CFA Newsletter

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CFA Newsletter
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Forest conservation and management in Madagascar: a bottom-up approach

Asity Madagascar, local communities and Government authorities working together to stop a major illegal logging operation carried out by criminal gangs in 2011 (Photo: Asity Madagascar).

To many people worldwide, Madagascar conjures images of lemurs, chameleons, baobabs and other extraordinary wildlife. An 'island-continent' almost as big as France, it has been isolated from other landmasses for so long that around 80% of its species are found nowhere else. But Madagascar is not a museum of natural history: it is home to 24.9 million people (estimated by the United Nations Population Division), who have endured unstable Government, famines, cyclones and above all a cycle of poverty and environmental degradation, despite the country's rich natural resources.

These resources include forests, which are critical to both livelihoods and biodiversity. The 2015 FAO *Forest Resources Assessment* estimates forest cover in 2015 to be around 12.5 million ha. Forest cover prior to human settlement is disputed, but evidence is clear that it decreased by almost 40% from the 1950s to 2000, accompanied by severe fragmentation (Harper *et al.* 2007). Despite this, until recently Madagascar was not among the most rapidly deforesting countries, but this appears to have changed, with increasing rates estimated by Global Forest Watch (www.globalforestwatch.org) and noted by numerous observers during the political instability of 2009–2013, a period which also saw a breakdown of environmental governance with a spike in illegal logging.

A form of shifting cultivation known as *tavy* is integral to the Malagasy rural

economy. This typically involves clearance and burning of small plots of forest, which are then planted with food crops such as rice or cassava (manioc) and then left fallow for some time. After a few cycles of cultivation and fallow years a change from forests to scrub or grassland is the usual result. While forest land was plentiful and population density low, this system served Malagasy farmers for many generations. However, over time, as the population has increased and forest land decreased, this system has become unable to both meet the needs of farmers and conserve forests capable of sustaining Madagascar's biodiversity.

Deforestation in Madagascar is also driven by illegal logging for timber, particularly of valuable hardwoods for international markets. This does not lead to clear-felling but causes degradation and opens the way for other threats such as hunting, while serious social impacts result where logging has become a large-scale and organised criminal activity. Fuelwood collection and charcoal production also cause forest loss. Finally, the actual and potential impacts of climate change on Madagascar's forests are complex, but there is general agreement that it is likely to make the situation of forests and the people who depend on them even more precarious.

In response, the Government of Madagascar has promoted community forest management through a range of legal instruments, and made this a key element of the management of new protected areas. Results to date have been mixed. Deforestation continues, and Waeber *et al*. (2016) note that 'no alternatives [to *tavy*] have been adopted and implemented at a scale anywhere near what is needed to have an appreciable impact on deforestation at a national level.' They add that 'recent work proposes a more bottom-up strategy to complement current knowledge. . . to address the continuing decrease in the area of forest in Madagascar despite more than three decades of national and international conservation programs.' The remainder of this article describes such an approach, which is typical of the *BirdLife International* global *Forests of Hope* programme: collaborative efforts of local communities, government, and national and international NGOs to advance forest and biodiversity conservation together with local, sustainable development (http://www.birdlife.org/worldwide/programmes/forests-hope).

The mayor of Ifarantsa Commune visiting a forest-edge area of cultivation supported by the project (Photo: Asity Madagascar).

The programme concerns Tsitongambarika Forest in SE Madagascar. Unlike many conservation programmes, which are run by international organisations, it is led by a fully autonomous national NGO, *Asity Madagascar*, which is the *BirdLife International Partner* in Madagascar. Asity Madagascar has a democratic governance system rooted in a public, Malagasy membership base, and is staffed entirely by Malagasy nationals.

Deforestation rates at Tsitongambarika have been among the highest in the country. Local people live almost entirely in villages around the forest edge, rather than within the forest, which they exploit for specific products rather than (with rare exceptions) for their entire livelihoods. They are as aware as anyone of the forest's value, and are keen to conserve it and to participate fully in the process. They do so with the expectation that resources generated are not captured by elite groups and promises are fulfilled. The role of the NGO is to provide the help needed by the communities to achieve this and to maintain and improve livelihoods without clearing more forest.

As one of the first steps in developing the forest conservation programme, *Asity Madagascar* carried out a comprehensive social and environmental impact assessment, which identified people most affected by protected area establishment and specified actions to meet their needs. *Asity Madagascar* then helped to establish a local organisation, KOMFITA, as an umbrella body of community associations. It is these associations that, supported by *Asity Madagascar* and supervised by the Government, manage the forest. The role of KOMFITA is to ensure that the forest-edge community is consulted in all aspects of the project, the benefits are determined and shared fairly, and local people are properly involved (as 'co-managers') of the forest. The democratic governance of KOMFITA, combined with the information in the social and environmental assessment, helps to ensure that capture of resources by elites, and marginalisation of groups already disadvantaged, are avoided.

Subject to national legislation, the communities themselves define the *Dina* or resource management rules for the forest. These can include some controlled and agreed use of forest products, limited to certain zones so that other areas are left intact. They may also benefit from income related to forest conservation, such as tourist guiding, or be supported to take up new ways of making a living by growing food for sale or subsistence outside the forest. Remarkable improvements have been made, for example through supporting simple composting methods in the cultivation of cassava, and improved water or soil management to grow food-crops in long-deforested areas close to villages, previously thought to be unproductive.

In April 2015, 600 km^2 of Tsitongambarika, including the whole forest, was protected by the Government of Madagascar in recognition of the progress made by the co-management initiative as well as the site's importance. This prevents many potentially damaging developments and helps to direct support to the site. However, the Government of Madagascar does not have the capacity to fund or manage conservation and development for its many extraordinary sites; it needs help.

Accordingly, the co-management arrangement between *Asity Madagascar* and KOMFITA now covers the new protected area. National and international support flows mainly through *Asity Madagascar* (for example, funding raised by the *BirdLife International Partnership*), to strengthen local capacity to conserve the forest and improve livelihoods outside it. Other organisations such as the development and humanitarian aid

NGO, *Welthungerhilfe*, have also become involved in supporting sustainable livelihoods around the forest, working with *Asity Madagascar*. As anywhere in the world, there must be rules on forest use, and the project supports enforcement of the *dina* by local communities themselves, with support from Government authorities where necessary.

