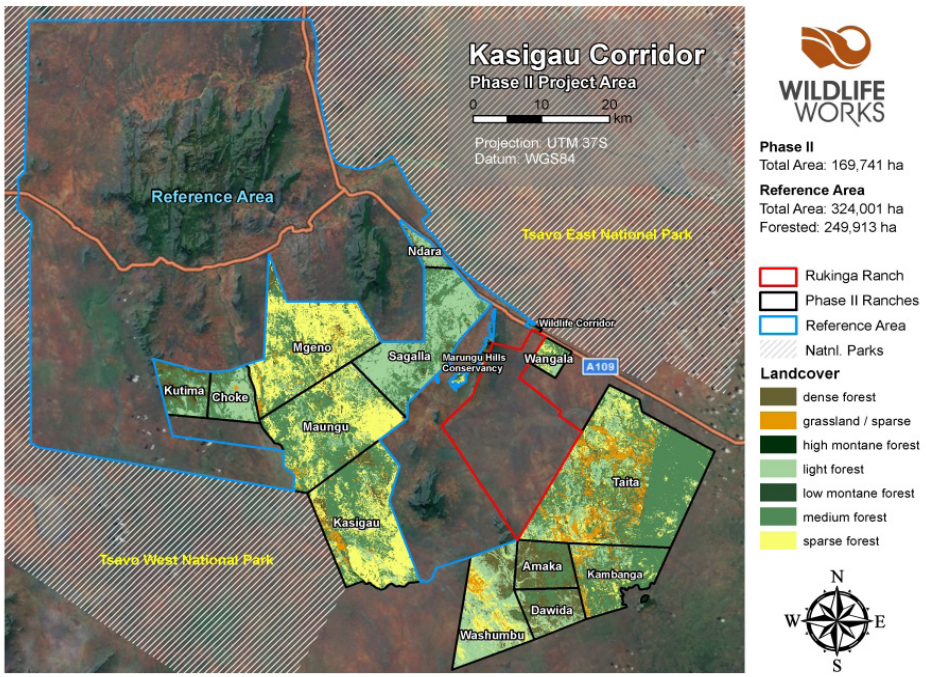
KASIGAU CORRIDOR REDD+ PROJECT, KENYA

The Kasigau Corridor REDD+ project (KCRP), located in the Taita–Taveta county in the wildlife corridor between the Tsavo East and Tsavo West National Parks in the southeastern part of Kenya, was the first REDD+ project in Africa to sell carbon credits in voluntary markets. The project is being implemented by a for-profit organization called Wildlife Works Carbon (WWC), and was rolled out in two phases. Phase I started in 2008–09 and consisted of a privately owned cattle ranch over an area of 30,166 ha. Phase II commenced in 2010–11 and covered 13 community ranches in an area of 169,741 ha. Together, these projects cover close to 200,000 ha and aim at reducing emission by 52 Mt of CO_2 over the project life or crediting period of 30 years, i.e., 10 tonnes per ha per year.

The project area is characterized by a semi-arid climate and a dryland forest ecosystem, where drought-resistant species of *Acacia* and *Commiphora* dominate the landscape. The project area also houses a huge diversity of mammals (over 50 species), birds (over 300 species) and important population of International Union of Conservation of Nature (IUCN) Red List species such as Grevy's zebra (*Equus grevyi*), cheetah (*Acinonyx jubatus*), lion (*Panthera leo*) as well as over 500 African elephants (*Loxidonta africana*) seasonally.[9]

Until the 1960s, most of the land in the project area used to be hunting blocks. These blocks were apportioned as ranches during the 1960s and the 1970s under the Kenya Livestock Development Project for commercial cattle production. The ranches have different forms

Map 3: Kasigau Corridor project and reference area



Source: KCRP monitoring report, 2014

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Large ranches constitute a lion's share of Kasigau Corridor REDD+ project area

of ownership—three are individually owned by registered proprietors of these lands, while the remaining are either private company ranches or directed agricultural company (DAC) ranches. Company ranches are leased or bought from the government or a county council by a group of people who purchase shares in the company. Private company ranches have limited membership while DAC ranches do not have a limit on the number of shareholders but the number of company shares itself is limited.[10]

54 per cent of the project area is under DAC, while 41 per cent is owned by private companies. Individuals own 4 per cent of the project area. Additionally, a small parcel of communal land of 1,000 ha called the Marungu Hills Conservancy Area and a wildlife corridor link over 156 ha is also included in the project area.

Land use and socio-economic profile

With the collapse of the Kenya Meat Commission in the 1980s, most ranches became unprofitable and fell into disuse. There were a few exceptions which continued small-scale cattle production or rented land to third party herders such as the Somalians at nominal fees, which often resulted in overgrazing. The absence of any major economic activity on the ranches, combined with the fact that the ranch owners were often absentee landowners also led to pressure from the neighbouring settlements on the ranches for slash and burn cultivation and charcoal production—the primary drivers of deforestation in the project area.[11] The ranches are subject to different kinds of anthropogenic pressures depending on factors such as availability of water, proximity to towns etc. For instance, agriculture pressure is high in the Kambanga ranch, while Washumbu attracts charcoal producers. More recently, gemstone mining has commenced around the Kasigau ranch, though the scale is quite small for the activity to be considered a deforestation or forest degradation driver yet.

The population of the settlements around 5 km radius of the project area is approximately 100,000, where a majority comprises of the Taita community who are subsistence agriculturalists, also practicing small-scale livestock rearing or small businesses in neighbouring towns. The second largest group is the Duruma, who practice charcoal burning and sometimes, bushmeat trade. Other groups such as the Kamba, the Maasai and the Kikuyu are also present in small numbers in the settlement areas.

The results of a 2012 baseline survey done from a randomized sample of 150 households suggest poor socio-economic conditions of the project community. 87 per cent of the households were subsistence farmers, with a majority of them (75 per cent) not selling any of their on-farm produce. 15 per cent surveyed households did not have any source of cash income. Nearly 25 per cent of the respondents suffered from food shortage throughout the year. In good years, the monthly household income ranged from 1,500 KES to 5,000 KES (US $15–50) for 45 per cent of the respondents while 32 per cent made between 5,000–10,000 KES (US $50–100). Crucially, in bad years, the income of 54 per cent dropped to below the region's poverty line of 1,500 KES (US $15).[12] The project region is, therefore, characterized by food scarcity and low income levels.

REDD+ context in the project area

Historically, the region in which the project area is located received rainfall in two seasons—April and December. Over the last decade, local climatic conditions and rainfall patterns have become irregular and the frequency of droughts has increased. In the absence of permanent sources of water in the project area, the years of droughts see large-scale crop failures and food shortages. The resulting food insecurity causes farmers to continue moving, clearing more land in the hope that they will find a better plot in the project area. Dry conditions and water scarcity also severely limit the success of any reforestation effort in the region.

KCRP has a project area and a reference area. The project area comprised of cattle ranches with low population density and the reference area supports a population of around 100,000 people. The REDD+ project has excluded these settlements from its accounting area as they are not forested lands.

In calculating its estimated emissions reduction, KCRP has assumed that over 90 per cent of the above and below ground forest biomass in the project area would be lost over 30 years in the absence of the project. The assumption has been contested by some groups who argue that there are socio-economic differences between the project and reference areas, and that the project has exaggerated the risk of deforestation in the project area.[13] WWC's contention is that in the absence of the project, deforestation rates would be higher in the project area as climate change impacts became more prominent.

Addressing the drivers of deforestation and forest degradation

WWC employs two key strategies to address the drivers of deforestation and forest degradation:

i) **Forest protection:** WWC and ranch owners have banned activities such as charcoal burning, slash and burn cultivation, bushmeat hunting and poaching in the project area. Project developers have employed 140 people from the local population to work as community rangers to patrol the forests and report incidents of violations. In addition to foot and car patrols, and camera traps, the project also carries out aerial surveillance of the project area.

ii) **Livelihood diversification**: Job creation for people in the reference area is a crucial part of the leakage mitigation strategy, and it is considered a "viable alternative for people that have previously had to destroy their environment for mere survival." In addition to community rangers, the project has established an export-processing eco-cloth factory in 2002 which employs 150 people. More than 90 per cent of WWC's employees, numbering close to 330, come from the reference area.

WWC is also demonstrating pilots to improve agricultural productivity of the farmlands without the need for expanding the land under cultivation. It has also established an eco-charcoal unit that produces charcoal briquettes sustainably, i.e., without felling an entire tree, and sells them to lodges, safari operators and tourist camps. Since 2016, WWC has also started working with local charcoal producers from the neighboring settlements to produce charcoal in accordance with the Charcoal Rules of 2009. WWC has formed one Charcoal Producers Association comprised of 89 producers and was awaiting a grant from the Kenyan government to start its operations as of October 2017.

There are also a couple of other initiatives like jojoba farming, crafts-making and eco-tourism which provide employment to the local communities. WWC has a dedicated community liaison and outreach team to help sensitize the entire project community about environmental conservation and climate change in general, and about the REDD+ project and its progress in particular.

Carbon markets

KCRP generates approximately 1.2–1.3 million verified carbon credits every year, which are listed in the voluntary markets for sale. Presently, International Finance Corporation (IFC), the private arm of the World Bank, is the major buyer of KCRP's carbon credits, buying approximately 40 per cent of the credits in the form of green bonds. The project has a five-year arrangement with IFC, starting 2016, which has been a financial helpline for the project. BNP Paribas (a retail banking company headquartered in Paris), Kering (Parent company of Puma) and La Post (a US-based production company) are the other big buyers of credits from the project.

WWC is also leveraging platforms such as Stand for Trees (www.standfortrees.org) and Code REDD (www.coderedd.com) which enable credit buyers from private institutions and companies to link directly with REDD+ projects. However, the volume of sales under these arrangements remains low and unpredictable. Kenya Airways, for instance, has a carbon offset programme for its customers wherein the offsets are credited to the KCRP, but the arrangement manages to sell only 900 credits on an average annually. While WWC has managed to sell most of its verified credits till date, it has been through periods of extremely lean sales, especially during 2013–14, and finding carbon markets remains a big challenge for the project.

Benefit-sharing mechanism

WWC has signed conservation easement agreements with the ranch owners, thereby acquiring carbon rights from them. Such agreements, spanning at least 30 years, constrain the exercise of rights otherwise held by a private landowner so as to set aside land for non-consumptive utilization. This also enables WWC to demonstrate that they are not purchasing the land, but rather entering a mutually beneficial contract and, therefore, avoiding the criticism of being associated with suspicions of "land-grabbing".[14]

WWC revised its benefit-sharing mechanism in 2016 for utilization of carbon revenue. In the original arrangement, based on the carbon stock of their ranches, ranch-shareholders were entitled to one-third of the revenue in exchange for signing the conservation easement agreement. One-third was to be utilized for covering operational costs of the project which includes salaries of the employees, costs of monitoring, verification, audits etc. The remaining one-third was earmarked for community benefit projects such as bursaries, school and water infrastructure.

Realizing that one-third of the revenue was not sufficient to cover the project costs led to a revision of this mechanism. While ranch shareholders are still entitled to one-third of the revenue, the profits after deducting the ranch holders' share and operational costs are now split equally between WWC and community projects.

