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I. IN THE PRESS

13 February 2014 - Forest Climate Change

[Forests and climate change in Central Africa – what will 2014 bring?](#)

With the deadline for a global climate agreement looming next year, scientists, conservationists and policymakers in Central Africa are becoming increasingly aware that management of forests needs to be part of a broader conversation about land use. This year looks set to bring in more of the surrounding sectors, issues and stakeholders. As demand for resources sees major projects changing Central Africa's landscapes, an integrated approach appears to be needed to manage the competition.

10 February 2014 - REDD Monitor

[REDD in the news 3-9 February 2014](#)

A round up of the week's news on REDD, in chronological order with short extracts.

8 February 2014 - IISD

[UNEP-FI and Partners Support Strategic Approach to REDD+ Financing](#)

The UN Environment Programme Finance Initiative (UNEP-FI), in collaboration with the Global Canopy Programme (GCP), the Amazon Environment Research Institute (IPAM), and Flora and Fauna International, issued a call for a 2015-2020 strategic approach to REDD+ financing through the Interim Forest Finance Project

February 2014 - Forest Climate Change

[How we can give REDD+ a \\$US12 billion job](#)

New research is turning to lessons learned from successful finance initiatives in the healthcare sector - namely vaccines – as one of a number of options to ensure REDD+ finance doesn't continue to slump before a new climate agreement takes effect in 2020. By providing clarity over revenue schemes and commitments to purchase vaccines before an established market mechanism takes hold, the Global Alliance for Vaccination and Immunisation (GAVI) has been able to raise significant capital and encourage private sector investment - and REDD+ could learn from these lessons.

24 January 2014 - Forest Climate Change

[Turning REDD+ data into knowledge](#)

Have you amassed a huge but not particularly well-categorized repository of electronic documents? Or perhaps your organization curates an online

publication library that relies on staff or authors manually identifying key words? Both of these situations lead to large databases that are difficult to search. And with the wealth of information available at our fingertips (the internet has reached over 1.76 billion pages) being able to find the information we want quickly and easily has become of utmost importance.

January 2014 - IISD

[Congo Basin REDD+ GEF Project Reviews Progress](#)

The World Bank and the Commission des Forêts d'Afrique Centrale (COMIFAC) convened the fourth Steering Committee of the 'Enhancing institutional capacities on REDD+ for sustainable forest management in the Congo Basin' project, which is funded by the Global Environment Facility (GEF)

24 January 2014 - IISD

[Workshop Discusses Social Inclusion in REDD+ in Argentina and Mesoamerica](#)

The Forest Carbon Partnership Facility (FCPF) held a workshop for participants from Argentina and seven Mesoamerican countries to take stock, analyze the experience gained, share strategy and tactics, and debate the benefits and challenges involved in social inclusion in REDD+. The workshop was held 20-24 January 2014 in Antigua, Guatemala.

21 January 2014 - IISD

[UNDP, Sweden Release Video on Climate Finance Management](#)

The UN Development Programme (UNDP) Asia-Pacific and the Government of Sweden released a video on managing climate finance effectively. The video provides guidelines on how countries can prepare for climate change and manage development by ensuring appropriate national budget allocations.

17 January 2014 - IISD

[UN Secretary-General Calls for Action on Poverty, Climate Change](#)

During an informal meeting of the Plenary of the UN General Assembly (UNGA), UN Secretary-General Ban Ki-moon outlined UN challenges for 2014, noting that the post-2015 development agenda "must fully reflect the importance of institutions, governance and the rule of law as essential ingredients for success." The UNGA briefing was held on 17 January 2014, in New York, US. Ban also spoke on climate change, natural disasters, and other pressing concerns for the coming year

II. MULTILATERAL PROCESSES IN CLIMATE CHANGE

Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) fourth part of its second session

10 - 14 March 2014, Bonn, Germany

The Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) will hold the fourth part of its second session from 10 to 14 March 2014 in Bonn, Germany. [More](#)

III. EVENTS & MEETINGS

Upcoming events

Forests Asia Conference

20 - 21 March 2014, Shangri-La-Hotel Jakarta, Indonesia

The Center for International Forestry Research (CIFOR) will convene a two-day conference focusing on sustainable forest landscapes to achieve green growth in the countries of the Association of Southeast Asian Nations (ASEAN), taking perspectives from other emerging economies such as China and India. Timed to celebrate the International Day of Forests (March 21) and with the Indonesian President Yudhoyono invited to deliver a keynote address, Forests Asia seeks to position forests and landscapes at the core of the ASEAN Community 2015 process and to inform a common stance among the ASEAN countries on the post-2015 Development Agenda, including the Sustainable Development Goals (SDGs). Alongside rapid economic growth and overall progress in development, Asia is still home to roughly two thirds of the world's poor, and is disproportionately affected by extreme weather, with much of its rural population dependent on climate-sensitive sectors such as forestry, agriculture or fishing. Already a major contributor to global greenhouse gas emissions from agriculture and land use change, Southeast Asia's growing economy and population will add further pressure on the region's forests and landscapes for forest goods, food, nutrition and energy. Attracting the region's leading policymakers, pioneers of the business, civil society, research, donor and media communities, the conference will address governance and trade and investment opportunities to optimize Southeast Asia's forest landscapes for climate change mitigation and adaptation, energy, livelihoods, food security and nutrition. [More](#)

Third International Climate Change Adaptation Conference

12 - 16 May 2014, Centro de Eventos do Ceará, Fortaleza, Brazil

The Third International Climate Change Adaptation Conference 2014 (Adaptation Futures 2014) will be the nexus between the research community and the users of climate change adaptation information at regional and global scale. This conference follows the successful pioneer Climate Adaptation Futures Conference, co-hosted by Australia's National Climate Change Adaptation Research Facility and the CSIRO Climate Adaptation Flagship in Australia in 2010, and the Adaptation Futures 2012 International Conference on Climate Adaptation in Arizona in 2012. Inspired by these two conferences, the Third Conference will build on the community that comes together in Fortaleza and foster a connected, collaborative and creative international network of adaptation researchers, decision makers and interested citizens. The conference will bring together researchers, policy makers, and practitioners from developed and developing countries to share insights into the challenges and opportunities that adaptation presents, and to share strategies for decision making from international to local scales. [More](#)

IV. RESEARCH ARTICLES

Plantation livelihoods in central Vietnam: Implications for household vulnerability and community resilience

Waaben Thulstrup, A.

