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## I. IN THE PRESS

15 November 2012 - Down To Earth

### [Forests brushed aside](#)

Forests constitute 80 per cent of the earth's terrestrial biodiversity. But instead of protecting it, the international community at the recently concluded Conference of Parties-11 to Convention on Biological Diversity (CBD) seemed more keen on using it as carbon stock.

13 November 2012 - IISD

### [Scenarios and Sticking Points under the Durban Platform: The Long and Winding Road to 2020](#)

Given the outcomes of COP 17 in Durban, South Africa, and subsequent negotiating sessions in Bonn and Bangkok in 2012, achieving "success" under the newly formed Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) is proving to be a formidable task. Nonetheless, Parties have begun to envision a future where all major emitters may be under the same "mitigation tent."

12 November 2012 - Mongabay

### [Norway's \\$650B pension fund to require deforestation disclosure among portfolio companies](#)

Norway's \$650 billion sovereign wealth fund will ask companies in which it invests to disclose their impacts on tropical forests, as part of its effort to reduce deforestation, reports Reuters. The move could usher in broader reporting on the forest footprint of operations and boost eco-certification initiatives.

10 November 2012 - ITTO

### [US\\$9 MILLION IN NEW FUNDS FOR TROPICAL FORESTS](#)

The International Tropical Timber Council (ITTC) announced today at the closing of its Forty-eighth Session additional funding of US\$9 million towards the sustainable management and trade of tropical forest resources, including \$3.6 million for the implementation of activities from a new work program for 2013-14. Funding announced at the Session included \$6 million in new pledges as well as those made earlier in 2012.

8 November 2012 - UNEP

### [UNEP Publication Highlights Guyana - Norway Partnership for REDD+](#)

The Frankfurt School UN Environment Programme (UNEP) Collaborating Centre for Climate and Sustainable Energy Finance has released a case study on the Guyana REDD+ (reducing emissions

from deforestation and degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries) Investment Fund (GRIF).

8 November 2012 - AlertNet

### [Mangrove losses raising risks in South Asia - experts](#)

Rapid destruction of South Asia's mangroves, which act as a buffer against extreme weather conditions such as storm surges and rising sea levels, is endangering lives and livelihoods in the region, experts say.

7 November 2012 - AlertNet

### [Interactive atlas aims to improve Cameroon's forest governance](#)

The Cameroon government, in collaboration with the World Resources Institute (WRI) has published an updated interactive atlas to help monitor the country's vast woodlands, which cover over 60 percent of its territory.

7 November 2012 - IISD

### [CIF 2012 Partnership Forum Focuses on Implementation, Knowledge Building and Lesson Sharing](#)

The Climate Investment Funds (CIF) 2012 Partnership Forum convened on 6-7 November 2012, in Istanbul, Turkey, and was co-hosted by the CIF and the European Bank for Reconstruction and Development (EBRD). As all CIF programmes are now moving into implementation at the country level, the 2012 Partnership Forum aimed to emphasize on-the-ground implementation, knowledge building and lesson sharing.

26-27 October 2012 - UN-REDD Programme

### [UN-REDD Policy Board Approves US\\$47.6 Million in Support to National REDD+ Actions](#)

During its ninth UN-REDD Programme Policy Board meeting 26-27 October 2012 in Brazzaville, Republic of the Congo, the Board approved the two-year work plan and revised budget of US\$47.6 million for global-level and country-specific support to national REDD+ actions for 2013 and 2014.

## **II. MULTILATERAL PROCESSES IN CLIMATE CHANGE**

### **United Nations Framework Convention on Climate Change**

The 2012 UN Climate Change Conference will take place in Doha, Qatar, from 28 November until 7 December. The meetings include the 18th session of the Conference of the Parties to the UN Framework Convention on Climate Change (COP 18) and the 8th session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 8). Five subsidiary bodies will also convene: the Subsidiary Body for Implementation (SBI), Subsidiary Body for Scientific and Technological Advice (SBSTA), Ad Hoc Working Group on Annex I Parties' Further Commitments under the Kyoto Protocol (AWG-KP), Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) and Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP).

A key task in Doha is to adopt amendments to the Kyoto Protocol for the second commitment period, which is to begin in 2013. The length of the second commitment period, how to convert emission reduction targets into "quantified emission limitation and reduction commitments" (QUELROs), and how to carry over unused emission credits of economies in transition in the second phase of the Protocol are to be decided. The AWG-LCA is scheduled to present its final outcome and terminate its work (i.e. on mitigation, adaptation, finance, technology and capacity building) at Doha. UNFCCC hopes to complete the new infrastructure to channel technology and finance to developing countries, including decisions on the location and work of the Green Climate Fund and the Technology Mechanism's Climate Technology Center and Network. The ADP will report to COP on progress made to develop "a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties" by 2015 to enter into force no later than 2020. A focus will be on how to increase ambitions over the existing national pledges to cut and limit emissions. The ADP's objective is to plan its remaining work. Discussions on adaptation will continue in Doha, with a particular focus on better protection against loss and damage caused by slow onset events. The Adaptation Committee will report to COP on its efforts to improve coordination of adaptation at global scale. Governments will further consider the crucial roles of agriculture in adaptation and mitigation, while at the same time addressing food security needs.

Forestry-related issues will be addressed in on-going deliberations on 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 (REDD+) and on land use, land-use change and forestry (LULUCF).

REDD+ issues will be addressed by SBSTA and AWG-LCA.

SBSTA (agenda item 5) will address methodological guidance for activities related to REDD+. Its work includes to:

- Complete work on guidance on modalities for a national forest monitoring system and for measuring, reporting and verification (MRV) and to forward a draft resolution to COP18 for adoption
- Continue to consider issues related to drivers of deforestation and forest degradation
- Continue to consider the timing and frequency of information that Parties will provide on how REDD+ safeguards are being addressed and respected (work to be completed by SBSTA 39 in late 2013)
- Begin work on developing guidance for the technical assessment of proposed forest reference emission levels and/or forest reference levels.

