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I. IN THE PRESS

21 October 2-13 - Forest Carbon

[Forest Carbon and GIZ pioneer tablet-based forest inventory approaches in Laos and Vietnam](#)

Forest Carbon has recently completed back-to-back trainings on a pioneering new method for REDD+ and forestry data collection in Laos and Vietnam supported by GIZ in both countries. Tablet-based inventory methods using either Android or iOS operating systems have advanced the way that local and national governments are able to navigate to, collect, and analyze forest data

21 October 2013 - Eco Business

[Mangrove map pinpoints carbon riches](#)

Scientists have known for centuries that mangroves are one of the most carbon-rich ecosystems on Earth. Now that knowledge has been refined with the development of a map and model that pinpoint just how much carbon is stored in different mangrove areas around the world.

17 October 2013 - World Agroforestry Centre

[Innovate to tackle climate change](#)

The ‘diversity of human ingenuity’ holds the key to finding solutions to the challenges facing modern agriculture, writes Peter Baker, Senior Scientist of Commodities and Climate Change at CABI, in The Ecologist.

17 October 2013 - CIFOR

[Biofuels and forests: Revisiting the debate](#)

Much of the initial optimism about the contribution of biofuels to energy security, climate change mitigation and rural development has given way to skepticism about its economic viability and bad publicity about related land grabbing and environmental destruction.

17 October 2013 - World Agroforestry Centre

[Climate-smart agriculture can help change the equation](#)

Ingenuity and innovative solutions” will be needed to address the problem of increasing demand for food with shrinking agricultural production. Juergen Voegelé, Director of the World Bank's Agriculture and Environmental Services Department, believes climate-smart agriculture is an approach that can help change the equation and prevent continued hunger and poverty.

16 October 2013 - FAO

[Forests, Rangelands and Climate Change in Southern Africa](#)

FAO has recently published a study on Forests, Rangelands and Climate Change in Southern Africa. The report provides an overview of the actual and potential impacts of climate change on forest and rangeland resources in southern Africa, reviews related efforts under way in the countries and the region to respond to climate change, and identifies areas of potential cooperation among countries in the region.

15 October 2013 - Science Daily

[Climate change creates complicated consequences for North America's forests](#)

Climate change affects forests across North America -- in some cases permitting insect outbreaks, plant diseases, wildfires and other problems -- but Dartmouth researchers say warmer temperatures are also making many forests grow faster and some less susceptible to pests, which could boost forest health and acreage, timber harvests, carbon storage, water recycling and other forest benefits in some areas.

11 October 2013 - redd Vietnam

[Global initiative gears up for reducing forest destruction and degradation in Viet Nam](#)

The Government of Viet Nam today took another major step towards reducing greenhouse gas emissions from agriculture and rural development with the gathering of more than 100 stakeholders from national government, local authorities, non-government organizations and development partners at an inception workshop in Ha Noi to shape the implementation of UN-REDD Viet Nam Phase II.

9 October 2013 - Forest Carbon Portal

[Can NAMAs overcome the CDM's shortcomings to achieve sustainability benefits?](#)

At the UNFCCC negotiations in Bali in 2007, developing countries agreed to develop nationally appropriate mitigation actions (NAMAs). NAMAs aim to reduce greenhouse gas emissions while also achieving sustainable development and poverty reduction objectives. NAMAs have been loosely defined and can include individual mitigation projects and actions or comprehensive sector-wide mitigation programs.