The decision has been to distribute the community's share of revenue to communal projects, instead of direct individual cash transfers. Going the communal way was agreed upon to be the most cost-effective, and was believed to have the highest impact and least complications.[15] The utilization of carbon revenue for community projects is decided by the Locational Carbon Committees (LCC). Locations are administrative units of a district and have an elected chief. Each LCC comprises of seven members from the settlement areas, including the chief. WWC is working with six such LCCs. Education and water have emerged as the priority areas for funding from the carbon revenue. The project had spent close to US $500,000 on community projects upto 2014.[16]

The benefit-sharing mechanism of the project has often come under critical review, with reports claiming that the share of communities (through community projects) in the total revenue has been as little as 14 per cent, while operational costs have crossed 50 per cent in 2010 and 2011.[17] WWC has counter-argued that the operational costs include the salaries of over 300 staff, mostly from the local community, which should also be considered as benefits to the community. Moreover, ranch shareholders were initially unwilling to share revenues with larger communities in the reference area and required some convincing. WWC has also asserted that there is no universal benchmark for a revenue distribution model between major players of the project, making it difficult to call these arrangements just or equitable.[18]

Issues and challenges

The Kasigau Corridor REDD+ project has received a number of awards in the years it has been in operation, the most recent recognition being the Best Offsetting Project in Environmental Finance in the 8th annual ranking of voluntary carbon markets. WWC claims that it is too early to see a trend in ecosystem benefits that can be attributed to the project, as the process of data entry and processing to monitor biodiversity underwent changes in 2012 and 2013. However, the general community perception has been that the wildlife population has increased in the project and reference area. WWC has also emerged as an important employer in an area where formal employment opportunities are extremely limited. Living standards of households with bursary beneficiaries have significantly improved, reflected in the quality of houses and availability of basic amenities in these households.[19]

Despite its achievements, the project faces a number of challenges. The replicability of pilot activities to diversify livelihoods is uncertain at this point of time. Some of the other key challenges are described below:

i) **Limited community benefits:** Though the project places job creation at the core of its strategy, there is limitation in the number of people that can be employed by the company. In 2013, only 3 per cent of households within a 5 km radius of the project area were reported to have a member employed with WWC.[20]

The average annual revenue per head from carbon has been estimated to be US $5–8 in the original benefit-sharing scheme.[21] The average household size, as per WWC's social monitoring exercise, is 2–8. Therefore, a household's annual income, if benefits were to be transferred directly, would have been only between US $10–64. In a baseline socio-economic survey done by the project agency from a random sample of 150 households across five locations, the average household income for 54 per cent of the respondents ranged from 1,500 KES (US $15) to 5,000 KES (US $50) per month in a normal year.[22] The annual household income from REDD+ in one year, therefore, was less than the annual income of one household at the lowest rung of the economic ladder in this survey, which is at least US $180 at US $15 per month. One can argue that it is an achievement considering that communities were not receiving a penny from forest protection earlier. One could also argue that the benefits are measly, with the average earning per head amounting to a meager US $5-8 per year—not significant enough to improve the living standards of the local population.

While low carbon revenue is partly responsible for limited community benefits, the other argument against directing more benefits to the larger community in the reference area is that their activities in the project area are illegal and should not be rewarded. Though WWC sees community benefits as part of its broader leakage mitigation strategy, limited benefits will do little to deter the "illegal" activities in the project area, especially when the underlying factor for such activities is poverty. This also explains the ongoing conflicts of project proponents with communities that are directly affected by resource-use restrictions in the project area.

ii) **Increasing incidents of human–wildlife conflict:** As a result of forest protection, wildlife population has increased in and around the project area, and so have incidents of human–wildlife conflict, primarily crop damages and livestock loss due to wildlife. Communities are now running pillar to post to seek compensation for these damages. Reportedly, Kenya Wildlife Service (KWS) has refused compensation arguing that it is the responsibility of WWC, as wildlife populations had increased as result of their efforts. WWC, on the other hand, contends that KWS would pay the compensation as wildlife outside the boundaries of protected areas is also the jurisdiction of KWS.[23] In this process of shifting responsibilities, wildlife is flourishing but communities are losing despite bearing the costs of forest protection without receiving any compensation.

iii) **Low and inconsistent carbon revenue:** While it is unclear how much revenue WWC estimated to generate from the sale of carbon credits, it was clear from discussions with WWC staff that the revenue has been less than expected. This also constituted a reason for the revision in the benefit-sharing mechanism. The inconsistency in the flow of income from carbon and the volatility of carbon markets have been an ongoing challenge for the project. The scope of community benefits has also admittedly been less than planned. Of the 42 community benefit projects (school and water infrastructure) that had been sanctioned, 15 had to be put on hold due to lack of finances during 2012–14.[24] WWC hopes that the integration of the project into a larger, jurisdictional programme in Kenya will also open carbon markets to bilateral and multilateral agencies as well as sovereign nations. However, Kenya is moving rather sluggishly in its overall development of REDD+ at the national level, only following which can such large-scale programmes be launched.

CHYULU HILLS REDD+ PROJECT, KENYA

The Chyulu Hills REDD+ project (CHRP), located in southeastern Kenya, derives its name from the volcanic mountain range Chyulu Hills. The project is spread over about 410,534 ha and lies between two major national parks—Tsavo and Amboseli, constituting a critical wildlife corridor. The carbon accounting area for the project is 374,677 ha. Rolled out in 2013, the project intends to reduce 37 million tonnes of CO_2 emissions over the course of its crediting period of 30 years, i.e., 3.3 tonnes of CO_2 per ha per year.

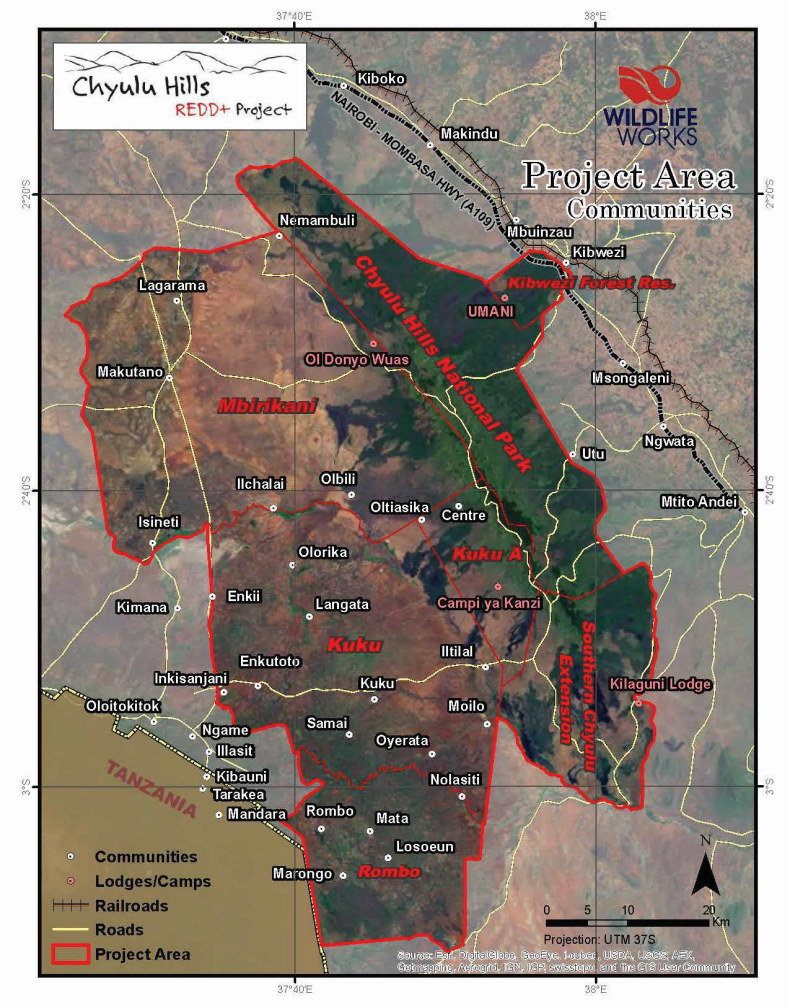
CHRP is a multi-partner initiative, implemented and managed by the Chyulu Hills Conservation Trust (CHCT)—a coalition of government, community and wildlife conservation organizations. The project area includes different tenurial arrangements:

i) Four group ranches owned communally by the pastoralist Maasai community—Mbirakani, Kuku A, Kuku and Rombo
ii) Chyulu Hills National Park and part of the Tsavo West National Park managed by Kenya Wildlife Service (KWS)
iii) Kibwezi Forest Reserve governed by the Kenya Forest Service (KFS) which awarded a concession in 2011 to a non-profit David Sheldrick Wildlife Trust (DSWT) for conservation management in the forest reserve.

With the exception of group ranches, there are no permanent settlements in the other arrangements.

The project area is made up of a heterogeneous landscape that features a transition from lowland dry savannah grassland and Acacia–Commiphora forest (with a moderate tree canopy and an

Map 4: Map of Chyulu Hills REDD+ project area



Source: CHRP monitoring report 2016

understory of grasses and shrubs), through a volcanic gradient, to an area dominated by a moist, dense cloud forest at elevations above 1,800 m. The area is rich in biodiversity, including Kenya's largest population of the increasingly threatened African Elephant (*Loxodonta africana*) and the critically endangered Black Rhino (*Diceros bicornis*).[25]

Land use and socio-economic profile

The project area has been delineated into the eastern and the western sides. The primary reason for the delineation is the difference in the communities on each side and their socio-economic profile, land ownership and the effects that has on resource access. The western side has been traditionally inhabited by the pastoralist Maasai community, while the Kambas constitute the dominant population on the eastern side.

Ownership of cattle is a central tenet of Maasai culture and traditional pastoralists strive to increase herd size as this is seen to improve their social standing. Maasai households can own between five–4,000 animals depending on their economic status. There is an increasing tendency to adopt sedentary lifestyles though. The adoption of agricultural practices is becoming common as more households seek to diversify their livelihoods and reduce their dependence on livestock. On this side of the project area, land is held in communal ownership by the Maasai group ranches. Access to land within the ranches is strictly controlled and limited by the ranch members and their elected leaders. Four such group ranches with nearly 23 Maasai settlements fall within the project area.

Agriculture, on the other hand, is the primary economic activity for the Kamba community, where the main cultivated crops are maize, green grams, pigeon peas and beans. The average subsistence farm size is 2.1 ha. Kambas are also known for their wood-carving skills and also often raise small livestock as insurance against crop loss. Charcoal burning is another important economic activity for the community, while bushmeat hunting for subsistence has also been practiced for generations. Though the Kamba settlements have not been included in the REDD+ project accounting area, the community has been using the project area, especially the forests of Kibwezi and Chyulu Hills, to meet its various subsistence and livelihood needs. However, there have been restrictions on the Kambas from using these forests even before their inclusion into CHRP.

A small percentage of communities on both sides of the project area own small businesses and are also employed in several wildlife tourism activities. Food security and poverty levels remain high on both sides of the project area with more than 50 per cent of the population living in absolute poverty and facing food scarcity.[26] These issues get exacerbated in years of drought.

REDD+ context in the project area

The focus area of the CHRP is Chyulu Hills, a water tower in the otherwise water scarce project zone characterized by arid and semi-arid climatic conditions, which faces a number of pressures from both the eastern and western side of the project area. On the eastern side, where agriculture continues to be the primary source of survival, farmers often expand their growing areas, to find more fertile and moist soil, especially following a drought. Therefore, slash-and-burn agriculture constitutes a primary driver of deforestation in the project area. With droughts becoming a regular and more frequent phenomenon, and increasingly rampant crop failures, the practice is expected to become more prevalent in the future.