The programme has been financed largely by grants from trusts and foundations. So far, resources have not allowed implementation of the full co-management 'package' of livelihood and forest management activities throughout the forest and its surroundings; the latter cannot take place before the former. But where this has been done, the results have been extremely promising, with deforestation almost halted and clear economic benefits realised. The challenge is now to scale up the co-management system across a larger area. Securing long-term funding to do this sustainably is a major obstacle; all long-term funding options have limitations, for example in terms of accessibility and transaction costs. The mining company, Rio Tinto, is currently pioneering a biodiversity offsets programme as a contribution to achieving 'Net Positive Impact' in relation to its mining activities in SE Madagascar; Tsitongambarika is one of the selected offset sites (Temple *et al*. 2012). Resources through the offsets programme are limited (so grants remain essential), but according to internationally-recognised principles (BBOP 2012) should continue for at least as long as the mine is active, which provides a sense of security and continuity to the communities and conservationists working in this remarkable forest.

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Association news

Prince William launches Canada's dedication to the Queen's Commonwealth Canopy

The Province of British Columbia, Canada, has dedicated the Great Bear Rainforest to The Queen's Commonwealth Canopy (QCC), a pan-Commonwealth forest conservation initiative in Her Majesty The Queen's name.

The Great Bear Rainforest is an iconic and globally significant area covering 6.4 million hectares along the central and north coast of British Columbia. It is home to a quarter of the earth's temperate rainforest and 26 separate First Nations. It is also the only place in the world where the Kermode, or Spirit,

Bear is found. Increasingly threatened by industrial logging, the Government of British Columbia passed historic legislation earlier this year to protect the Rainforest's ecology and indigenous people.

Making the announcement, the Premier of British Columbia, Christy Clark said: "The Great Bear Rainforest is a global treasure, and all British Columbians have a stake in protecting it. The international recognition conferred by The Queen's Commonwealth Canopy is something all British Columbians can be proud of."

Michael Lake, Director of the Royal Commonwealth Society said: "The inclusion of The Great Bear Rainforest in The Queen's Commonwealth Canopy highlights Canada's ongoing commitment to the Commonwealth and its leading role in conserving key ecological and indigenous peoples' cultural values. The ecosystem-based management regime for British Columbia's Great Bear Rainforest, developed in collaboration with First Nations, industry and environmental organisations, provides an example that other Commonwealth countries can look to when pursuing their own forest conservation agendas. The Society is proud of this important Commonwealth initiative, conceived in The Queen's name and honoring Her commitment as Head of the Commonwealth."

Canada's commitment to the QCC joins those previously received by Antigua and Barbuda, Australia, Belize, Jamaica, Malta, Mauritius, New Zealand, Papua New Guinea, Seychelles, Singapore, Sri Lanka, the United Kingdom and Zambia.

The formal dedication was undertaken by Prince William, who said "The establishment of the canopy is a loud and unambiguous statement . . . that nature is fundamental to the health of our societies. When we protect our rivers, oceans, atmospheres and forests, we are telling our children that our future prosperity cannot be disconnected from the health of the natural world."

ICF welcomes CFA members

Institute of Chartered Foresters

In pursuit of ways in which the UK Institute of Chartered Foresters, ICF, and the CFA can work together more closely the ICF would like to welcome CFA members who live, or otherwise find themselves, in the UK to participate in its National Conferences and Study Tours, as well as other events. The National Conferences usually take place in April (the next one, on *Trees, People and the Built Environment*, takes place in Birmingham on 5–6 April 2017) and the Study Tours usually take place in October. Details of future (and past) events can be found on the ICF website (www.charteredforesters.org).

David Henderson-Howat
President, Institute of Chartered Foresters

CFA Regional Award of Excellence, South East Asia and the Pacific Region awarded to Wide Bay Water

Headquartered at Hervey Bay, Queensland, the Fraser Coast's water utility, *Wide Bay Water,* has initiated a successful irrigated plantation project. After trials of several potential tree species, over 200 hectares of principally **Corymbia citriodora subsp. variegata** (Spotted Gum) have been established. The recycling of effluent water commenced in 1990 and the plantation project was underway in earnest in 2005.

The approach of using reuse water, to stimulate growth, instead of discharge to the sea has proved to be successful. The project has been supported through the use of conventional and advanced treatment technologies combined with the design and installation of sophisticated irrigation and monitoring infrastructure. As a result, *Wide Bay Water* has authenticated what is an industry-leading wastewater reuse scheme through the successful establishment of irrigated hardwood plantations.

The achievements of this undertaking are a great credit to the experienced project management team of Denis Heron B.Ag,. Rebecca Dudley B.A. and Kevin Riley. The Commonwealth Forestry Association congratulates the *Wide Bay Water* on this award, in the knowledge that this project is an outstanding example of what can be achieved in this aspect of plantation Forestry in the Region.

CFA Young Forester Award 2017

Applications are now invited for the 2017 *CFA Young Forester Award* (YFA) which will be hosted by the University of British Colombia at their Malcolm Knapp Research Forest, between September and December 2017.

The purpose of the YFA is to provide young foresters with an opportunity to develop their skills and experience by working with professional foresters in a an excellent learning environment. Canada is a global leader in forestry practices and the Faculty of Forestry at UBC is one of the world's leading forestry schools.