II. MULTILATERAL PROCESSES IN CLIMATE CHANGE

United Nations Framework Convention on Climate Change

11-22 November, Warsaw, Poland

The 19th session of the Conference of the Parties to the UNFCCC and the 9th session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol will take place from 11 to 22 November. The conference will be held at the National Stadium in Warsaw, Poland. [More](#)

III. EVENTS & MEETINGS

Upcoming events

Oslo REDD Exchange 2013

29 - 30 October, Oslo, Norway

Hosted by the Norwegian and International Climate and Forest Initiative, Oslo REDD Exchange aims to renew the forests and climate change agenda in light of experience to date, and respond to rapidly changing physical, financial, and political landscapes. REDD stands for “Reducing Emissions from Deforestation and Forest Degradation in Developing Countries”. REDD+ goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. [More](#)

Workshop on Impact of Climate Change on Forest Work

11 -12 November 2013, Geneva, Switzerland

The ECE/FAO/ILO Joint Expert Network to implement Sustainable Forest Management is organizing a workshop on the impact of climate change on forestry work. This workshop is scheduled to take place in Geneva on 11 November with a field trip on 12 November 2013 (tbc). The objective of the workshop is to identify climate change related impacts on forestry work and ways and means to address them, by reviewing existing solutions and possible innovations and formulating recommendations for forest entrepreneurs, forest owners as well as policy makers and training centres. [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

Forest and conservation policy in a changing climate

Special issue of Forest Policy and Economics Volume 36: 1-98

The Forest Policy and Economics journal has developed a special issue on forests and conservation policy in a changing climate. For a list of abstracts please click [here](#)

Finding a path for REDD+ between ODA and the CDM

Neeff, T., Gohler, D., Ascui, F.

Climate Policy (2013) DOI: 10.1080/14693062.2013.831289

A new financing mechanism known as REDD+ (reducing emissions from deforestation and forest degradation, and conservation, sustainable management of forests and enhancement of forest carbon stocks) is being established to achieve large-scale reductions in GHG emissions from tropical forestry and land use. Can REDD+ successfully integrate an emphasis on sustainable development benefits (as with Official Development Assistance, ODA) with a focus on delivering emission reductions (as with the Clean Development Mechanism, CDM)? It is argued that there is a real risk that REDD+ will stay too close to ODA and fail to move beyond its 'readiness' phase. Moreover, as with the CDM, there could be an over-emphasis on results in terms of emission reductions, which would only make it attractive for a small set of activities in relatively few countries. In order to balance sustainable development with cost-effective emission reductions, REDD+ needs to involve the private sector in project implementation and financing, its rules for reference levels and crediting arrangements need to be flexible, and forest countries need to proactively direct activities. Policy relevance REDD+ has the potential to deliver funding at an unprecedented scale for forestry and land use activities in developing countries. However, this will only occur if the mechanism can successfully transition from its current readiness phase (which is similar to ODA) to a results-based REDD+ phase (which implies similarities with the CDM). A framework for analysing the attractiveness of results-based REDD+ for both forest and funder countries is provided. It is argued that the interests of forest and funder countries coincide when there are activities that score well with respect to financing and co-funding requirements, socio-economic impacts, and governance implications, within the context of each forest country's policy environment and capabilities. An early case study of a results-based REDD+ transaction, the Indonesian logging moratorium, suggests this conceptual framework provides an effective decision support tool to help design future REDD+ policy interventions to avoid the various pitfalls of ODA and the CDM.

Interventions to better manage the carbon stocks in Australian *Melaleuca* forests

Tran, D. B.; Dargusch, P.; Herbohn, J.; Moss, P

Land Use Policy; 2013. 35:417-420

Forests and woodlands dominated by tree species of the genus *Melaleuca* cover around 7,556,000 ha in Australia and predominantly occur as wetland ecosystems. In this *Viewpoint*, we use published secondary data to estimate that there is likely to be between 158 tC/ha and 286 tC/ha stored in *Melaleuca* forests. These estimates are at least five times greater than the previous estimate made by the Australian Government (about 27.8 tC/ha). There are 2.1 million ha of protected *Melaleuca* forest which likely stock between 328 M tC and 601 M tC; equivalent to between 2.7% and 5.0% of total carbon storage of all Australian native forests. These estimates are significant because it appears that carbon stocks in *Melaleuca* forests are currently dramatically under-estimated in Australia's national greenhouse gas emissions inventory reported under the United Nations

Framework Convention on Climate Change (UNFCCC). Whilst the precision of the estimates is limited by the availability of rigorous primary data, we also argue that the estimates are indicative and meaningful, and this synopsis highlights the fact that this forest type should be considered a significant carbon store nationally and globally.

