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FAO, Forestry Department, Forest and Climate Change Team
Food and Agriculture Organization of the United Nations

CONTENTS

September 2013

I. IN THE PRESS

18 September 2013 - Mongabay

Credits from first African government-backed REDD+ project go on sale

Carbon credits generated from protecting thousands of hectares of endangered rainforest in northeastern Madagascar have now been certified for sale, reports the Wildlife Conservation Society (WCS), the project's main organizer. The development represents the first time that credits generated by African government-owned project have been put on the voluntary carbon market.

17 September 2013 – FAO

Impact of climate change on forests requires early action

Early action and more investments are needed to respond to the threats of climate change on the world's forests. It will probably cost less to adjust forest management strategies immediately to the impacts of climate change than to react to the aftermath of climate-inflicted damage, FAO said in its new Climate change guidelines for forest managers.

17 September 2013 – World Agroforestry Centre

Benefits and challenges with REDD in Tanzania

REDD mechanisms in Tanzania have the potential to not only reduce carbon dioxide emissions but also address rural poverty and conserve biodiversity. An article in All Africa says there has been concern about Reducing Emissions from Deforestation and Forest Degradation (REDD+) projects causing even greater poverty if poor people are denied access to wood from forests for fuel and building materials.

Pilot REDD+ projects in Tanzania aim to provide people with alternative sources of incomes which do not cause forest destruction or degradation, such as agroforestry and beekeeping. The benefits of these activities include conservation of forest biodiversity, water regulation, soil conservation, timber, forest foods and other non-timber forest products.

17 September 2013 - IISD

UNFCCC Releases Documents on REDD+, Finance and Gender

The UNFCCC Secretariat has released three documents to be considered by country representatives during the upcoming Climate Change Conference to be held in Warsaw, Poland, from 11-22 November 2013. Documents released include: parties' submissions on gender balance related to climate change; finance provided by developed countries in accordance with the Conference of the Parties (COP) decisions; and a

report on two REDD+ workshops.

16 September 2013 – Mongabay

Which ecosystems are most vulnerable to climate change

New research highlights the world's most (and least) vulnerable ecosystems to climate change. The study, published in Nature Climate Change, is the first to combine anticipated climatic impacts with how degraded the ecosystem is due to human impacts, creating what scientists hope is a more accurate list of vulnerable regions. The most endangered regions include southern and southeast Asia, western and central Europe, eastern South America, and southern Australia.

16 September 2013 - CIFOR

Smallholder agroforestry plots may boost tree conservation: Report

When natural forests are threatened by deforestation or climate change, the best hope for the survival of certain at risk tree species may be to include them in agroforestry plots managed by small farmers, according to new research.

12 September 2013 – Mongabay

Brazil's satellite data suggests rise in Amazon deforestation over past year

Deforestation in the Brazilian Amazon appears to have risen significantly over the past year, according to data released by the country's space agency, INPE. Data aggregated from INPE's monthly deforestation alert system shows a 34 percent rise for the 12 months ended July 31, 2013 relative to the year-earlier period. Brazil tracks deforestation on an August 1 through July 31 basis.

10 September 2013 – CIFOR

Indonesia president delivers promised REDD+ agency

A new decree signed by the Indonesian president to create a national agency aimed at combating greenhouse gas emissions signals progress in the country's efforts to tackle global warming, said a scientist with the Center for International Research.

27 August 2013 – CIFOR

Mitigation without adaptation can leave communities vulnerable - study

Understanding the vulnerability of forest-dependent communities is a point of departure for building more effective climate mitigation and adaptation strategies, a study has found

II. MULTILATERAL PROCESSES IN CLIMATE CHANGE

No events to report on.

III. EVENTS & MEETINGS

Upcoming events

EFI 20 Years Science and Policy Forum

23 – 27 September, 2013, Nancy, France

European Forest Institute (EFI) celebrates its 20th anniversary in 2013. The commemoration is also an opportunity to develop an analysis of the future of our forests, and on how EFI and its partners can contribute to meet the challenges related to the various changes, risks and uncertainties to which the forests will be exposed. The EFI 20 Years Science and Policy Forum will stimulate balanced discussion between policy/decision makers, stakeholders and scientists on concrete issues related to the future of our forests, and the risks and opportunities their face. On 25 September, a high-level conference **"Our forests in the 21st century – ready for risks and opportunities?"** gathers both scientists and decision-makers. The follow-up of the conference on 26 September continues with a session "Risks to European Forests - What added value can a European Forest Risk Facility provide?" **More**

Governors' Climate and Forests Task Force

1 – 4 October, Puerto Maldonado, Madre de Dios, Peru

The Governors' Climate and Forests Task Force (GCF) is a unique subnational collaboration between 19 states and provinces from Brazil, Indonesia, Mexico, Nigeria, Peru, Spain, and the United States. The GCF seeks to advance jurisdictional programs for reducing emissions from deforestation and land use and link these activities with emerging greenhouse gas (GHG) compliance regimes and other pay-for-performance opportunities. More than 20% of the world's tropical forests are in GCF states and provinces, including more than 75% of Brazil's and more than half of Indonesia's. The GCF includes states and provinces that are leading the way in building comprehensive, jurisdiction-wide approaches to reducing deforestation and low emissions development as well as the only jurisdiction in the world (California) that is considering provisions that would recognize efforts to reduce emissions from deforestation and forest degradation (REDD+) as part of its GHG compliance system. **More**