AWG-LCA (agenda item 3(b)(iii)) will continue to consider financing options for the full implementation of results-based REDD+ actions, taking into consideration a technical paper prepared by the UNFCCC Secretariat and a workshop held in Bangkok in August on this subject.

Deliberations on methodological issues related to LULUCF under the Kyoto Protocol will be addressed by SBSTA. SBSTA (agenda item 11) will address land use, land use change and forestry under Article 3, paragraphs 3 and 4, of the Kyoto Protocol and the clean development mechanism (CDM). The key issues include:

- Exploring more comprehensive accounting, including through a more inclusive activity-based approach or a land-based approach
- Considering possible additional LULUCF activities under CDM
- Alternative approaches to addressing the risk of non-permanence under the CDM
- Modalities and procedures for applying the concept of additionality.

Additional issues under discussion at Doha that have links to forests include nationally appropriate mitigation actions (NAMAs) by developing country Parties and adaptation. SBSTA is discussing issues related to agriculture (agenda item 10). Some linkages with forests and REDD+ may be made.

A useful source of information on REDD+ issues under negotiation and background, including preceding UNFCCC decisions, is the FIELD guide for REDD-plus negotiators (see reference later in this issue of CLIM-FO).

To keep abreast of the negotiations in Doha, information is available on the UNFCCC [website](#) as well as in the daily reports of the [Environmental News Bulletin of IISD](#)

### III. EVENTS & MEETINGS

#### Upcoming events

##### **Illegal logging and legality verification - the FLEGT / VPA as new modes of governance**

*6-7 December, 2012, Copenhagen, Denmark*

In 2003 the EU adopted its Action Plan on Forest Law Enforcement, Governance and Trade (FLEGT). In order to promote the import to Europe of legal timber, the EU proceeded in 2005 to introduce Voluntary Partnership Agreements (VPAs) with countries that export tropical timber. As of March 2013, timber placed on the European market must be documented legal, and traders will be required to exercise due diligence to ensure that the timber they deal with is from legal sources. At this backdrop, this international academic conference will discuss a number of theoretical and empirical issues related to the practice of illegal logging and trade in illegal tropical timber as well as measures to counteract such practices. Although main focus will be on the EU modalities, presentations on other related initiatives are welcome as well. [More](#)

##### **World Forests Summit. Achieving sustainable forest management on a global scale**

*5-6 March 2013, Stockholm, Sweden*

Forests play a crucial role in the world's environment, health and economy - yet they are under threat. Our World Forests Summit will assemble a leading group of experts from around the world to identify common ground and discuss mechanisms for forest stakeholders to work together differently. The summit will openly explore the tensions and compromises that are involved in creating a thriving global green economy, delivering fresh insight into solving critical challenges at both global and national levels. [More](#)

##### **11th International Conference on Dryland Development: “Global Climate Change and its Impact on Food & Energy Security in the Dry lands”**

*18-23 March 2013, Beijing, China*

It has now been well established that the global climate change is occurring and is having a wide impact on the environment and the livelihood of the people across the world. Dry areas of the world have highly fragile ecosystem, which is highly vulnerable to climate changes. For sustainable development of the drylands and other dry areas in the face of global climate and other changes, it is important to recognize the impacts of climate change and human activities on dryland ecosystem and understand the process and mechanism of dry lands ecosystem changes occurring because of these pressures. In addition, other global changes are also triggering challenges for food and energy security in the drylands. The Conference will provide an opportunity to exchange research results and experiences among colleagues from around the world and to promote international cooperation in developing strategies to meet the challenge of sustainable development of the

drylands in the face of these changes. Emphasis will be specially laid on identifying adaptation and mitigation strategies using traditional knowledge as well as modern science and technology for different dryland ecologies. [More](#)

## **IV. RESEARCH ARTICLES**

### **Developing biodiverse plantings suitable for changing climatic conditions 1: Underpinning scientific methods**

Booth T.H, Williams K.J

*Ecological Management & Restoration*. 13(3), 267-273

Governments across Australia have long been investing in revegetation in an effort to restore biodiversity and, more recently, mitigate climate change. However, no readily available methods have been described to assist project leaders identify species and provenance material likely to be sustainable under the changing climatic conditions of coming decades. Focussing particularly on trees, as trees are important for biosequestration as well as for providing habitat for other native species, Paper 1 of this two part series briefly reviews species distribution models and growth simulation models that could provide the scientific underpinning to improve and refine selection processes. While these previous scientific studies provide useful insights into how trees may respond to climate change, it is concluded that a readily accessible and easy-to-use approach is required to consider the potential adaptability of the many trees, shrubs and ground cover species that may be needed for biodiverse plantings. In Part 2 of this paper, the Atlas of Living Australia is used to provide preliminary information to assist species selection by assessing the climatic range of individual species based on their current distributions and, where available, cultivated locations. While using the Atlas can assist current selections, ways are outlined in Part 2 in which more reliable selections for changing climatic conditions could be made, building on the methods described here.

### **Developing biodiverse plantings suitable for changing climatic conditions 2: Using the Atlas of Living Australia**

Booth T.H, Williams K.J, Belbin, L

*Ecological Management & Restoration*. 13(3), 274-281

There has been an increasing investment of taxpayer dollars in revegetation in Australia over the past 20 years, at both federal and state levels. The largest of these, the Australian Government's Biodiversity Fund, will invest A\$946 million (about one billion US dollars) to revegetate, rehabilitate and restore landscapes to store carbon, enhance biodiversity and build environmental resilience under climate change. The universal challenge for restoration practitioners working within these programmes is species selection for both current and future environmental conditions at a given site. For policy makers, the challenge is to provide guidelines and tools for this process. The first paper in this series of two papers looked at scientific methods that could provide underpinning knowledge to improve the assessment of species vulnerability to climatic and atmospheric change. In this paper, the publically accessible Atlas of Living Australia is used to demonstrate how revegetation project leaders can assess whether the species and provenances used in their revegetation projects are likely to be suitable for changing environmental conditions. While using the Atlas can assist current selections, ways in which more reliable selections for changing climatic conditions could be made are also outlined.

