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I. IN THE PRESS

15 January 2014 - Just Forests

[What to look out for in 2014!](#)

What stories will impact people and the planet in 2014? On 8 January 2014, Dr. Andrew Steer, WRI's President & CEO, offered his perspectives on the major global developments in economics, business, natural resources and sustainability in the coming year. What are the big events? Who are the influential people? What policy decisions will take place? And how will these determine the future for people and the planet? Now in its 11th year, WRI's STORIES TO WATCH is a go-to event for D.C.'s media, policymakers, business leaders, and consultants

14 January 2014 - *The Guardian*

[UN climate chief calls for tripling of clean energy investment](#)

The United Nations climate chief has urged global financial institutions to triple their investments in clean energy to reach the \$1 trillion a year mark that would help avert a climate catastrophe.

9 January 2014 - *The Guardian*

[Indonesian indigenous groups fight climate change GPS mapping](#)

Indigenous communities in Indonesia are using GPS technology to demarcate the boundaries of their ancestral lands, a move many believe could also help mitigate the negative effects of climate change. "Community mapmaking has been a successful tool to show the government that we are here, and that we want to protect our lands," says Rukka Sombolnggi, a spokeswoman for the Indigenous Peoples' Alliance of the Archipelago (Aman), a Jakarta-based secretariat representing more than 2,000 communities.

6 January 2014 - IISD

[UN-REDD Explores Transparency and Accountability in REDD+](#)

The UN Collaborative Programme on Reducing Emissions from Deforestation (UN-REDD) released a report on 'Sharing National Experiences in Strengthening Transparency, Accountability, and Integrity for REDD+.' The publication features examples from the Democratic Republic of the Congo (DRC), Kenya, Nepal and the Philippines.

5 January 2014 - *REDD Monitor*

[REDD in the news: 30 December 2013 - 5 January 2014](#)

A round up of the week's news on REDD, in chronological order with short extracts (click on the title for the full article). REDD-Monitor's news page is updated regularly.

4 January 2014 - *BusinessMirror*

[Asean, China discuss PES to promote conservation and green growth](#)

TWENTY-EIGHT researchers, academicians and Asean Heritage Park managers from Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand, Vietnam and China convened in Manila recently for the "Workshop on Science, Economics and Institutions for Payments for Ecosystem Services Design.

3 January 2014 - IISD

[People's Voices Brief Released for OWG 7](#)

The UN Development Group (UNDG) has issued a 'People's Voices Issue Brief' conveying views on topics for the seventh session of the UN General Assembly's (UNGA) Open Working Group (OWG) on Sustainable Development Goals (SDGs), including consumption and production patterns, urbanization, climate change, and disaster risk reduction.

3 January 2014 - *RTCC Responding to Climate Change*

[Carbon markets shrank 38% in 2013](#)

The amount of carbon credits traded on the global markets shrank by 38% in 2013, reflecting the lack of pressure companies face to reduce their emissions.

30 December 2013 - *Ecosystem Marketplace*

[The Year in Forest Carbon: Supply-Side Success, Demand-Side Dilemmas](#)

This year began with an underappreciated tailwind from the 2012 climate talks in Doha, which provided a clear set of forest-carbon issues for UN negotiators to work through in 2013. The result was a series of productive meetings that culminated with agreement on sticky issues that had long been hindering the creation of financing mechanisms that Reduce greenhouse gas Emissions from Deforestation and forest Degradation (REDD) under the United Nations Framework Convention on Climate Change (UNFCCC).

18 December 2014 - IISD

[Mitigation and MRV Partnership Discusses MRV for NAMAs in Francophone Africa](#)

The International Partnership on Mitigation and MRV, in cooperation with the Tunisian Energy Agency (ANME) and Tunisian Ministry for Environment, held a regional workshop on monitoring, reporting, and verification (MRV) for Nationally Appropriate Mitigation Actions (NAMAs).

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

World Congress on Agroforestry. Trees for life: Accelerating the impacts of agroforestry

10-14 February 2014, New Delhi, India

The 3rd World Congress on Agroforestry will be held in Delhi, India, 10 - 14 February 2014, co-hosted by the World Agroforestry Centre and the Indian Council of Agricultural Research. It will shape the next steps in the field of integrative science, transformative change in landscapes, tree improvement, innovative tree-based value chains, debates on global and local sustainability, reform of land and tree tenure and holistic education. [More](#)

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

Impacts of exceptional and extreme inter-annual climatic events on the net ecosystem carbon dioxide exchange of a Sitka spruce forest

Saunders, M., Tobin, B., Sweeney, C., Gioria, M., Benanti, G., Caciotti, E. and Osborne, B.A.

Agricultural and Forest Meteorology 184: 147-157

Climatic parameters such as temperature and precipitation are key drivers of the global carbon cycle and both inter-annual climatic variability and extreme climatic events can influence carbon sequestration and greenhouse gas mitigation within terrestrial ecosystems. The impacts of the timing, intensity, frequency and duration of both exceptional and extreme inter-annual climatic events, characterised by major differences in rainfall and temperature, on a Sitka spruce forest in the Irish midlands were assessed using eddy covariance-based measurements of net ecosystem carbon dioxide exchange (NEE). Annual precipitation in 2009 (1156 mm) represented an extremely wet year characterised by extreme precipitation episodes in July (155 mm) and November (220 mm), however the differences in precipitation were not uniformly distributed throughout the year with above average rainfall occurring during the growing season (April–August). The mean annual air temperature in 2010 (8.2 °C) was 1.7 °C lower than the 30 year mean and represented an extremely cold year, and extreme low temperature events, characterised by a number of extended sub-zero temperature periods, were recorded in December of 2009 and 2010 where the mean monthly temperatures were 0.7 °C and –0.7 °C, respectively. These climatic differences resulted in a 1.07 t C ha⁻¹ yr⁻¹ difference between the annual estimates of NEE in 2009 (–8.14 ± 1.94 t C ha⁻¹ yr⁻¹) and 2010 (–9.21 ± 0.99 t C ha⁻¹ yr⁻¹), respectively. The measured NEE in 2009 and 2010 represented a 5.6% decrease and a 6.9% increase relative to the long-term mean measured at this site (2002–2008; –8.62 ± 1.39 t C ha⁻¹ yr⁻¹). The components of NEE, gross primary productivity (GPP) and ecosystem respiration (Reco), also showed differences between years. In 2009, GPP was ~19% lower when compared to 2010, due to a reduction in net stand carbon assimilation at higher irradiances during the growing season. This was most likely due to the development of low oxygen conditions in the rooting zone during periods of higher soil water availability, which may have limited photosynthetic carbon assimilation through a reduction in stomatal conductance. The extended sub-zero temperatures experienced during the winter of 2010 had a greater impact on GPP, relative to Reco, resulting in a net loss of carbon during these periods. Variations in GPP were, however, positively correlated with Reco in both years. NEE was correlated with temperature in all years, with a slope (negative) of 0.2 to 0.3 g C m⁻² d⁻¹ per degree increase in air temperature. At temperatures below ~0 °C the forest was a carbon source, whilst there was a progressive increase in sink capacity as temperatures increased up to ~20 °C. The observed decrease in NEE was dependent on both the duration of exposure and the extent to which the temperature was reduced below zero. This information indicates that while temperature remains the key driver of NEE in this forest ecosystem, the observed reduction in NEE during periods of high water availability in 2009 suggests that under future climatic scenarios the magnitude and timing of extreme precipitation events may also have a significant impact on annual carbon gain.