IV. RESEARCH ARTICLES

Once there was a lake: vulnerability to environmental changes in northern Mali
Djoudi, H.; Brockhaus, M.; Locatelli, B
Regional Environmental Change; 2013. 13(3):493-508
Vulnerability assessment is increasingly recognised as a starting point to identify climate adaptation needs and improve adaptive capacity. However, vulnerability assessments are challenging because of the complexity of multifaceted biophysical, human and institutional factors, interacting at different scales and levels within socio-ecological systems. Using a participatory approach across levels and genders, this paper explores the vulnerability of livestock- and forest-based livelihoods to climate variability and change in Lake Faguibine, northern Mali, where drastic ecological, political and social changes have occurred. Our results show that the distribution of vulnerabilities within livelihoods and groups shifted when the ecosystem evolved from a lake to a forest. New vulnerability drivers have emerged, related to resources availability, access and power relations. In addition, political interests and psychological barriers hinder the local transition to an equitable and sustainable use of forest ecosystem services. Divergent perceptions, social identities, interests and power explained why different actors - governmental and non-governmental, men and women, local, sub-national and national - differed in their vulnerability assessments. This is exemplified in the way actors at different levels and of different gender analysed the effects of herders' mobility and in the way women analysed men's migration. This case study confirms the need for participatory and gender-sensitive vulnerability assessments across different scales and levels that consider the interaction between socio-ecological systems and the dynamics and distribution of vulnerability across different social sub-systems.

Climate warming-induced upward shift of Moso bamboo population on Tianmu Mountain, China.

Song XinZhang; Peng ChangHui; Zhou GuoMo; Jiang Hong; Wang WeiFeng; Xiang WenHua

Journal of Mountain Science; 2013. 10(3):363-369

Although increasing attention has been paid to upward shift of plant species in altitude as a response to global warming, research on this phenomenon at low altitudinal and low latitudinal zones did not receive enough attention. In this study, an investigation was carried out to test the relationship between the upward spread of Moso bamboo (*Phyllostachys pubescens*) along altitudinal gradient and the increasing air temperature over the past decade within the Tianmu Mountain region, situated in southeastern China. Results showed that the peak elevation of Moso bamboo population establishment rose by an average of 9.8 m (+or-2.7 m) during the past decade and significant correlation existed with mean annual temperature ($P<0.0001$, n=339) but not with annual precipitation ($P=0.7$, n=339), indicating that the upward shift of Moso bamboo along altitudinal gradients was driven primarily by warming temperatures. This upward shift could potentially reduce biodiversity by altering the species composition of the ecosystem. However, there is also the potential for increased carbon sequestration capacity of local forest systems, which would produce an additional carbon sink to combat rising atmospheric CO_2 concentrations and future global warming.

Boreal carbon loss due to poleward shift in low-carbon ecosystems

Koven, C. D

Nature Geoscience; 2013. 6(6):452-456

Climate change can be thought of in terms of geographical shifts in climate properties. Examples include assessments of shifts in habitat distributions, of the movement needed to maintain constant temperature or precipitation, and of the emergence and disappearance of climate zones. Here I track the movement of analogue climates within climate models. From the model simulations, I define a set of vectors that link a historical reference climate for each location to the location in a changed climate whose seasonal temperature and precipitation cycles best match the reference climate. I use these vectors to calculate the change in vegetation carbon storage with climate change due to ecosystems following climate analogues. Comparing the derived carbon content change to direct carbon projections by coupled carbon-climate models reveals two regions of divergence. In the tropical forests, vector projections are fundamentally uncertain because of a lack of close climatic analogues. In the southern boreal forest, carbon losses are projected in the vector perspective because low-carbon ecosystems shift polewards. However, the majority of carbon-climate models - typically without explicit simulation of the disturbance and mortality processes behind such shifts - instead project vegetation carbon gains throughout the boreal region. Southern boreal carbon loss as a result of ecosystem shift is likely to offset carbon gains from northern boreal forest expansion.

Soil organic carbon storage capacity positively related to forest succession on the Loess Plateau, China.

Deng Lei; Wang KaiBo; Chen MeiLing; Shangguan ZhouPing; Sweeney, S.;

Catena; 2013. 110:1-7.