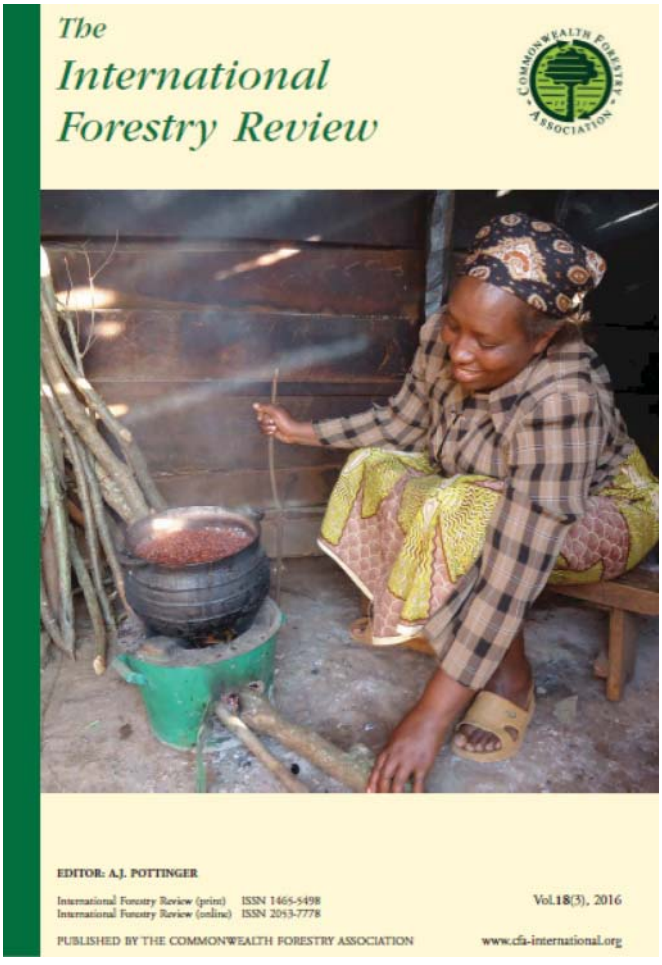
The Award covers cover flights, accommodation and transportation while on placement, living expenses and a modest stipend for the recipient.

Details of the application procedure are available on the Youth section of the CFA website.

Forest Scenes

History of the introduction of the improved cooking stoves into Kenya and Africa: a South-South initiative

In the recent edition of the International Forestry Review (Vol.18 [3] 2016) there was a photograph of a Kenyan woman cooking on an improved fuelwood stove, which had a ceramic liner. When I lived in Kenya from 1981 to 1987, I played an important role in the introduction of the Kenyan Ceramic Jiko (KCJ) into Kenya and then into Africa, which I now detail. But first some background information.



Cover of the International Forestry Review in September 2016

From 1968 to 1970, I was the FAOs field officer in Tanzania undertaking a wood consumption survey/timber trends study as part of a forest industries development programme. After that I went to Thailand and undertook a similar study on behalf of FAO. This was followed by an equivalent study in the Gambia in 1972 through UK aid. (1, 2, 3). On analysis of these studies, woodfuel consumption (principally fuelwood and charcoal plus a little crop residues) accounted for 80% to 90% of wood use; it was also the dominant energy form: this aroused my interest in woodfuel and I wrote an article, which was published in 1976, in the New Scientist entitled Wood Fuels the Developing World. (4). From 1975 to 1980, I was head of the forest economic section at the now Sokoine University based at Morogoro in Tanzania. During that time, I did a study comparing the efficiency of the metal charcoal stove (jiko) with the ceramic Thai bucket stove, using a simple water boiling test[1]. This experiment showed that the Thai stove was about 50% more efficient than the metal jiko. These results were published in 1979 and presented at a Kenya Academy of Sciences/Beijer Institute/UNEP sponsored conference. (5). Also in 1978, on behalf of the University Forestry Dept. I organized a week-long demonstration during the Saba-Saba celebrations (7th July). Twice a day the Thai bucket stove was compared to the metal jiko and a modified clay-lined metal jiko in a simple water boiling test and each day, the results were charted showing the superiority of the Thai bucket stove (Photo). This aroused local enthusiasm and one of the forestry MSc students (R.C. Ishengoma) decided to do his PhD on improved (charcoal) stoves. I arranged for him to spend two weeks in Thailand visiting and working in stove factories. He returned full of enthusiasm, but unfortunately the university academic committee did not think it was a suitable PhD topic! I also presented at paper at an US National Academy of Sciences bioenergy conference in Georgia USA on Energy Requirements for the Household in Africa with Existing and Improved Cooking Stoves. (6).

Photo of the 'saba-saba' stove testing competition.

[1] This consisted of boiling 2 litres of water at a time with a fixed mass of lump charcoal (0.5 kg) on both the metal jiko and the Thai bucket. The time taken to boil each 2 litres was noted and the number of litres boil was recorded. The experiment was carried out for 7 days outside my house in Morogoro on the sheltered side. The equipment consisted of: 2 charcoal stoves; metal pans with lids; thermometers; measuring flask for water; stop watches; and lump charcoal. When the first two litres had boiled, it was replaced with another two litres in a second pan and so on until the charcoal was used up. The ambient water temperature and boiling point were recorded as was the temperature of the final two litres that did not boil.

In 1981 to 1987 I worked in Kenya, first for two years as the Deputy Director of the 'Kenya Fuelwood Cycle Project' through the Beijer Institute (now the Stockholm Environmental Institute, part of the Swedish Academy of Sciences) and then for five years as the Regional Director for Eastern and Southern Africa of a USAID funded project entitled Energy Initiatives for Africa (EIA) with Energy/Development International (E/DI) of Washington D.C., now the International Resource Group (IRG).

In 1981, renewable energy was a dominant international topic and Nairobi held a UN conference on 'New and Renewable Energy'. Prior to that, and because of it, the Kenya Energy NGO (KENGO) was established. At the inaugural meeting, I demonstrate the Thai bucket stove and my wife and her Thai friend cooked sweets on a ceramic stove. A Kenyan, Maxwell Kinyanjui demonstrated a domed shaped charcoal stove that is common in the USA. Like me, Wangari Mathaai (the Nobel laureate) and Stuart Marwick from York University (Canada) were inaugural members of KENGO. The advantages of the ceramic stove were demonstrated (quicker cooking time, fuel saving, safer stove, longer lifetime) and a 'clay stove working group' was established with the above members and we held meetings with Clayworks Ltd., a large manufacturer of roofing tiles, but also of pottery. We got the managers interested in the manufacture of ceramic stoves.