### **Incentives for the use of forest biomass: a comparative analysis of Kyoto Protocol accounting pre- and post-2012**

Frieden, D., Pena, N., Bird, D.N.

*Greenhouse Gas Measurement and Management*. Volume 2, Issue 2-3.

This article focuses on differences between incentives of current and post-2012 Kyoto Protocol land use, land-use change and forestry (LULUCF) accounting rules. Three changes to the LULUCF accounting rules were agreed to in Durban. These changes alter national-level incentives for retaining wood in forests, using wood for products or using it for energy. Post-2012, accounting for emissions from managed forests will be mandatory rather than voluntary, as is currently the case. Reference levels, rather than historical carbon stock levels, will be used to measure these emissions. Finally, increases and decreases in harvested wood products (HWP) pools will be reported. These changes provide national-level incentives to increase forest carbon stocks and to use nationally harvested wood for products. However, the rule that no emissions are counted at the point of combustion of biomass remains unaltered. This gives entities with greenhouse gas (GHG) obligations under the EU Emissions Trading Scheme (EU ETS) an incentive to use wood for energy, counteracting the national-level

incentives. Use of additionally harvested wood for energy may increase national emissions within commitment period time-frames because combustion of biomass, in most cases, results in higher carbon dioxide emissions per unit of energy supplied than combustion of the fossil fuels it replaces. In contrast, retention of wood in forests or use of domestic wood for products, will, particularly under the post-2012 rules, tend to result in lower national-level emissions being accounted. However, neither retention of wood in forests nor increases in the HWP pool results in benefits to individual entities, as currently there is no EU scheme under which the entities involved face GHG obligations.

### **Review on benefits of agro forestry system**

Fanish, S. A.; Priya, R. S

*International Journal of Agricultural Science and Research (IJASR); 2012. 2: 3, 80-91*

Agroforestry is a land use option that increase livelihood security and reduce vulnerability to climate and environmental change. According to Planning Commission report "Greening India", that 33% forest cover can only be achieved through agro-forestry. Agro-forestry has many potential, such as enhance the overall (biomass) productivity, soil fertility improvement, soil conservation, nutrient cycling, micro-climate improvement, carbon sequestration, bio drainage, bio energy and bio fuel etc. Nowadays agro-forestry has gained popularity among farmers, researchers, policy makers and other for its ability to contribute significantly in meeting deficit of tree products, socio-economic and environmental benefits.

### **Tropical forest carbon balance in a warmer world: a critical review spanning microbial- to ecosystem-scale processes**

Wood, T. E.; Cavaleri, M. A.; Reed, S. C

*Biological Reviews; 2012. 87: 4, 912-927*

Tropical forests play a major role in regulating global carbon (C) fluxes and stocks, and even small changes to C cycling in this productive biome could dramatically affect atmospheric carbon dioxide (CO<sub>2</sub>) concentrations. Temperature is expected to increase over all land surfaces in the future, yet we have a surprisingly poor understanding of how tropical forests will respond to this significant climatic change. Here we present a contemporary synthesis of the existing data and what they suggest about how tropical forests will respond to increasing temperatures. Our goals were to: (i) determine whether there is enough evidence to support the conclusion that increased temperature will affect tropical forest C balance; (ii) if there is sufficient evidence, determine what direction this effect will take; and, (iii) establish what steps should to be taken to resolve the uncertainties surrounding tropical forest responses to increasing temperatures. We approach these questions from a mass-balance perspective and therefore focus primarily on the effects of temperature on inputs and outputs of C, spanning microbial- to ecosystem-scale responses. We found that, while there is the strong potential for temperature to affect processes related to C cycling and storage in tropical forests, a notable lack of data combined with the physical, biological and chemical diversity of the forests themselves make it difficult to resolve this issue with certainty. We suggest a variety of experimental approaches that could help elucidate how tropical forests will respond to warming, including large-scale in situ manipulation experiments, longer term field experiments, the incorporation of a range of scales in the investigation of warming effects (both spatial and temporal), as well as the inclusion of a diversity of tropical forest sites. Finally, we highlight areas of tropical forest research where notably few data are available, including temperature effects on: nutrient cycling, heterotrophic versus autotrophic respiration, thermal acclimation versus substrate limitation of plant and microbial communities, below-ground C allocation, species composition (plant and microbial), and the hydraulic architecture of roots. Whether or not tropical forests will become a source or a sink of C in a warmer world remains highly uncertain. Given the importance of these ecosystems to the global C budget, resolving this uncertainty is a primary research priority.

### **An investigation of the carbon neutrality of wood bioenergy**

Sedjo, R. A.; Tian, X. H

*Journal of Environmental Protection; 2012. 3: 9, 989-1000*

Wood biomass has been viewed as "carbon neutral" - its uses as energy have a zero carbon footprint. Some observers argue that the use of wood biofuels will result in a decrease of the forest stock and a net reduction of the carbon captured in the forest. Such assessments take a static, accounting view of forest systems and do not consider the effects of management in renewing the forest and increasing its extent or ability to sequester carbon. This paper addresses the carbon neutrality debate using a dynamic optimization forest management model to examine the effect on the existing and future forests of a changing demand for wood biomass. The results show that under market optimizing conditions, when future demand is anticipated to increase for significant periods, the response of managers will be to increase the intensity of forest production thereby offsetting much of the carbon released in bioenergy production.

## **An assessment of deforestation and forest degradation drivers in developing countries**

Hosonuma, N., Herold, M., De Sy, V., De Fries, R.S., Brockhaus, M., Verchot, L., Angelsen, A., Romijn, E.  
*Environmental Research Letters*. Volume 7, Number 4.