Land-use change resulting from natural restoration probably enhances the carbon sequestration capacity of terrestrial ecosystems. To explore those factors which foster changes in the soil carbon pool in forest restoration, a study comparing soil organic carbon at different vegetation succession stages along a 150-year chronosequence was conducted in the Ziwuling forest region located in the central part of the Loess Plateau, China. It showed that in long-term (~150yr) secondary forest succession the soil organic carbon storage (Cs), soil organic carbon (SOC), total nitrogen (TN), and C/N ratio all increased rapidly and tended to be at their highest at roughly the 50-year restoration mark. From this point onward the values gradually stabilized indicating that the SOC and the TN accumulated mainly in the early restoration stages. The Cs was significantly and positively correlated with the SOC, the TN, and the C/N ratio ($P < 0.01$). The Cs in the soil was higher in the upper rather than the lower soil layers. However, the increments of the Cs mainly changed in the lower soil layers. Soil water storage was not the key factor influencing the Cs. The results suggested that changes to the Cs were the result of the accumulation of the SOC and the TN during forest succession and this capacity has shown to be positively related to forest succession on the Loess Plateau, China.

Soil classification and carbon storage in cacao agroforestry farming systems of Bahia, Brazil.

Araujo, Q. R.; Loureiro, G. A. H. A.; Santana, S. O.; Baligar, V. C.;

Journal of Sustainable Forestry; 2013. 32(6):625-647

Information concerning the classification of soils and their properties under cacao agroforestry systems of the Atlantic rain forest biome region in the Southeast of Bahia, Brazil is largely unknown. Soil and climatic conditions in this region are favorable for high soil carbon storage. This study is aimed to classify soils under cacao agroforestry and further, to quantify carbon stocks in these soil profiles. Soil classification was performed, and the amount of C stored was estimated, based on the thickness of the soil horizons, their bulk

density, and total organic carbon stored. In the sites studied under cacao, four general classes of soils were identified: Ultisols, Oxisols, Alfisols, and Inceptisols. Carbon stocks in these soil profiles showed wide variation, ranging from 719.24 to 2089.93 Mg ha^{-1}. Carbon stocks in soil surface and subsurface layers in different agroforestry systems with cacao (cacao cabruca, cacao x rubber tree, and cacao x erythrina) were comparable; however, total storage of organic C in these soils was higher than expected, compared to values reported for the International Soil Reference and Information Center (ISRIC), based on the FAO-UNESCO database, and were also higher than estimated regional soil data.

Relationship between projected changes in future climatic suitability and demographic and functional traits of forest tree species in Spain

Lloret, F.; Martinez-Vilalta, J.; Serra-Diaz, J. M.; Ninyerola, M.;
Climatic change. 2013 Sept. 120(1-2) p. 449-462.

The response of plant species to future climate conditions is probably dependent on their ecological characteristics, including climatic niche, demographic rates and functional traits. Using forest inventory data from 27 dominant woody species in Spanish forests, we explore the relationships between species characteristics and projected changes in their average climatic suitability (occurrence of suitable climatic conditions for a species in a given territory) obtained by empirical niche-based models, under a business-as-usual climate change scenario (A1, HadCM3, 20012100). We hypothesize that most species will suffer a decline in climatic suitability, with a less severe for species (i) currently living in more arid climates or exhibiting a broader current climatic niche; (ii) with higher current growth rates; (iii) with functional traits related to resistance to water deficits. The analysis confirm our hypothesis since apart from a few Mediterranean species, most species decrease their climatic suitability in the region under future climate, characterized by increased aridity. Also, species living in warmer locations or under a wider range of climatic conditions tend to experience less decrease in climatic suitability. As hypothesized, a positive relationship was detected between current relative growth rates and increase in future climatic suitability. Nevertheless, current tree mortality did not correlate with changes in future climatic suitability. In contrast with our hypothesis, functional traits did not show a clear relationship with changes in climate suitability; instead species often presented idiosyncratic responses that, in some cases, could reflect past management. These results suggest that the extrapolation of species performance to future climatic scenarios based on current patterns of dominance is constrained by factors other than species autoecology, particularly human activity.

Allometric equations for estimating aboveground biomass of Coffea arabica L. grown in the Rift Valley escarpment of Ethiopia

Negash, Mesele; Starr, Mike; Kanninen, Markku; Berhe, Leakemaraiam;
Agroforestry systems. 2013 Aug. 87(4) p. 953-966.

Coffee, Coffea arabica L., which is native to Ethiopia, is the worlds most widely traded tropical agricultural commodity. While much is known about the productivity and management of coffee for coffee beans little attention has been given to the plants overall biomass production and carbon sequestration. The objective of this study was to develop and evaluate allometric equations for estimating the aboveground biomass of C. arabica plants growing in indigenous agroforestry system in the Rift Valley escarpment of south-eastern Ethiopia. Coffee plays an important role in providing income and in sustaining these productive systems. Biomass harvesting of 31 plants with 54 stems was carried out in a 40iu kmpo area varying in elevation from 1,500 to 1,900iu m. The stem accounted for most (56iu %) of plant biomass, followed by branches (39iu %) and twigs plus foliage (5iu %). Plant mean biomass was 22.9iu pliu 15.8iu kg. Power equations using stem diameter measured at either 40iu cm (d) or at breast height (d, 1.3iu m) with and without stem height (h) were evaluated. The square power equation, [Formula: see text], was found to be the best (highest ranked using goodness-of-fit statistics) for predicting total and component biomass. The reliability of the prediction decreased in the order: stemiu >iu branchesiu >iu twigs plus foliage. A cross-validation procedure showed that equation parameterization was stable and coefficients reliable. Our parameterized square power equation for total aboveground biomass was also found to be better than the equations parameterized by Hairiah et al. (Carbon stocks of tropical land use systems as part of the global C balance: effects of forest conversion and options for clean development activities, International Centre for Research in Agroforestry, Bogor, 2001) and Segura et al. (Agroforest Syst 68:143150, 2006) for C. arabica grown in agroforestry systems, confirming the importance of parameterization of allometric equations with site specific data when possible.