Effect of the replacement of tropical forests with tree plantations on soil organic carbon levels in the Jomoro district, Ghana

Chiti, T., Grieco, E., Perugini, L., Rey, A., Valentini, R.

Plant and Soil, Published on line: 23 October 2013. DOI 10.1007/s11104-013-1928-1

Background and aims

In the Jomoro district in Ghana, tree plantations were the first cause of deforestation in the past, drastically reducing the area occupied by primary forests. The aim of this study was to quantify soil organic carbon (SOC) losses due to a change in land use from primary forest to tree plantations (cocoa, coconut, rubber, oil palm) on the different substrates of the district. Secondary forests and mixed plantations were also included in the study. *Methods*

Soils were sampled at different depths up to 100 cm along a series of chronosequences in each of the three substrates (Granite, Lower Birrimian and Tertiary Sands) present in the area. *Results*

The highest SOC losses in the 0-30 cm layer were caused by the conversion of primary forests to tree plantations: cocoa –61 % of the original SOC stock, coconut –55 %, rubber –35 % and oil palm 28 %, while mixed plantations and secondary forests showed a loss of 23 % and 21 % of the original SOC stock, respectively. C losses were less apparent from the entire profile (to a depth of 100 cm). *Conclusions*

All conversions to tree plantations caused substantial SOC losses, comparable to the conversion of forests to agricultural systems. Secondary forests and mixed plantations were the only sustainable land uses that restricted SOC losses considerably.

Country-level carbon balance of forest soils: a country-specific model based on case studies in Hungary

Somogyi, Z.; Bidlo, A.; Csiha, I.; Illes, G

European Journal of Forest Research; 2013. 132(5/6):825-840

International agreements require countries to annually report on greenhouse gas emissions and removals. For the land-use sector, this includes estimating stock changes in various carbon pools. For carbon pools like mineral forest soil where a country-level statistical inventory based on measurements is very difficult, models are usually applied together with data from case studies. In this paper, we present a country-specific model together with case studies that aim at capturing major soil processes due to forestry activity. These processes include "hot moments", e.g., disturbances that occur rarely but might result in relatively high emissions. The model only aims at developing a conservative estimate, rather than a central one, of net country-level carbon stock change with emissions overestimated and removals underestimated. The model is partially parameterised using paired sampling of soil organic carbon in the uppermost 30-cm layer, applying standard methods including those suggested by IPCC, in afforestations on former croplands and in artificial regenerations. Results show that soils of afforested croplands act as a sink, and carbon stock after regeneration might decrease due to disturbance by forest operations, but might also increase due to transfer of carbon from dead roots to soil depending on disturbance levels. The estimation at the country level, which involves additional considerations and data from the literature, suggests that overall, forest soils are a net sink in Hungary, but also that artificially limiting soil organic carbon changes estimation to the uppermost 30-cm layer as applied in the IPCC methodology might lead to artefacts.

Transformation of even-aged European beech (*Fagus sylvatica* L.) to uneven-aged management under changing growth conditions caused by climate change

Schou, E.; Meilby, H

European Journal of Forest Research; 2013. 132(5/6):777-789

Transformation from even-aged to uneven-aged forest management is currently taking place throughout Europe. Climate change is, however, expected to change growth conditions - possibly quite radically. Using a deterministic approach, it was the objective of this study to investigate the influence of such changes on optimal transformation strategies for an even-aged stand of European Beech in Denmark. For a range of growth change scenarios, represented by changes in site index, optimal harvest policies were determined using a matrix modelling approach and a differential evolution algorithm. Transition probabilities were updated continuously based on stand level variables and the transition matrix was thus dynamic. With optimal transformation policies, stand development followed similar pathways during the transformation phase irrespective of climate change scenario. Optimal transformation policies were thus robust, suggesting that a good policy would work well under different outcomes of climate change, i.e., acting under erroneous assumptions about change would not lead to major economic loss. For the chosen case stand, the net present value (NPV) of the transformation phase (first 100 years) contributed 80-90% of the total expectation value at a 2% discount rate. To assess the robustness of the optimisation procedure and understand the nature of the response surface, 100 replications per scenario were carried out. Variation between replications peaked during the later stages of the transformation phase indicating several pathways for transformation, which were characterised by almost identical levels of profitability.

Long-term study of above- and below-ground biomass production in relation to nitrogen and carbon accumulation dynamics in a grey alder (*Alnus incana* (L.) Moench) plantation on former agricultural land

Aosaar, J.; Varik, M.; Lohmus, K.; Ostonen, I.; Becker, H.; Uri, V

European Journal of Forest Research; 2013. 132(5/6):737-749

In the Northern and Baltic countries, grey alder is a prospective tree species for short-rotation forestry. Hence, knowledge about the functioning of such forest ecosystems is critical in order to manage them in a sustainable and environmentally sound way. The 17-year-long continuous time series study is conducted in a grey alder plantation growing on abandoned agricultural land. The results of above- and below-ground biomass and production of the 17-year-old stand are compared to the earlier published respective data from the same stand at the ages of 5 and 10 years. The objectives of the current study were to assess (1) above-ground biomass (AGB) and production; (2) below-ground biomass: coarse root biomass (CRB), fine root biomass (FRB) and fine root production (FRP); (3) carbon (C) and nitrogen (N) accumulation dynamics in grey alder stand growing on former arable land. The main results of the 17-year-old stand were as follows: AGB 120.8 t ha⁻¹; current annual

increment of the stem mass 5.7 t ha year⁻¹; calculated CRB 22.3 t ha⁻¹; FRB 81±10 g m⁻²; nodule biomass 31±19 g m⁻²; fine root necromass 11±2 g m⁻²; FRP 53 g DM m⁻² year⁻¹; fine root turnover rate 0.54 year⁻¹; and fine root longevity 1.9 years. FRB was strongly correlated with the stand basal area and stem mass. Fine root efficiency was the highest at the age of 10 years; at the age of 17 years, it had slightly reduced. Grey alder stand significantly increased N and C^{org} content in topsoil. The role of fine roots for the sequestration of C is quite modest compared to leaf litter C flux.