Norsk Geografisk Tidsskrift - Norwegian Journal of Geography, 68:1, 1-9

Social vulnerability to disturbances is influenced by the economic and political context in which actors and

institutions both enable and constrain household access to productive resources. These resources are crucial as a means for mitigating, coping, and responding to impacts of natural disturbances. The Vietnamese Government has formulated policies aimed at achieving dual objectives of socioeconomic development and environmental protection through the expansion of plantation forests. Negative social impacts and worrying environmental trends have been noted by a number of scholars. However, few studies have examined these issues at the local level or analysed the interplay between plantation forest expansion, household vulnerability, and community resilience to climatic disturbances. The article documents the extent to which the introduction of acacia tree species has reinforced existing inequalities in landholding, which in turn increases household vulnerability to natural disturbances. This has resulted in the emergence of a social-ecological context characterized by decreasing resilience. The most vulnerable households are those of the landless and ethnic minorities, both of which depend on short-term insecure income from casual labour. A growing concentration of landholdings, coupled with a commune economy based on monoculture plantations, threatens resilience and potentially could constrain future government development interventions.

Carbon sequestration: Managing forests in uncertain times

Bellassen, V. & Luysaert, S.

Nature. Volume: 506, Pages: 153-155

The best way to manage forests to store carbon and to mitigate climate change is hotly debated. Trees absorb carbon dioxide from the atmosphere, and wood can be a substitute for fossil fuels and carbon-intensive materials such as concrete and steel. In the past few decades, the world's forests have absorbed as much as 30% (2 petagrams of carbon per year; Pg C year⁻¹) of annual global anthropogenic CO₂ emissions¹ – about the same amount as the oceans. Two-thirds of forests are managed.

Using biodiversity databases to verify and improve descriptions of tree species climatic requirements

Booth, T.H.

Forest Ecology and Management; 2014. 315: 95-102

Understanding tree species climatic adaptability, as well as climatic conditions within their natural distributions, is crucial for managing forests for both commercial and conservation objectives under climate change. Multi-million dollar investments in biodiversity databases are providing forestry professionals with freely accessible tools to carry out these kinds of analyses for many tree species. The climatic requirements of hundreds of tree species have been described in the commercially available Forestry Compendium developed by CAB International, but these descriptions have often relied on expert opinion where information is lacking. It is desirable that descriptions of tree species climatic requirements should, as far as possible, be explicit, quantitative and based on specific observations. This paper describes how the Atlas of Living Australia (ALA) and the Global Biodiversity Information Facility (GBIF) can provide specific observations to assist verifying and, where necessary, improving descriptions of tree species climatic requirements. It focuses mainly on Australian species as the ALA is one of the most sophisticated biodiversity databases currently available for a single country. However, the ALA also has international relevance as Australian eucalypts and acacias are important plantation species in many countries. Data in the GBIF complement the ALA data by providing very useful information on where Australian tree species are growing outside Australia. Analyses of a commercially important species (*Eucalyptus nitens*) and a lesser-known species (*E. botryoides*) demonstrate how descriptions of climatic requirements can be verified and, if necessary, improved. However, the general methods described have the potential to be applied to many tree species. Some of the advantages and disadvantages of these systems are discussed and possible improvements are suggested.

PALSAR 50 m mosaic data based national level biomass estimation in Cambodia for implementation of REDD+ mechanism

Avtar, R.; Suzuki, R.; Takeuchi, W.; Sawada, H

PLoS ONE; 2013. 8(10):e74807.

Tropical countries like Cambodia require information about forest biomass for successful implementation of climate change mitigation mechanism related to Reducing Emissions from Deforestation and forest Degradation (REDD+). This study investigated the potential of Phased Array-type L-band Synthetic Aperture Radar Fine Beam Dual (PALSAR FBD) 50 m mosaic data to estimate Above Ground Biomass (AGB) in Cambodia. AGB was estimated using a bottom-up approach based on field measured biomass and backscattering (σ^0) properties of PALSAR data. The relationship between the PALSAR σ^0 HV and HH/HV with field measured biomass was strong with $R^2 = 0.67$ and 0.56 , respectively. PALSAR estimated AGB show good results in deciduous forests because of less saturation as compared to dense evergreen forests. The validation results showed a high coefficient of determination $R^2 = 0.61$ with RMSE = 21 Mg/ha using values up to 200 Mg/ha biomass. There were some

uncertainties because of the uncertainty in the field based measurement and saturation of PALSAR data. AGB map of Cambodian forests could be useful for the implementation of forest management practices for REDD+ assessment and policies implementation at the national level.