Land use changes and GHG emissions from tropical forest conversion by oil palm plantations in Riau Province, Indonesia.

Ramdani, F.; Hino, M.;
PLoS ONE; 2013. 8(7):e70323.

Increasing prices and demand for biofuel and cooking oil from importer countries have caused a remarkable expansion of oil palm plantations in Indonesia. In this paper, we attempt to monitor the expansion of oil palm

plantations on peat land and in tropical forests. We measure the GHG emissions from the land conversion activities at provincial scale. Using Landsat images from three different periods (1990s, 2000s and 2012), we classified LULC of the Riau Province, which is the largest oil palm producing region in Indonesia. A hybrid method of integration, generated by combining automatic processing and manual analysis, yields the best results. We found that the tropical rainforest cover decreased from ~63% in the 1990s to ~37% in the 2000s. By 2012, the remaining tropical rainforest cover was only ~22%. From the 1990s to the 2000s, conversion of forests and peat lands was the primary source of emissions, total CO_2 emitted to the atmosphere was estimated at ~26.6 million $tCO_2.y^{-1}$, with 40.62% and 59.38% of the emissions from conversion of peat lands and forests, respectively. Between 2000 and 2012, the total CO^2 emitted to the atmosphere was estimated at ~5.2 million $tCO^2. y^{-1}$, with 69.94% and 27.62% of the emissions from converted peat lands and converted forests, respectively. The results show that in the Riau Province, the oil palm industry boomed in the period from 1990 to 2000, with transformation of tropical forest and peat land as the primary source of emissions. The decrease of CO^2 emissions in the period from 2000 to 2012 is possibly due to the enforcement of a moratorium on deforestation.

Allometric equations used to estimate biomass and carbon in four neotropical tree species with restoration potential.

Douterlungne, D.; Herrera-Gorocica, A. M.; Ferguson, B. G.; Siddique, I.; Soto-Pinto, L.;
Agrociencia (Montecillo); 2013. 47(4):385-397.

One of today's environmental challenges is reducing greenhouse gases (GHG) through reforestation. Forest plantations with adequate species composition and management sequester carbon and restore degraded areas simultaneously, but methods to estimate their biomass must be refined. In Mexico's Lacandon Jungle, 103 trees were harvested to determine allometric equations for four abundant Neotropical species with high potential for restoration: *Guazuma ulmifolia*, *Trichospermum mexicanuum*, *Inga vera* and *Ochroma pyramidale*. The best biomass predictors were diameter at breast height and at the base, which generated allometric relations with r^2 0.90 or higher. Based on these relations, average biomass accumulation in two-year-old monocultures of *Inga*, *Ochroma*, *Trichospermum* and *Guazuma* were calculated at 6.60, 30.80, 47.62 and 48.12 Mg ha^{-1}. Restoration plantations with the last two species are a potentially efficient strategy to reduce atmospheric carbon. The high inter-site and inter-species variability, partly related to differences in survival and growth, indicate the need for multisite experimental designs in order to generalize the results of biomass estimation.

Designing and implementing effective REDD+ policies: a forest transition approach

Angelsen, A.; Rudel, T. K.;
Review of Environmental Economics and Policy; 2013. 7(1):91-113.

Effective policies to halt deforestation depend critically on the forest context. This article uses a forest transition framework to discuss three forest contexts: remote (core) forest areas, frontier forests, and forest-agriculture mosaics. Just as the drivers and capabilities differ across these three contexts or stages, so too do the appropriate government policies. The first stage represents forests that are protected passively by their remote location, where the challenge is to maintain low deforestation rates. Thus high priority should be given to avoiding or redesigning infrastructure developments, resettlements, and other large-scale projects that can accelerate deforestation. Clarifying tenure and local forest rights and creating protected areas can also be helpful. In frontier forests, well-defined property rights, if present, provide a basis for using direct incentive and compensation schemes such as payments for environmental services. Avoiding perverse government policies, such as subsidized credit for deforesting activities, would also reduce the high deforestation rates that characterize this second stage. In largely settled forest-agriculture mosaics, government policies can augment emerging market-based incentives to plant trees. Improved agricultural technologies, which at early stages tend to stimulate agricultural land expansion, can also be important at later stages by increasing food production on existing agricultural land.

The potential for REDD+: key economic modeling insights and issues.