Impacts of innovative forestry land use on rural livelihood in a bimodal agricultural system in irrigated drylands

Djanibekov, U.; Djanibekov, N.; Khamzina, A.; Bhaduri, A.; Lamers, J. P. A.; Berg, E

Land Use Policy; 2013. 35:95-106

The conversion of marginal croplands to tree plantations, as an option to address climate change, land degradation, and irrigation water scarcity, as well as to improve the welfare of local population requires prior analysis. This study analyzed the impacts of afforestation of marginal croplands, including potential benefits in the form of carbon sequestration rewards via the Clean Development Mechanism, on the livelihood of commercial farms and rural households by considering their interdependencies via wage-labor relations in irrigated agricultural regions of the lower reaches of the Amu Darya River, Central Asia. A dynamic nonlinear programming model was developed that jointly maximizes profit of farm and net incomes of rural households over a 15-year horizon under conditions of decreasing irrigation water availability and forestry plantations with a single seven-year rotation period. The results showed that the introduction of short-rotation plantation forestry in degraded irrigated croplands can help mitigate the repercussions of water shortages on rural livelihood, while sustaining energy needs, income, and food security. Although income and food consumption of rural households may decline from year two to six after afforestation, the subsequent increase in farm profit following the harvest of tree plantations would be transmitted to rural households through existing wage-labor payment arrangements. The incorporation of fuelwood into labor payment schemes would substitute the use of fossil fuels by rural households and thus substantially decrease their energy expenses and CO₂ emissions. Furthermore, given the low irrigation water demand of trees, afforestation would increase irrigation water availability for more productive croplands.

Does production of oil palm, soybean, or jatropha change biodiversity and ecosystem functions in tropical forests

Savilaakso, S.; Laumonier, Y.; Guariguata, M. R.; Nasi, R.

Environmental Evidence; 2013. 2(17):(11 September 2013)

Background: Biofuels, or fuels derived from transformation of biological matter, are hailed by some as a promising source of renewable energy potentially reducing greenhouse gas emissions. A widespread adoption of biofuels will however present its own set of challenges and consequences. Direct or indirect land use change due to expansion of feedstock cultivation can cause deforestation and forest degradation leading to biodiversity losses and other environmental concerns like soil degradation and erosion, water pollution and scarcity, and the risk of crop species invading natural ecosystems. Although biofuel production is currently not the main use of palm oil and soybean and hence, has so far contributed only little to the land-use change patterns, it has been predicted to grow. Therefore, it is important to know the potential consequences of the expansion of biofuel cultivation may have for biodiversity in order to provide policy guidance. Methods/design: In this review, we will assess the current state of knowledge of the impact of three first generation biofuel crops - oil palm, soybean, and jatropha - on the biodiversity and ecosystem functions of the tropical forests. We will look at the additional comparison of impacts from industrial versus smallholder plantations, and will compare the mitigation potential of different standards related to biofuel production. We will consider both qualitative and quantitative primary studies as well as descriptive reports that compare land conversion for target crop production with other land uses or land cover types. Both before/after and site comparison studies will be included, and biodiversity indicators to be assessed are species richness, abundance, and plant and animal community composition. If there is enough data, quantitative meta-analysis will be performed. Otherwise results will be summarized narratively.

First signs of carbon sink saturation in European forest biomass

Nabuurs, G. J.; Lindner, M.; Verkerk, P. J.; Gunia, K.; Deda, P.; Michalak, R.; Grassi, G

Nature Climate Change; 2013. 3(9):792-796

European forests are seen as a clear example of vegetation rebound in the Northern Hemisphere; recovering in area and growing stock since the 1950s, after centuries of stock decline and deforestation. These regrowing forests have shown to be a persistent carbon sink, projected to continue for decades, however, there are early signs of saturation. Forest policies and management strategies need revision if we want to sustain the sink.