Carbon budget of managed forests in the Russian Federation in 1990-2050: post-evaluation and forecasting

Zamolodchikov, D. G.; Grabovskii, V. I.; Korovin, G. N.; Gitarskii, M. L.; Blinov, V. G.; Dmitriev, V. V.; Kurz, W. A

Russian Meteorology and Hydrology; 2013. 38(10):701-714

Considered are the contribution of managed forests in the Russian Federation to the climate change softening and the forecast of their carbon-depositing potential in the period till 2050 under different scenarios of the forest management. The sink of CO₂ to managed forests is estimated using the flow balance method. The CBM-CFS3 model worked out in the Canadian Forestry Service is used for predicting the carbon budget. It is found out that managed forests absorb 473.8 Mt of CO₂ per year. The carbon sink is caused by the reduction of the volume of the forest use and by the regeneration of cutover stands of previous years. Depending on the conditions of the forest use, by 2020 the CO₂ sink to managed forests will amount to 466-632 Mt/year and will be able to compensate from 21 to 29% of industrial emissions of greenhouse gases. The carbon absorption by managed forests will decrease to 105-235 Mt/year by 2050. To maintain and increase the carbon-depositing potential of managed forests, the Russian Federation needs the development of the system of purposeful activities on strengthening the protection against forest fires and on the intensification of forest reproduction.

Drastic reduction in the potential habitats for alpine and subalpine vegetation in the Pyrenees due to twenty-first-century climate change

Perez-Garcia, N.; Font, X.; Ferre, A.; Carreras, J

Regional Environmental Change; 2013. 13(6):1157-1169

Recent climate change is already affecting both ecosystems and the organisms that inhabit them, with mountains and their associated biota being particularly vulnerable. Due to the high conservation value of mountain ecosystems, reliable science-based information is needed to implement additional conservation efforts in order to ensure their future. This paper examines how climate change might impact on the distribution of the main alpine and subalpine vegetation in terms of losses of suitable area in the Oriental Pyrenees. The algorithm of maximum entropy (Maxent) was used to relate current environmental conditions (climate, topography, geological properties) to present data for the studied vegetation units, and time and space projections were subsequently carried out considering climate change predictions for the years 2020, 2050 and 2080. All models predicted rising altitude trends for all studied vegetation units. Moreover, the analysis of future trends under different climate scenarios for 2080 suggests an average loss in potential ranges of 92.3-99.9% for alpine grasslands, 76.8-98.4% for subalpine (and alpine) scrublands and 68.8-96.1% for subalpine forest. The drastic reduction in the potential distribution areas for alpine grasslands, subalpine scrublands and *Pinus uncinata* forests highlights the potential severity of the effects of climate change on vegetation in the highest regions of the Pyrenees. Thus, alpine grasslands can be expected to become relegated to refuge areas (summit areas), with their current range being taken over by subalpine scrublands. Furthermore, subalpine forest units will probably become displaced and will occupy areas that currently present subalpine scrub vegetation.

Climate responses of aboveground productivity and allocation in *Fagus sylvatica*: a transect study in mature forests

Muller-Haubold, H.; Hertel, D.; Seidel, D.; Knutzen, F.; Leuschner, C

Ecosystems; 2013. 16(8):1498-1516

According to recent climate change scenarios, temperate forests will be increasingly exposed to droughts in the 21st century which are thought to affect productivity. Although decreasing timber yield with reduced precipitation has frequently been reported from temperate forests, the dependence of forest net primary production (NPP) on precipitation is little understood. In a 3-year transect study (2009-2011) carried out in 12 mature beech forests (*Fagus sylvatica*) along a precipitation gradient (820-540 mm y⁻¹) in Northern Germany, we measured all aboveground NPP components (NPP_a; stem wood, leaf mass, flower and fruit production) and analyzed relationships with monthly weather data. Because we measured NPP_a under a broad range of precipitation levels, drought lengths and mast fruiting intensities, the climatic controls of aboveground productivity and carbon allocation could be analyzed in detail. Despite a significant decrease in annual (and growing season) precipitation sums along the transect, NPP_a remained largely invariant in each of the years, but varied remarkably between the years (means of 981, 702, 955 g DM m⁻² y⁻¹, respectively). Variation in NPP_a was most closely related to current year's early summer weather conditions (June-July), whereas the patterns of biomass allocation to wood, leaf, and fruit production responded to the previous summer's weather. Wood

production cannot predict NPP_a in beech due to alternative allocation priorities of vegetative and reproductive growth. Our results show that apparent drought-induced reductions in beech timber yield often are the result of allocation shifts toward fruit production triggered by warm and dry weather in the previous summer.

Ten-year Landsat classification of deforestation and forest degradation in the Brazilian Amazon

Souza, C. M., Jr.; Siqueira, J. V.; Sales, M. H.; Fonseca, A. V.; Ribeiro, J. G.; Numata, I.; Cochrane, M. A.; Barber, C. P.; Roberts, D. A.; Barlow, J.
Remote Sensing; 2013. 5(11):5493-5513.

Forest degradation in the Brazilian Amazon due to selective logging and forest fires may greatly increase the human footprint beyond outright deforestation. We demonstrate a method to quantify annual deforestation and degradation simultaneously across the entire region for the years 2000-2010 using high-resolution Landsat satellite imagery. Combining spectral mixture analysis, normalized difference fraction index, and knowledge-based decision tree classification, we mapped and assessed the accuracy to quantify forest (0.97), deforestation (0.85) and forest degradation (0.82) with an overall accuracy of 0.92. We show that 169,074 km² of Amazonian forest was converted to human-dominated land uses, such as agriculture, from 2000 to 2010. In that same time frame, an additional 50,815 km² of forest was directly altered by timber harvesting and/or fire, equivalent to 30% of the area converted by deforestation. While average annual outright deforestation declined by 46% between the first and second halves of the study period, annual forest degradation increased by 20%. Existing operational monitoring systems (PRODES: Monitoramento da Floresta Amazônica Brasileira por Satélite) report deforestation area to within 2% of our results, but do not account for the extensive forest degradation occurring throughout the region due to selective logging and forest fire. Annual monitoring of forest degradation across tropical forests is critical for developing land management policies as well as the monitoring of carbon stocks/emissions and protected areas.