Countries are encouraged to identify drivers of deforestation and forest degradation in the development of national strategies and action plans for REDD+. In this letter we provide an assessment of proximate drivers of deforestation and forest degradation by synthesizing empirical data reported by countries as part of their REDD+ readiness activities, CIFOR country profiles, UNFCCC national communications and scientific literature. Based on deforestation rate and remaining forest cover 100 (sub)tropical non-Annex I countries were grouped into four forest transition phases. Driver data of 46 countries were summarized for each phase and by continent, and were used as a proxy to estimate drivers for the countries with missing data. The deforestation drivers are similar in Africa and Asia, while degradation drivers are more similar in Latin America and Asia. Commercial agriculture is the most important driver of deforestation, followed by subsistence agriculture. Timber extraction and logging drives most of the degradation, followed by fuelwood collection and charcoal production, uncontrolled fire and livestock grazing. The results reflect the most up to date and comprehensive overview of current national-level data availability on drivers, which is expected to improve over time within the frame of the UNFCCC REDD+ process.

## **Trade-offs between tree cover, carbon storage and floristic biodiversity in reforesting landscapes**

Hall, J. M.; Holt, T. van; Daniels, A. E.; Balthazar, V.; Lambin, E. F.  
*Landscape Ecology*; 2012. 27: 8, 1135-1147

This study explores the relationships between an increase in tree cover area (i.e., natural and planted-tree land covers) and changes in forest carbon storage and the potential of a landscape to provide habitat for native floristic biodiversity. Four areas experiencing an increase in tree cover were analyzed. We developed a metric estimating the potential to support native biodiversity based on tree cover type (plantation or natural forests) and the landscape pattern of natural and anthropogenic land covers. We used published estimates for forest and plantation carbon stocks for each region. Focus regions in northwestern Costa Rica, northern Vietnam, southern Chile and highland Ecuador all showed an increase in tree cover area of 390 %, 260 %, 123 % and 418 %, respectively. Landscapes experiencing increases in natural secondary forest also experienced an increase in carbon stored above and below ground, and in the potential to support native floristic biodiversity. Study landscapes in Chile and Ecuador experiencing an expansion of exotic plantations saw their carbon stock decrease along with their potential to support native floristic biodiversity. This study shows that an increase in forest area does not necessarily imply an increased provision of ecosystem services when landscapes are reforesting with monoculture plantations of exotic tree species. Changes in the support of native biodiversity and the carbon stored in pulp rotation plantations, along with other ecosystem services, should be fully considered before implementing reforestation projects.

## **Mapping and monitoring deforestation and forest degradation in Sumatra (Indonesia) using Landsat time series data sets from 1990 to 2010**

Margono, B. A.; Turubanova, S.; Zhuravleva, I.; Potapov, P.; Tyukavina, A.; Baccini, A.; Goetz, S.; Hansen, M. C  
*Environmental Research Letters*; 2012. 7: 3, 034010

As reported by FAO (2005 State of the World's Forests (Rome: UNFAO), 2010 Forest Resource Assessment (FRA) 2010/095 (Rome: UNFAO)), Indonesia experiences the second highest rate of deforestation among tropical countries. Hence, timely and accurate forest data are required to combat deforestation and forest degradation in support of climate change mitigation and biodiversity conservation policy initiatives. Within Indonesia, Sumatra Island stands out due to the intensive forest clearing that has resulted in the conversion of 70% of the island's forested area through 2010. We present here a hybrid approach for quantifying the extent and change of primary forest in Sumatra in terms of primary intact and primary degraded classes using a per-pixel supervised classification mapping followed by a Geographic Information System (GIS)-based fragmentation analysis. Loss of Sumatra's primary intact and primary degraded forests was estimated to provide suitable information for the objectives of the United Nations Framework on Climate Change (UNFCCC) Reducing Emission from Deforestation and Forest Degradation (REDD and REDD+) program. Results quantified 7.54 Mha of primary forest loss in Sumatra during the last two decades (1990-2010). An additional 2.31 Mha of primary forest was degraded. Of the 7.54 Mha cleared, 7.25 Mha was in a degraded state when cleared, and 0.28 Mha was in a primary state. The rate of primary forest cover change for both forest cover loss and forest degradation slowed over the study period, from 7.34 Mha from 1990 to 2000, to 2.51 Mha from 2000 to 2010. The Geoscience Laser Altimeter System (GLAS) data set was employed to evaluate results. GLAS-derived tree canopy height indicated a significant structural difference between primary intact and primary degraded forests (mean height 28 m  $\pm$  8.7 m and 19 m  $\pm$  8.2 m, respectively). The results demonstrate a method for quantifying primary forest cover stand-replacement disturbance and degradation that can be replicated across



the tropics in support of REDD+ initiatives.

## **Current status and future prospects for carbon forestry in Australia**

Mitchell, C. D.; Harper, R. J.; Keenan, R. J  
*Australian Forestry*; 2012. 75: 3, 200-212

Carbon forestry is part of a suite of land-based activities that can be used to mitigate carbon emissions, and also provide a range of other environmental co-benefits. Components are included in the Carbon Credits (Carbon Farming Initiative) Act 2011. There is large divergence in Australian estimates of the areas of land that may be used for carbon forests and there has been a vigorous public debate about carbon forestry, partly based on concerns about displacement of food-producing land. We identify four distinct afforestation or reforestation (AR) activities that involve carbon mitigation and suggest a terminology based on these. These are (1) 'plantations' that also produce timber and wood products, (2) 'carbon-focused' sinks, (3) 'environmental' or natural resource management plantings and (4) 'bioenergy' plantings for use either as a feedstock for stationary energy production or transport fuels. After accounting for AR projects established for other purposes (e.g. timber and pulpwood), we estimate that the current area of carbon forests in Australia is 65 000 ha. Despite the national Renewable Energy (Electricity) Act 2000 and its 2010 amendments there are few extant biomass projects. However this may change with the development of new technologies and the imposition of a carbon price on electricity production. The reasons for the gulf between actual and potential carbon AR activity are proposed to include (1) the absence of a formal carbon compliance scheme, (2) challenges in managing carbon through an entire product cycle, (3) degree of understanding of carbon forestry by financiers, (4) landholder preference, (5) technical barriers and (6) regulatory uncertainty. We suggest an extension of the National Plantation Inventory from traditional plantations to carbon forestry, so that future policy can be developed on the basis of good-quality underpinning information that can be disaggregated to analyse trends in AR for different purposes. To encourage innovation in the sector, we also suggest either the extension or establishment of research and development funding arrangements, similar to those already existing for other rural industries.