Above ground biomass and litter productivity in relation with carbon and nitrogen content in various landuse small watershed, Lower Northern Thailand

Podong, C.; Poolsiri, R

Journal of Biodiversity and Environmental Sciences (JBES); 2013. 3(8):121-132

There have been few studies quantifying litterfall and litter decomposition in relation to carbon and nitrogen return to the soil in upland areas following forest conversion to agriculture such as with the establishment of Para rubber tree plantations. Mean annual litterfall production, litter decomposition rates and carbon and nitrogen returns in a secondary mixed deciduous forest were significantly higher than in a Para rubber tree plantation. The aboveground biomass carbon of the tree such as stems, branches and leaves have been collected and dried at laboratory, and the dry biomass of different sections of the tree are presented in Table 5. The result of carbon analysis through CHN Analyzer is presented in Table 6. It is observed with mixed deciduous forest for *Haldina cordifolia* that average leaf, stem and branch contained 43.32, 47.49, and 46.01% carbon, respectively. For *Albizia odoratissima*, average leaf, stem and branch contained 46.34, 45.98 and 46.61% carbon, respectively. For *Lagerstroemia duperreana*, average leaf, stem and branch contained 47.61, 47.96 and 46.88%. For *Croton roxburghii*, average leaf, stem and branch contained 45.29, 47.53 and 45.68%. It is observed in para rubber plantation for *Hevea brasiliensis* that average leaf, stem and branch contained 51.20, 50.66, 49.83%.

Long term effects of natural and plantation forests on carbon sequestration and soil properties in mid-hill sub-humid condition of Himachal Pradesh, India.

Bandana Devi; Bhardwaj, D. R.; Pankaj Panwar; Sharmistha Pal; Gupta, N. K.; Thakur, C. L.;

Range Management and Agroforestry; 2013. 34(1):19-25.

Natural forests of *Quercus*, *Pinus roxburghii*, Oak and pine, mixed broad leaved, *Acacia catechu*, scrub and grassland and eight different planted tree species viz., *Quercus leucotrichophora*, *P. roxburghii*, *Acacia catechu*, *Acacia mollissima*, *Albizia procera*, *Alnus nitida*, *Eucalyptus tereticornis* and *Ulmus villosa* were studied for carbon sequestration and soil properties. In natural forest, maximum and minimum biomass was produced in *P. roxburghii* (214.90 t ha⁻¹) and grasslands (10.87 t ha⁻¹), respectively. Maximum carbon sequestration was in *P. roxburghii* (107.5 2.43 t ha⁻¹) and minimum in grassland (5.44 t ha⁻¹). In natural forest, detritus carbon sequestration varied from 0.49 t ha⁻¹ in grassland to 12.24 t ha⁻¹ in mixed broad leaved. Soil carbon sequestration ranged from 156.64 t ha⁻¹ in grassland to 238.53 t ha⁻¹ in natural forest of *A. catechu*.

Carbon and greenhouse gas mitigation through soil carbon sequestration potential of adaptive agriculture and agroforestry systems

Bangroo, S. A.; Tahir Ali; Mahdi, S. S.; Najar, G. R.; Sofi, J. A.;

Range Management and Agroforestry; 2013. 34(1):1-11

Agriculture together with agro-forestry systems are perceived as a source of significant greenhouse gas (GHG) emissions, with concomitant potentials for mitigation. It is among the economic sectors having the largest GHG mitigation potential. Conversion to invigorating land uses and implementation of recommended management practices (RMP) can enhance soil organic carbon (SOC). The adoption of these alternatives is likely to have considerable benefits for some cropping systems under moderate climate change. The C sequestration potential in soils of terrestrial ecosystems is 3x10⁹ tonnes C/year or 0.05% reduction of atmospheric CO₂ at the rate of 1 Mg/ha/year by improving C pool by the end of the year 2099. The role of forest and grasslands as a sink for atmospheric CO₂ is the subject of active debate. The carbon stock for the period 2006-2030 is projected to increase from 8.79x10⁹ tonnes C to 9.75x10⁹ tonnes C with forest cover becoming more or less stable, and new forest carbon accretions coming from the current initiatives of afforestation and reforestation programme. With the knowledge and information that is now emerging, the role of agro-forest and plantations in mitigation is becoming more and more important. Over the past decades, national policies of India aimed at conservation and sustainable management of forests have transformed India's forests into a net sink of CO₂. Not all improved management practices are suitable to all soils and ecological conditions. Dealing with many barriers to effective adaptation will require a comprehensive and dynamic policy approach covering a range of scales and issues. A crucial component of this approach is the implementation of adaptation assessment frame works that are relevant, robust and easily operated by all stakeholders, practitioners, policymakers and scientists.