Interactive effects of environmental change and management strategies on regional forest carbon emissions

Hudiburg, T. W.; Luysaert, S.; Thornton, P. E.; Law, B. E

Environmental Science & Technology; 2013. 47(22):13132-13140

Climate mitigation activities in forests need to be quantified in terms of the long-term effects on forest carbon stocks, accumulation, and emissions. The impacts of future environmental change and bioenergy harvests on regional forest carbon storage have not been quantified. We conducted a comprehensive modeling study and life-cycle assessment of the impacts of projected changes in climate, CO₂ concentration, and N deposition, and region-wide forest management policies on regional forest carbon fluxes. By 2100, if current management strategies continue, the warming and CO₂ fertilization effect in the given projections result in a 32-68% increase in net carbon uptake, overshadowing increased carbon emissions from projected increases in fire activity and other forest disturbance factors. To test the response to new harvesting strategies, repeated thinnings were applied in areas susceptible to fire to reduce mortality, and two clearcut rotations were applied in productive forests to provide biomass for wood products and bioenergy. The management strategies examined here lead to long-term increased carbon emissions over current harvesting practices, although semi-arid regions contribute little to the increase. The harvest rates were unsustainable. This comprehensive approach could serve as a foundation for regional place-based assessments of management effects on future carbon sequestration by forests in other locations.

Monitoring coniferous forest biomass change using a Landsat trajectory-based approach

Main-Knorn, M.; Cohen, W. B.; Kennedy, R. E.; Grodzki, W.; Pflugmacher, D.; Griffiths, P.; Hostert, P

Remote Sensing of Environment; 2013. 139:277-290

Forest biomass is a major store of carbon and thus plays an important role in the regional and global carbon cycle. Accurate forest carbon sequestration assessment requires estimation of both forest biomass and forest biomass dynamics over time. Forest dynamics are characterized by disturbances and recovery, key processes affecting site productivity and the forest carbon cycle. Thus, spatially and temporally explicit knowledge of these processes and their drivers are critical for understanding regional carbon cycles. Here, we present a new method that uses satellite data to estimate changes in forest aboveground biomass associated with forest disturbances and recovery at annual time steps. First, yearly maps of aboveground biomass between 1985 and 2010 based on Landsat time series and field data were created. Then, we applied a trajectory-based segmentation and fitting algorithm to the yearly biomass maps to reconstruct the forest disturbance and recovery history over the last 25 years. We tested the method over a coniferous forest region in the Western Carpathian Mountains, which experienced long-term environmental changes. Overall, 55% (~30,700 ha) of the total coniferous forest experienced a loss of biomass over the observation period, while ~30% showed severe or complete removal of forest biomass. At the same time, 11.2% of the area was reforested or regenerated on previously damaged forest stands. The total coniferous biomass dropped by 15% between 1985 and 2010,

indicating negative balance between the losses and the gains. Disturbance hotspots indicate high insect infestation levels in many areas and reveal strong interactions between biomass loss and climate conditions. Our study demonstrates how spatial and temporal estimates of biomass help to understand regional forest dynamics and derive degradation trends in regard to regional climate change.

Land use change and carbon fluxes in East Africa quantified using earth observation data and field measurements

Pfeifer, M.; Platts, P. J.; Burgess, N. D.; Swetnam, R. D.; Willcock, S.; Lewis, S. L.; Marchant, R
Environmental Conservation; 2013. 40(3):241-252

Carbon-based forest conservation requires the establishment of 'reference emission levels' against which to measure a country or region's progress in reducing their carbon emissions. In East Africa, landscape-scale estimates of carbon fluxes are uncertain and factors such as deforestation poorly resolved due to a lack of data. In this study, trends in vegetation cover and carbon for East Africa were quantified using moderate-resolution imaging spectroradiometer (MODIS) land cover grids from 2002 to 2008 (500-m spatial resolution), in combination with a regional carbon look-up table. The inclusion of data on rainfall and the distribution of protected areas helped to gauge impacts on vegetation burning (assessed using 1-km spatial resolution MODIS active fire data) and biome trends. Between 2002 and 2008, the spatial extents of forests, woodlands and scrublands decreased considerably and East Africa experienced a net carbon loss of 494 megatonnes (Mt). Most countries in the area were sources of carbon emissions, except for Tanzania and Malawi, where the areal increase of savannah and woodlands counterbalanced carbon emissions from deforestation. Both Malawi and Tanzania contain large areas of planted forest. Vegetation burning was correlated with rainfall (forest only) and differed depending on land management. Freely available global earth observation products have provided ways to achieve rapid assessment and monitoring of carbon change hotspots at the landscape scale.