A severe drought struck the country in 2009, described as the worst drought in living memory.

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Ownership of cattle is central to Maasai culture but overgrazing has led to degradation of grasslands

On the western side, a study done in Kuku group ranch revealed that the Maasai pastoralists lost 84 per cent cattle, 77.8 per cent goats and 72.8 per cent sheep to the drought.[27] The poorer Maasai households are slowly switching to charcoal burning, a shift from their traditional lifestyle, undertaken mostly by the Maasai women. The drought year coincided with the construction of tarmac roads and growth of towns in the region. This provided markets for charcoal burning and CHCT's research has shown that the highest incidents of charcoal burning have been reported in the Maasai villages close to the towns. For additional income, the Maasai are also increasingly leasing their land to other communities (especially the Kikuyu community) for agriculture which is leading to conversion of grasslands into agricultural land. It is estimated that a plot of two acres generates a lease rent of KES 60,000 (US $600) per annum if three crops are harvested from it in a year.

There are reportedly far too many livestock units for the carrying capacity of the ranches, resulting in severe overgrazing and degradation of the grasslands in certain areas. Additionally, the project area faces threats of frequent forest fires, mostly human induced. While some are set intentionally by pastoralists with the goal of allowing fresh pasture to grow, others may start accidentally from cooking fires set off by herders or poachers.

Addressing drivers of deforestation and forest degradation

CHRP employs the following strategies to achieve its REDD+ objectives:

i) **Forest protection**: It is the core project activity to check drivers of deforestation and forest degradation. Similar to KCRP, community rangers have been employed by project partners to patrol the project area against 'poaching of wildlife, incursion into the forest and the felling of trees, provide communication and liaison with community members, and collect monitoring and research data.' Community rangers also support and work closely with KWS and KFS in their day-to-day operations of forest protection.

Community ranches are meant to be governed by bye-laws developed by the official members, all from the Maasai community. However, as that was never done, these rangers now implement the laws of KFS meant for gazetted forests in community ranches, supposedly after approval from ranch officials. Fencing the boundaries of protected areas is also a forest protection measure in the project area. KWS and David Sheldrick Wildlife Trust have built fences on the southeastern and northeastern boundaries of the Chyulu Hills National Park.

ii) **Landscape restoration:** The project has taken up pilot projects for restoring grassland ecosystems and arresting their conversion into agricultural land. These include a grass seed bank project where women groups practicing charcoal burning are encouraged to grow hay on small plots of communal land. Currently, the project is active on 13 ha in only one village with 10 Maasai women. The results have been encouraging. In just one year, the women harvested 670 kg of grass seed and sold it for KES 1,200 (US $12) per kg to buyers from outside the community. 24 bales of hay were also harvested and sold to the local community at KES 300 (US $3) per bale. Cultivation of hay from grass seed does not require fertilizers or irrigation and once sown, regeneration takes place on its own without the need for replanting. The project is also seeking to demonstrate, on a pilot basis in a neighbouring village, that the cultivation of hay can generate as much revenue from the land, if not more, as lease rent from agriculture.

The other restoration programme involves constructing stone contour lines and semi-circular bunds to slow down surface run-off and retain rainwater, enhance infiltration and recharge the groundwater table. Retained water increases soil moisture and allows grasses to re-grow. On a pilot basis, the programme has been taken up on 800 ha in one of the overgrazed patches of communal land and 72,000 percolation pits have been dug in this area. If the pilot is successful, the approach could be used to restore large areas of degraded land in the project area.

iii) **Livestock management:** Project partners have been developing an integrated landscape-scale livestock and grassland management plan in consultation with the Maasai leaders. The plan involves preferring quality over quantity in livestock rearing, and forming grazing committees to implement and monitor the plan as well as livestock value addition.

Income-generating activities such as wildlife tourism, bee-keeping and crafts are also promoted among local communities to diversify their livelihoods. The project also plans to assist the Kamba community in improving their agricultural practices and developing tree planting to reduce incentives to harvest wood from the national park or forest reserve.

Carbon markets

CHRP was first verified as per VCS-CCBA standards in December 2016, and issued 2,033,002 carbon credits for the monitoring period between September 2013 and December 2016.[28] Credits have been listed on the voluntary markets for sale. As of 31 October 2017, the project had made its first corporate sale to Tiffany and Co., an American luxury jewellery and specialty retailer. The number of credits sold was 19,800 at a rate of US $12 per credit.[29] The project is pursuing a number of other sales opportunities both in the corporate or institutional sector and to individuals through a carbon calculator available on the website of Conservation International. Some of the project partners are internationally recognized institutions which provide the project a marketing advantage over other REDD+ credits. Advisory members of

SHRUTI AGARWAL / CSE

Landscape restoration has been taken up on a pilot basis in the Chyulu Hills project area

the CHCT such as Conservation International currently employ marketing teams who possess substantial experience in credit sales, and have valuable existing relationships with potential buyers.

Benefit-sharing mechanism

As all project partners have been facing funding challenges, the future generation of carbon revenues is part of a broader strategy to diversify and expand revenue streams for these organizations and institutions. Carbon revenue is expected to allow the continuation and expansion of initiatives to further the aim of wildlife conservation while also reducing CO_2 emissions from the project area. The project has developed a revenue allocation model (RAM) to distribute revenue from sale of carbon credits among partner organizations. The model proposes that a significant portion of the revenue will be distributed equally between partners as grants. Partners will be required to submit proposals for projects that further the aim and objectives of the REDD+ project. It has been estimated that about 67 per cent carbon revenue would be allocated to partner organizations (about 7.5 per cent each) to be distributed via the grant mechanism, while the remaining would cover operational costs of the project. The following areas have been identified as priority activities to be funded from the carbon revenue:

i) Operations of Chyulu Hills National Park and capital support for forest protection
ii) Holistic livestock management plan
iii) Fire management plan
iv) Kamba community engagement
v) Endowment fund creation

Issues and challenges

As the project is relatively new and has only been verified once, it is too early to comment on the ecosystem and community benefits. However, there are some issues with the way the project has been conceptualized, and is being implemented, and its benefit-sharing mechanism.

i) **Reinforcing the 'fortress conservation' model:** REDD+ in Chyulu Hills is being used as a framework to mobilize financial resources to further the aims of wildlife conservation, and also achieve emission reduction. The model of wildlife conservation is one of fortress conservation where funds are spent on constructing fences to keep communities out of the project area and conservancy with resource-use restrictions on communities. Such exclusionary conservation initiatives were already in place and would continue to be, even in a non-project scenario, as community use of forests in the national parks and forest reserves is illegal by law. However, the project is likely to enhance the aggression and rigour with which these initiatives are implemented as the sustainability of the project is dependent on carbon emission reduction. Conflicts with communities are already an issue in the project area.

As planned in the revenue-allocation model, a priority area for investment of carbon revenue would be operations of the Chyulu Hills National Park and capital support for forest protection. These would include equipment such as camera traps, radios, night-vision goggles, vehicles, cameras, GPS, etc. and infrastructure improvement such as construction of posts for community rangers. These will be effective in identifying poachers and other people entering the project area for tree felling, charcoal burning, grazing, etc. and contribute to the larger objective of forest and wildlife conservation. However, such exclusionary and restrictive practices have been known to make communities more hostile towards, than participative in, conservation efforts and also involve high costs.

ii) **No mechanism to channelize carbon revenue to the Maasai:** Though the communal land of the Maasai constitutes a significant part of the project area, the community is not entitled to a share in the carbon revenue. Instead, the funds would be invested in activities deemed to be in the best interest of the community and forests by partner organizations. Some partner organizations such as Africa Wildlife Foundation, Conservation International and Wildlife Works Carbon do not have a physical presence in the project area. However, they have been made shareholders in the carbon revenue due to their support in project development, or for their conservation and marketing expertise. On the face of it, it seems unfair that community landowners are not being rewarded from carbon revenue, while organizations without a local presence can claim a 7.5 per cent share of the carbon revenue.

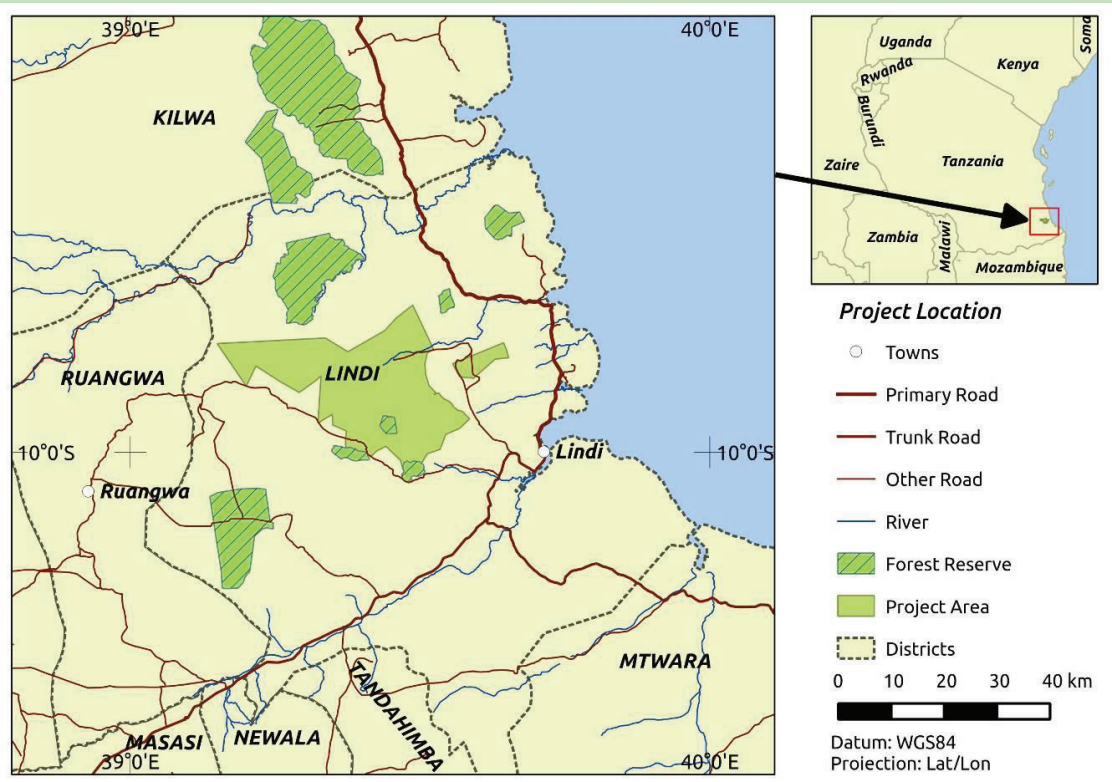
iii) **High opportunity costs:** Given that the project is able to reduce only 3.3 tonnes of CO_2 emissions per ha of land per year, revenue from carbon sales per unit of land is unlikely to be significant. Even if the remaining carbon credits were sold at the same rate of US $12, which is more than the average market price of US $4.5 per tonne of CO_2, revenue from carbon would only be US $40 per ha per year. This is quite low compared to the annual rent of US $600 that the Maasai can earn from leasing their land to the immigrant, agriculturist population. Granted that not all lands in the project area would be fertile enough to provide US $600 per ha per year and the revenue would be lower in years of drought and crop failures, the difference between US $40 and US $600 is still humongous, and the opportunity cost of avoiding conversion of grassland into agriculture is unlikely to be compensated for by carbon revenue.