Scaling issues in forest ecosystem management and how to address them with models

Seidl, R.; Eastaugh, C. S.; Kramer, K.; Maroschek, M.; Reyer, C.; Socha, J.; Vacchiano, G.; Zlatanov, T.; Hasenauer, H

European Journal of Forest Research; 2013. 132(5/6):653-666

Scaling is widely recognized as a central issue in ecology. The associated cross-scale interactions and process transmutations make scaling (i.e. a change in spatial or temporal grain and extent) an important issue in understanding ecosystem structure and functioning. Moreover, current concepts of ecosystem stewardship, such as sustainability and resilience, are inherently scale-dependent. The importance of scale and scaling in the context of forest management is likely to further increase in the future because of the growing relevance of ecosystem services beyond timber production. As a result, a consideration of processes both below (e.g. leaf-level carbon uptake in the context of climate change mitigation) and above (e.g. managing for biodiversity conservation at the landscape scale) the traditional focus on the stand level is required in forest ecosystem management. Furthermore, climate change will affect a variety of ecosystem processes across scales, ranging from photosynthesis (tree organs) to disturbance regimes (landscape scale). Assessing potential climate change impacts on ecosystem services thus requires a multi-scale perspective. However, scaling issues have received comparatively little attention in the forest management community to date. Our objectives here are thus first, to synthesize scaling issues relevant to forest management and second, to elucidate ways of dealing with complex scaling problems by highlighting examples of how they can be addressed with ecosystem models. We have focused on three current management issues of particular importance in European forestry: (1) climate change mitigation through carbon sequestration, (2) multi-functional stand management for biodiversity and non-timber goods and services and (3) improving the resilience to natural disturbances. We conclude that taking into account the full spatiotemporal heterogeneity and dynamics of forest ecosystems in management decision-making is likely to make management more robust to increasing environmental and societal pressures. Models can aid this process through explicitly accounting for system dynamics and changing conditions, operationally addressing the complexity of cross-scale interactions and emerging properties. Our synthesis indicates that increased attention to scaling issues can help forest managers to integrate traditional management objectives with emerging concerns for ecosystem services and therefore deserves more attention in forestry.

Toward full economic valuation of forest fuels-reduction treatments

Huang, C. H.; Finkral, A.; Sorensen, C.; Kolb, T

Journal of Environmental Management; 2013. 130:221-231

Our goal was to move toward full economic valuation of fuels-reduction treatments applied to ponderosa pine (*Pinus ponderosa*) forests. For each of five fuels-reduction projects in northern Arizona, we calculated the economic value of carbon storage and carbon releases over one century produced by two fuels-reduction treatments of thinning followed by prescribed burning every one (Rx10) or two (Rx20) decades and for no treatment followed by intense wildfire once in the first 50 years (HF50) or once in the first 100 years (HF100). Our estimates include two uses of harvested wood, the current use as pallets, and multiproduct use as paper, pallets, and construction materials. Additionally, we included the economic value of damage and loss from wildfire. Results indicate that treatments increase carbon stock in live trees over time; however, the inclusion of carbon emissions from treatments reduces net carbon storage and thereby carbon credits and revenue. The economic valuation shows that the highest net benefit of \$5029.74 ha⁻¹ occurs for the Rx20 treatment with the HF50 baseline and the high estimated treatment benefits of avoided losses, regional economic benefits, and community value of fire risk reduction. The lowest net benefit of -\$3458.02 ha⁻¹ occurs for the Rx10 treatment with the HF100 baseline and the low estimated treatment benefits. We conclude that current nonmarket values such as avoided wildfire damage should be included with values of traditional wood products and emerging values of carbon storage to more appropriately estimate long-term benefits and costs of forest fuels-reduction treatments.

Pervasive, long-lasting impact of historical logging on composition, diversity and above ground carbon stocks in Afrotropical forest

Adie, H.; Rushworth, I.; Lawes, M. J

Forest Ecology and Management; 2013. 310:887-895

Understanding the rate and extent of forest recovery from major disturbance events enable forest managers to establish conservation priorities and allocate limited resources for their management. We examined the extent to which Afrotropical forest has recovered from widespread, stand-levelling logging that followed the European settlement of south eastern South Africa approximately 150 years ago. We used plot-based tree census data to compare ecological characteristics (diversity, composition, structure) of primary, secondary and degraded Afrotropical forests. Forests impacted by colonial logging events show no evidence of converging on the composition and above ground standing stock of old-growth forests. Primary forest canopies were dominated by two conifer species (Podocarpaceae) and a suite of long-lived pioneer angiosperms dominated the canopies of secondary forests. Old-growth canopy trees (≥ 20 cm dbh) were taller (~26 m vs ~16 m) and had broader girths (~94 cm vs ~54 cm) compared with those in secondary forest. Canopy tree size differences translated to considerable (2 to 3-fold) differences in above ground carbon: we estimated that primary forest stores >240 Mg C ha⁻¹ compared with the range of 80.7-114.3 Mg C ha⁻¹ estimated for the two secondary forests and 84.3 Mg C ha⁻¹ for the degraded forest. Measures of rarefied species richness and diversity (Shannon exponential) were markedly lower for primary forest canopy trees, consistent with the proposition that the composition of Afrotropical forests converges on podocarp dominance at the old-growth stage. In contrast, diversity measures for small (2.5-10.0 cm dbh) and medium (10.1-19.9 cm dbh) trees were noticeably higher in secondary and degraded forests indicating the considerable conservation value of these formerly disturbed

Prescribed fire effects on field-derived and simulated forest carbon stocks over time

Vaillant, N. M.; Reiner, A. L.; Noonan-Wright, E. K
Forest Ecology and Management; 2013. 310:711-719