Positioning fruit trees into climate change/variability scenarios: opportunities and constraints in the placement of fruit tree species in payment for environmental services

Mng'omba, S. A.; Beedy, T

Scientific Research and Essays; 2013. 8(28):1343-1348

Extreme environmental conditions due to climate change or variability are a threat to crop production, productivity and livelihoods. Thus, providing alternative livelihoods to communities, especially the rural masses remain an important catalyst in reducing poverty, food insecurity and deforestation in the development of climate change/variability scenarios. This is critical in southern Africa where poverty, deforestation rate and food insecurity are high. These are challenges that rural development programs abating impacts of climate change/variability must address. Planting trees including those outside the forest has been a possible climate change mitigation or adaptation measure. Surprisingly, planting fruit trees have been given little attention and have always aligned to food security, but not their contribution to carbon sequestration and payment for environmental services (PES). There have been limited research studies quantifying carbon sequestration capacities in diverse fruit tree species. This contributes to low profile of fruit tree species in carbon trading. While the emphasis has been on forest trees, those trees outside the forest have also a role to play, especially with proper fruit orchard management systems and propagation protocols that maximize carbon reservoirs. This paper reviews the role of fruit trees in the context of carbon quantities sequestered and the reasons they should be considered in PES or better still carbon trading. It is envisaged that proper fruit tree orchard management practices and propagation protocols can be designed to increase carbon sequestration, while gaining some socio-economic benefits. We hypothesize that proper management of fruit trees offers an opportunity to extend and maximize fruit productivity and carbon storage over a long period. This provides a diverse development option within the framework of climate change/variability mitigation/adaptation. Planting fruit tree species presents many opportunities, but there are still limited documented research studies and piloted projects on any form of PES, especially carbon trading. It is clear that many research studies are warranted to quantify carbon storage within diverse fruit orchards and under different management systems.

Carbon pools recover more quickly than plant biodiversity in tropical secondary forests

Martin, P. A.; Newton, A. C.; Bullock, J. M.

Proceedings of the Royal Society of London. Series B, Biological Sciences; 2013. 280(1773):20132236

Although increasing efforts are being made to restore tropical forests, little information is available regarding the time scales required for carbon and plant biodiversity to recover to the values associated with undisturbed forests. To address this knowledge gap, we carried out a meta-analysis comparing data from more than 600 secondary tropical forest sites with nearby undisturbed reference forests. Above-ground biomass approached equivalence to reference values within 80 years since last disturbance, whereas below-ground biomass took longer to recover. Soil carbon content showed little relationship with time since disturbance. Tree species richness recovered after about 50 years. By contrast, epiphyte richness did not reach equivalence to

undisturbed forests. The proportion of undisturbed forest trees and epiphyte species found in secondary forests was low and changed little over time. Our results indicate that carbon pools and biodiversity show different recovery rates under passive, secondary succession and that colonization by undisturbed forest plant species is slow. Initiatives such as the Convention on Biological Diversity and REDD+ should therefore encourage active management to help to achieve their aims of restoring both carbon and biodiversity in tropical forests.

Evaluation of the Agro-Ecological Zone methods for the study of climate change with micro farming decisions in sub-Saharan Africa

Seo, S. N

European Journal of Agronomy; 2014. 52(B):157-165

This paper evaluates the Agro-Ecological Zone (AEZ) methods for understanding agriculture and measuring the impacts of climate change on agriculture with the observed farming decisions in sub-Saharan Africa. The Agro-Ecological Zone (AEZ) method is explained using the concept of the Length of Growing Period (LGP) and the AEZ classification of the African continent. Farmers' decisions are obtained from the World Bank household surveys of around 8000 farms across 9 sub-Saharan countries. The AEZ results are compared with the observed behavioral decisions of the farmers as well as future predictions of behaviors. Observed choices of agricultural systems, crop net revenues, distributions of livestock species, and grain yields are compared with the AEZ classification. This paper finds that the AEZ/LGP classification identifies the land's suitability for crop farming well, but is a poor indicator of livestock systems, both specialized and diversified. It also does a poor job of identifying nonmajor grains such as forest activities. Besides these identification issues, adaptive decisions such as diversification and risk management are difficult to capture by the AEZ methods. These problems become evident when the AEZ method is applied to measure the impacts of future climate changes since the shifts of farming behaviors are hard to measure. Future research is needed to improve the classification of agro ecosystems and to develop an improved integrated analysis of ecological sciences and economics.

Cradle-to-gate life-cycle assessment of a glued-laminated wood product from Quebec's boreal forest

Laurent, A. B.; Gaboury, S.; Wells, J. R.; Bonfils, S.; Boucher, J. F.; Sylvie, B.; D'Amours, S.; Villeneuve, C

Forest Products Journal; 2013. 63(5/6):190-198

The building sector is increasingly identified as being energy and carbon intensive. Although the majority of emissions are linked to energy usage during the operation part of a building's life cycle, choice of construction materials could play a significant role in reducing greenhouse gas emissions and other environmental end-point damages. Increasing the use of wood products in buildings may contribute to the solution, but their environmental impacts are difficult to assess and quantify because they depend on a variety of uncertain parameters. The present cradle-to-gate life-cycle analysis (LCA) focuses exclusively on a glued-laminated wood product (glulam) produced from North American boreal forests located in the province of Quebec, Canada. This study uses primary data to quantify the environmental impacts of all necessary stages of products' life cycle, from harvesting the primary resources, to manufacturing the transformed product into glulam. The functional unit is 1 m³ of glulam. This is the first study based on primary data pertaining to Quebec's boreal forest. Quebec's boreal glulam manufacturing was compared with two other LCAs on glulam in Europe and the United States. Our results show that Quebec's glulam has a significantly smaller environmental footprint than what is reported in the literature. From an LCA perspective, there is a significant advantage to producing glulam in Quebec, compared with the European and American contexts. The same holds true in regard to the four end-point damage categories.