MJUMITA COMMUNITY FOREST PROJECT, TANZANIA

The MJUMITA community forest project is located in the Lindi district, 30 km inland from the southeast coast of Tanzania. The project zone of Lindi encompasses 66,110 ha, in which the project area is 41,924 ha, including all woody vegetation meeting the definition of forests within the boundaries of 10 project villages. The project area is a mosaic of different forest types which are variants of East African Coastal Dry Forests. These forest types are Coastal Scrub Forest, Coastal Brachystegia Forest and Coastal Riverine or Groundwater or Swamp Forest. The forests of the project area are also interspersed with agroforestry landscape with plantations of cashew, coconut, mango and species of citrus.[30]

Two NGOs, Tanzania Forest Conservation Group and Mtandaowa Jamiiwa Usimamiziwa Misitu Tanzania (MJUMITA; www.mjumita.org) partnered to implement first of the nine REDD+ pilot projects in Tanzania named "Making REDD+ and the carbon market work for communities and forest conservation in Tanzania."This was a five-year partnership (2009–14) to demonstrate how this "pro-poor" project could benefit both the forests and local communities through a "best practice" model for reconciling global forest conservation needs with equitable economic growth of local communities, while addressing critical policy shortcomings regarding concerns about livelihood effects and equity, in the REDD+ mechanism. The project received funding worth US $5.9 million for implementation during 2009–14 from the Norwegian government.

Map 5: MJUMITA REDD+ project location



Source: MJUMITA REDD+ Project Design Document

Land use and socio-economic profile

All land within the project area is categorized as village land, defined under the Village Land Act of 1999. This makes communities the legal managers of land and forests in the project area. Within the village land, access for individuals is by customary right of occupancy or deemed right of occupancy. This includes land under permanent agriculture. Land under shifting cultivation is only considered to be under right of occupancy whilst it is being farmed. When not in use it reverts to the status of communal village land. The Act also provides for communities to establish the boundaries of their village land. These include agreeing on the boundaries with adjacent villages or by having a village land certificate.[31]

The total population of the project villages is 16,051, of which approximately 21 per cent are men, 28 per cent are women and 51 per cent are children and dependents.[32] Agriculture is the predominant livelihood activity of people in the Lindi region and a majority of households in the region produce crops for subsistence needs and for local markets.

The farmers in the region have traditionally been practicing shifting cultivation to produce crops characterized by low levels of mechanization, sparsely utilizing modern agricultural facilities such as improved seeds, fertilizers and irrigation, and with poor extension services, before the project came into existence.

REDD+ context in the project area

Prior to the commencement of the project, the villages in the project area had not established their village boundaries. The conversion of forest into smallholder agriculture was legal, except in cases of conversion of forest land to agriculture within 30 meters of a stream and farming on extremely steep slopes (hazard lands), which are illegal land-uses under the 2002 Forest Act and 1999 Land Act respectively. Despite the restrictions, historical deforestation analysis of the project area reveals that smallholder farmers preferred stream valleys for shifting cultivation. The project estimates that 18,748 ha forests in the project area would be deforested over a period of 30 years in the business-as-usual scenario, equivalent to 44 per cent of the project's land area.[33]

Shifting cultivation is considered the largest driver of deforestation in the project area. As a common practice, an average household clears one–five acres (0.81–2.02 ha) of primary or secondary forest annually to prepare new fields for cultivation. In the absence of the project, shifting cultivation is likely to increase due to the following factors:

- Growing population
- Absence of any plan or legal basis for conserving forests
- Unclear village boundaries and weak village governance
- Lack of other livelihood options for communities, particularly given the low levels of literacy
- Lack of extension services and other support to small-scale farmers to help them switch away from shifting agriculture
- Poverty and lack of capital preventing adoption of other livelihood activities
- Selling price, and therefore profit from the sale, of maize which is likely to increase with lifting of a ban on its export

Other drivers of deforestation and forest degradation include small-scale logging, brick manufacturing, fuel wood extraction, charcoal production and forest fires. Other than agriculture, local communities have been dependent on forests for firewood, construction materials, charcoal, hunting and other subsistence food resources like wild fruits and vegetables.

MJUMITA, TANZANIA

Every individual in the MJUMITA REDD+ project area is a shareholder in the carbon revenue

Addressing drivers of deforestation and forest degradation

The project's strategy to address deforestation is built on the foundation of local governance of land and forests. Some of the key activities taken up by the project developers are as follows:

i) **Land use planning:** The project has been facilitating communities in preparing village land use plans. The plans have identified different land uses within the village boundaries, including demarcation of village forest reserves which are meant to be protected. The project has also been facilitating communities in applying for village land certificates, which can provide an additional way to demonstrate village land tenure. The plan is implemented by the village land-use management committees.

ii) **Community forest management:** The project has helped build consensus among villagers to agree on the boundaries of the villages and has developed forest management plans for village forest reserves. Village natural resource committees have been formed to implement these plans and trainings to tackle forest fires. Village communities are encouraged to protect their forest reserves instead of clearing them for cultivation. Farmers have been trained and extension services provided to improve productivity and profitability from agriculture.

iii) **Strengthening local governance:** Strong village governance is the key to the REDD+ implementation strategy in the project area. Villages have been trained on good governance and government staff on conflict resolution. The project has also constructed village offices in all 10 villages to provide a more conducive environment for the implementation of government functions.

iv) **Livelihood diversification:** The project also plans to improve access to microfinance services in the villages, and provide trainings on enterprise development. Promoting beekeeping and agroforestry is also part of the livelihood diversification strategy. Another key component of improving livelihoods is channelizing REDD+ payments directly to individuals in villages based on their performance in protecting forests, described in detail in the following sections.

Carbon markets

The project has prevented 40,178 tonnes of CO_2 emissions over five years. It is estimated that a minimum carbon price of US $5.30 per tonne must be obtained in order to for the project to achieve its objectives and be financially self-sufficient. As per calculations, a price of US $3.5 per tonne would be just enough to offset the opportunity cost of a typical farm in the project area.[34] Therefore, close to 60 per cent carbon revenue would flow to communities while the remaining would be used to meet operational costs of the project.

After the Norwegian funding phased out in 2014, the project has struggled to find carbon buyers. The project is registered with VCS-CCBA standards, and is leveraging platforms such as Stand for Trees and CODE-REDD, but had been unsuccessful in selling a single carbon credit in the voluntary carbon markets till October 2017. Project developers attribute this to low carbon prices in the voluntary markets and the "voluntary" nature of the carbon markets.

Benefit-sharing

The project has a unique model of individual REDD+ payments, where all residents of the villages are treated as "shareholders" in the project with equal rights to carbon payments. The amount that communities will earn will be based on their performance, proportional to their emissions reduction. Each community has the discretion to decide the proportion of the payments they would like to retain for personal use and that for community development activities. This payment mechanism was trialed successfully in all villages.

The project received a five year funding support of 5.9 million USD from 2009–14. TFCG and MJUMITA set aside a portion of these funds for "trial" REDD payments to the communities. Trial payments meant paying communities for conserving forests before the actual sale of voluntary emission reductions or carbon credits were made. It was a way to earn the confidence of the communities in the ability of REDD+ to deliver benefits. Between November 2011 and July 2013, the project made a one-time payment of 284,842,940 Tanzanian Shillings (TZS) or US $124,226 to the ten villages. Of this, TZS 199,598,000 were paid in cash to 1,836 men, 2,685 women and 5,224 children and dependents in eight villages. Two villages chose to allocate the whole of their revenue to community development projects. All households, including those within the lowest category of well-being, received REDD+ payments which averaged close to US $30 per household.[35] This was an explicit strategy to ensure that community members felt individual responsibilities towards conserving forests, and the poorest households, including women, benefitted from the project.

Individual payments were reportedly used by community members for a wide range of expenses, including investing in businesses, paying school fees, purchasing agricultural inputs, paying for improved houses, and covering immediate needs such as food and medicine.

MJUMITA, TANZANIA

MJUMITA REDD+ project prevented 40,178 tonnes of CO_2 emission from 2009–14

Issues and challenges

In addition to reducing deforestation from 1.91 per cent to 1.58 per cent across the project area, the most significant benefit provided by the project is the enhancement of land tenure security and the devolution of authority over forests to communities. Clarity on village boundaries and participatory land-use plans have reportedly resolved inter-village boundary disputes.[36] There has been an improvement in village-level governance and infrastructure. Community leaders CSE spoke to expressed enthusiasm for the REDD+ project, and while funding has stopped, people have reportedly not gone back to shifting cultivation, hoping that someday they would get paid for protecting their forests. The project is also one of the rare REDD+ projects that has factored in opportunity costs in its calculation of optimal carbon price.

Despite these achievements, the project has struggled to find carbon buyers or additional funding to continue the project. Two key challenges of the project are as follows:

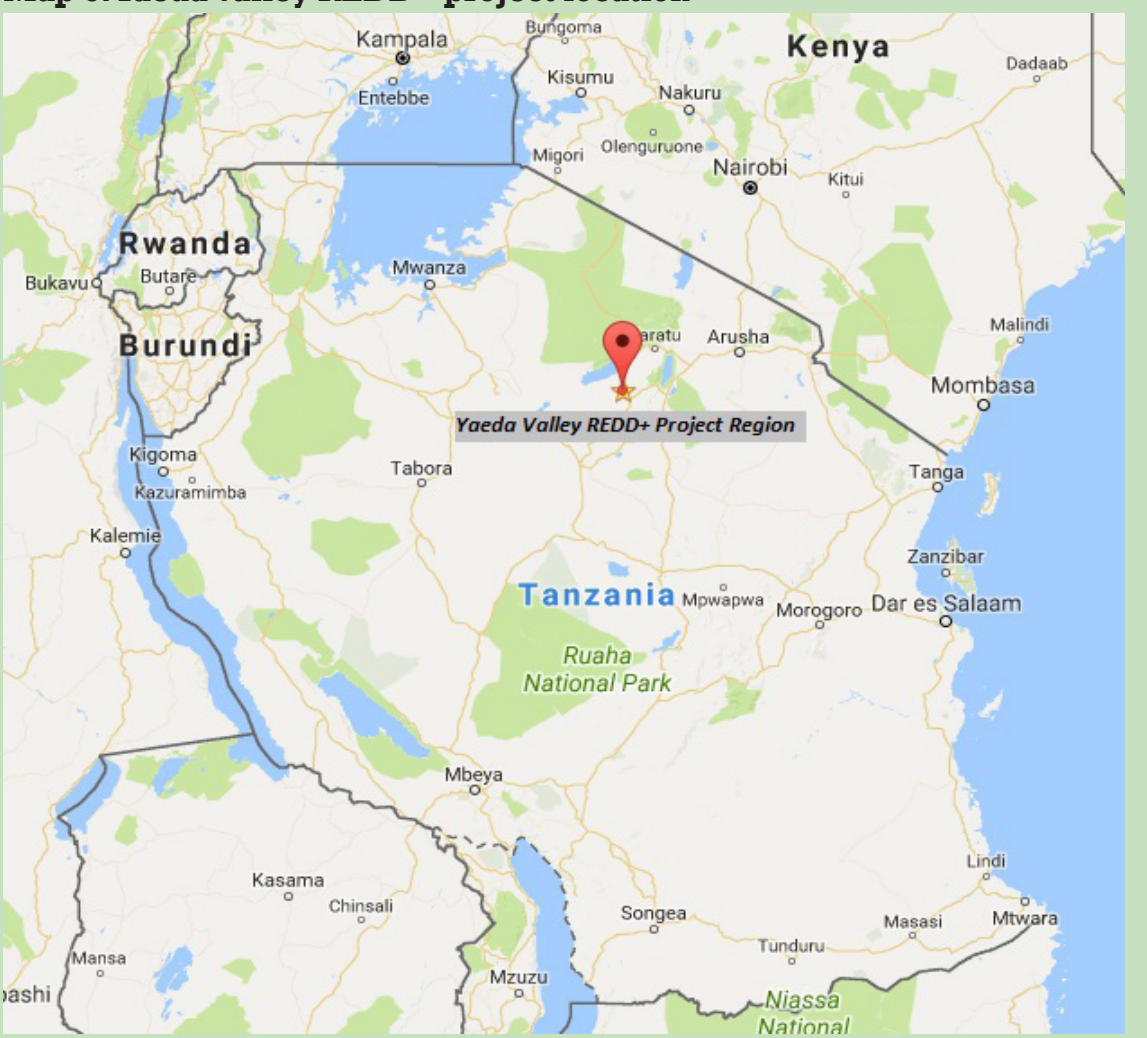
i) **Lack of carbon markets:** Project developers have done their bit of lobbying and meetings, and introduced the project at various platforms to find buyers. While many parties seemed impressed with the efforts and achievements of the project, none came forward to actually buy credits. The voluntary nature of the carbon markets has hit the project's finances as it continues to struggle to sell its carbon credits, more than three years after the Norwegian funding phased out.