Quantifying the climate-change consequences of shifting land use between forest and agriculture.

Kirschbaum, M. U. F.; Saggar, S.; Tate, K. R.; Thakur, K. P.; Giltrap, D. L.;

Science of the Total Environment; 2013. 465:314-324

Land-use change between forestry and agriculture can cause large net emissions of carbon dioxide (CO₂), and

the respective land uses associated with forest and pasture lead to different on-going emission rates of methane (CH₄) and nitrous oxide (N₂O) and different surface albedo. Here, we quantify the overall net radiative forcing and consequent temperature change from specified land-use changes. These different radiative agents cause radiative forcing of different magnitudes and with different time profiles. Carbon emission can be very high when forests are cleared. Upon reforestation, the former carbon stocks can be regained, but the rate of carbon sequestration is much slower than the rate of carbon loss from deforestation. A production forest may undergo repeated harvest and regrowth cycles, each involving periods of C emission and release. Agricultural land, especially grazed pastures, have much higher N₂O emissions than forests because of their generally higher nitrogen status that can be further enhanced through intensification of the nitrogen cycle by animal excreta. Because of its longevity in the atmosphere, N₂O concentrations build up nearly linearly over many decades. CH₄ emissions can be very high from ruminant animals grazing on pastures. Because of its short atmospheric longevity, the CH₄ concentration from a converted pasture accumulates for only a few decades before reaching a new equilibrium when emission of newly produced CH₄ is balanced by the oxidation of previously emitted CH₄. Albedo changes generally have the opposite radiative forcing from those of the GHGs and partly negate their radiative forcing. Overall and averaged over 100 years, CO₂ is typically responsible for 50% of radiative forcing and CH₄ and N₂O for 25% each. Albedo changes can negate the radiative forcing by the three greenhouse gases by 20-25%.

Carbon storage and soil CO₂ efflux rates at varying degrees of damage from pine wilt disease in red pine stands

Jeong JaeYeob; Kim ChoonSig; Lee KwangSoo; Bolan, N. S.; Naidu, R.

Science of the Total Environment; 2013. 465:273-278

We evaluated the carbon (C) storage and soil CO₂ efflux rates of red pine (*Pinus densiflora* S. et Z.) stands damaged by pine wilt disease (PWD) in Korea. Ten red pine plots at varying degrees of damage from PWD were established and grouped into five categories (very slightly, slightly, moderately, severely, and very severely damaged plots) based on differences in the tree density. The incidence of PWD was a major cause of C loss from forest ecosystems, but the magnitude of loss depended on the severity of disease damage. An exponential regression of the CO₂ efflux rates against the corresponding soil temperature was highly significant ($R^2 = 0.82-0.95$, $P < 0.01$) for the varying degrees of damage from PWD. The rates of change in the CO₂ efflux rates with temperature, as defined by the Q₁₀ values, were generally lower in the slightly (2.94) versus the moderately (3.60) or severely (4.26) PWD-damaged stands. The cumulative soil CO₂-C efflux rates for two years were significantly higher in the slightly (10.8 Mg C ha⁻¹ yr⁻¹) or moderately (10.9 Mg C ha⁻¹ yr⁻¹) versus the very severely (7.9 Mg C ha⁻¹ yr⁻¹) PWD-damaged stands. The results indicate that the C storage and soil CO₂ efflux rates in red pine stands can be impacted by the incidence of PWD, with a significant C reduction in the severely damaged stands.