KENGO was asked to put on a display during the UNs New and Renewable Energy Conference. I volunteered to mount a stove testing competition similar to the one I did at the Saba-Saba week in Tanzania. People were asked to bring along stoves, which would be tested twice a day during the conference. Each day results were posted on a chart. The most efficient one was an UNICEF stove consisting of a tin drum with a clay lining, where the metal pan (suferea) sat inside the stove. However, this stove was heavy, not very portable and only one size of suferea could be accommodated. The Thai buck stove was nearly as efficient, was portable and could take various pan sizes. A local entrepreneur, Richard Kimani, provided a double-walled metal stove for testing, but this performed poorly and was withdrawn. Of note, Indira Gandhi, the India P.M. visited the exhibition and expressed great interest in the KENGO stove demonstration: USID took a video of the stove demonstration. The results of the demonstration was written up and presented at the 1971 UN Energy NGO Forum (7). I also presented a paper on Woodfuel and the Energy Crisis: Problems and Possible Solutions at the same UN Energy NGO Forum, (8).

Because of the interest in renewable energy, USAID through E/DI financed a 5-year energy programme in the Kenyan Ministry of Energy (MOE) and one of their projects was an improved stove initiative. Maxwell Kinyanjui was appointed project manager and I arranged a two week trip to Thailand for him, together with the potter and marketing manager from Clayworks to visit stove manufacturers and to spend time working with them. Maxwell came back full of enthusiasm and set about designing and manufacturing an improved clay-lined stove. However, the MOE favoured a small entrepreneur to help develop the improved stove, thus Richard Kimani's firm (Jerri International) was chosen rather than Clayworks. Mr Kimani engaged the Clayworks potter to build a kiln and make clay liners.

Kinyanjui and Kimani then set about designing improved stoves through brainstorming and trial and error. Like the Thai clay stove, these designs consisted of a metal outer shell, an insulation layer and a ceramic liner. The metal outer shell was to be built by metal artisans, who made the metal jikos, using scrap metal from oil drums; an appropriate insulation was found, namely vermiculite and suitable clay deposits were also sourced. A stove similar to the Thai bucket was made, but this had to have a replaceable grate. An alternative design was produced with the metal shell tapering to the halfway point and then expanding again (the bell-bottom design). In this way a ceramic 'half-liner' was designed with a fixed grate: this could be replaced when worn out; the ash pit was insulated with vermiculite and cement. This design was field tested with Mathaai's women's group and modified accordingly. Several sizes of stoves were made including a design for the service sector. The MOE then held demonstrations and a radio programme to extol the virtues of the Kenyan Ceramic Jiko (KCJ). The MOE provided training through the 'improved stove project' and encouraged entrepreneurs to produce the improved stoves. Several entrepreneurs started manufacturing them or assembling them with the purchase of the metal shell, insulation and the clay liner. The stoves were sold on the market, but the MOE guaranteed a baseline price. The stoves were sold at about twice the price of a metal jiko, with a guarantee to return them if the customers were not satisfied. The MOE did not have to subsidize the manufacturers! Together with Lauri Childers of ITDG (Intermediate Technology Development Group) Maxwell Kinyanjui produced a booklet on making improved (charcoal) stoves (9).

Although most people cooked with fuelwood, principally on a 'three-stone' fire, it was easier to promote improved charcoal stoves because the users bought both the stove and the fuel and were more amenable to buy improved stoves. Most fuelwood users did not buy the stove and they collected the fuelwood. However, there was a GTZ (German Aid) programme, run by a KENGO member – Dr. Agnes Klinshirn – who ran a training programme for women's groups to manufacture improved ceramic stoves. These were 'beehive' like with an entry for the wood and stove rests for the pot at the top opening. More than one stove could be joined by a pipe and they could be packed round with soil for insulation. There cost was about $0.5 per stove. There have been several developments of improved fuelwood stove and these are gaining ground, principally as many household now purchase some of their fuelwood. The picture in the IFR Vol 18 (3) shows a wood stove with a ceramic liner and possibly a metal insert to support the wood and allow access of air, named a 'rocket' stove.

After two years in Kenya, I took up my post as Regional Director of EIA funded by USAID, through E/DI. We looked round for various 'energy related' projects to promote. We could spend up to US$500,000 per project and the first one was a 5-year 'Farm Tree Planting Project' in Rwanda. The second one was a 5-year 'Stove Training Programme', initially for Eastern and Southern Africa, based at KENGO H.Q. in Nairobi. A project manager Stephen Karekezi was appointed. Previously, he worked as an engineer at the Firestone tyre factory in Nairobi. His job was to organize training programmes in stove manufacturer including; sourcing of supplies, kiln construction, metal working and stove assemble; stove testing; marketing; promotion, visits to manufacturers etc. Kenyatta University in Nairobi was also charged with developing and testing improved stoves. I played a role in stove testing procedures and testing stoves at their facility. I also presented a paper at a KENGO workshop on marketing of improved stoves, (10). Several courses were run

each year for interested people from the region and the project manager was in correspondence with regional forestry departments and energy ministries telling them about improved stoves and KENGOs training facilities.

As a result of the successful charcoal stove project and the stove training programme at KENGO, improved stove programmes were established in Burundi, Ethiopia, Mozambique, Rwanda, Sudan and Uganda. The World Bank financed an improved stove programme in Tanzania, and Maxwell Kinyanjui was appointed Project Manager, so finally improved charcoal stoves were introduced into Dar-es-Salaam and other urban areas! Since leaving Kenya, I have worked for the World Bank and IRG in several African countries and have witnessed improved stoves in Benin, Botswana (fuelwood), Ghana, the Ivory Coast, Malawi, and Zambia.

In 1990, the Swedish based Innovation for Development (IDEA) recognised Maxwell Kinyanjui, Achoka Awory, Executive Director of KENGO and Steven Karekezi of the Foundation for Woodstove Dissemination (FWD) for their role in the development and dissemination of improved stoves in Africa and honoured them with a prize[2]. This is a South-South initiative originally based on the Thai bucket ceramic stove developed by local people.