Lubowski, R. N.; Rose, S. K.;
Review of Environmental Economics and Policy; 2013. 7(1):67-90.

This article takes stock of economic modeling tools and findings related to reducing greenhouse gas emissions from deforestation and forest degradation as well as other forestry activities in developing countries (REDD+), and discusses priorities for future research. The economics literature has identified opportunities for significant cost-effective climate change mitigation from both reducing deforestation and enhancing forest carbon stocks. Several studies estimate that including REDD+ could reduce the costs of achieving climate policy goals over both the near and longer terms. Studies also suggest that the near-term potential for REDD+, especially reduced deforestation, could be valuable in support of near-term emissions reduction strategies, hedging against uncertainties, and dampening future carbon market price volatility. However, the literature is evolving. Most early and many recent studies of REDD+ provide optimistic benchmark estimates, based on ideal, but

unrealistic, assumptions about policies and institutions. The more recent literature, which analyzes dynamics; interactions among forestry activities, regions, and economic sectors; implementation requirements and costs; policy designs; and uncertainties suggests a more limited and nuanced mitigation role for REDD+, especially in the near future. There are also important modeling challenges. Together, these real-world complexities and modeling challenges indicate that the actual costs and net environmental benefits of potential REDD+ activities are uncertain and highly dependent on policy and implementation features.

The economics of international policy agreements to reduce emissions from deforestation and degradation.
Kerr, S. C.
Review of Environmental Economics and Policy; 2013. 7(1):47-66.
This article synthesizes the key conceptual insights from economics for the design of international policies to reduce deforestation and forest degradation and increase reforestation (known as REDD+) as part of the international climate change mitigation effort. Most of the emphasis is on the contribution of economics to the effective design of results-based policies that introduce a price incentive for "strong" states (i.e., those with the institutional capacity to respond effectively to such policies) to address deforestation, degradation, and reforestation. The article also emphasizes how large-scale agreements can minimize leakage and adverse selection, the importance of allocating uncertainty with care, and the need to differentiate clearly among potentially conflicting objectives. It explores the conflicts between cost sharing and efficiency that arise because of private information and the inability of states to make long-term commitments. The article also examines policies that complement price incentives, and, for weak states, policies that can substitute for results-based agreements.

Exploring vulnerability and adaptation to climate change of communities in the forest zone of Cameroon.
Bele, M. Y.; Tiani, A. M.; Somorin, O. A.; Sonwa, D. J.;
Climatic Change; 2013. 119(3/4):875-889.
Understanding vulnerability to the impacts of global environmental change and identifying adaptation measures to cope with these impacts require localized investigations that can help find actual and exact answers to the questions about who and what are vulnerable, to what are they vulnerable, how vulnerable are they, what are the causes of their vulnerability, and what responses can lessen their vulnerability. People living in forests are highly dependent on forest goods and services, and are vulnerable to forest changes both socially and economically. In the Congo basin, climate change effects on forest ecosystems are predicted to amplify the existing pressure on food security urging expansion of current agricultural lands at the expense of forest, biodiversity loss and socioeconomic stresses. The paper aimed at exploring vulnerability and adaptation needs to climate change of local communities in the humid forest zone of Cameroon. Field work was conducted in two forest communities in Lekie and in Yokadouma in the Center and Eastern Regions of Cameroon respectively. The assessment was done using a series of approaches including a preparatory phase, fieldwork proper, and validation of the results. Results show that: (a) the adverse effects of climate conditions to which these communities are exposed are already being felt and exerting considerable stress on most of their livelihoods resources; (b) drought, changing seasons, erratic rain patterns, heavy rainfall and strong winds are among the main climate-related disturbances perceived by populations in the project sites; (c) important social, ecological and economic processes over the past decades seemed to have shaped current vulnerability in the sites; (d) Some coping and adaptive strategies used so far are outdated; and specific adaptation needs are identified and suggestions for facilitating their long-term implementations provided.

The role of forestry plantations in soil carbon sequestration in a reserved forest in North-Western India
Ekta Bhalla; Gupta, S. R.;
American-Eurasian Journal of Agricultural & Environmental Sciences; 2013. 13(7):1019-1026
The aim of this study was to analyze soil carbon stock, carbon storage in soil aggregates and clay mineralogy in *Eucalyptus tereticornis*, *Prosopis juliflora* and *Dendrocalamus hamiltonii* (located at Seonthi Reserved Forest, Kurukshetra, 29 degrees 59'N and 76 degrees 59'E; Altitude is 247 m above msl) in north-western India. The climate of the study area is tropical monsoonal and semiarid. The soil pH varied from 7.44 to 8.11. The organic carbon stock upto 0-60 cm soil depth varied from 16.677 to 2.983 Mg C ha^{-1}; inorganic carbon was 1.344 to 4.360 Mg C ha^{-1}. The microaggregates (250 micro m-53 micro m) and sand and silt associated fractions (<53 micro m) formed a large fraction of soil aggregates and protected most of soil organic carbon. The total carbon content was higher in microaggregates (250 micro m-53 micro m) as compared to silt and clay associated soil fractions (<53 micro m). Montmorillonite, chlorite, illite, chasmosite, kaolinite and vermiculite were found to be the main clay minerals in soils of the three tree plantations. Tree plantations were found to have a marked potential for carbon sequestration by improving soil structure, soil aggregation and increasing soil carbon. Tree

plantations of fast growing species in the reserved forest were found to be an effective strategy for forest restoration, carbon sequestration and conservation of biodiversity.