To better understand the impact of prescribed fire on carbon stocks, we quantified aboveground and belowground carbon stocks within five pools (live trees and coarse roots, dead trees and coarse roots, live understory vegetation, down woody debris, and litter and duff) and potential carbon emissions from a simulated wildfire before and up to 8 years after prescribed fire treatments. Total biomass carbon (sum of all the pools) was significantly lower 1 year post-treatment than pre-treatment and returned to 97% of pre-treatment levels by 8 year post-treatment primarily from increases in the tree carbon pool. Prescribed fire reduced predicted wildfire emissions by 45% the first year after treatment and remained reduced through 8 year post-treatment (34%). Net carbon (total biomass minus simulated wildfire emissions) resulted in a source (10.4-15.4 Mg ha⁻¹) when field-derived values were compared to simulated controls for all post-treatment time periods. However, the incidence of potential crown fire in the untreated simulations was at least double for the 2 year and 8 year post-treatment time periods than in the treated plots. We also compared field-derived estimates to simulated values using the Fire and Fuels Extension to the Forest Vegetation Simulator (FFE-FVS). In our validation of FFE-FVS to predict carbon stocks, the model performed well for the total biomass carbon (4% difference); however, there was great variability within the individual carbon pools. Live tree carbon had the highest correlation between field-derived and simulated values, and dead tree carbon the lowest correlation and highest percent differences followed by herb and shrub carbon. The lack of trends and variability between the field-derived and simulated carbon pools other than total biomass indicate caution should be used when reporting carbon in the individual pools.

A 100-year conservation experiment: impacts on forest carbon stocks and fluxes

Tara Sharma; Kurz, W. A.; Stinson, G.; Pellatt, M. G.; Li QingLin
Forest Ecology and Management; 2013. 310:242-255.

Forest conservation is an important climate change mitigation strategy. National parks in Canada's Rocky and Purcell Mountains offer a rare opportunity to evaluate the impacts of a century of conservation on forest carbon (C) stocks and fluxes. We studied forest ecosystem C dynamics of three national parks in the Rocky and Purcell Mountains of British Columbia - Yoho, Kootenay, and Glacier National Parks - over the period 1970-2008 using the CBM-CFS3 inventory-based forest C budget model. We hypothesized that parks and protected areas would contain higher forest C density and have lower CO₂ uptake rates compared to their surrounding reference areas because of the exclusion of timber harvesting and resulting predominance of older, slower growing forest stands. Results for Glacier National Park relative to its reference area were consistent with our hypothesis. Forests in Kootenay National Park were substantially younger than those in its reference area despite the exclusion of harvesting because natural disturbances affected large areas within the park over the past century. Site productivity in Kootenay National Park was also generally higher in the park than in its reference area. Consequently, Kootenay National Park had both higher C density and higher CO₂ uptake than its reference area. Yoho National Park forests were similar in age to reference area forests and more productive, and therefore had both higher C stocks and greater CO₂ uptake. C density was higher in all 3 parks compared to their surrounding areas, and parks with younger forests than reference areas had higher CO₂ uptake. The results of this study indicate that forest conservation in protected areas such as national parks can preserve existing C stocks where natural disturbances are rare. Where natural disturbances are an important part of the forest ecology, conservation may or may not contribute to climate change mitigation because of the risk of C

loss in the event of wildfire or insect-caused tree mortality. Anticipated increases in natural disturbance resulting from global warming may further reduce the climate change mitigation potential of forest conservation in disturbance-prone ecosystems. We show that managing for the ecological integrity of landscapes can also have carbon mitigation co-benefits.

managing for the ecological integrity of landscapes can also have carbon mitigation co-benefits.

Relationship between aboveground biomass and measures of structure and species diversity in tropical forests of Vietnam

Tran Van Con; Nguyen Toan Thang; Do Thi Thanh Ha; Cao Chi Khiem; Tran Hoang Quy; Vu Tien Lam; Tran Van Do; Sato, T

Forest Ecology and Management; 2013. 310:213-218.

Tropical forests play an important role in storing carbon through aboveground biomass (AGB) and are considered the highest biodiversity ecosystem on earth. However, the quantitative relationship between AGB and structure-species diversity is poorly understood. Twenty-eight 1-ha plots from old-growth tropical evergreen broadleaf forests and dry dipterocarp deciduous forests, distributed in six ecological regions throughout Vietnam, were used for large tree census (diameter at breast height ≥ 10 cm). Measures of biodiversity (species richness, Shannon index, and evenness) and of structure-species diversity (biomass-species and abundance-biomass-species diversities) were used to determine the patterns and strengths of relationship between each measure and AGB. The linear, logarithmic, and exponential patterns were found, however the former dominated. Negative linear and exponential patterns represented relationship between evenness and AGB, while positive linear and logarithmic relationships were most suitable for others. In general, site-specific relationships ($R^2 > 0.6$) were much stronger than inter-site relationships ($R^2 < 0.6$). Meanwhile, relationships between measures of biodiversity and AGB (the lowest $R^2 = 0.14$) were generally weaker than that between measures of structure-species diversity and AGB (the lowest $R^2 = 0.31$). This finding indicates that structure-species diversity is a sound index representing the role of tropical forest in storing biomass and may suggest that uneven-aged and multistoried plantations should be encouraged for carbon sequestration

Parklands for buffering climate risk and sustaining agricultural production in the Sahel of West Africa

Bayala, J., Sanou, J., Teklehaimanot, Z., Kalinganire, A., Ouédraogo, S.J.

Current Opinion in Environmental Sustainability, Volume 6, 28-34.

In the Sahelian zone of West Africa, crops grown under a discontinuous cover of scattered trees dominate many landscapes and constitute the so-called parklands. These systems reflect the ecological knowledge of the farmers of such risk prone environments. Agroforestry parklands are playing an important role, through trees and shrubs providing soil cover that reduces erosion and buffers the impacts of climate change. They also provide green fodder that complements crop residues for livestock feeds, and fruits and leaves for human consumption and for income generation. The interactions between various components of the system influence the ecosystem service functions of trees of parklands (provisioning, regulating and supporting services) in several ways. These ecosystem functions have been at the center of the local ecological knowledge guiding the management options of the farmers and have also attracted the attention of scientists. Findings revealed new challenges that call for production options ensuring increased and diversified productivity of the systems while preserving the environment. Research on such challenges must adopt an inclusive approach based on local knowledge supported by science-based analyses of the socio-ecological systems in the face of high population pressure and climate change.

Rethinking local adaptation: mind the environment!

Salmela, M. J

Forest Ecology and Management; 2014. 312:271-281.