I am proud of my part in the improved stove programmes through undertaking an initial experiment comparing the metal jiko with the Thai bucket stove, organising a visit of Kinyanjui to Thailand to work with Thai stove makers, and financing a stove training programme through KENGO. I have also been involved in promoting improved charcoal production. Today there is the 'Global Alliance for Clean Cookstoves', which is promoting improved stoves through gasification of biomass and smoke reduction through chimneys etc. These initiatives should be encouraged for the goal should be to provide renewable cooking energy at the turn of a knob or the flick of a switch. But for many decades there will be millions of household relying on solid biomass fuels, mainly fuelwood and charcoal. It is up to governments, donors, NGOs etc. to promote improved stoves and better kitchen practises to assist such families. Dr. Phil O'Keefe my former project manager with the Kenyan Fuelwood Cycle Project said that my promotion of improved stoves may be the best thing I did. He may be correct!

[2] On the 23rd May 1990, the award was simultaneously announced in Kenya and Sweden by the Nairobi based African Centre for Technology Studies (ACTS) and the Stockholm–based IDEA.

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Keith Openshaw
retired forest economist

Climate Smart School Programme

My concern for the environment and the forest became more prominent during the first year of my undergraduate study in BSc. Forest Resources Technology with the Kwame Nkrumah University of Science and Technology. Gradually my understanding of the socioeconomic, biological and physical roles of forest resources urged me to advocate for the sustainable management of this basic necessity of life. I am very happy to have read Forest Resources Technology because it has kept me in touch with nature and has made me very cautious of the environment.

In recent decades, climate change has become a household term and the most talked about issue on both local and international stages. Climate change and its impact has necessitated the need for global action to make the world a haven of tranquillity for humankind. Noticeably, anthropogenic activities such as illegal mining, seasonal wildfires, wanton felling and destruction of trees, urbanization, illegal farming continue to degrade our forest landscapes; which is paramount in carbon sequestration. Again, increasing demand for agricultural and forest products at local market and for ex- port; over-capacity of forest industries; policy failures and weak institutions in the timber sector are other drivers to Ghana's diminishing forest.

However, the resulting changes in our routine weather conditions currently establish the realities of climate change. As part of the global action to relieve the overall anthropogenic pressures on the planet and its natural systems, several targets have be set in this regard. Amongst these is Goal 13 [TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS] of the Sustainable Development Goal (SDGs). The set targets of the SDGs is intended to embody a universally shared vision of towards a safe, just and sustainable space for all human beings to thrive on the planet (USDG Report, 2015).

Young Ghanaians are ready to embrace the Climate Smart School Programme

Previewed to the drastic change in Ghana's forest cover from 8.2 million ha at the beginning of the 20th Century to an estimated 1.6 million ha remaining. There is therefore an urgent need to use forest resources in a sustainable way and encourage plantation development activities to make up the deficit created in the forest cover.

There is the need to groom and create that level of awareness in the young generation of Ghana on the importance of forests to live sustainably. Population growth as stated is a key factor engendering forest land use conflicts and it is out of education and awareness creation we can manage our resources and livelihood mutually.

Taking inspiration from the call for action from the SDG, specifically Goal 13 and being previewed to the diminishing forest cover of Ghana, I asked myself these questions;

What is your contribution to address this shortfall?
What are you doing to safeguard your future and that of generations yet to come? What role can young people play in mitigating climate change?"

The response to these self-questions finally resulted in the birth of the **Climate Smart School** concept. The Climate Smart School is a passion driven youth enterprise that is addressing climate change through engagement and empowerment of young people in adopting the culture of tree growing and maintenance.

Through the programme, I engage young people as change agents in promoting tree growing and appreciating green environment. In partnership with stakeholders such as the Ghana Forestry commission, Ghana Education Service, I engage young people in raising tree seedlings and growing them around their schools and in their communities.

By way of this program, I anticipate;

- Inculcating the sense of ownership of forest resources and communal responsibility in the young people to impact on society.
- Encourage the attitude of tree growing
- Enhance carbon stocks
- Improve the micro-climatic conditions of our communities
- To draw support from climate funds to support schools infrastructural development through carbon credit trades.

I acknowledge the efforts of Ghana's colonial Government in the constitution of Ghana's forest reserves which has preserved some of our forest resources till now. Irrespective of population increase, we cannot undermine the role the forest plays. Our future and destines are aligned to our forest resources and must therefore be safeguarded against the worst impact of climate change.

The concept of this program has been captured in a video documentary titled "Climate Smart School" which is available via https://youtu.be/mp2e4iOeUhg?list=PLYT7vD5He2VDv7Drpa1hj5JT1owdCsWDC

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Safeguarding timber supply chains the scientific way

Taking bigleaf maple samples from a theft site (Photo – DoubleHelix)

Several recent projects are demonstrating that DNA, chemical isotopes and other scientific approaches can detect and exclude illegal timber in global supply chains.

Illegal logging continues to be a significant problem, with recent studies suggesting that it is on the rise again, driven by illegal land clearing for commercial agriculture, a rise in timber demand from China and other tropical producer countries, and illegal logging by small-scale producers in developing countries.[1] As a result, it is highly likely that the average consumer has purchased wood products manufactured from illegal timber.

Whilst illegal logging is a major challenge faced by timber producing countries, the problem persists due to the ease by which illegal timber can be laundered into legitimate supply chains through document fraud. Once a tree has been cut and transported away from the logging site, it's relatively easy to produce official documentation to show that it has come from a legitimate source.

But what if you could scientifically determine the origin of wood and use this to verify the veracity of documentation that comes with timber? This is the basic premise of work done by *Double Helix Tracking Technologies*, based in Singapore. In collaboration with scientific groups around the world, Double-Helix is developing means to detect fraudulent document claims as part of timber supply chain audits. Testing capability has already been established for a number of timber species. This article introduces some examples:

1. Improving control of trade in CITES-listed Afrormosia (*Pericopsis elata*) and African cherry (*Prunus africana*)

The International Tropical Timber Organisation (ITTO) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Secretariats are collaborating on a programme of activities aimed at ensuring that international trade in CITES-listed timber species is consistent with their sustainable management and conservation.[2] Efforts to establish sustainable harvesting practices and controlled export quotas for two species in Africa have been hampered by gaps in the issuance of document-based CITES permits. These gaps have allowed timber and bark from non-controlled areas to enter supply chains controlled under the ITTO-CITES programme.