Brazil's success in reducing deforestation

Boucher, D.; Roquemore, S.; Fitzhugh, E.;
Tropical Conservation Science; 2013. 6(3):426-445.

Over the past several years, the rate of deforestation in the Brazilian Amazon has dropped by more than two-thirds. This reduction has been achieved despite high beef and soy prices, which in previous years had pushed deforestation upward, and during the same time that Brazil made important social progress in reducing poverty, hunger and inequality. The reduction in global warming pollution that this represents is the largest contribution so far by any country, rich or poor. Several factors are responsible for this accomplishment. They include: government policies and enforcement actions by prosecutors, on both the federal and state levels; the incentive created by Norway's pledge of up to $1 billion in results-based compensation through the Amazon Fund; the strong and concerted pressure exerted by Brazilian civil society on the government and the soy and beef industries; and the positive response by those industries, resulting in the 2006 soy and 2009 beef moratoria. Political leaders, such as President Luis Inacio Lula da Silva and especially Minister of the Environment/2010 Green Party presidential candidate Marina Silva, can also claim an important share of the credit. While success is by no means assured, what has been achieved so far is already quite impressive, and makes it possible to envision the reduction of Amazon deforestation and forest degradation to zero within the next decade.

REDD+, adaptation, and sustainable forest management: toward effective polycentric global forest governance.

Long, A.
Tropical Conservation Science; 2013. 6(3):384-408.

The Reduced Emissions from Deforestation and Degradation (REDD+) program emerging as a part of the international climate change regime holds the potential to dramatically affect forestry in the tropics. REDD+ has demonstrated an ability to overcome the major political obstacles to earlier efforts to promote sustainable forest management (SFM) in the tropics, but key questions regarding its on-the-ground impact remain. This article suggests that REDD+ can become a successful vehicle for advancing SFM if it is re-conceived to include support for adaptation as one of its primary goals. Some degree of adaptation is necessary to effectively implement any form of REDD+, and SFM practices offer the core toolkit for securing forest adaptation in the context of REDD+. Re-envisioning REDD+ as a dual-focus program aimed at mitigation and adaptation builds upon the potential synergies between these two climate regime goals and calls upon experiences with SFM to provide the means of achieving them. Operationalizing this vision will require development of novel arrangements of authority and incentives across scales of governance that can provide opportunities for learning in support of a larger need for new approaches to governance of global environmental issues. Thus, integrating adaptation into REDD+ can advance not only climate change regime goals, but also long-standing SFM goals and the increasingly apparent demand for more effective international environmental governance generally.

Mapping vulnerability and conservation adaptation strategies under climate change

Watson, J.E.M., Iwamura, T., Butt, N.
Nature Climate Change 2013 doi:10.1038/nclimate2007

Identification of spatial gradients in ecosystem vulnerability to global climate change and local stressors is an important step in the formulation and implementation of appropriate countermeasures[1, 2]. Here we build on recent work to map ecoregional exposure to future climate, using an envelope-based gauge of future climate stability—defined as a measure of how similar the future climate of a region will be to the present climate[3, 4]. We incorporate an assessment of each ecoregion's adaptive capacity, based on spatial analysis of its natural integrity—the proportion of intact natural vegetation—to present a measure of global ecosystem vulnerability. The relationship between intactness (adaptive capacity) and stability (exposure) varies widely across ecoregions, with some of the most vulnerable, according to this measure, located in southern and southeastern Asia, western and central Europe, eastern South America and southern Australia. To ensure the applicability of these findings to conservation, we provide a matrix that highlights the potential implications of this vulnerability assessment for adaptation planning and offers a spatially explicit management guide.

Novel tropical forests: nature's response to global change.

Lugo, A. E.
Tropical Conservation Science; 2013. 6(3):325-337.

We now live in a world dominated by humans (the Anthropocene), whose activities on Earth are resulting in new habitats and new environmental conditions, including climate change. To many, the Anthropocene is an era of environmental doom that unless reversed, will result in catastrophic reductions in biodiversity. An

alternate view is that the biota will adjust to the new environmental conditions and through processes of species mixing and self-organization will form sustainable novel communities of organisms. Using examples from Puerto Rico, I discuss the conditions that lead to novel forest formation and the characteristics of these forests, including their species composition. Novel forests include native tree and animal species as well as significant numbers of introduced and naturalized species. These introduced species dominate forest stands, and their dominance is not incompatible with the regeneration of native species. I propose that these types of ecosystems might represent the natural response of the biota to the Anthropocene.