Factors controlling carbon distribution on reforested minelands and regenerating clearcuts in Appalachia, USA.

Littlefield, T.; Barton, C.; Arthur, M.; Coyne, M

Science of the Total Environment; 2013. 465:240-247

Increasing carbon (C) storage in soils of degraded lands, such as surface coal mines, is of interest because of its potential role in mitigating increases in atmospheric CO₂. While it has been shown that reforesting degraded lands can significantly increase C storage in soils, there are limited studies addressing what processes control soil C in these systems. A study was initiated with the following objectives: (1) quantify the amount of soil C accumulating on reforested mine lands; and (2) examine several biological processes that govern the amount of C sequestered into soil (decomposition, soil respiration and microbial dynamics). A chronosequence approach was used to examine C changes with time in reforested mine lands (years 1, 3, and 8) and unmined regenerating clear-cuts (years 4, 12 and 20). From a C perspective, our results indicated that the young reforested mines (ages 1 and 3) differed significantly from the older mines (age 8) and all regenerating clear-cuts for all parameters examined. However, after 8 years litterfall, microbial biomass C and nitrogen (N), microbial activity, litter decomposition and CO₂ efflux were similar on the mine as that found on the 12-year-old naturally regenerating clear-cut. Although soil organic C (SOC) content was lower on the reforested mines than the regenerating forests, rates of SOC accumulation were greater on the mine sites, likely because the young mine lands were initially devoid of SOC and conditions were suitable for rapid sequestration.

Soil carbon stocks in Sarawak, Malaysia.

Padmanabhan, E.; Eswaran, H.; Reich, P. F

Science of the Total Environment; 2013. 465:196-204.

The relationship between greenhouse gas emission and climate change has led to research to identify and manage the natural sources and sinks of the gases. CO₂, CH₄, and N₂O have an anthropic source and of these CO₂ is the least effective in trapping long wave radiation. Soil carbon sequestration can best be described as a process of removing carbon dioxide from the atmosphere and relocating into soils in a form that is not readily released back into the atmosphere. The purpose of this study is to estimate carbon stocks available under current conditions in Sarawak, Malaysia. SOC estimates are made for a standard depth of 100cm unless the soil by definition is less than this depth, as in the case of lithic subgroups. Among the mineral soils, Inceptisols tend to generally have the highest carbon contents (about 25kgm⁻²m⁻¹), while Oxisols and Ultisols rate second (about 10-15kgm⁻²m⁻¹). The Oxisols store a good amount of carbon because of an appreciable time-frame to sequester carbon and possibly lower decomposition rates for the organic carbon that is found at 1m depths. Wet soils such as peatlands tend to store significant amounts of carbon. The highest values estimated for such soils are about 114kgm⁻²m⁻¹. Such appreciable amounts can also be found in the Aquepts. In conclusion, it is pertinent to recognize that degradation of the carbon pool, just like desertification, is a real process and that this irreversible process must be addressed immediately. Therefore, appropriate soil management practices should be instituted to sequester large masses of soil carbon on an annual basis. This knowledge can be used effectively to formulate strategies to prevent forest fires and clearing: two processes that can quickly release sequestered carbon to the atmosphere in an almost irreversible manner.

Optimal Ecological Management Practices (EMPs) for minimizing the impact of climate change and watershed degradation due to urbanization