ii) **Government apathy:** The project has demonstrated a unique model to incentivize smallholders to protect forests on their community lands. Tanzania's annual deforestation rate is quite high at 1 per cent, driven largely by agricultural expansion, and the country's national strategy could learn from the experience of this project. However, in its formulation of the national REDD+ strategy, the initiatives envisaged by the government remained mostly theoretical, bureaucratic legalese without the anchorage of on-ground implementation. This kept the project developers in a vacuum, as they could not "anchor" the lessons from their efforts on REDD+ readiness and implementation into the national REDD+ processes. The absence of government interest has also prevented the project from garnering support to identify potential carbon buyers internationally.

YAEDA VALLEY, TANZANIA

The Yaeda Valley REDD+ project is located in the Central Rift Valley, in the southwest of Mbulu district of northern Tanzania. The project was rolled out in two phases. The first phase started in 2010, covered 20,790 ha and comprised two villages—Mongo Wa Mono, and Domanga. The second phase of the project, rolled out in 2015, spanned 12,283 ha and included another village—Yaedachini. The project aims to reduce 572,508 tonnes of CO_2 emissions over its crediting period of 20 years.[37] The project is implemented by Carbon Tanzania, a not-for-profit organization founded by two wildlife conservationists. The project partnered with Ujamma Community Resource Team (UCRT)—a non-profit environmental and social justice organization working towards empowerment of marginalized people in northern Tanzania to secure their rights to natural resources and land.

Map 6: Yaeda Valley REDD+ project location



Source: Google Maps

The major part of the project area includes Kidero hills, an area with granite outcrops and dry forests of *Acacia–Commiphora* species, including tree species like *Acacia tortillis*, *Acaci akirkii*, *Acacia mellifera*, *Commiphora* species, *Grewia* species and *Combretum* species, interspersed with areas of savanna grasslands and the iconic Baobab trees (*Adansonia digitata*).[38] The project area also holds significant importance for being habitat to several rare and threatened large mammal species such as African Wild Dog, Leopard, Cheetah, Lion and ungulate species such as Thomson's Gazelle, Wildebeest, Impala, Zebra, Giraffe, Eland, Elephant and Cape Buffalo. The project area also borders YaedaChini seasonal wetland, designated by Birdlife International as an Important Bird Area (IBA).

Land use and socio-economic profile

The project works primarily with the hunter-gatherer Hadzabe community who has been utilizing the landscape for close to 40,000 years, and the Barabaig community who are predominantly pastoralists. The Hadzabe are known for their indigenous knowledge pertaining to use of natural resource, which has enabled them to survive in a challenging environment. The community has been gradually displaced to remote and relatively inhospitable semi-arid areas, as other communities have taken over more productive lands and converted them to agriculture.

Hadzabe are now a threatened community with a total population of just 1,000 surviving in fragmented areas of northern Tanzania. They do not have any form of stable economic activities or income, earning significantly less than US $1 a day, living primarily off baobabs and dozens of other edible plants, honey, and wild meat. Wildlife tourism in the region also employs some members of the community. Land and its resources are crucial to their survival. In 2012,

SOPHIE TREMBLAY / MONGABAY

The Hadzabe live primarily off baobabs and dozens of other edible plants, honey, and wild meat

the government recognized the Hadzabe as having special status and started issuing them Certificate of Customary Right of Occupancy (CCRO), thereby granting them ownership of village lands, including on lands within the project area. A CCRO formalizes and documents customary rights within village land, and can be used to strengthen the external legal recognition and boundaries of community lands.

The Barabaig sell their cattle to meet occasional needs such as paying school fee or hospital bills. They also engage in some subsistence agriculture and hunting. Both the Hadzabe and Barbaig are living at the extreme end of the poverty scale within Tanzania. The villages of Mongo Wa Mono and Domanga are mostly populated by the Hadzabe and another agro-pastoralist community called the Sukuma. YaedaChini, which was added into the project area in the second phase, is populated by multiple tribal groups—Barabaig, Iraqu and Hadzabe.

REDD+ context in the project area

The soil of the *Acacia–Commiphora* woodlands is attractive to shifting agriculturists that seek to cultivate maize, sunflowers and food beans. This pressure originates from both inside and outside the three villages in the project area. Over the last 50 years, the Hadzabe have gradually been displaced from this land, losing more than 90 per cent of land to outsiders for grazing and farming. Also, scarce water sources in and around the project area lead to encroachment or trespassing, resulting in deforestation.[39]

Addressing the drivers of deforestation and forest degradation

The REDD+ project at Yaeda valley is focused on improvement of the land-use planning and management with the involvement of community members within the project area. Key activities taken under the REDD+ project are listed as follows:

- Securing title deeds for Hadzabe as owners of the forest land through CCROs. This also involved getting the land-use plans and bye-laws approved by the district officials. Land-use plans provide the legal framework for village governments to protect land accordingly and to deal with local conflicts related to it
- Improving awareness and appreciation towards ecological and livelihood benefits of conservation by developing educational material for use in schools and community meetings
- Improving monitoring of forest disruption, land conversion and poaching activities in the project area through employment and training of community guards
- Communicating with neighbouring villages about prohibited land-use and associated penalties
- Developing a land-dispute resolution system to enforce land-use plans and bye-laws
- Providing support to UCRT to conduct training on legal rights and process of creating CCROs
- Improving agricultural profitability by collaborating with local agricultural specialists to impart training in modern agricultural techniques and tracking the results
- Tracking monitoring results, carrying out reflective participatory community meetings which add to training when necessary

Carbon markets

Carbon Tanzania remains the only private sector initiative in Tanzania which has been successful in utilizing the voluntary carbon marketplace to sell carbon credits through the development of an internationally accredited avoided deforestation project in a natural forest.

The organization's pioneering efforts to develop a business approach to achieve multi-pronged objectives of biodiversity conservation coupled with reduced GHG emissions has resulted in development of its own carbon market in Tanzania, largely with tourism companies. It is already in the process of developing it further to enhance its international visibility.[40]

The largest buyer of PVCs (carbon credits) from Carbon Tanzania is Native Energy Inc. (www.nativeenergy.com) which has sourced over 18,000 tonnes of CO_2 offsets to National Geographic Expeditions. In 2016, the National Geographic Expeditions committed to purchase carbon offsets for a further year through Native Energy Inc. Asilia Africa Ltd, a wildlife safari company (www.asiliaafrica.com) and Sustainable Tourism International (STI) are the other major carbon offset buyers from Carbon Tanzania with purchases of over 4,000 tonnes of CO_2 each (see *Table 14: Carbon credits sold to various buyers by Carbon Tanzania*).

Table 14: Carbon credits sold to various buyers by Carbon Tanzania

Buyer	Reporting period					
	Start to January 2013	February 2013 to January 2014	February 14 to January 2015	February 15 to January 2016	February 16 to January 2017	Total
Native Energy	0	2,500	4,572	4,000	7,000	18,072
Asilia	1,133	720	779	954	986	4,571
STI	0	0	1001.2	904	2,240	4,145
ME	995	593	697	569	414	32,68
A&K	222	856	936	0	0	2,015
Zero Mission	0	0	500	165	1,000	1,665
ND	414	291	0	339	194	1,237
GP	504	215	203	314	0	1,235
AE	0	0	57	652	247	956
Braeburn School	390	130	0	154	84	757
Summits Africa	447	0	195	0	0	642
Clevel	0	0	0	300	300	600
FCF	0	0	0	0	414	414
Wildlife Explorer	0	150	129	115	0	393
Regional Air Services	376	0	0	0	8.8	385
TNC	0	0	0	346	0	346
TSL	0	0	117	117	103	337
Sanctuary Retreats	122	0	191	0	0	313
Dorobo	0	0	57	76	127	260
Tree Campaign	0	0	0	203	0	203
Fair Travel TZ	0	41	80	0	38	159

Kisima Ngeda	0	35	43	36	41	155
Theobald Barber	147	0	0	0	0	147
Duma Explorer	0	0	0	131	0	131
Sanjan	126	0	0	0	0	126
Edward McAlpine	0	0	0	0	100	100
Traveller's Philanthropy	81	0	0	0	0	81
Matembezi	0	0	0	0	60	60
Honeyguide Foundation	56	0	0	0	0	56
Cap Conseil	54	0	0	0	0	54
MBS	53	0	0	0	0	53
Guiding Principles	0	0	0	0	44	44
Carbon Tanzania	0	0	24	17	0	41
JAS	35	0	0	0	0	35
SOI	0	0	0	0	30	30
Ker and Downey Safaris Ltd	0	0	0	0	25	25
East Africa Photo Safaris	0	0	0	25	0	25
Acacia Natural Resource Cons	0	0	0	11.75	0	12
Kate McAlpine	0	0	0	9.5	0	10
TOTAL	**5,153**	**5,530**	**9,580**	**9,437**	**13,456**	**43,156**

Source: Project Design Document (PDD) Yaeda Valley REDD+ Project, Carbon Tanzania, 2016

A total of 43,156 tCO_2 (PVCs) were sold to 39 entities (companies, non-profits and individuals) by 2017. Adjusting for minor discrepancies (66.43 tCO_2), 20,822 tCO_2 remained unsold, resulting in a total of 64,044 PVCs.[41]

Benefit-sharing mechanism

A strict contract development pathway, which the UCRT has been following elsewhere, was applied for the Yaeda valley REDD+ project. The contract development process followed this pathway through the community for initial agreement and then through the village, ward and district governments. This agreement clearly outlines the objectives and roles of the village council, and mutual and general responsibilities of all parties involved, including Carbon Tanzania and the villages.