What is the relevance of smallholders' agroforestry systems for conserving tropical tree species and genetic diversity in circa situm, in situ and ex situ settings?
Dawson, I.K., Guariguata, M.R., Loo, J., Weber, J.C., Lengkeek, A., Bush, D., Cornelius, J.P., Guarino, L., Kindt, R., Orwa, C., Russell, J., Jamnadass, R.H.
Biodiversity and Conservation 22 (2): 301-324
Smallholders' agroforests may be valuable for conserving tropical trees through three main mechanisms. First, trees planted and/or retained by farmers in agricultural landscapes where wild stands were once found may be circa situm reservoirs of biodiversity. Second, farmland trees may support conservation in situ by providing an alternative source of product to reduce extraction from forest, and by acting as 'corridors' or 'stepping stones' that connect fragmented wild stands. Third, the additional value that planting assigns to trees may result in greater interest in including them in seed collections, field trials and field 'genebanks' that support ex situ conservation. Here, we critically review the evidence for these mechanisms, and highlight areas for research and for intervention so that agroforestry practices can better support conservation in each setting, with an emphasis on often neglected genetic-level considerations. Based on current global challenges to diversity, conservation will need to rely increasingly on a smallholder-farm circa situm approach, but concerns on long-term effectiveness need to be properly quantified and addressed. Connectivity between widely dispersed, low density trees in agricultural landscapes is an important factor determining the success of the circa situm approach, while improving farmers' access to a diversity of tree germplasm that they are interested in planting is required. The circumstances in which agroforestry plantings can support in situ conservation need to be better defined, and research on the stability of active tree seed collections (how long are species and populations retained in them?) as ex situ reservoirs of biodiversity is needed.

Local vulnerability, Forest communities and Forestcarbon conservation
Chia, E.L., Somorin, O., Sonwa, D.J., Tiani, A.M
International journal of Biodiversity and Conservation Volume 5 (8): 498-507
The mechanism for reducing carbon emissions through forest conservation is dominating climate policy processes in many tropical forests countries. However, there are concerns about the implications of these activities on forest-dependent communities, who are vulnerable to climatic stresses. Reconciling local vulnerability, adaptive capacity and forests carbon conservation initiatives is necessary but challenging. This paper examines this option in two community forests carbon conservation projects in Nomedjoh and Nkolenyeng in southern Cameroon. Base on community perception, the study reveals firstly, that communities are vulnerable to local climate variability and the carbon conservation projects might further exacerbate community vulnerability. Secondly, local adaptation needs and options encompass improvement in livelihood diversification, strengthening the viability of local economic activities, knowledge and capacity building in local agriculture systems and alternative livelihood options. Thirdly, the motivation, incentives and willingness of forest communities to participate in forests conservation activities are somehow influenced by factors linked to their adaptation needs, in addition to the perception of tenure security. Furthermore, the carbon project objectives and activities have prospects to enhance the adaptive capacity of forest communities if well implemented. This study concludes that assessing the vulnerability of livelihood options of communities to both climatic and non climatic stresses is a point of departure to minimise risk on forests carbon conservation schemes.

V. PUBLICATIONS, REPORTS AND OTHER MEDIA

Climate change guidelines for forest managers. FAO Forestry Paper 172
FAO
This document provides guidance on what forest managers should consider in assessing vulnerability, risk, mitigation options, and actions for adaptation, mitigation and monitoring in response to climate change. Recommended actions for climate change adaptation address impacts on: forest productivity; biodiversity; water availability and quality; fire; pests and diseases; extreme weather events; sea-level rise; and economic, social and institutional considerations. A range of mitigation actions is provided, along with guidance on the additional monitoring and evaluation that may be required in forests in the face of climate change. The publication

Gender and Community Forests in a Changing Landscape: Lessons From Ban Thung Yao, Thailand
RECOFTC
In the dynamic socio-demographic contexts of the world's forests and their users, climate change, including climate change mechanisms such as Reducing Emission from Deforestation and Forest Degradation (REDD+), along with energy and food security issues, have brought emerging challenges for women and men in adopting new roles in resource management. Consequently, a renewed focus on the world's forests and their users is warranted. If gender considerations are taken as a weak link in designing and implementing forest-related interventions and investments, there remains the danger of not only pushing women further toward marginalization, insecurity and despair, but also of forest policies and investment frameworks failing to deliver results on the ground. This study analyzes men's and women's specific roles, responsibilities and rights by identifying the levels of participation in using, managing and governing forests and forest resources, in the context of a community forest in Ban Thung Yao village of Northern Thailand. The study highlights gender differential roles, responsibilities, traditional knowledge and wisdom in community forestry, and its influence on resource use and management. The survey revealed that empowering activities like taking initiatives, being involved in conflict resolution and actively engaging in training, were often undertaken by the men of the community while women were heavily engaged in nominal, passive and consultative process of participation. The study concludes that these attributes should be factored in while developing forest policies and programs, to ensure a fair sharing of benefits, equal rights and sustainability. Finally, the study demonstrates the critical importance of looking beyond gender representation merely in terms of 'the number of men and women'. **The publication**