A system of DNA verification was proposed to verify the accuracy of CITES export permit applications at key control points in the supply chain. In a pilot project finished earlier in 2016, DNA reference data made up of polymorphic genetic markers was established by sampling standing trees across several natural populations across Cameroon, the Republic of Congo and the Democratic Republic of Congo. The resulting data sets enabled assignment of randomly selected timber or bark samples back to specific populations, with a 95% success rate on average. In some cases the populations were only 15–20km apart.[3]

Effectively rolled out to all controlled harvesting areas, DNA verification aims to independently verify and control claims of origin of harvest associated with CITES export permits. It is a means of detecting and measuring instances of document fraud to circumvent CITES controls. As such, it closes a significant gap in the CITES permit system and serves as an important proof of concept to other document-based control systems.

[1] http://www.illegal-logging.info/topics/scale-illegal-logging

[2] https://cites.org/eng/prog/itto.php

[3] ITTO Tropical Forest Update. Barking up the right tree. www.itto.int/direct/topics/topics_pdf_download/topics_id=4762&no=1

Sampling Pericopsis elata in Cameroon (Photo – ANAFOR)

2. Tackling illegal logging of bigleaf maple (*Acer macrophyllum*) in the United States

DNA reference data has also been developed to tackle illegal logging of bigleaf maple on United States public lands. Funded by the World Resources Institute and in partnership with the University of Adelaide, the task was to develop a system to match suspected illegal timber with the stumps of trees that had been felled illegally. To do this, a genetic reference data for bigleaf maple across its natural range in the North American Pacific coast was developed. The resulting DNA markers enabled the matching of timber samples back to individual trees or stumps across the natural range to a high level of confidence (Jardine et al. 2015)[4]. The success of the project led to a significant milestone: the first time plant DNA has been used as part of a criminal illegal logging prosecution (under the Lacey Act) in the United States. See http://news.mongabay.com/2016/03/dna-evidence-just-helped-convict-illegal-loggers-in-the-us-pacific-northwest/.

It is hoped that this system can be used to routinely verify harvest permits, which in the United States are granted for individual trees. Unfortunately, such permits are used multiple times as a means to fell protected trees illegally.

3. Revealing the scale of oak substitution in the UK retail market

With support from the World Resources Institute, the Forest Stewardship Council® and participating organizations, DoubleHelix conducted a project to test the veracity of documented claims of origin and species associated with white oak products in the UK market.

The purpose was to generate scientific data that would shed light on the extent of species substitution in typical oak supply chains. For example, how often are wood products claiming to be American oak (*Quercus alba*) actually Asian oak (*Q. mongolica*)?

The project applied a combination of wood anatomy and DNA analysis (provided by the Thünen Institute of Forest Genetics) and stable isotope testing (provided by Agroisolab Gmbh) on a variety of oak products that were either purchased or submitted voluntarily by members of the UK timber trade. The study indicated significant levels of incorrect species claims across a broad range of products. For more information, see http://www.forestlegality.org/document/white-oak-secret-shopper-project-results-fla-meeting-january-2015.

Darren Thomas
CEO, Double Helix Tracking Technologies

[4] D. I. Jardine, E. E. Dormontt, K.-J. van Dijk, R. R. M. Dixon, B. Dunker, A. J. Lowe. A set of 204 SNP and INDEL markers for Bigleaf maple (*Acer macrophyllum* Pursch). Conservation Genetic Resources, 19 August 2015.

UNECE region accounts for 87% of the world's certified forest area

The certified forest area coverage extended across 11% of global forests in 2015. The UNECE (United Nations Economic Commission for Europe) region, with about 40% (1.6 billion hectares) of the global forest estate, accounted for 87% of the total global certified forest area (graph 1). Of the global certified forest area, 48% is in North America, 25% in Western Europe, and 14% is in the Commonwealth of Independent States (CIS), according to the *UNECE/FAO Forest Products Annual Market Review 2015–2016*.

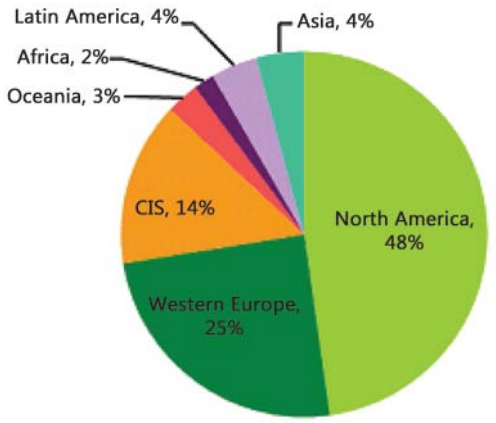
Forest certification provides consumers with assurance that the products they purchase come from forests that are managed in conformity with laws and standards that guarantee their sustainability such as those related to biodiversity and water quality, sustainable harvest levels, and prompt regeneration.

Forest certification is a market-based tool that promotes sustainable forest management. In the Paris Climate Agreement adopted in December 2015, sustainable forest management and the reduction of emissions from deforestation have been recognized as efficient ways to address climate change.

Last year, roundwood production from certified forests was estimated to account for 29% of global roundwood production that is processed mainly to sawnwood, panels and pulp and

paper products. Virtually all of the global certified roundwood production (97%) came from UNECE countries, but certified production is also increasing outside the region. The impact of stringent import regulations in Europe (the EU Timber Regulation) and North America (the Lacey Act) to stop imports of illegal timber, is slowly motivating African, Latin American and Asian producers to obtain certification for their forestlands in order to have access to all markets.

Graph 1: Share of certified forest management area, by region, 2015



Source: Forest Products Annual Market Review 2015–2016

Roundwood consumption at its highest level in almost ten years

The consumption of roundwood in the UNECE region, comprising logs for industrial uses and fuel, increased by 1.2% in 2015 to reach the highest level in almost ten years. Removals of industrial roundwood were up by 2% in Europe in 2015, by 1.1% in the CIS sub region and by 0.1% in North America.