## **How can climate policy benefit from comprehensive land-use approaches?**

Knoke, T.; Roman-Cuesta, R. M.; Weber, M.; Haber, W  
*Frontiers in Ecology and the Environment*; 2012. 10: 8, 438-445

Schemes that reward developing countries for mitigating greenhouse-gas (GHG) emissions through forest preservation and restoration are becoming more common. However, efforts to reduce GHG emissions must also consider food production. This creates an apparent conflict, given that agricultural production - a key driver of GHG emissions as a consequence of forest clearance - will increase as human populations continue to grow. We propose that a mosaic of small patches of forest mixed with cropland enables sustainable intensification of agriculture by minimizing soil degradation. Economic analyses of this mixed land-use concept suggest an improvement of longterm economic performance of 19-25% relative to conventional industrial agriculture with largescale monocropping. Adopting this approach requires farm management plans, landscape zoning, and new instruments to finance sustainable agriculture. We conclude that climate policy and food production can be reconciled through an integrative landscape concept that combines this more sustainable method of agricultural intensification with the reforestation of abandoned lands.

## **Modeling the spatial and temporal heterogeneity of deforestation-driven carbon emissions: the INPEEM framework applied to the Brazilian Amazon**

Aguiar, A. P. D.; Ometto, J. P.; Nobre, C.; Lapola, D. M.; Almeida, C.; Vieira, I. C.; Soares, J. V.; Alvares, R.; Saatchi, S.; Valeriano, D.; Castilla-Rubio, J. C  
*Global Change Biology*; 2012. 18: 11, 3346-3366

We present a generic *spatially explicit modeling framework* to estimate carbon emissions from deforestation (INPE-EM). The framework incorporates the temporal dynamics related to the deforestation process and accounts for the biophysical and socioeconomic heterogeneity of the region under study. We build an emission model for the Brazilian Amazon combining annual maps of new clearings, four maps of biomass, and a set of alternative parameters based on the recent literature. The most important results are as follows: (a) *Using different biomass maps* leads to large differences in estimates of emission; for the entire region of the Brazilian Amazon in the last decade, emission estimates of primary forest deforestation range from 0.21 to 0.26 Pg C yr<sup>-1</sup>. (b) *Secondary vegetation growth* presents a small impact on emission balance because of the short duration of secondary vegetation. In average, the balance is only 5% smaller than the primary forest deforestation emissions. (c) *Deforestation rates decreased significantly in the Brazilian Amazon in recent years*, from 27 Mkm<sup>2</sup> in 2004 to 7 Mkm<sup>2</sup> in 2010. INPE-EM process-based estimates reflect this decrease even though the agricultural frontier is moving to areas of higher biomass. The decrease is slower than a non-process instantaneous model would estimate as it considers residual emissions (slash, wood products, and secondary vegetation). The average balance, considering all biomass, decreases from 0.28 in 2004 to 0.15 Pg C yr<sup>-1</sup> in

2009; the non-process model estimates a decrease from 0.33 to 0.10 Pg C yr<sup>-1</sup>. We conclude that the INPE-EM is a powerful tool for representing deforestation-driven carbon emissions. Biomass estimates are still the largest source of uncertainty in the effective use of this type of model for informing mechanisms such as REDD+. The results also indicate that efforts to reduce emissions should focus not only on controlling primary forest deforestation but also on creating incentives for the restoration of secondary forests. Modeling the impacts of reforestation on future climate in West Africa.

### **Modeling the impacts of reforestation on future climate in West Africa**

Abiodun, B. J.; Adeyewa, Z. D.; Oguntunde, P. G.; Salami, A. T.; Ajayi, V. O.;  
*Theoretical and Applied Climatology*; 2012. 110: 1/2, 77-96

This study investigates the potential impacts of reforestation in West Africa on the projected regional climate in the near two decades (2031-2050) under the SRES A1B scenario. A regional climate model (RegCM3) forced with a global circulation model (ECHAM5) simulations was used for the study. The study evaluates the capability of the regional model in simulating the present-day climate over West Africa, projects the future climate over the region and investigates impacts of seven hypothetical reforestation options on the projected future climate. Three of these reforestation options assume zonal reforestation over West Africa (i.e., over the Sahel, Savanna and Guinea), while the other four assume random reforestation over Nigeria. With the elevated GHGs (A1B scenario), a warmer and drier climate is projected over West Africa in 2031-2050. The maximum warming (+2.5 degrees C) and drying (-2 mm day<sup>-1</sup>) occur in the western part of the Sahel because the West Africa Monsoon (WAM) flow is stronger and deflects the cool moist air more eastward, thereby lowering the warming and drying in the eastern part. In the simulations, reforestation reduces the projected warming and drying over the reforested zones but increases them outside the zones because it influences the northward progression of WAM in summer. It reduces the speed of the flow by weakening the temperature gradient that drives the flow and by increasing the surface drag on the flow over the reforested zone. Hence, in summer, the reforestation delays the onset of monsoon flow in transporting cool moist air over the area located downwind of the reforested zone, consequently enhancing the projected warming and drying over the area. The impact of reforesting Nigeria is not limited to the country; while it lowers the warming over part of the country (and over Togo), it increases the warming over Chad and Cameroon. This study, therefore, suggests that using reforestation to mitigate the projected future climate change in West Africa could have both positive and negative impacts on the regional climate, reducing temperature in some places and increasing it in others. Hence, reforestation in West Africa requires a mutual agreement among the West African nations because the impacts of reforestation do not recognize political boundaries.