Do Carbon offsets work? The role of forest management in Greenhouse Gas Mitigation
United States Department of Agriculture. Forest Service
As forest carbon offset projects become more popular, professional foresters are providing their expertise to support them. But when several members of the Society of American Foresters questioned the science and assumptions used to design the projects, the organization decided to convene a task force to examine whether these projects can provide the intended climate benefits. The report details reasons to look for other solutions to greenhouse gas emission challenges. After synthesizing the latest available science, the authors challenge the underlying assumptions used to establish most carbontrading mechanisms, including the notion that lightly managed or unmanaged forests will be more effective at sequestering carbon over long periods than would a combination of managed forests and efficiently produced wood products. They take issue with the measurement systems used to determine trading parameters and find validity in the concerns that many market experts have expressed about additionality and leakage. Energy benefits typically are ignored in forest carbon offset projects, which promotes misunderstandings about overall atmospheric carbon flux. The authors emphasize the carbon-storage benefits of using wood products in place of nonrenewable, energy-intensive materials and using woodbased energy instead of fossil fuels. They recommend sustainable production in forests where it supports primary management objectives and assert that well-managed production forests can promote the goals of reducing carbon emissions and increasing Earth's carbon-storage capacity. **The publication**

Guide for REDD-plus negotiators August 2013
FIELD
The purpose of this guide is to assist developing country negotiators and others who are working on REDD-plus*. FIELD provides this information on a neutral basis. The guide is available in English, French and Spanish at www.field.org.uk. The guide or parts of it can be printed out as a PDF document. This guide has been produced with the financial assistance of the European Union through the EU REDD Facility of the European Forest Institute (EFI). The views expressed herein can in no way be taken to reflect the official opinion of the European Union. **The publication**

Potential for corruption in REDD+ and measures to mitigate risks

the REDD desk

This presentation shows why addressing corruption is important for equitable and effective REDD+ and demonstrates the UN-REDD Programme's approach to understanding and mitigating the potential risks of corruption in national REDD+ programmes. Examples of the REDD+ Corruption Risks Assessments in the Philippines and Viet Nam are highlighted. **The presentation**

Report on the workshops of the work programme on results-based finance to progress the full implementation of the activities referred to in decision 1/CP.16, paragraph 70

UNFCCC

This report contains information on the outcomes of the two workshops held relating to the work programme on results-based finance for the full implementation of the activities referred to in decision 1/CP.16,

paragraph 70. It contains summaries of the presentations made and the outcomes of the discussions that took place at both workshops. The workshops addressed the three areas identified by the aforementioned work programme: (a) ways and means to transfer payments for results-based actions; (b) ways to incentivize non-carbon benefits; and (c) ways to improve the coordination of results-based finance. Several key points of convergence emerged during the discussions on ways and means to transfer payments for results-based actions at the second workshop. At both workshops, issues requiring further consideration and/or elaboration were identified. In addition, this report presents the key elements for consideration in designing an architecture for results-based financing for the full implementation of the activities referred to in decision 1/CP.16, paragraph 70. **The publication**

V.I JOBS

PhD on gender, policies and climate change

CIFOR – deadline for application is the 20th September 2013

The Center for International Forestry Research (CIFOR) is offering a 3-year PhD position in the context of CIFOR's global comparative study on REDD+ (GCS). As part of the Module 1 research team, the successful candidate would be expected to work mainly on gender, policies and climate change in West Africa. **More**

Scientist Climate Policy Research

CIFOR – deadline for application is the 30th of September   2013

The scientist's research will contribute to the development of policy-relevant conclusions on REDD+ design for specific country, regional and global contexts and policies. The scientist's work will be integrated and supported by the Global Comparative Study (GCS)-REDD+ module 1 on national REDD+ strategies component and other relevant REDD+ projects, and also will form part of CIFOR's climate policy research team. The Scientist will be responsible to the lead Senior Scientist, GCS REDD + Module 1. **More**

Post Doc Fellow for REDD+ policies and Climate Change

CIFOR – deadline for application is the 5th of October 2013

The Post Doc Fellow's research will contribute to the development of policy-relevant conclusions on institutional design for specific country and regional contexts. The Post Doc Fellow's work will be integrated and supported by the GCS REDD+ Module 1 on national REDD+ strategies component and the Work Package 5 of EC benefit sharing project, and will be part of CIFOR's Forests and Environment Research Team. The Post Doc Fellow will be responsible to the Regional Office Director and under the scientific supervision of the Research Director. **More**

VII. ANNOUNCEMENTS

No announcements were found for this issue.

CLIM-FO INFORMATION

The **objective** of CLIM-FO-L is to compile and distribute recent information about climate change and forestry. CLIM-FO-L is issued monthly.

Past issues of CLIM-FO-L are available on the website of *FAO Forest and Climate Change*:

http://www.fao.org/forestry/climatechange/en/

For technical help or questions contact **CLIM-FO-Owner@fao.org**

The Newsletter is compiled by Marc Dumas-Johansen and Susan Braatz.

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