Spatial heterogeneity in environmental conditions has led to adaptive genetic differentiation and the development of home-site fitness advantage (local adaptation) among populations of many widespread plant species such as forest trees. Although its overall patterns have been well characterised, earlier studies on adaptation have predominantly used long-term averages of environmental variables to describe local climates. Subsequently, only little is currently known about more complex patterns of variation in potential selective forces and how they affect adaptive processes. Furthermore, we also lack a good understanding of why adaptive traits often vary within populations despite clear evidence of local selection. Because the capacity of a population to respond to changes in its home environment depends on the amount of genetic variation that it contains, an understanding of these patterns is fundamental to predicting how extant populations will cope with climate change. In this paper, I call attention to these two issues and discuss adaptation in heterogeneous environments using studies mainly on Finnish populations of Scots pine (*Pinus sylvestris* L.) as an example. In this geographic area, population means in growth cessation are closely related to the latitude at

the population's home site, indicating adaptation to local environments. Yet the trait varies considerably also within populations, with the highest levels of phenotypic variation found in the central part of the latitudinal gradient. Increased variation further north may have a significant genetic component. In stable local environments this would indicate that populations with less variation are more optimally adapted to their home site environments. On the other hand, climate data show that growing season temperature conditions within Finland become temporally more variable towards the north which might contribute to different levels of trait variation. Collectively, these findings demonstrate the weaknesses of focusing only on long-term averages of environmental variables or trait means when examining adaptation in natural populations. Moreover, better integrated analyses of both genetic and environmental variation might help in disentangling the mechanisms that maintain adaptive genetic diversity and adaptive capacity in natural populations of perennial species under changing environmental conditions.

Importance of assessing carbon sequestration potential in forest and urban areas.

Kumar, M.; Nandini, N

Lifesciences Leaflets; 2013. 5(5):78-88.

World is facing tremendous pressure due to increasing concentrations of carbon dioxide and other greenhouse gases (GHG) in the Earth's atmosphere have the potential to enhance the natural greenhouse effect, which may result in climatic changes. The main anthropogenic contributors to this increase are fossil fuel combustion, land use conversion, and soil cultivation. It is clear that overcoming the challenge of global climate change will require a combination of approaches, including increased energy efficiency, energy conservation, alternative energy sources, and carbon capture and sequestration. Sequestration is a major tool for managing carbon emissions. The present study appraised the importance of assessing carbon sequestration potential in both forest and urban areas in terms of i. Above ground biomass (Both litter and wood stock), ii. Below ground biomass (roots), iii. Soil carbon, iv. Air Pollution Tolerance Index of each species. At present, not much information is available on the estimates of carbon sequestration potential in forest and urban areas; therefore more detailed studies are needed for assessing the ultimate changes that are happening in both forest and urban areas. Nowadays the forest are converting into built up areas and urban areas are losing its carbon sequestering potential by converting woody parks into horticulture parks (Flowering parks). Forests itself cannot mitigate or sequester atmospheric carbon; even urban areas should play major role in mitigating regional climate change or global warming.

The impacts of climate change on ecosystem structure and function

Grimm, N. B.; Chapin, F. S., III; Bierwagen, B.; Gonzalez, P.; Groffman, P. M.; Luo, Y.; Melton, F.; Nadelhoffer, K.; Pairis, A.; Raymond, P. A.; Schimel, J.; Williamson, C. E.

Frontiers in Ecology and the Environment; 2013. 11(9):474-482

Recent climate-change research largely confirms the impacts on US ecosystems identified in the 2009 National Climate Assessment and provides greater mechanistic understanding and geographic specificity for those impacts. Pervasive climate-change impacts on ecosystems are those that affect productivity of ecosystems or their ability to process chemical elements. Loss of sea ice, rapid warming, and higher organic inputs affect marine and lake productivity, while combined impacts of wildfire and insect outbreaks decrease forest productivity, mostly in the arid and semi-arid West. Forests in wetter regions are more productive owing to warming. Shifts in species ranges are so extensive that by 2100 they may alter biome composition across 5-20% of US land area. Accelerated losses of nutrients from terrestrial ecosystems to receiving waters are caused by both winter warming and intensification of the hydrologic cycle. Ecosystem feedbacks, especially those associated with release of carbon dioxide and methane release from wetlands and thawing permafrost soils, magnify the rate of climate change.

Carbon density and anthropogenic land-use influences on net land-use change emissions

Smith, S. J.; Rothwell, A

Biogeosciences; 2013. 10(10):6323-6337

We examine historical and future land-use emissions using a simple mechanistic carbon-cycle model with regional and ecosystem specific parameterizations. We use the latest gridded data for historical and future land-use changes, which includes estimates for the impact of forest harvesting and secondary forest regrowth. Our central estimate of net terrestrial land-use change emissions, exclusive of climate- carbon feedbacks, is 250 GtC over the last 300 yr. This estimate is most sensitive to assumptions for preindustrial forest and soil carbon densities. We also find that land-use change emissions estimates are sensitive to the treatment of crop and pasture lands. These sensitivities also translate into differences in future terrestrial uptake in the RCP (representative concentration pathway) 4.5 land-use scenario. The estimate of future uptake obtained here is smaller than the native values from the GCAM (Global Change Assessment Model) integrated assessment model result due to lower net reforestation in the RCP4.5 gridded land-use data product.

Comparison of carbon stocks between mixed and pine-dominated forest stands within the Gwalinidaha community forest in Lalitpur District, Nepal

Aryal, S.; Bhattarai, D. R.; Devkota, R. P
Small-scale Forestry; 2013. 12(4):659-666.

Forests play an important role in the global carbon cycle as both a source and sink of carbon. The carbon stock in a forest is affected by climate, tree species and forest management. The community forestry program of Nepal has been successful in reviving degraded forest patches in the Mid-hills but there is a lack of information whether mixed or pine plantations store more carbon. This study estimated and compared carbon stocks in mixed and pine-dominated forest stands within the Gwalinidaha Community Forest of Lalitpur District, Central Nepal. Carbon components considered include tree biomass carbon, root biomass carbon, litter biomass carbon and soil organic carbon. Total carbon stock of the forest is estimated to be 2,250.24 tons with average carbon stock of 166.68 tons/ha. Total carbon stock per hectare was found to be higher in the pine-dominated forest as compared to mixed forest due to the larger tree biomass although the litter carbon and soil organic carbon estimates are higher in the latter. The Community Forestry of Nepal has a huge potential for carbon storage and the pine-dominated forest has a greater carbon stock than mixed forest.