The UNECE region continues to be a net exporter of logs; shipments of softwood logs from North America and the Russian Federation to China and the Republic of Korea are among the world's largest log trade flows.

Exports picking up in the CIS

Over the past 5 years, CIS countries principally the Russian Federation, have increased exports of forest products by more than 20%. Exports of sawn softwood increased by 20%, sawn hardwood by 55%, and panels by 86% making the CIS sub-region one of the main producers of forest products globally. In the wood-based panel sector, significant investments sustained production and competitiveness especially in the Russian Federation where revenues in the sector have grown by an annual average of 17% in the last four years.

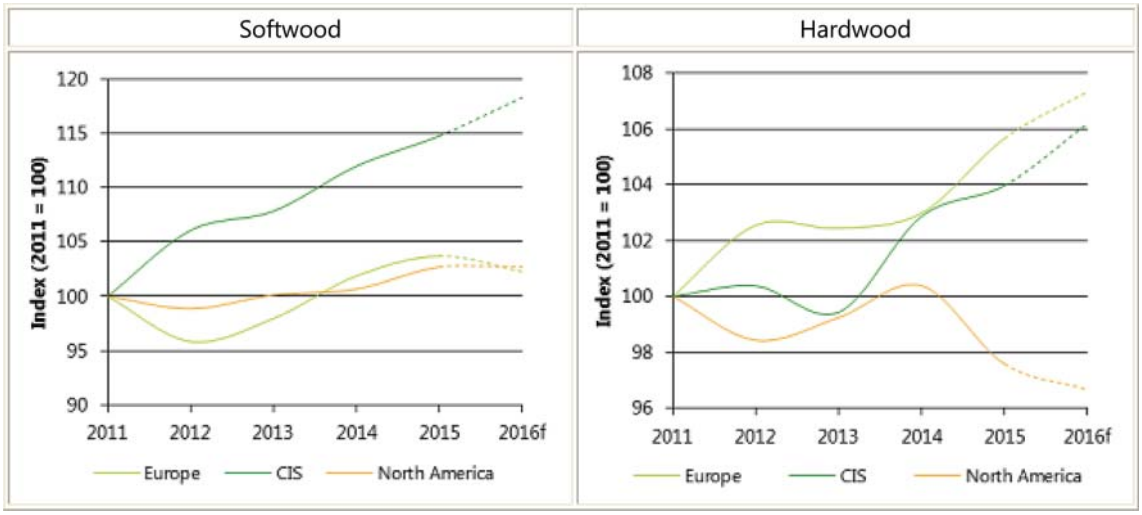
The wood-based panels industry accounted for 13% of the total revenue generated by the forest sector in the Russian Federation in 2015 and stood out for its performance, with year over year production growth of 3%, and export growth of 14.2%.

In 2015, local currency weaknesses helped to sustain exports and counterbalance challenging domestic economic conditions; thus while consumption and imports decreased, production remained relatively stable.

Higher CO_2 sequestration: wooden packaging production on the rise

The wooden packaging industry, including pallets, has recovered from the 2008 economic crisis in North America and Europe. It is estimated that there are about 4 billion pallets in circulation in Europe and about 2 billion in the US. This is an estimated 160 million kg of CO_2 sequestered in wooden packaging; a similar amount of CO_2 would be saved by taking 31 thousand cars for one year off the road. Wooden pallets play an important role in the movement and storage of goods worldwide by providing a safe, effective transport and storage platform throughout the handling and distribution process. In comparison with other materials, wood pallets have clear advantages as they are ecofriendly and sustainably produced; for example, plastic pallets are made of oil – a finite resource – and their manufacturing processes are energy intensive (up to five times more than wooden pallets) and could contribute significantly to greenhouse gas emissions. In addition, recent

Graph 2: Apparent Consumption of industrial roundwood, by subregion, 2011–2016



Note: f = 2015 Committee on Forests and the Forest Industry forecast.
Source: Forest Products Annual Market Review 2015–2016

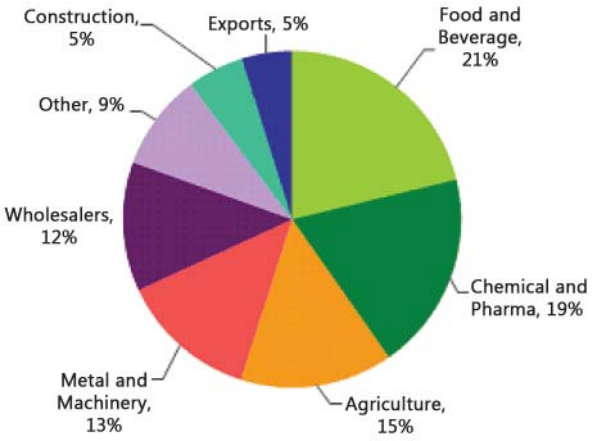
studies show wooden pallets as safer from the sanitary perspective – bacteria have a greater survival rate on plastics than on wood.

In Europe, the production of pallets and wooden packaging has been shifting to Eastern Europe, where costs are lower. Pallet prices have been reasonably stable in Europe since 2013; in North America, prices increased between 2013 and 2016 by an average of 3.8% per year.

Wooden barrel and other wooden packaging production has been booming in the last few years. Barrel production in France, the global top producer, increased by 170% between 2012 and 2014. Similarly, in the US the barrel industry has been booming, driven largely by a 50% increase in the production of bourbon whiskey between 2010 and 2013. France and the US dominate global barrel exports, accounting for about US$807 million and US$450 million, respectively, of the value of barrel exports in 2015.

For further information, please visit: http://www.unece.org/fileadmin/DAM/timber/publications/fpamr2016.pdf

Graph 3: Pallets use in North America, by industry



Source: Forest Products Annual Market Review 2015–2016

Jean Rodriguez
Chief, Information Unit
United Nations Economic Commission for Europe

Publications

Are you sitting comfortably? Sustainable timber sourcing and the UK furniture industry

WWF-UK

This report seeks to establish the origins of the furniture that's sold in the UK, and to find out whether UK businesses in the sector are sitting comfortably, safe in the knowledge they are doing their best to ensure that the world's forests are being managed in ways that will secure this vital natural resource for the future.