As per the agreement, Carbon Tanzania is required to secure appropriate buyers for the carbon credits. Carbon Tanzania would pay 60 per cent of the market rate of carbon (US $5 per tCO_2), or at least US $3 per tonne of CO_2 to the communities if avoided deforestation targets are met in accordance with the result-based payment plan. The carbon revenue is shared in the ratio of 20:20:60 in which Carbon Tanzania retains 20 per cent of the carbon revenue for project implementation costs such as administrative expenses, market research, and another 20 per cent is spent on MRV. The remaining 60 per cent is paid to the communities.

SOPHIE TREMBLAY / MONGABAY

The Hadzabe are employed as community scouts to patrol the project area and report illegal activities

The organization has agreed to make payments to the communities every six months based upon annual monitoring results as mentioned in the community sale agreement. During the first phase of the project, payments due to the community are deposited into two different kinds of accounts in each village:

i) Village accounts managed by village councils into which funds from the district government flow
ii) Community funds of the Hadzabe, of which 5 per cent is paid to the district government.

These payments are required to provide financial support for forest management such as community scouts, ecological monitoring as well as legal services beyond the scope of UCRT that may be required for land-use enforcement. Payments in excess of what is needed to fulfill these purposes are supposed to be earmarked for community-wide development initiatives and to be made available to individuals who apply for funds either in times of stress (i.e., illness) or for the purpose of increasing human capital (i.e., teaching or medical training) that will benefit the community at large. This approach to benefit-sharing is said to be modelled after a pre-existing village mechanism used to dispense funds generated from tourism.[42]

For the Hadzabe, therefore, carbon revenue becomes complimentary to their income stream from tourism. The Barbaig, on the other hand, are expected to derive livelihood benefits from the improved health of their cattle as a result of greater pasture availability from sustainably managed lands. The second phase of the project will deposit the community share of the carbon revenue only into the account of the village government. There is, therefore, no separate fund for the community.

The project has paid US $93,000 to the villages of Mongo wa Mono and Domanga from the carbon revenue from 2012 to 2016. Village scouts, who are assigned the task of patrolling forests of the project area, are paid TZS 50,000 (US $23) per month. Overall, the project is currently paying TZS 500,000 (around US $300) per month to the communities.[43]

Issues and challenges

The project has managed to achieve emission reductions as well as boost the incomes of the Hadzabe community. Securing a legally binding land tenure system in the project area has promoted sustainable use of land and reduced conflicts among the communities, according to project developers. However, there are some concerns that need to be allayed.[44] First, though the project works primarily with the Hadzabe community, there are two other tribal communities present in the project area—Barabaig and Iraqu—which are pastoralists and agro-pastoralists, respectively. While the project provides carbon revenue benefits to the Hadzabe, it is not clear how the other two communities in the project area are benefitted either from the project or from the accruing carbon revenue. Although the project design document (PDD) mentions that these pastoralist and agro-pastoralist communities live with each other without conflict, ignoring these communities, in this case, may create land-use conflicts in the future.

The Barabaigs are supposed to reap the environmental benefits of sustainably managed lands in the form of improvement in cattle health. Whether this is incentive enough for these communities needs to be looked into further. The opportunity costs for these communities to forego certain land-use change activities have also not been mentioned in any project-related document.

One research study in the project area highlighted that the Hadzabe did not feel sufficiently informed about the project's carbon trading. The promised annual revenue of TZS 100 million had not been realized till date. There was also discontent about the fact that 5 per cent of the community fund had to be paid to the district government that did not provide support to these villages when villagers from neighbouring wards entered the protected zones.[45]

Carbon Tanzania retains 40 per cent carbon revenue which is meant to cover project implementation costs. However, costs of forest protection, i.e. the salaries of community rangers, have been excluded from these calculations. The study also highlighted that Hadzabe members from Mongo wa Mono were not happy with this new arrangement under the project. They were of the opinion that Carbon Tanzania should cover these costs partially, especially since protection of forests by the guards augmented its revenue as well.[46]

KEY TRENDS FROM THE AFRICAN CASE STUDIES

- **Diverse objectives beyond emissions reduction**: All four projects managed to successfully reduce deforestation and achieve carbon emissions reduction from their project areas. The core strategy and focus of these projects for achieving REDD+ objectives have been different. While the projects in Kenya had forest protection as their strategy, REDD+ projects in Tanzania sought to strengthen land tenure and community forest management to achieve emission reduction.

  The scope of emission reduction in the REDD+ projects was small, ranging from 1 tonne per ha per year to 9 tonnes per ha per year. This was because the drivers of deforestation in the project areas were small-scale. More than a mechanism to achieve significant emissions reduction, REDD+ was used to generate non-carbon benefits in the project area and additional finance for the project developers.

- **Secure tenure important for emissions reduction:** All four projects chose such lands to be included in their project areas where the tenure was either secure or could be secured because of the existence of an enabling legal framework. In Kenya, the project areas comprised of large, privately owned ranches (Kasigau) or community-owned ranches and Protected Area (Chyulu Hills). In both projects, the project area constituted important wildlife corridors too. In Tanzania, the project area comprised land falling within village boundaries over which legal titles could be obtained. In fact, the success of the projects to achieve carbon emission reduction can be largely attributed to tenure security, where the nature and extent of rights on the lands in the project area were well-defined.

- **Scalability of pilot activities unclear:** Shifting cultivation, livestock grazing and charcoal production constituted the major drivers of deforestation and forest degradation in all project areas. Pilot activities to improve agricultural productivity, produce charcoal sustainably, restore degraded landscapes and diversify livelihoods had been undertaken. The replicability of these pilots, however, remains uncertain at this point.

- **The challenge of carbon markets:** The MJUMITA-TFCG REDD+ project in Tanzania had not been able sell a single carbon credit—largely due to the "voluntary" nature of carbon markets. Except this REDD+ project, carbon revenue has been flowing into the other projects, though the voluntary and unpredictable nature of carbon markets remains a challenge for all.

- **Discretion in benefit-sharing arrangements**: In the absence of a universal benefit-sharing mechanism, project developers exercised discretion in deciding who benefits from carbon revenue. Except for the MJUMITA REDD+ project, none of the other projects had factored in the opportunity costs in calculating the rightful share of communities from the carbon revenue. Collective benefits were prioritized over direct individual payments to communities foregoing forest use.

- **High costs of REDD+:** The operational and implementation costs of these four REDD+ projects have been high, ranging from 33 per cent to 53 per cent, and are being met from the carbon revenue. This eats into the share of potential community benefits and also limits the ability of the project to make direct payments to stakeholders.

AFRICA'S TRANSITION TO JURISDICTIONAL PROGRAMMES

Most of the smaller REDD+ projects, including the ones studied by CSE, are in the process of or hopeful of getting integrated into regional or jurisdictional REDD+ programmes. The Paris Agreement does not provide a way for individual projects to engage with REDD+ under UNFCCC.[47] Integration into jurisdictional programmes is expected to open carbon markets to bilateral and multilateral agencies and sovereign nations.

Africa has quickly moved into, and is now leading, the jurisdictional space. The expansion of scale is also happening within governments as REDD+ is now being integrated into national development agendas as well as budgets.[48]

Democratic Republic of Congo became the first country in Africa to announce a jurisdictional REDD+ programme in 2016. Seven countries have more or less completed the development of these programmes, while two countries, Cameroon and Cote d'Ivoire, had submitted the project idea note for jurisdictional REDD+ to FCPF as of March 2018. A majority of these programmes have been developed under the Carbon Fund of FCPF, while two of them (in Ethiopia and Zambia) are being supported by Biocarbon Fund. Both funds are managed by the World Bank, and are based on the concept of performance-based payment. These programmes will be funded by multiple agencies including multilateral agencies such as Central African Forest Initiative in the Congo Basin, Forest Investment Programme as well as the private sector. Carbon Fund and Biocarbon Fund will contribute to the total funds of these programmes through performance-based payments for achieving emission reductions. A list of these programmes is provided in *Table 15: Jurisdictional REDD+ programmes in Africa*.

Table 15: Jurisdictional REDD+ programmes in Africa

Country	Name of the jurisdictional programme	Programme area (in million ha)	Estimated CO_2 emission reduction
Cameroon*	Emission Reduction Programme in Southern Cameroon	9.3	Not available
Democratic Republic of Congo	Mai-Ndombe Emission Reductions Programme	12.3	29 Mt in five years
Republic of Congo	Emission Reductions Programme in Sangha and Likouala	12.4	10 Mt tCO_2e in six years
Ethiopia	Oromia Forested Landscape Programme	28	Not available
Ghana	Ghana Cocoa Forest REDD+ Programme	5.92	295.4 Mt over 20 years
Cote d'ivoire*	Emissions Reduction Programme in the Tai National Park Area	4.3	Not available
Madagascar	Atiala Atsinanana Emission Reduction Programme	6.9	13.71 Mt in six years
Mozambique	Zambezia Integrated Landscape Management Programme	3	10.68 Mt in six years
Zambia	Zambia Integrated Forest Landscape Programme	5	35 Mt of CO_2e from 2018–30

Source: Compiled from FCPF and World Bank databases
**Cameroon and Cote D'Ivoire are yet to submit full-fledged programme documents on emission reductions*

Carbon Fund has entered into emission reduction purchase agreements with a number of African countries to finance their jurisdictional REDD+ programmes. These agreements are characterized by purchase of limited volume of emission reductions at fixed prices. For instance, Republic of Congo, Madagascar and Mozambique have agreed to sell more than 95% of their target emission reductions in six years to the Carbon Fund at US $5 per tonne of CO_2, based on the performance of these programmes. This pre-determined price is not based on opportunity costs, and is being considered too low, especially against competing land uses such as mining and commercial agriculture.[49]

Jurisdictional REDD+ programmes comprise of multiple land tenurial and land-use systems, and not just forestlands. For instance, only 1.27 million ha of the total area in Ghana's jurisdictional programme is forests. The remaining area is made up of settlements and infrastructure, agricultural lands (including tree crops), fallow lands, forest patches or high biomass agroforests.[50] Forests cover only 6.8 million ha in Ethiopia's 28 million ha programme. Within legally classified forests too, land use varies. Republic of Congo, for instance, has 61 per cent of its forests in the jurisdictional area under logging and industrial palm concessions. Jurisdictional REDD+, therefore, requires navigating collaboration and conflict with different actors with varying degrees of power and vested interests.[51]

The preference of certain regions, provinces or landscapes for jurisdictional programmes has been governed by important developments, and unique opportunities that these areas offer. Ethiopia, for instance, has included the entire regional state of Oromia, which harbours the country's largest forested landscapes, the state's water tower and globally important biodiversity, in its programme area.[52] Ghana's cocoa forest landscape has one of the highest deforestation rates in Africa at 3.2 per cent per annum. The programme hopes to establish the effectiveness of REDD+ in reducing deforestation when a global commodity such as cocoa is its major driver.[53] The jurisdictional programme of Republic of Congo covers half of the country's forests, though the country has historically had low levels of deforestation. Following the dramatic drop in oil prices, the government has identified agriculture, forestry, and mining as the key alternative sectors for economic development. This poses a threat to its forest stock. The REDD+ programme is being looked upon as an opportunity for economic diversification and demonstrating the feasibility of innovative approaches to economic development that minimize impacts on forests.[54]

While the jurisdictional approach is being thought of as the way ahead for REDD+ implementation, the degree of success it can achieve remains uncertain at this point of time (see Box: *Why jurisdictional REDD+ is unlikely to succeed*). Having said so, REDD+ readiness activities saw many countries in Africa carry out detailed, analytical work to identify major gaps and challenges in forest governance, which have been integrated into jurisdictional programmes. Some countries have also prepared roadmaps for reform. Republic of Congo is revising its law on agriculture to take into account its national REDD+ strategy and improve policy for forest-smart development. In Ethiopia, the Council of Ministers has approved a revised Forest Development, Conservation and Utilization Proclamation, which is expected to augment community rights in natural and plantation forests under community management, and address carbon rights issues, particularly for private and community forests.[55] In Ghana, the tree tenure regime vested control over trees and forest resources with the state even on lands owned by communities. As part of its national REDD+ strategy, a new framework on tree tenure and benefit-sharing is proposed to be developed to provide stronger incentives to communities in the management and protection of forest and tree resources.[56] These regulatory and policy changes should improve the overall forest governance even if jurisdictional REDD+ is unsuccessful.