Carbon storage on non-industrial private forestland: an application of the theory of planned behavior

Thompson, D. W.; Hansen, E. N.
Small-scale Forestry; 2013. 12(4):631-657

Leading scientific experts in the field of climate change suggest that a multifaceted response to global warming should include the use of forest carbon offsets (also known as forest sinks). Emerging emissions reduction legislation in the United States (US) accounts for this recommendation by allowing for carbon offsets derived from domestic forestry projects (e.g. reforestation, afforestation, avoided deforestation). Given that the majority of US forestland is privately owned and non-industrial, the current research employs a behavioral model to measure intentions of private non-industrial forestland owners to participate in carbon sequestration and trading. Results suggest that very few (5.1%) of these forestland owners are currently involved in carbon sequestration and trading, but half (50.4%) were at least somewhat interested in exploring opportunities to do so. The Theory of Planned Behavior, acting as the theoretical frame of reference, was extended in the current research to include environmental orientation, innovativeness, perceived risk and tested knowledge, all of which had significant effects on core model constructs: attitude, subjective norms, perceived behavioral control and behavioral intentions. The extended model explained a significant amount of the variance related to behavioral intentions to sequester carbon on private US forestland ($R^2=.53$).

Accounting for capacity and flow of ecosystem services: a conceptual model and a case study for Telemark, Norway

Schroter, M.; Barton, D. N.; Remme, R. P.; Hein, L
Ecological Indicators; 2014. 36:539-551.

Understanding the flow of ecosystem services and the capacity of ecosystems to generate these services is an essential element for understanding the sustainability of ecosystem use as well as developing ecosystem accounts. We conduct spatially explicit analyses of nine ecosystem services in Telemark County, Southern Norway. The ecosystem services included are moose hunting, sheep grazing, timber harvest, forest carbon sequestration and storage, snow slide prevention, recreational residential amenity, recreational hiking and existence of areas without technical interference. We conceptually distinguish capacity to provide ecosystem services from the actual flow of services, and empirically assess both. This is done by means of different spatial models, developed with various available datasets and methods, including (multiple layer) look-up tables, causal relations between datasets (including satellite images), environmental regression and indicators derived from direct measurements. Capacity and flow differ both in spatial extent and in quantities. We discuss five conditions for a meaningful spatial capacity-flow-balance. These are (1) a conceptual difference between capacity and flow, (2) spatial explicitness of capacity and flow, (3) the same spatial extent of both, (4) rivalry or congestion, and (5) measurement with aligned indicators. We exemplify spatially explicit balances between capacity and flow for two services, which meet these five conditions. Research in the emerging field of mapping ES should focus on the development of compatible indicators for capacity and flow. The distinction of capacity and flow of ecosystem services provides a parsimonious estimation of over- or underuse of the respective service. Assessment of capacity and flow in a spatially explicit way can thus support monitoring sustainability of ecosystem use, which is an essential element of ecosystem accounting.

Natural forest disturbances and the design of REDD+ initiatives

Nguon, P.; Kulakowski, D
Environmental Science & Policy; 2013. 33:332-345

Basing ecosystem management and conservation on the best available science is essential to meeting intended goals and minimizing surprises. To design effective, efficient, and equitable policies for the REDD+ initiatives, requires that drivers of deforestation and forest degradation are correctly identified, and that the ecological context of those drivers is correctly understood. Contemporary forest ecology and management are based on the recognition that forest ecosystems are dynamic, and that those dynamics are often driven by both anthropogenic- and naturally induced disturbances. Here we examine the degree to which the dynamic view of ecosystems is incorporated into the design of REDD+ initiatives. We conducted content analysis of the World Bank's Forest Carbon Partnership Facility's 36 REDD+ participating countries' Readiness Plan Idea Notes and/or Readiness Preparation Proposals. Across the 36 countries, drivers of deforestation and forest degradation could be grouped into categories of institutional policies, political-economic contexts and social settings. The result of our content analysis indicates that there is a lack of discussion of the dynamic character of ecosystems and of the potential influence of natural disturbances on the identified drivers of deforestation and forest degradation. We argue that REDD+ initiatives must take into account knowledge of natural disturbance regimes (including the size, frequency and severity of key disturbances) in their framing of the drivers of deforestation and forest degradation in order to better understand the ecological stage on which these projects will be implemented after the piloting phase. This paper proposes four approaches to integrate understanding of natural disturbances with the socio-political and economic drivers of deforestation and forest degradation within REDD+ participating countries.

Exploring different forest definitions and their impact on developing REDD+ reference emission levels: a case study for Indonesia

Romijn, E.; Ainembabazi, J. H.; Wijaya, A.; Herold, M.; Angelsen, A.; Verchot, L.; Murdiyarso, D
Environmental Science & Policy; 2013. 33:246-259

Developing countries participating in the mitigation mechanism of reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks (REDD+), need to determine a national forest reference emission level (REL) as part of their national monitoring system, which serves as a benchmark to measure the impact of their REDD+ actions. Using data from Indonesia, we show that the choice of a forest definition can have a large impact on estimates of deforestation and forest degradation areas, on assessment of drivers of deforestation and on the development of a REL. The total area of deforestation between 2000 and 2009 was 4.9 million ha when using the FAO definition, 18% higher when using a 'natural forest definition' and 27% higher when using the national definition. Using the national and natural forest definitions, large areas (>50%) were classified as shrubland after deforestation. We used regression models to predict future deforestation. Deforestation was much better predicted than degradation (R^2 of 0.81 vs. 0.52), with the natural forest definition giving the best prediction. Apart from historical deforestation and initial forest cover, gross domestic product and human population were important predictors of future deforestation in Indonesia. Degradation processes were less well modeled and predictions relied on estimates of historical degradation and forest cover.

What causes differences between national estimates of forest management carbon emissions and removals compared to estimates of large-scale models?