### **Changes in carbon stocks in Indian forests: a historical overview**

Sheikh, M. A.; Munesh Kumar; Bhat, J. A.; Pala, N. A.; Rawat, V. R. S.; Todaria, N. P.  
*Indian Forester*; 2012. 138: 8, 682-688

Reducing emissions from deforestation and degradation (REDD+) in Non-Annex-I countries is of central importance in efforts to combat climate change, because carbon management in forests will probably be the single most important agenda of the first half of the 21st century in the context of the greenhouse effect and mitigation of global climatic changes. In this context we tried to know the position of Carbon stock in India from 1880 onwards by compiling the published literature, besides that the C stocks for the year 2003, 2005 and 2007 were also estimated on the basis of GS data published by Forest Survey of India. Carbon stocks in Indian forests from 1880 showed a marked decrease from 7940 Mt in 1880 to 3426 Mt in 1980 which have reduced to 3325.30 in 2003 to 3161.71 Mt in 2007. The carbon stock in India's forest biomass decreases continuously despite slight increase in forest cover of the country.

### **Perspectives in dryland restoration: approaches for climate change adaptation**

Vallejo, V. R.; Smanis, A.; Chirino, E.; Fuentes, D.; Valdecantos, A.; Vilagrosa, A.;  
*New Forests*; 2012. 43: 5/6, 561-579

Reforestation efforts in dryland ecosystems frequently encounter drought and limited soil productivity, although both factors usually interact synergistically to worsen water stress for outplanted seedlings. Land degradation in drylands (e.g. desertification) usually reduces soil productivity and, especially, soil water availability. In dry sub-humid regions, forest fires constitute a major disturbance affecting ecosystem dynamics and reforestation planning. Climate change projections indicate an increase of drought and more severe fire regime in many dryland regions of the world. In this context, the main target of plantation technology development is to overcome transplant shock and likely adverse periods, and in drylands this is mostly related to water limitations. In this paper, we discuss some selected steps that we consider critical for improving success in outplanting woody plants, both under current and projected climate change conditions including: (1) Plant species selection, (2) Improved nursery techniques, and (3) Improved planting techniques. The number of plant species used in reforestation is increasing rapidly, moving from a reduced set of well-known, easy-to-

grow, widely used species, to a large variety of promising native species. Available technologies allow for reintroducing native plants and recovering critical ecosystem functions for many degraded drylands. However, climate change projections introduce large uncertainties about the sustainability of current reforestation practices. To cope with these uncertainties, adaptive restoration approaches are suggested, on the basis of improved plant quality, improved techniques for optimizing rain use efficiency in plantations, and exploring native plant species, including provenances and genotypes, for their resilience to fire and water use efficiency.

### **Ecosystem services from forest restoration: thinking ahead**

Ciccarese, L.; Mattsson, A.; Pettenella, D

*New Forests*; 2012. 43: 5/6, 543-560

Global deforestation and forest degradation have led to massive loss of biodiversity and decline of ecosystem services. Against this prospect, it is important not only to protect, but also to restore forest ecosystems. The paper analyzes the current and future role of the restoration of forests and degraded lands starting with the definition of various techniques, scales and objectives of forest restoration. Three key motivations for and targets of forest restoration are then discussed: forest biodiversity protection, biomass production, climate change mitigation and adaptation. The paper also briefly discusses three tools of increasing relevance for supporting forest restoration policies: the development of forest nursery techniques and the improvement of quality of forest reproductive material, the use of standard and certification tools, and financing of restoration investments, including projects aimed at reducing emissions from deforestation and forest degradation. We conclude by making some final remarks on the future challenges of forest restoration policies.

### **Carbon stocks and dynamics under improved tropical pasture and silvopastoral systems in Colombian Amazonia**

Mosquera, O.; Buurman, P.; Ramirez, B. L.; Amezcuita, M. C

*Geoderma*; 2012. 189/190: 81-86.

To evaluate the effect of land use change on soil organic carbon, the carbon contents and stocks of primary forest, degraded pasture, and four improved pasture systems in Colombian Amazonia were compared in a flat and a sloping landscape. The improved pastures were *Brachiaria humidicola*, and *Brachiaria decumbens*, either in monoculture or in combination with native legumes. The age of the treatments was 30 years for degraded pasture and 10 or 15 years for each of the improved pastures. Carbon fractions were Total C, Oxidizable C, and Non-Oxidizable (stable) C. Stocks were compared using a fixed soil mass base. The degraded pasture in the flat landscape was abandoned and dominated by weeds, while that in the sloping area was overgrazed. The latter had much lower C stocks than the former. *B. humidicola* monoculture had the highest stocks both in flat and sloping areas, while the effect of the other three treatments varied. C replacement based on  $\delta^{13}\text{C}$  indicated that after 30 years, the degraded pasture still contained more than 50% forest-derived C in its topsoil. The fraction in the topsoil that is not replaced roughly coincides with the Stable C fraction.  $\delta^{13}\text{C}$  values suggest that the changes in carbon stocks ascribed to differences in land use may be - at least partially - inherited from the previous land use, thus confusing the interpretation of land use effects. Nevertheless, the introduction of improved pastures on degraded grassland is a feasible alternative of land use both for carbon sequestration and as an attractive economic alternative to farmers.