WHY JURISDICTIONAL REDD+ IS UNLIKELY TO SUCCEED

Jurisdictional or sub-national REDD+ programmes grew out of the belief that individual REDD+ projects will not scale up, therefore failing to deliver significant emissions reduction in the long-term. Convergence between government policies and programmes at multiple levels was also seen as crucial to the success of REDD+, and jurisdictional REDD+ seemed to offer the opportunity to engage multiple actors beyond forestry.

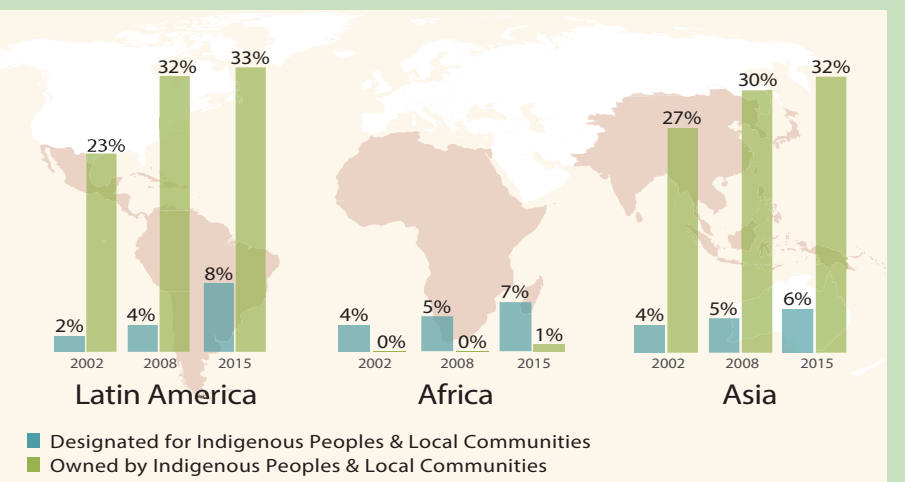
On the one hand, such large-scale programmes can reduce the operational or transactional costs of REDD+ and contribute to more robust multi-stakeholder process and policy-level changes. On the other hand, these programmes require political will to challenge powerful interests that benefit from deforestation.[1] These have been long-standing issues of forest governance and whether REDD+ can address these challenges is uncertain, especially when most developing countries are characterized by poor governance, high corruption levels, and weak enforcement of law.

The most fundamental issue, however, with jurisdictional programmes is the significant possibility of re-centralization of forest governance. Multilateral agencies such as FCPF have provided for legally separating carbon rights from rights to land and forests in jurisdictional programmes. Such separation will undercut the need for equitable benefit-sharing and for initiating land and forest tenure reforms. Countries such as Democratic Republic of Congo and Nepal have been quick to nationalize carbon rights and introduce contracts for landowners to transfer carbon titles to governments in these cases, making benefits for communities discretionary for the latter.[2]

There are also unresolved issues of tenure security in most jurisdictional programmes of Africa. Africa continues to make extremely slow progress in resolving this issue, compared to other regions such as Asia and Latin America (see *Figure 7: Regional change in land tenure ownership from 2002–15*).

The jurisdictional programmes propose no credible measures to permanently and legally secure community rights to land and forests. For instance, in the Republic of Congo and Cameroon, close to 65 per cent of the forests in the programme area are legally classified as "permanent estate", where land titling is not allowed. This is despite global acknowledgement that tenure insecurity is an underlying factor for deforestation and that securing tenure lowers deforestation rates. With such unresolved issues, jurisdictional programmes are unlikely to succeed in achieving emissions reduction from forests.

Figure 7: Regional change in land tenure ownership from 2002–15



Source: Rights and Resources Initiative, 2016

4. REDD+ UNDER UNFCCC

In 2013, the Warsaw REDD+ framework gave the first set of guidelines under UNFCCC for implementing REDD+. However, the directions provided by the framework are vague, inconsistent and unlikely to guide the future implementation of REDD+.

The framework, for instance, requires the GHG emissions reduction reported by developing countries to be verified by a team of technical experts, including two land use, land-use change and forestry experts, one each from a developing country and a developed country party. This ensures that the MRV processes are quite rigorous. However, the framework does not exercise the same rigour to safeguards. Before receiving result-based payments, developing countries are required to provide the ''most recent summary of information'' on safeguards without any mechanism to verify whether governments are telling the truth about respecting safeguards. Safeguard implementation has, therefore, been left to the discretion of national governments.

Countries and stakeholders have interpreted the framework in their own ways. The underlying problem in designing a global framework for preventing forest losses is that drivers of deforestation, community composition and the economic and social fabric vary widely across countries. What adds to this complexity is the variety of sources of funds and mechanisms for disbursal of forest carbon money. Besides, REDD+ is not mandatory in nature and sufficient funding is not available for its large-scale implementation and this has contributed to its dismal performance so far.

Currently, bilateral cooperation and multilateral funds are playing a prominent role in supporting REDD+ activities. Parties involved in bilateral agreements can incorporate tailor-made rules to fit REDD+ implementation to host countries' national circumstances and to donors' preferences; in contrast, CoP guidelines provide multilaterally agreed rules and a level playing field for all UNFCCC member countries.

Interestingly, advancement of REDD+ initiatives outside the UNFCCC has outpaced the guidance provided by the Convention. For example, many of the initiatives have developed their own set of safeguards and standards for REDD+. At the CoP 16 in Cancun, it was decided that the funding ''may come from a variety of sources, public and private, bilateral and multilateral, including alternative sources.'' This leaves enough scope for interpretation and holds no one responsible for providing funds for REDD+. In this scenario, it is unclear how such ground efforts will integrate and coordinate with the UNFCCC.

A key factor in the tardy progress of REDD+ implementation is the way payments for it are made—they are offered as an incentive after mitigation efforts bear fruit, but not before. Therefore, countries willing to participate in REDD+ are expected to take the risk of investing in REDD+ initiatives without knowing whether these initiatives will provide sufficient emissions reductions to compensate their forest-dependent people; these people would be foregoing the forest benefits they derive before REDD+ starts in their forests. Another genuine concern about the future of REDD+ under UNFCCC is the provision for offsetting emissions. Brazil, South Africa, India and China (the BASIC group) argue that offsetting can undermine the environmental integrity of emissions reduction achieved and lead developed countries to

avoid their domestic emissions reduction targets. An important critique of the framework is that by giving a financial value to the carbon stored in forests, REDD+ incentivizes GHG emissions reduction in forests, but not the other tangible and non-tangible benefits that forests provide, some of which are of much higher value than carbon storage.

Although the Warsaw framework provided a roadmap on how to get ready for REDD+, clear and essential incentives for developing countries' participation are not yet in place in the UNFCCC or outside. Multiple donor and funding agencies, applying their own sets of safeguards and standards, are triggering chaos instead of organizing concerted global efforts to reduce deforestation and forest degradation.

The REDD+ rules developed under UNFCCC are difficult to implement given the diversity in the forest governance contexts across countries. UNFCCC has little funds for REDD+. Green Climate Fund, touted as the most popular option to finance REDD+ under UNFCCC, has also failed to mobilize funds from developed countries. This has further impacted the credibility of REDD+ under UNFCCC. As a result, REDD+ has been effectively driven by bilateral and multilateral agencies instead of the UNFCCC. Further discussions are needed on whether this trend should continue to be acceptable.

INDCs AND FORESTS

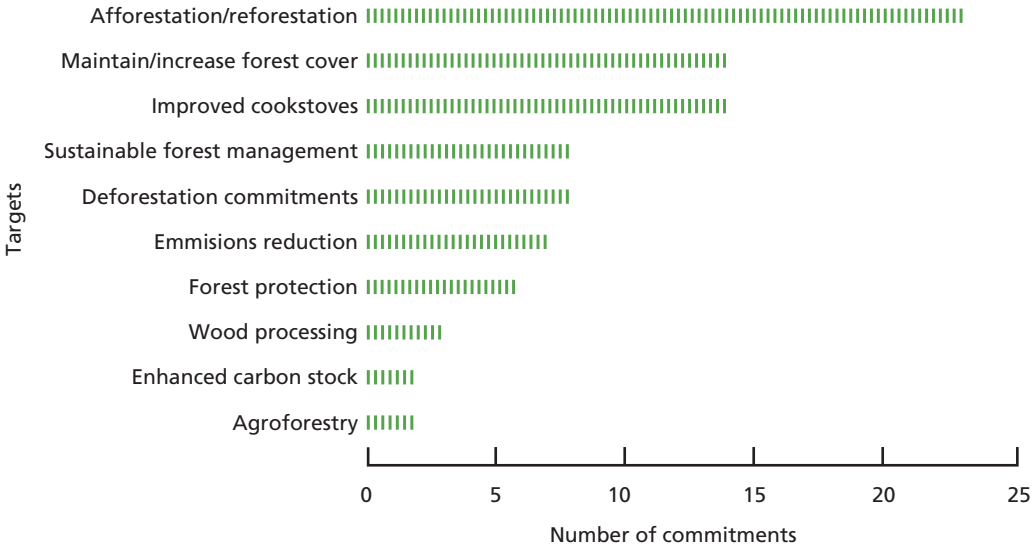
International climate negotiations are believed to have seen the greatest collective commitment to reduce emissions from land-use change, including forests, through the submission of INDCs.[1] Forests, which fall in the LULUCF sector, have been included within the scope of mitigation targets specified in the INDCs of a majority of developing parties. However, developed countries such as USA, Canada and in the European Union have excluded commitments and contributions in the LULUCF sector (see *Table 16: Forest targets in INDCs of top GHG emitters*). While Canada's INDC states that the country will use a ''production approach'' to account for harvested wood products, European Union will come out with a policy on including LULUCF into the 2030 greenhouse gas mitigation framework when "technical conditions allow".