Groen, T. A.; Verkerk, P. J.; Bottcher, H.; Grassi, G.; Cienciala, E.; Black, K. G.; Fortin, M.; Kothke, M.; Lehtonen, A.; Nabuurs, G. J.; Petrova, L.; Blujdea, V.;
Environmental Science & Policy; 2013. 33:222-232

Under the United Nations Framework Convention for Climate Change all Parties have to report on carbon emissions and removals from the forestry sector. Each Party can use its own approach and country specific data for this. Independently, large-scale models exist (e.g. EFISCEN and G4M as used in this study) that assess emissions and removals from this sector by applying a unified approach to each country, still often based on country specific data. Differences exist between the national reported values and the calculations from the large scale models. This study compares these models with national reporting efforts for 24 EU countries for the period 2000-2008, and identifies the most likely causes for differences. There are no directly identifiable single input parameters that could be targeted to fully close the gap between country and model estimates. We found that the method applied by the country (i.e. stock-difference or gain-loss) contributes significantly to differences for EFISCEN and was the best explaining variable for G4M, although for the latter it was not significant. Other variables (biomass expansion factors, harvest volumes and the way harvest losses are treated) were not found to provide a conclusive explanation for the differences between the model estimations and the country submissions in an over-all analysis. However, at the level of individual countries several different causes for differences were identified. This suggests that to really close the gap between country submissions and large scale models, close collaboration between modellers and country experts is needed, calling for openness and willingness to share relevant data and to compare GHG inventories with independent estimates. This would enable to improve the confidence both in historical GHG inventories and in the models which are needed to project the future forest sink for several policy issues.

Monitoring vegetation dynamics and carbon stock density in miombo woodlands

Ribeiro, N. S.; Matos, C. N.; Moura, I. R.; Washington-Allen, R. A.; Ribeiro, A. I
Carbon Balance and Management; 2013. 8(11):(9 November 2013)

Background. The United Nation's Program for Reducing Emissions from Deforestation and Forest Degradation (REDD+) aims to reduce the 20% contribution to global emissions of greenhouse gases from the forest sector, offering a financial value of the carbon stored in forests as an incentive for local communities. The prerequisite for the setup of a participatory REDD + Program is the monitoring, reporting and verification (MRV) of baseline carbon stocks and their changes over time. In this study, we investigated miombo woodland's dynamics in terms of composition, structure and biomass over a 4-year period (2005-2009), and the Carbon Stock Density (CSD) for the year 2009. The study was conducted in the Niassa National Reserve (NNR) in northern Mozambique, which is the 14th largest protected area in the world.

Results. Mean tree density distributed across 79 species increased slightly between 2005 and 2009, respectively, from 548 to 587 trees ha⁻¹. *Julbernardia globiflora* (Benth.) was the most important species in this area [importance value index (IVI₂₀₀₅=61 and IVI₂₀₀₉=54)]. The woodlands presented an inverted J-shaped diametric curve, with 69% of the individuals representing the young cohort. Woody biomass had a net increase of 3 Mg ha⁻¹ with the highest growth observed in *Dyplorhynchus condilocarpon* (Müll.Arg.) Pichon (0.54 Mg ha⁻¹). *J. globiflora* had a net decrease in biomass of 0.09 Mg ha⁻¹. Total CSD density was estimated at ca. 67 MgC ha⁻¹ ± 24.85 with soils (average 34.72 ± 17.93 MgC ha⁻¹) and woody vegetation (average 29.8 MgC ha⁻¹ ± 13.07) representing the major carbon pools. The results point to a relatively stable ecosystem, but they call for the need to refocus management activities.

Conclusions. The miombo woodlands in NNR are representative of the woodlands in the eco-region in terms of vegetation structure and composition. They experienced net increase in woody biomass, a considerable recruitment level and low mortality. According to our results, NNR may present good potential for carbon sequestration especially in soils and woody biomass, representing an important potential carbon sink. However, further investigations are needed in order to address the contribution of this area to MRV REDD + initiatives.

BIOCLIM: the first species distribution modelling package, its early applications and relevance to most current MAXENT studies

Booth, T.H., Nix, H.A., Busby, J.R., Hutchinson, M.F.

Diversity and Distributions, (Diversity Distrib.) (2014) 20, 1-9

Aim. Interest in species distribution models (SDMs) and related niche studies has increased dramatically in recent years, with several books and reviews being prepared since 2000. The earliest SDM studies are dealt with only briefly even in the books. Consequently, many researchers are unaware of when the first SDM software package (BIOCLIM) was developed and how a broad range of applications using the package was explored within the first 8 years following its release. The purpose of this study is to clarify these early developments and initial applications, as well as to highlight BIOCLIM's continuing relevance to current studies. **Location.** Mainly Australia and New Zealand, but also some global applications. **Methods.** We outline the development of the BIOCLIM package, early applications (1984-1991) and its current relevance. **Results.** BIOCLIM was the first SDM package to be widely used. Early applications explored many of the possible uses of SDMs in conservation biogeography, such as quantifying the environmental niche of species, identifying areas where a species might be invasive, assisting conservation planning and assessing the likely impacts of climate change on species distributions. **Main conclusions.** Understanding this pioneering work is worthwhile as BIOCLIM was for many years one of the leading SDM packages and remains widely used. Climate interpolation methods developed for BIOCLIM were used to create the WorldClim database, the most common source of climate data for SDM studies, and BIOCLIM variables are used in about 76% of recent published MAXENT analyses of terrestrial ecosystems. Also, some of the BIOCLIM studies from the late 1980s, such as measuring niche (both realized and fundamental) and assessing possible impacts of climate change, are still highly relevant to key conservation biogeography issues.

V. PUBLICATIONS, REPORTS AND OTHER MEDIA

Forest BioEnergy Production. Management, Carbon sequestration and Adaptation

Kellomäki, Seppo; Kilpeläinen, Antti; Alam, Ashraf (Eds.)

For thousands of years, forest biomass or wood has been among the main energy sources of humans around the world. Since the industrial revolution, fossil fuels have replaced wood and become the dominant source of energy. The use of fossil fuels has the disadvantage of increasing atmospheric concentrations of greenhouse gases (GHGs), especially carbon dioxide (CO₂), with the consequent warming of global climate and changes in

precipitation. In this context, the substitution of fossil fuels with renewable energy sources like forest biomass is among the ways to mitigate climate change. This book summarizes recent experiences on how to manage forest land to produce woody biomass for energy use and what are the potentials to mitigate climate change by substituting fossil fuels in energy production. In this context, the book addresses how management can affect the supply of energy biomass using short-rotation forestry and the conventional forestry applying long rotations. Furthermore, the book outlines the close interaction between the ecological systems and industrial systems, which controls the carbon cycle between the atmosphere and biosphere. In this context, sustainable forest management is a key to understand and control indirect carbon emissions due to the utilization of forest biomass (e.g. from management, harvesting and logistics, and ecosystem processes), which are often omitted in assessing the carbon neutrality of energy systems based on forest biomass. The focus in this book is on forests and forestry in the boreal and temperate zones, particularly in Northern Europe, where the woody biomass is widely used in the energy industry for producing energy. The book is available for purchase from Springer - click [here](#)