Sequester or substitute-consequences of increased production of wood based energy on the carbon balance in Finland

Kallio, A. M. I.; Salminen, O.; Sievanen, R

Journal of Forest Economics; 2013. 19(4):402-415

Forests play an important role in mitigating climate change. Forests can sequester carbon from the atmosphere and provide biomass, which can be used to substitute for fossil fuels or energy-intensive materials. International climate policies favor the use of wood to substitute for fossil fuels rather than using forests as carbon sink. We examine the trade off between sequestering carbon in forests and substituting wood for fossil fuels in Finland. For Finland to meet its EU targets for the use of renewable energy by 2020, a considerable increase in the use of wood for energy is necessary. We compare scenarios in which the wood energy targets are fully or partially met to a reference case where policies favoring wood based energy production are removed. Three models are used to project fossil fuel substitution and changes in forest carbon sinks in the scenarios through 2035. Finnish forests are a growing carbon sink in all scenarios. However, net greenhouse gas (GHG) emissions will be higher in the medium term if Finland achieves its current wood energy targets than if

the use of energy wood stagnates or decreases. The volume of GHG emissions avoided by replacing coal, peat and fossil diesel with wood is outweighed by the loss in carbon sequestered in forests due to increased biomass removals. Therefore, the current wood energy targets seem excessive and harmful to the climate. In particular, biodiesel production has a significant, negative impact on net emissions in the period considered. However, we did not consider risks such as forest fires, wind damage and diseases, which might weaken the sequestration policy. The potential albedo impacts of harvesting the forests were not considered either.

Enabling factors for establishing REDD+ in a context of weak governance

Korhonen-Kurki, K.; Sehring, J.; Brockhaus, M.; Gregorio, M. Di
Climate Policy; 2014. 14(2):167-186

Reducing emissions from deforestation and forest degradation (REDD+) has emerged as an important carbon governance mechanism. However, forest governance is weak in most REDD+ countries, which undermines efforts to establish REDD+. This study analyses the factors that enable national REDD+ processes in the context of weak governance using a two-step 'qualitative comparative analysis' (QCA) of 12 REDD+ countries. Assuming that actor-related factors can be effective only if certain institutional preconditions are met, six factors were divided into two categories that were analysed separately: institutional setting (pressure from forest-resource shortage; forest legislation, policy, and governance; already initiated policy change) and the policy arena (national ownership; transformational coalitions; inclusiveness of the policy process). The factors were analysed to determine their role in efforts to establish comprehensive REDD+ policies that target transformational change. The results reveal path dependencies and institutional stickiness in all the study countries. Only countries already undertaking institutional change have been able to establish REDD+ policies in a relatively short period - but only in the presence of either high pressure from forest-resource shortages or key features of effective forest legislation, policy, and governance. Furthermore, where an enabling institutional setting is in place, the policy arena conditions of national ownership and transformational coalitions are crucial. Policy relevance. Although the aim of REDD+ is to provide performance-based payments for emissions reductions, the outcomes in terms of actual emission reductions or co-benefits are not yet observable. Most REDD+ countries are still at the design and implementation stage for policies and measures. Indicators and criteria to measure progress in this phase are required to identify which factors enable or hinder countries' performance in delivering necessary policy change to provide targeted financial incentives to support countries' efforts. This study analyses the factors that shape national REDD+ processes in the context of weak governance using a two-step QCA of 12 REDD+ countries. The results show a set of enabling conditions and characteristics of the policy process under which REDD+ policies can be established. These findings may help guide other countries seeking to formulate REDD+ policies that are likely to deliver efficient, effective, and equitable outcomes.

Consequences of carbon offset payments for the global forest sector

Buongiorno, J.; Zhu, S. S
Journal of Forest Economics; 2013. 19(4):384-401

Long-term effects of policies to induce carbon storage in forests were projected with the Global Forest Products Model. Offset payments for carbon sequestered in forest biomass of \$15–\$50/t CO₂e applied in all countries increased CO₂ sequestration in world forests by 5–14 billion tons from 2009 to 2030. Limiting implementation to developed countries exported environmental damage from North to South, as developing countries harvested more, decreasing their stored CO₂e. Substantially more CO₂e was sequestered by allocating a given budget to all countries rather than to developed countries only. As offset payments increased wood prices relatively more than they decreased production, timber revenues generally increased. In the few countries with timber revenues losses they were more than compensated by the offset payments.

The additionality problem with offsets: optimal contracts for carbon sequestration in forests

Mason, C. F.; Plantinga, A. J
Journal of Environmental Economics and Management; 2013. 66(1):1-14

Carbon offsets are a frequently discussed tool for reducing the costs of an emissions reduction policy. However, offsets have a basic problem stemming from asymmetric information. Sellers of offsets have private information about their opportunity costs, leading to concerns about whether offsets are additional. Non-additional offsets can undermine a cap-and-trade program or, if the government purchases them directly, result in enormous government expenditures. We analyze contracts for carbon sequestration in forests that mitigate the asymmetric information problem. Landowners are offered a menu of two-part contracts that induces them to reveal their type. Under this scheme, the government is able to identify ex post how much additional forest each landowner contributes and minimize ex ante its expenditures on carbon sequestration. To explore the performance of the contracting scheme, we conduct a national-scale simulation using an

econometric model of land-use change. The results indicate that for an increase in forest area of 61 million acres, government expenditures are \$5.3 billion lower under the contracting approach compared to a uniform subsidy offered to all landowners. This compares to an increase in private opportunity costs of just \$110 million dollars under the contracts. Thus, the contracting scheme is preferable from society's perspective.