Table 16: Forest targets in INDCs of top GHG emitters

Country	Forest targets in INDCs
China	Enhance the forest stock volume by around 4.5 billion cubic meters by 2030
USA	No targets
EU 28	No targets
India	Create additional sink of 2.5 to 3 billion tonnes of CO_2e by establishing additional forest and tree cover by 2030
Russia	No targets
Japan	Removal of 27.8 million tonnes of CO_2 by 2030 through forest sink measures, i.e., forest management or forest industry measures
Brazil	i) Zero illegal deforestation by 2030 ii) Restoring and reforesting 12 million ha of forests by 2030
Indonesia	No targets
Canada	No targets
Mexico	Zero per cent rate of deforestation by 2030

Source: UNFCCC, 2015

Figure 8: Common forest targets in INDCs of 75 developing countries



Source: WWF, 2015

A NON-MARKET APPROACH TO REDD+

Developing an appropriate financial mechanism for REDD+ has been a bone of contention at the UNFCCC. At CoP11 in Durban, it was agreed that results-based finance for REDD+ must come from a wide variety of sources, including from the market-based mechanism with environmental integrity preserved, safeguards addressed and respected, and a robust MRV system.[1] Cancun agreements also provide for REDD+ finance to come from multiple sources—public and private, multilateral and bilateral, including alternative sources.

However, market approaches for REDD+ have been strongly contested by BASIC countries, as discussed in the previous section. Some countries such as India, Bolivia and Tanzania have submitted proposals to the UNFCCC advocating the adoption of non-market approaches to finance REDD+. These countries have argued that linking forests to public funding will move the thinking from carbon to multiple benefits of forests. In several developing countries, where deforestation and degradation is driven by biomass needs of local communities and food security concerns, market-based approaches are unlikely to address such drivers of deforestation.

Some other countries such as Papua New Guinea, Guyana and Mexico, on the other hand, contend that REDD+ should use a combination of market and non-market approaches, as public funding might not be sufficient and a variety of sources are needed.

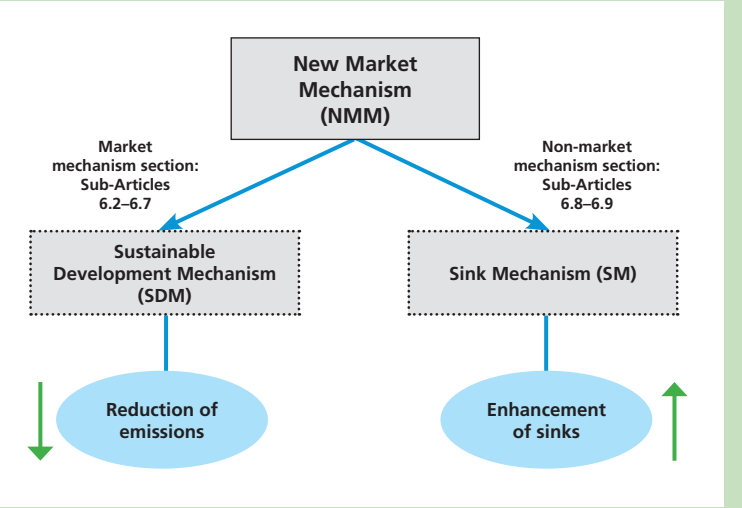
Meanwhile, negotiations are ongoing on the New Market Mechanism proposed under the Paris Agreement. Our proposal is that this be broken into two separate components as shown in *Figure 9: CSE proposal for the New Market Mechanism*. The sustainable development mechanism will include large-scale transformation in energy, building and industry sector. The sink mechanism will include the LULUCF sector.[2]

Some countries with rich forest resources have failed to include specific forest targets in their INDCs though they acknowledge the role of forests to reduce GHG emissions. For instance, Indonesia's INDC states that its commitment to reduce GHG emissions by 29 per cent by 2030 would be achieved through effective land-use and spatial planning, sustainable forest management including spatial forestry programmes, restoring degraded ecosystems, etc.

An analysis of 75 INDCs by developing countries has shown that forests had been discussed in some capacity in most INDCs, with a small number also specifying forest-based mitigation targets. The most common targets include afforestation, reforestation, restoration, enhancement of forest cover, and increasing uptake of improved cookstoves. REDD+ has been included as a means of achieving mitigation targets for a number of countries. Papua New Guinea for instance, has stated that its entire forestry effort will be coordinated through REDD+, while Chad, Zimbabwe and Sudan have detailed funding needs for the implementation of REDD+. However, not all countries participating in REDD+ make mention of it in their INDCs.[2] These include those with relatively high deforestation rates such as Democratic Republic of Congo, Bolivia, Ghana, Nigeria, Madagascar, etc. Afforestation or reforestation, on the other hand, forms an integral part of their INDCs.

There is clearly a greater thrust in INDCs on enhancement of carbon sinks, as compared to emissions reduction from forests. Though the scope of REDD+ includes sink enhancement, a market-based REDD+ is unlikely to pay for the costs of sink enhancement. A paradigm shift is required to make REDD+ a meaningful instrument (see *Box: A non-market approach to REDD+*).

Figure 9: CSE proposal for the New Market Mechanism



Source: CSE, 2018

Forests are sinks of carbon and the focus has been gradually shifting to its sink enhancement potential, reflected in the INDCs of developing countries. Enhancing sinks through afforestation and reforestation, and reducing deforestation and degradation will create additional co-benefits for environment as well as livelihoods. With a paradigm shift in forest governance towards decentralized, community-owned and managed forests, sink enhancement projects can be bottom-up, working with and improving the practices of forest-dependent communities. Large sink projects will generate a vast amount of cheap forest carbon credits distorting the carbon market. As developing countries have already made commitments and investments for enhancing forest carbon sink, developed countries can bridge the investment gap through various channels, including bilateral and multilateral sources. REDD+, therefore, can be integrated into the sink mechanism under a non-market approach. Under this approach, developing countries can account for carbon sequestration under sinks as part of their mitigation component of INDCs. Developed countries can account for financial contribution they make as part of their finance component of INDCs.

5. DISCUSSION AND RECOMMENDATIONS

Potentially, REDD+ can achieve synergy between climate change mitigation and equitable distribution of resources with local forest-dwelling communities. The current design of the mechanism has, however, failed to deliver adequate benefits to the environment or local communities. REDD+ has been driven by bilateral and multilateral agencies with their own standards and safeguards. The costs of REDD+ have proven to be higher than expected, and opportunity costs have not been factored in benefit-sharing arrangements of REDD+ projects and programmes.

The transition to jurisdictional REDD+ in several countries, especially those in Africa, is happening without resolving important issues of forest governance such as tenure security. Global carbon markets are failing to materialize, and doubts prevail over international REDD+ finance commitments.

Having said so, countries have been taking domestic action to reduce deforestation and degradation with varying degrees of success. Simultaneously, the recognition of community rights over forests in developing countries has gained momentum, and forest management outcomes have proven to be better in community-managed forests. REDD+ can boost these processes significantly. For this, REDD+ needs to be a bottom-up initiative owned largely by communities with technical and funding support from state or regional governments and national governments. The international community can support to fill the funding gaps which cannot be met from domestic sources.

An ideal REDD+ project should enable communities to manage and govern forests and practice sustainable forest management, which will provide livelihood benefits as well as carbon storage and enhancement in forests. This is possible if the following measures are taken into account:

1. **Develop a sink mechanism and integrate all activities covered under REDD+:** Creating a sink mechanism is about implementing ''carbon sequestration plus''. Besides scaling up carbon sequestration, the mechanism can also create additional ecological and social co-benefits, such as promoting better forest management, and improving communities' livelihoods. REDD+, with the same broader objectives, should be integrated within the sink mechanism.

2. **Make sink mechanism a non-market mechanism, with result-based payments:** The costs of any carbon sink enhancement project, including REDD+, cannot be met by the carbon markets. REDD+ should, therefore, be a non-market mechanism where national, regional or provincial governments mobilize sufficient funds from domestic and international sources and set them aside to build capacities of communities and local governments to implement their own REDD+ projects, and get rewarded for achieving emissions reduction or carbon stock enhancement based on their performance.

3. **Integrate REDD+ with sustainable forest management:** REDD+ should not become a mechanism to promote exclusionary conservation where protected areas and their buffer zones form the major chunk of the project area. Instead, REDD+ project areas should be a healthy mix of sustainably managed forests, preferably by the communities, and lands held by smallholder farmers and landowners.

4. **Factor in opportunity costs in determining carbon prices:** In calculating the expected price of carbon, most REDD+ projects have not estimated the true opportunity costs of foregoing deforestation. Worse still, most projects have failed to realize the expected price and affected communities have not been adequately compensated. Households facing restrictions on land and resource use must be compensated from the carbon payments, and the compensation amount should be based on the opportunity costs of foregoing deforestation and forest degradation.

5. **Develop clarity on carbon rights:** Governments in several countries such as Democratic Republic of Congo and Nepal have nationalized carbon rights. This will compromise transparency in benefit-sharing with REDD+ incentives not reaching—or reaching only partially and indirectly—through governmental programmes to communities. Forest carbon should belong to those with user and ownership rights on land and forests over which REDD+ is implemented. In forests managed by communities legally or through contractual arrangements, therefore, communities should own carbon as a collective (on individual smallholders land, the carbon will belong to the individual household) and to the state on government-managed lands. This will ensure that payments for carbon storage and enhancement are made to those directly involved in efforts to reduce deforestation and degradation.

6. **Develop basic protocols for a benefit-sharing mechanism:** The lack of a standard benefit-sharing mechanism has allowed REDD+ projects to exercise discretion in developing their own benefit-sharing arrangements. While site-specific contexts can determine these arrangements, some basic principles should be laid down. Payments from carbon revenue should be linked to carbon rights, which in turn are linked to land and forest rights. A major proportion (at least 70 per cent) of the payments should be made directly to forest users as cash transfers based on opportunity costs, while a small portion can be set aside for community development. It will also be important to ensure equity in the payments system so that disadvantaged communities such as the landless and women are not excluded from carbon payments.

7. **Ensure effective and meaningful participation of communities:** Effective and meaningful engagement of communities is an exception rather than the norm. Communities, and all affected parties should be provided clear and substantive information on why and where REDD+ activities should be developed, and who is entitled to forest carbon and its correspondent benefit streams. This will inevitably be a time-taking process, but must be done. Communities should also have the right to stay in or opt out of the REDD+ process.

8. **Prioritize smaller, community-owned REDD+ projects over jurisdictional REDD+ programmes:** Tropical developing countries with the most forested regions in the world are often characterized by weak rule of law and low levels of public accountability. Unless this fundamental issue is addressed, jurisdictional REDD+ programmes will not be successful in achieving their objectives. Instead, they threaten to re-centralize forest governance. REDD+ should take place at smaller scales, where strong local institutions and community-managed forests are capable of delivering

REDD+ benefits. Regional governments should take the lead in building capacities of communities to manage and monitor their forests.

9. **Resolve tenure issues before implementing REDD+:** Tenurial insecurity and conflicts have long been acknowledged as the underlying drivers of deforestation in most tropical developing countries. In places where legislative and policy frameworks to allow forest tenure reforms exist, such as the Forest Rights Act, 2006 in India and the Village Land Act, 1999 in Tanzania, the first step should be to guarantee that the customary rights of forest-dependent communities are recognized permanently and legally. In countries that do not have a near-future plan of such reforms, contractual arrangements that are respectful of customary rights of use, access and management of forests should be made with communities. The rationale is to ensure that communities do not feel threatened about losing traditional access to their lands and forests through the REDD+ processes. Tenurial rights, not just for individual lands but also over forest commons, will provide greater rights to local users to make rules on forest governance, which has proven to generate improvements in both livelihood benefits and carbon storage.

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