### **Huge carbon sequestration potential in global forests**

Liu YingChun; Yu GuiRui; Wang QiuFeng; Zhang YangJian

*Journal of Resources and Ecology*; 2012. 3: 3, 193-201

Forests play an important role in mitigating climate change by absorbing carbon from atmosphere. The global forests sequestered  $2.4 \pm 0.4 \text{ Pg C y}^{-1}$  from 1990 to 2007, while the quantitative assessment on the carbon sequestration potential (CSP) of global forests has much uncertainty. We collected and compiled a database of site above-ground biomass (AGB) of global mature forests, and obtained AGB carbon carrying capacity (CCC) of global forests by interpolating global mature forest site data. The results show that: (i) at a global scale, the AGB of mature forests decline mainly from tropical forests to boreal forests, and the maximum AGB occurs in middle latitude regions; (ii) temperature and precipitation are main factors influencing the AGB of mature forests; and (iii) the above-ground biomass CCC of global forests is about  $586.2 \pm 49.3 \text{ Pg C}$ , and with CSP of  $313.4 \text{ Pg C}$ . Therefore, achieving CCC of the existing forests by reducing human disturbance is an option for mitigating greenhouse gas emission.

## V. PUBLICATIONS, REPORTS AND OTHER MEDIA

### Community guidelines for accessing forestry voluntary carbon markets

FAO

The climate change debate has brought forests to the forefront of the international agenda. Forests have acquired a new value as one of the planet's most important stores of carbon, thus helping to ensure that levels of atmospheric carbon dioxide, the most abundant greenhouse gas, are kept below critical levels. With all newly-appreciated values, new markets are not far behind. Carbon markets allow forest owners to gain recognition, and financial compensation, for the work they do to keep the forests in place, and to manage them sustainably. Since the 1990s the forestry voluntary carbon market (VCM) has taken shape, though forest owners have generally not been the first to understand its potential. It is a complex concept and there is a very real risk that forest owners may surrender the potential benefits of this new market to other, better informed actors. Small landowners and local communities in rural areas of the Asia-Pacific region are at the greatest risk of losing out in this new market. These guidelines were developed to assist smallholders and smallholder groups, community-based forest managers, non-governmental organizations and local forestry officials to decide whether or not to undertake a forestry voluntary carbon market project and, once a decision has been taken to proceed, to provide guidance on how to design and implement the project. [The publication](#)

### Climate Change and Development Research Review 2012

TERI & CDKN

A new report prepared by TERI, and supported by the Climate and Development Knowledge Network (CDKN), highlights key trends in a growing body of research on the links between climate change and development. Useful for policy-makers, practitioners, and researchers, the Climate & Development Research Review draws on a meta-synthesis of more than 500 policy-relevant research papers published between January 2010 and August 2011, and a closer review of 93 of those papers. [The publication](#)

### REDD+ Politics in the Media

CIFOR

This study examines how policy debates around reducing emissions from deforestation and forest degradation and enhancing forest carbon stocks (REDD+) have been framed by the media in Papua New Guinea. It does this through an analysis of print media articles mentioning 'REDD(+)' or 'carbon trade'/'carbon trading' published between December 2005 and December 2010. The articles were drawn from Papua New Guinea's highest selling and/or most influential newspapers - two English language daily newspapers, the Post-Courier and The National, and the weekly local language publication Wantok Niuspepa. The analysis identifies common topics covered by the media when reporting on REDD+ and includes coverage of the key actors in the national REDD+ policy domain, and their positions - as either advocates or adversaries - on particular issues. [The publication](#)

### Adapting to Climate Change: Assessing World Bank Group Experience. Phase III.

World Bank

Developing countries are not yet well adapted even to current climate risks: floods, droughts and storm. Yet those risks are becoming harsher as the world warms, climate extremes become more intense, and the oceans rise - the consequences of human-caused greenhouse gas emissions. This evaluation draws lessons from World Bank Group experience with adaptation to both current levels of climate variability and ongoing climate change. It reviews the impact of longer-standing efforts to deal with climate variability, for instance via drought relief, sustainable land management, and flood control. The evaluation also looks at how, and how well, the World Bank Group has incorporated climate change risks into the design and appraisal of long-lived infrastructure. It assesses early lessons from a new crop of activities that explicitly grapple with climate adaptation at the national level. [Download](#)

### Policy Brief. Community-based Forest Monitoring for REDD+: Lessons and reflections from the field

IGES

The Institute for Global Environmental Strategies has just released a policy brief on Community-based Forest Monitoring for REDD+, which reports some of the early findings of a regional action learning project involving partners in 5 countries. [The policy brief](#)

## **Annual report of the Executive Board of the clean development mechanism to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol**

*UNFCCC*

This report covers the work of the Executive Board of the clean development mechanism (CDM) during the period from 27 October 2011 to 13 September 2012. It highlights achievements and challenges faced by the Executive Board in its supervision of the mechanism, the status of the mechanism, and work undertaken by the Board and its support structure in the areas of accreditation, methodologies, registration and issuance, and other areas. Further, it includes a number of recommendations for action by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol at its eighth session. The CDM is suffering a lack of demand for its certified emission reductions due to the time being taken to agree on ambitious emission targets. In this context, the mechanism's ability to spur private and public-sector action on climate change and sustainable development is severely limited. There is an increasing risk of the CDM losing its momentum, and with it, losing the related intellectual and institutional capacity that has been built up among Parties and other stakeholders. This is outside the control of the CDM Executive Board. [The report](#)

## **Recalibrating Food Production in the Developing World: Global Warming Will Change More Than Just the Climate**

*CCAFS*

The publication reveals a number of cross-cutting themes, such as:

- Recalibrating agriculture in the face of climate change is more than planting crops that can tolerate warmer weather. Durable crops might cope with warm weather but cannot resist the insects and diseases whose prevalence will increase.
- Securing and maintaining necessary levels of calories, protein and nutrients for populations around the world will be an exceptional challenge.
- Production of the most common commodity staples—wheat, maize and rice—will be challenged by new weather patterns.
- Trees will continue to be valued as a provider of agricultural commodities like nuts and fruit; as a mitigating resource that removes carbon dioxide from the atmosphere; and also as a staple of adaptation. [The policy brief](#)