V. PUBLICATIONS, REPORTS AND OTHER MEDIA

Twelve reasons why climate change adaptation M&E is challenging

SEA Change CoP and UKCIP

Climate change adaptation (CCA) refers to how people and systems adjust to the actual or expected effects of climate change. It is often presented as a cyclical process developed in response to climate change impacts or their social, political, and economic consequences. There has been a recent upsurge of interest in CCA among international development agencies resulting in stand-alone adaptation programs as well as efforts to mainstream CCA into existing development strategies. The scaling up of adaptation efforts and the iterative nature of the adaptation process means that Monitoring and Evaluation (M&E) will play a critical role in informing and improving adaptation policies and activities. Although many CCA programmes may look similar to other development interventions, they do have specific and distinct characteristics that set them apart. These stem from the complex nature of adaptation itself. CCA is a dynamic process that cuts across scales and sectors of intervention, and extends long past any normal project cycle. It is also inherently uncertain: we cannot be entirely sure about the course of climate change consequences, as these will be shaped by societal decisions taken in the future. How then should we define, measure, and assess the achievements of an adaptation programme? The complexities inherent in climate adaptation programming call for a nuanced approach to M&E research. This is not, however, always being realised in practice. CCA poses a range of thorny challenges for evaluators. In this Guidance Note, we identify twelve challenges that make M&E of CCA programmes difficult, and highlight strategies to address each. While most are not unique to CCA, together they present a distinctive package of dilemmas that need to be addressed. [The publication](#)

Selecting indicators for climate change adaptation programming

SEA Change CoP and UKCIP

Climate change adaptation (CCA) programming is a complex, dynamic process that cuts across scales, sectors, and levels of intervention. CCA itself is characterised by many uncertainties, and it extends long past usual project cycles. Moreover, the evidence base of what works, where, and under what conditions is only beginning to emerge. How then to define, measure, and assess results of an adaptation programme? The complexities inherent in CCA pose a number of thorny challenges for evaluators; these were detailed in Guidance Note 1 (Bours, McGinn, and Pringle 2014a). This second Guidance Note follows on from that discussion with a narrower question: how does one go about choosing appropriate indicators? We begin with a brief review of approaches to CCA programme design, monitoring, and evaluation (DME). We then go on to discuss how to identify appropriate indicators. We demonstrate that CCA does not necessarily call for a separate set of indicators; rather, the key is to select a medley that appropriately frames progress towards adaptation and resilience. To this end, we highlight the importance of process indicators, and conclude with remarks about how to use indicators thoughtfully and well. [The publication](#)

Theory of Change approach to climate change adaptation programming

SEA Change CoP and UKCIP

'Theory of Change' (ToC) is a critical thinking approach to program design, monitoring, and evaluation which has become increasingly influential in international development. Described as "a roadmap, a blueprint, an engine of change, a theory of action and more" (Stein and Valters 2012: 5), ToC outlines the building blocks and the relationships between them that would lead to the accomplishment of a long-term goal. When done well, this approach enables stakeholders to embed an intervention within a larger strategy and broad, transformative analysis. It is flexible and practical insofar as it clearly articulates a vision of meaningful social change, and then systematically maps out specific steps towards achieving it. ToC is especially well-suited for the design, monitoring, and evaluation of complex, multifaceted, long-term endeavors and 'wicked problems' like climate change, conflict transformation, and gender equality. It is not without its critics, however, and there are concerns that if misapplied it might become an onerous (and potentially confusing) bureaucratic requirement rather than a vehicle for transformation. In this Guidance Note, we describe the Theory of Change approach and explain why it is a good fit for climate change adaptation programming. We highlight its differences with the more familiar logic model / logical framework ('logframe') approaches - and also show how they can be used together. We go on to guide the reader through the steps of a hypothetical ToC exercise, and then comment on how to avoid the disadvantages and pitfalls that can occur when applying this model. We

conclude by highlighting a 'real world' example of how one agency has used ToC to enhance its work. [The publication](#)

Family forest landowners' interest in forest carbon credit programs: focus group findings from the Lake States

University of Minnesota

Focus groups were organized with individuals owning 20+ acres in the Lake States region (Michigan, Minnesota, and Wisconsin) to discuss various issues related to forest carbon offsetting. Focus group participants consisted of landowners who had responded to a mail-back survey on forest carbon offsets in 2010. Two focus groups were held per state with an average of eight participants each (49 total). While landowner participant types varied, overall convergence was reached on several key issues. In general, discussion results found that the current payment amounts offered for carbon credits are not likely, on their own, to encourage participation in carbon markets. Landowners are most interested in other benefits they can attain through carbon management (e.g., improved stand species mix, wildlife, trails). Interestingly, landowner perceptions about the condition of their own forest land were most indicative of prospective interest in carbon management. Landowners who felt their forest was currently in poor condition, or did not meet their forest ownership objectives, were most interested in participating. While the initial survey sought landowner opinions about carbon markets, a majority of focus group participants expressed interest in carbon management as a means to achieve reduced property taxes. [The publication](#)