Qualitative Comparative Analysis (QCA). An application to compare national REDD+ policy processes

CIFOR

In 1987, the American social scientist Charles Ragin built the foundation for Qualitative Comparative Analysis (QCA) with his seminal book *The Comparative Method*. QCA is designed for the comparison of a small to intermediate number of cases. It enables systematic cross-case comparison without neglecting case complexity, allowing modest, medium-range generalization and theorizing. The aim of this working paper is to introduce QCA as a method to study policy processes. In particular, we discuss its application to the Global Comparative Study on REDD+ (GCS-REDD). The objective of GCS-REDD is to provide policy makers and practitioners with relevant knowledge to ensure effective, cost-efficient and equitable reduction of carbon emissions from deforestation and forest degradation as well as co-benefits (3E+ criteria). Its analyses occur simultaneously with efforts to start and implement REDD+ and try to identify 'what works and what does not.' The paper was developed for Module 1 of GCS-REDD (see Brockhaus and Di Gregorio 2012). This Module analyses the national processes that formulate and implement REDD+ policies and assesses whether the resulting outcomes are meeting the 3E+ criteria, in nine countries with additional studies in three other countries. Each full country study consists of five work modules: a country profile of the institutional context, a media analysis, a policy network analysis, a REDD+ policy content analysis, and a fifth flexible module that can be adapted to specific country research needs. [The publication](#)

Overview of linkages between gender and climate change

UNDP

The degree to which people are affected by climate change impacts is partly a function of their social status, gender, poverty, power and access to and control over resources. Despite the international community's increasing acknowledgement of the differential experiences and skills women and men bring to development and environmental sustainability efforts, women still have lesser economic, political and legal clout and are hence less able to cope with—and are more exposed to—the adverse effects of the changing climate. Drawing on women's experiences, knowledge and skills and supporting their empowerment will make climate change responses more effective. However, the impacts of gender inequalities and women's recurrent socio-economic disadvantages continue to be ignored and remain a critical challenge to adaptation efforts. As the world continues to grapple with what a post-Kyoto climate regime should look like, it is crucial that mitigation and adaptation efforts integrate gender issues at all levels. This will minimize risks to women and children and ensure greater success of efforts to address climate change. [The publication](#)

Environment at a Glance 2013. OECD Indicators

OECD

This book includes key environmental indicators endorsed by OECD Environment Ministers and major environmental indicators from the OECD Core Set. These indicators reflect environmental progress made since the early 1990s and thus contribute to measuring environmental performance. Organised by issues such as climate change, air pollution, biodiversity, waste or water resources, they provide essential information for all those interested in the environment and in sustainable development. [The publication](#)

Report of the Subsidiary Body for Implementation on its thirty-ninth session, held in Warsaw from 11 to 18 November 2013

UNFCCC

The report can be downloaded [here](#)

Guidance Note on Gender Sensitive REDD+

UN-REDD Programme

This note has been prepared as a guide for those engaged in REDD+ efforts at the local, national, regional or global level. The overall objective is to promote gender sensitive REDD+ processes and support UN-REDD Programme partner countries and stakeholders in the preparation, development and implementation of gender sensitive national REDD+ strategies. By doing this, REDD+ will be more efficient, effective and sustainable. [The publication](#)

V.I JOBS

Director, CGIAR Research Program on Forests, Trees, and Agroforestry (FTA)

CIFOR - deadline for application is 31st of January 2014

CIFOR is looking for a director for the CGIAR Research Program on Forests, Trees and Agroforestry: Livelihoods, Landscapes and Governance (FTA) is a large integrated research program that started in 2011. It is responding to the call for urgent, strong and sustained effort focused on forest management and governance, given the crucial role of forests in some of the most important challenges of our time: climate change, poverty, environment and food security. [More](#)

Team Leader for Xe-Pian REDD+ Project in Southern Laos

ÖBf Consulting

ÖBf Consulting is looking for a highly motivated and experienced candidate for the position as “Team Leader” in the Xepian NPA REDD+ Project in Southern Laos. ÖBf Consulting offers a fixed contract full-time for 27 months commencing on 1 April 2014. The position entails, inter alia, the close cooperation with local park administration and various other stakeholders as well as coordinating the implementation of REDD+ project activities apart from setting up and implementing a monitoring system in line with MRV requirements by VCS. For further information and professional qualification requirements, see the full text. [More](#)

VII. ANNOUNCEMENTS

Global Forest Products Companies Come Together to Support Forest Certification

World business council for sustainable development

Istanbul, 4 November 2013- In an unprecedented show of support from the private sector for forest certification, 26 of the world’s leading companies along the forest products value chain released a leadership statement today, committing to significantly scale up sustainable forest management. These 26 members of the World Business Council for Sustainable Development (WBCSD) Forest Solutions Group (FSG) are responsible for nearly 40% of annual global forest, paper and packaging sales, and are aware that the business sector plays a major role in transforming forest challenges into forest-based opportunities and solutions. [More](#)

New Interactive Global Weather Resources Available through aWhere Platform Support Sustainable Forestry

aWhere. Location Intelligence for Global Development

Increased weather variability and changing weather patterns due to climate change are already beginning to impact the world’s forests. Hyper-localized weather data and agro meteorological indices available freely through the aWhere Platform can support sustainable forest management in the face of climate change.

Recently, aWhere incorporated two new global resources into the Platform: [satellite derived precipitation data](#) and localized weather data for [Mexico and Central America](#).

The new satellite derived precipitation product, created by Colorado State University, uses microwave satellite sensors to provide unprecedented access to localized, global precipitation data. These data, which have better

spatial and temporal resolution than existing sources, are now a significant part of the aWhere Platform.

Both the satellite derived precipitation data and weather data for Mexico and Central America are now accessible through aWhere's interactive, web based tool. [The Platform](#) offers free access to weather data for Eastern, Western, and Southern Africa; South Asia; Central America; and Mexico. Platform users have access to historical, daily-observed, and forecasted hyper-localized weather data for key variables including precipitation, temperature, humidity, solar radiation, wind speed, and growing degree days. Users interact with gridded data (available in a 5-arc minute resolution, or 9 x 9 km grid cell) through rich maps, graphs, and table tools, all accessed via the internet. Additionally, users can customize web-based weather analyses, download data for further analysis, and monitor weather patterns through emailed alerts and reports.

[Register Now](#) to access the aWhere Platform and these new global weather resources, or [contact us](#) to learn more about aWhere's weather data. Returning users can [log in here](#).

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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