## **Forest, trees, and woodlands in Africa: an action plan for World Bank engagement**

*The World Bank*

The purpose of this paper is to outline an approach for Bank engagement in forests, trees, and woodlands on farms in Sub-Saharan Africa for the coming five years. The paper takes the framework of the Africa development strategy, which has two main pillars: supporting employment and competitiveness, and building resilience and reducing vulnerability; and one underlying foundation: strengthening capacity and governance. It is consistent with the pillars of the bank forest strategy from 2002, which highlight the contribution of forests to economic development, poverty reduction, and protection of global public goods. Several other World Bank corporate strategies are also relevant for the implementation of this action plan. The primary messages of this paper are linked: enhanced forest, tree and woodland management can play a key role in achieving the goals of the Africa Strategy. Employment generation, improving competitiveness as well as building resilience and reducing vulnerability are the overall objectives of the World Bank's forest engagement in Sub-Saharan Africa; and in many countries the most effective approaches will be outside the traditional forestry institutions and will involve working through operations and reforms supported through other sectors. [The publication](#)

## **Synthesis report on the submissions from Parties on the work programme and on the revision of the review guidelines for the review of biennial reports from developed country Parties and national communications, including national greenhouse gas inventories, from Parties included in Annex I to the Convention**

*UNFCCC*

The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its thirty-sixth session, initiated its consideration of the work programme on the revision of the guidelines for the review of biennial reports and national communications, including national greenhouse gas (GHG) inventories, for developed country Parties. The SBSTA invited Parties to submit views on the elements of the work programme and on the timeline of proposed activities, as well as on the key elements of the revision of the review guidelines, and requested the secretariat to prepare a synthesis report of Parties' submissions. This report provides a synthesis based on submissions from six Parties as at 12 November 2012. It will serve as an input to further discussions by the

SBSTA at its thirty-seventh session on the revision of the guidelines for the review of biennial reports and national communications, including national GHG inventories. [The publication](#)

## **National Climate finance institutions support programme. Case study : Guyana REDD-Plus Investment Fund (GRIF)**

*UNEP*

The Governments of Guyana (GoG) and Norway (GoN) signed a Memorandum of Understanding<sup>1</sup> (MoU) and a Joint Concept Note (JCN) on November 9th, 2009 pledging that the countries will “work together to provide the world with a relevant, replicable model for how REDD+ can align the development objectives of forest countries with the world’s need to combat climate change.” The result of this cooperation is the Guyana REDD-Plus Investment Fund (GRIF). The GRIF aims to align national economic development with climate resilience and low-deforestation, low carbon growth by investing in low-carbon strategies identified in Guyana’s Low Carbon Development Strategy (LCDS). The GRIF channels funding and offers economic incentives to a wide range of actors to enhance national government policy frameworks and economic incentives for combating climate change. Due to its characteristics, purpose and use the GRIF can be viewed as a public finance mechanism (PFM). [The publication](#)

## **Leveraging the Landscape. State of the Forest Carbon Markets 2012**

*Forest Trends*

The report, which aggregates data from 415 individual forest carbon projects historically, was published Thursday by Forest Trends' Ecosystem Marketplace, a world-leading provider of news, data and analytics on environmental markets and investments in conservation. The report examines a variety of strategies for injecting financial resources into projects that save or plant forests that capture carbon. Carbon offsets from these projects averaged \$9.2 per tonne of sequestered carbon in 2011, up from \$4.6 per tonne in 2010. Companies seeking to offset emissions continue to be the dominant source of demand. At the same time, governments around the globe are stepping up to include forests in their regulatory emissions-reduction strategies. Transactions of credits developed under the United Nation’s Clean Development Mechanism soared in 2011. Additionally, governments in locations like California, Australia, and Canada included forests in national or regional emissions reductions programs. “Last year, market value was buoyed by a diverse landscape of actors, funding sources and projects - mostly in sectors where an emerging price on carbon is writ large,” says Molly Peters-Stanley, Ecosystem Marketplace Carbon Program Manager. “Our findings demonstrate that continued growth requires both price signals and a wide array of actors innovating and financing forest carbon solutions.” The report found 18 million hectares impacted by carbon finance in 40 countries. The majority of projects were on private land but increasingly involved communities and smallholder landholders. “To address the drivers of deforestation, we need to establish innovative ways of enabling forest conservation,” says Katherine Hamilton, Ecosystem Marketplace Director. “As this type of investment gains increasing attention, transparency and access to information are critical for empowering the range of stakeholders and facilitating effective investments in reducing greenhouse gases.” [The report](#)

## **Updated Guide for REDD-plus negotiators**

*FIELD*

In advance of the Doha Climate Change Conference an updated version of FIELD's Guide for REDD-plus negotiators is now available in English, French and Spanish. [More](#)

## **V.I JOBS**

### **Program Officer Forest and Climate**

*WWF Germany - deadline for application is the 30<sup>th</sup> of November 2012*

The World Wide Fund for Nature (WWF) is looking for a Program Officer Forest and Climate for their conservation division in Berlin, Germany with travel to project regions (Indonesia, Russia, Ecuador and Democratic Republic of the Congo). [More](#)

## VII. ANNOUNCEMENTS

### Interactive Forest Atlas for Central African Republic (Atlas Forestier Interactif de la République Centrafricaine)

WRI

The Interactive Forest Atlas is both an information management tool and an aid to decision makers working to support the sustainable use of forest resources in the Central African Republic. [More](#)

### Online Consultation on Hunger, Food and Nutrition Security

FAO & WFP

We are pleased to invite you to the online consultation on Hunger, Food and Nutrition Security - toward a post-2015 development agenda. As the target date for the Millennium Development Goals (MDGs) approaches, a number of processes have been put in place to seek inputs which will shape the "Post-2015 Development Agenda". Consultations are being held across the globe, both within and outside of the United Nations system.

[More](#)

## 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](mailto:CLIM-FO-Owner@fao.org)

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

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