REDD+ politics in the media. A case study from Tanzania

CIFOR

Reducing Emissions from Deforestation and forest Degradation (REDD+) is an agreed mechanism by the international community to mitigate climate change while securing other environmental services. The REDD+ mechanism intends to achieve this by providing financial incentives for maintaining and enhancing carbon stocks in forests and trees. Tanzania is actively involved in REDD+ both by developing supportive policies and by implementing projects on the ground, primarily with support from Norway. The media reflects the general agreement, support for and optimism about REDD+ by various stakeholders. REDD+ is seen as a source of additional income for local communities and a mechanism to curb deforestation. The main concerns expressed are whether its implementation will be effective and cost efficient, and whether benefits will be shared equitably. This REDD+ media analysis working paper is part of the research module in the global comparative study (GCS) that focuses on REDD+ policies and policy processes (Brockhaus and Di Gregorio 2012; Brockhaus et al. 2012; Di Gregorio et al. 2012). This study aims to analyze how media is shaping the REDD+ discourse in Tanzania, and to answer key questions: (i) How is REDD+ represented in Tanzanian media?; (ii) What policies and positions related to REDD+ were discussed in the Tanzanian media from 2005 to 2012?; and (iii) Who is influencing these discussions? The media analysis investigates how discourse around REDD+ policy is framed in the mainstream Tanzanian press, identifying media frames, the main actors and their positions on REDD+, while looking at a range of variables at different levels. The analysis of print media articles in Tanzania followed the methodology outlined in Di Gregorio et al. (2012), and is based on a predefined code book to investigate content and actors and their position statements (stances) in the media. The study selected three newspapers in Tanzania: *The Daily News*, *The Guardian* and *Nipashe*. The selections were based on the circulation rate, the possibility of coverage of climate change and REDD+-related issues, ownership and availability both in print and online. A total of 403 articles were collected from the three newspapers and entered into an MS Access database. A total of 54% (166 articles) of the articles collected were from the government-owned *The Daily News*, while 29% (118) and 17% (69) were from *The Guardian* and *Nipashe*, respectively, which are privately owned. Looking into the total number of articles in relation to the subject (REDD+ versus climate change in general), the majority of articles featured general information on the environment and environmental conservation. When examining REDD+ coverage alone in relation to the number of articles collected, the study found relatively less information either partly related to REDD+ or to REDD+ as a whole. The study showed less coverage of REDD+ in the *Nipashe* (Swahili-language) newspaper than in the two English newspapers. The report concluded there was low climate change coverage in Tanzania from 2005 to 2008, but that coverage increased just after 2009; this was mainly due to international negotiations and agreements around the world that played a major role in shaping the REDD+ discourse, including in Tanzania. Most articles published from 2009 touched on how REDD+ will fit into the country in relation to the existing tenure system, benefit sharing and opportunity cost in relation to other land uses and resource ownership rights. There were debates on how REDD+ and conservation will improve economic growth and boost livelihood conditions. As the country was getting more and more of a grip on what REDD+ is all about, the discourse started to shift between scales; media started to get curious about issues such as benefit sharing, the carbon accounting system, and monitoring and verification. This has raised stakes and interest both for and against REDD+. The pro-REDD+ side mainly civil society organizations (CSOs) and nongovernmental organizations (NGOs) – see REDD+ as a game

changer, while doubting it could fit with existing policies and the institutional framework of natural resources governance and management in Tanzania. REDD+ discourse focused more on national-level issues. It narrated progress of REDD+ in various subnational-level pilot projects with respect to related government plans and strategies. [The publication](#)

Stimulating Interim Demand for REDD+ Emission Reductions: The Need for a Strategic Intervention from 2015 to 2020

UNEP Finance Initiative, Global Canopy Programme, Amazon Environment Research Institute, Flora and Fauna International

The UN Environment Programme Finance Initiative (UNEP-FI), in collaboration with the Global Canopy Programme (GCP), the Amazon Environment Research Institute (IPAM), and Flora and Fauna International, issued a call for a 2015-2020 strategic approach to REDD+ financing through the Interim Forest Finance Project. In a report, titled 'Stimulating Interim Demand for REDD+ Emission Reductions,' UNEP-FI and partners propose strategic actions to scale-up public and private sector demand for REDD+ investments over a five-year period. The report seeks to address the current gap between supply and demand, which is resulting in early movers providing significantly less financing than current project proposals could consume. The report notes that the fast start finance (FSF) period (2010-2012), agreed by parties to the UN Framework Convention on Climate Change (UNFCCC) in 2009, resulted in pledges of US\$4.5 billion. However, it stresses that these pledges need to be scaled-up to meet the expected costs of between US\$4 and 48 billion in the interim period (the period between FSF and long-term finance, which will start in 2020). In order to achieve such financing, the report calls for the establishment of a performance-based financial incentive with clear price signals must in order to reduce REDD+ financing risks. Furthermore, it stresses that a strategic intervention to stimulate demand is necessary and should build on existing institutions, mechanisms and funds. [The publication](#)

UNFCCC Releases COP 19 and CMP 9 Reports

IISD

The UNFCCC Secretariat has released the reports of the 19th session of the Conference of the Parties (COP 19) and the 9th session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP 9). The reports contain the COP 19 and CMP 9 decisions taken at the Warsaw Conference and the proceedings from the sessions of COP 19 and CMP 9. [More](#)

Treesilience. An assessment of the resilience provided by trees in the drylands of Eastern Africa

World Agroforestry Center

This book is the result of a consultative process, which brought together experts from Eastern Africa and beyond to synthesize and compile existing information on the role of trees in building resilience in the region's drylands. The group consisted of a mixture of experts with backgrounds in research, academia, government, farmers and development practitioners, and the book reflects the knowledge and perspectives of these various groups. The book begins by describing the rationale behind the initiative followed by a clarification on the background and approach taken. Chapter three then describes the Eastern African region and argues why there is a need to build resilience in the livelihoods of communities living in drylands. Chapter four builds on this by introducing an ecosystem services perspective as the conceptual framework to explore the resilience offered by trees. Chapter five reviews the ecology, distribution and use of trees throughout the Eastern African region. Chapter six uses an ecosystem service perspective to review the various benefits that people derive from dryland trees. Chapter seven draws on experiences gained in development practices and presents and reviews 11 case studies of natural resource management. Chapter eight presents reflections of the write-shop participants on how best practice in resilience-building could be scaled up. A review of knowledge and information gaps regarding the contribution of trees in building resilience is presented in chapter nine, which is followed by a plan for possible follow-up action in chapter ten. [The publication](#)

V.I JOBS

4 UN-REDD positions with UNEP

See the following link for details. Click [here](#)

VII. ANNOUNCEMENTS

No announcements this month.

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.

We appreciate any comments or feedback.

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