Sarma, B.; Sarma, A. K.; Singh, V. P

Water Resources Management; 2013. 27(11):4069-4082

Massive deforestation induced by unplanned urbanization in the hilly watersheds of Brahmaputra basin, India, has led to ecological imbalance and is gradually transforming this basin into a multi-hazard zone. Removal of green cover is also becoming a matter of global concern, as it can accelerate the adverse impacts of climate change. People coming in search of work generally reside in the hills, as they cannot afford the high cost of land in plains. This has led to deforestation of the hilly area and has resulted in increased surface erosion from the upper catchments. Though sediment and water yield from these degraded watersheds could have been minimized by implementing ecologically sustainable management practices (EMPs), such as grass land, forest land and detention pond, poor economic conditions of the people stands in the way of field implementation. On the other hand, major industries, which can be held responsible for emission of greenhouse gases, can be asked to finance greenery development in these hilly watersheds through implementation of selected EMPs to earn carbon credit for them. To convert this concept into reality, the EMP combination must be selected in such a way that it restricts sediment and water yield from the watershed within the permissible limit and maximizes its carbon sequestration capacity at minimum possible cost. Such optimal planning is a prerequisite for preparing an acceptable logical agreement between Government and private companies. Keeping this in mind, an optimization model was developed and applied to a micro watershed of Guwahati to explore its applicability in actual field. The model developed in this study provides most logical carbon credit negotiation, subject to the availability of reliable value of CO₂ sequestration for different EMPs.

Causes of variation in mineral soil C content and turnover in differently managed beech dominated forests

Schoning, I.; Gruneberg, E.; Sierra, C. A.; Hessenmoller, D.; Schrumpf, M.; Weisser, W. W.; Schulze, E. D

Plant and Soil; 2013. 370(1/2):625-639.

Background and aims. Forest soils are important carbon stores and considered as net CO₂ sinks over decadal to centennial time scales. Intensive forest management is thought to reduce the carbon sequestration potential of forest soils. Here we study the effects of decades of forest management (as unmanaged forest, forest under selection cutting, forest under age class management) on the turnover of mineral associated soil organic matter (MOM) in German beech (*Fagus sylvatica* L.) dominated forests. Methods. Radiocarbon contents were determined by accelerator mass spectrometry (AMS) in 79 Ah horizon MOM fractions of Cambisols (n = 13), Luvisols (n = 51) and Stagnosols (n = 15). Mean residence times (MRTs) for soil organic carbon (SOC) were estimated with a 2-pool model using the litter input derived from a forest inventory. Results. MOM fractions from Ah horizons contained 64 ± 8.8 % of the bulk SOC. The radiocarbon content of MOM fractions in Ah horizons, expressed as Δ14C, ranged between -2.8 ‰ and 114 ‰ for the three soil groups. Almost all samples contained a detectable proportion of 'bomb' carbon fixed from the atmosphere since 1963. Under the assumption that depending on the soil texture between 19 % and 24 % of the SOC from the labile pool is transferred to the stable SOC pool, the corresponding MRTs ranged between 72 and 723 years, with a median of 164 years. Conclusions. Our results indicate that the MOM fraction of Ah horizons from beech forests contained

a high proportion of young carbon, but we did not find a significant decadal effect of forest management on the radiocarbon signature and related turnover times. Instead, both variables were controlled by clay contents and associated SOC concentrations ($p < 0.01$). This underlines the importance of pedogenic properties for SOC turnover in the MOM fraction.

Organic carbon in soil and biomass of an *Alnus nepalensis* forest in Kathmandu, Nepal

Dahal, K. N.; Kafle, G

International Journal of Agriculture and Forestry; 2013. 3(6):240-243

This article reports the results of measuring organic carbon contents in biomass and soil of an *Alnus nepalensis* forest in Kathmandu. The aboveground and belowground biomass of *A. nepalensis* were 62.21 t/ha and 12.44 t/ha respectively in the forest. The aboveground and belowground carbon stock in the forest were 29.24 t/ha and 5.85 t/ha respectively. Average organic carbon stock in soil depths 0-10 cm and 10-20 cm were found 19.78 t/ha and 10.61 t/ha respectively. The mean organic soil carbon stock in 0-20 cm soil depth was found 15.20 t/ha and in living biomass was found 35.09 t/ha. The organic carbon stock in 0-10 cm soil depth was found 1.86 times more than in soil depth of 10-20 cm. Carbon stored in living vegetation biomass is 2.31 times more than soil organic carbon in the forest up to 20 cm soil depth. Soil bulk density in 0-10 cm and 10-20 cm soil depths were found 0.69 g/cm³ and 1.14 g/cm³ respectively.

V. PUBLICATIONS, REPORTS AND OTHER MEDIA

Forests, Rangelands and Climate Change in Southern Africa. Forests and Climate Change Working Paper 12.

FAO

The forests and rangelands resource in southern Africa is of critical importance to sustainable livelihoods and ecosystems. However, this resource is also extremely vulnerable to the projected changes in climate in the region, as well as to other external stressors with which climate may interact, which, in turn, will have serious implications for people and economies. Consequently, adaptation is a central priority in the Southern African Development Community (SADC)'s regional response framework. This paper provides an overview of the status of issues and actions related to the adaptation of forest and rangeland resources to climate change in southern Africa. [The publication](#)

RECOFTC Annual report 2011/2012

RECOFTC

[The publication](#)

Climate Change 2013: The Physical Science Basis

IPCC

The Twelfth Session of Working Group I (WGI-12) was held from 23 to 26 September 2013 in Stockholm, Sweden. At the Session, the Summary for Policymakers (SPM) of the Working Group I contribution to the IPCC Fifth Assessment Report (WGI AR5) was approved and the underlying scientific and technical assessment accepted. [The publication](#)

Analysis of linkages and opportunities for synergies between FLEGT, REDD and national forest programme in Ghana

Tropenbos International

This study was undertaken for Tropenbos International (TBI) and the Food and Agriculture Organisation of the United Nations (FAO) to analyse the Forest Law, Enforcement, Governance and Trade (FLEGT) and the Reduced Emissions from Deforestation and Degradation (REDD+) processes in the context of national forest policy and programme in Ghana in order to learn how the coordination of sector policies and programmes can be improved. Specifically, the objective was to see if and how the overall forest governance framework has supported the planning and implementation of forest-related processes and initiatives in Ghana, in particular how the FLEGT and REDD+ processes have been integrated into the national forest strategies. The aim was also to give suggestions on how the initiatives, in particular REDD+ and FLEGT, can further strengthen the use of existing structures and processes, in particular the national forest programme, and create synergies in implementing the national forest policy/strategies. The study, which lasted for about six weeks, mainly involved documentary review and expert interviews as well as synthesis of stakeholder views from a regional

meeting on forest governance organised by FAO ACP FLEGT Support Programme in Accra, Ghana. [The publication](#)

Integrating adaptation into REDD+. Potential impacts and social return on investment in Setulang, Malinau District, Indonesia

CIFOR

Reducing emissions from deforestation and forest degradation and enhancing forest carbon stocks (REDD+) interventions can help both people and forests adapt to climate change by conserving or enhancing biodiversity and forest ecosystem services. However, additional adaptation measures might be needed, such as the protection of agriculture and livelihoods for communities and the development of fire management strategies in forests. Such measures could support the sustainability of REDD+ interventions and the permanence of carbon stocks by preventing activity displacement and induced deforestation and by limiting or avoiding damage to the ecosystem from extreme weather events. [The publication](#)

V.I JOBS

Manager, Knowledge Sharing & Learning, Forest & Climate Change

WWF

World Wildlife Fund (WWF), the world's leading conservation organization, seeks a Manager for Forest & Climate Change. Under the supervision of the Director, the Knowledge Sharing & Learning (KS&L) Manager is responsible for developing and implementing the Forest and Climate Programme's (FCP) KS&L strategy and work plans, ensuring that these align with and support the FCP's overarching strategy and learning framework in ways that influence REDD+ policy, finance and implementation. [More](#)

VII. ANNOUNCEMENTS

Conservation Training - new courses on climate change and REDD+

Conservation Training

The Nature Conservancy, Conservation International, Rainforest Alliance, and the World Wildlife Fund has released three new web-based courses on climate change and REDD+. [More](#)

CLIM-FO INFORMATION

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

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

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

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

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

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