Of the retailers assessed 68% have no published policy or any other credible sourcing statement suggesting that they do not see the need for responsible sourcing of timber, nor are willing to provide any information to support any customer interest in environmental matters. These retailers include some prominent brand names such as Laura Ashley, Oak Furnitureland, Next, Furniture Village, Harveys and Staples, as well as the department stores Debenhams and House of Fraser.

However, 22% of the retailers are making good progress or show industry-leading performance. These include DIY chains such as B&Q, Wickes, and specialist retailers like Magnet, Warren Evans, and Office Depot. Others have achieved a rating of 'progress', indicating they are making good progress against strong policy commitments; including Argos, and Ikea.

The report notes that the greatest challenge relates to the importing of finished furniture from outside the EU, particularly where the products do not fall within the current scope of the EU Timber Regulation. The report identified €4.1 billion of UK imports of which 59% were from outside the EU. China provides 42% of all relevant UK furniture imports, followed by Italy (15%), Poland (10%), Vietnam (8%) and Germany (7%). However, the import partner is not necessarily the timber's country of origin. For example, for Poland only 42% of the imported oak is from the EU while over half is from Ukraine with some from Bosnia and Russia.

Total furniture imports from 'high risk' countries – those with recognised illegal logging and trade issues – are valued at €1.9 billion (600,000 tonnes) and include China, Vietnam, Malaysia, Brazil and Indonesia.

The report outlines key recommendations for all furniture retailers to follow to build up sustainable practices that will not only reduce their business risk, but enhance their reputation. These include:

- Publishing a responsible timber sourcing policy
- Providing supplier guidance notes or training to ensure that all supply chain participants are aware of requirements
- Get third-party verification such as FSC.
- Communicate policies to all stakeholders
- Seek support from suppliers, industry bodies, environmental groups and competitors to help source responsibly.

Forest bioeconomy – a new scope for sustainability indicators

European Forest Institute

European forests and the forest-based sector play a central role in a bioeconomy: they provide material (wood and non-wood), bioenergy and a wealth of other regulating and cultural ecosystem services. These demands need to be properly balanced, and many targets have to be tackled simultaneously.

In a situation with many possibilities, synergies, trade-offs and uncertainties, indicators can help to avoid unwanted impacts, and support successful and sustainable bioeconomy development. They can be used to inform policy makers, synthesize complex matters and act as tools for decision support. At present, however, there is a fragmented landscape of bioeconomy-related data and monitoring instruments.

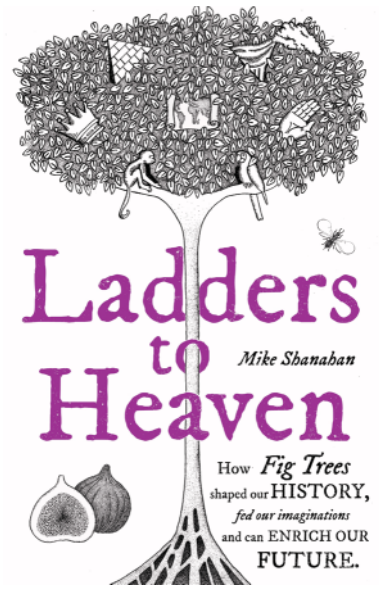
The forest-based sector has the opportunity to take the lead in the sustainable development of the bioeconomy. It has powerful tools in place that can be adapted and further developed for application in the bioeconomy as a whole. These tools have to be state-of-the art and continuously developed: here the forest sector can be a forerunner and role model, shaping the bioeconomy debate and its monitoring and assessment.

This study provides insights into the potential use of forest-based sector indicator sets in Europe. It builds on the rich experience gained with sectoral indicator tools, and connects to aspects of policy research, operational research and sustainability science. It develops three different options or scenarios for how bioeconomy indicators can be designed in the future.

Download the study at www.efi.int/files/attachments/publications/efi_fstp_4_2016.pdf

Ladders to Heaven: how fig trees shaped our history, fed our history and can enrich our future

Mike Shanahan – Unbound



A new book tells how fig trees have shaped our world, influenced diverse cultures and can help us restore life to degraded rainforests – all thanks to their curious biology. They are trees of life and trees of knowledge. They are wish-fulfillers . . . rainforest royalty. They are the fig trees, and they have affected humanity in profound but little-known ways. Mike Shanahan's new book *Ladders to Heaven* tells their amazing story.

Fig trees fed our pre-human ancestors, influenced diverse cultures and played key roles in the dawn of civilization. They feature in every major religion, starring alongside Adam and Eve, Krishna and Buddha, Jesus and Muhammad. This is no coincidence – fig trees are special. They evolved when giant dinosaurs still roamed and have been shaping our world ever since.

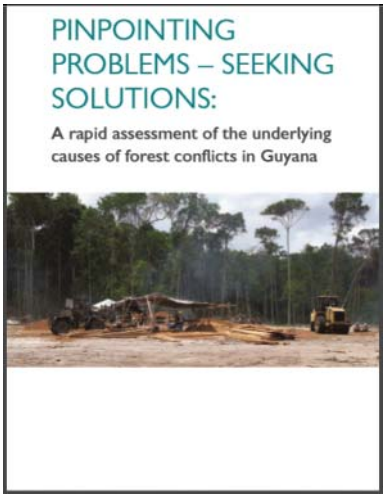
These trees intrigued Aristotle and amazed Alexander the Great. They were instrumental in Kenya's struggle for independence and helped restore life after Krakatoa's catastrophic eruption. Egypt's Pharaohs hoped to meet fig trees in the afterlife and Queen Elizabeth II was asleep in one when she ascended the throne.

And all because 80 million years ago these trees cut a curious deal with some tiny wasps. Thanks to this deal, figs sustain more species of birds and mammals than any other trees, making them vital to rainforests. In a time of falling trees and rising temperatures, their story offers hope.

Ultimately, it's a story about humanity's relationship with nature. The story of the fig trees stretches back tens of millions of years, but it is as relevant to our future as it is to our past.

Pinpointing problems – seeking solutions: A rapid assessment of the underlying causes of forest conflicts in Guyana

Forest Peoples Programme



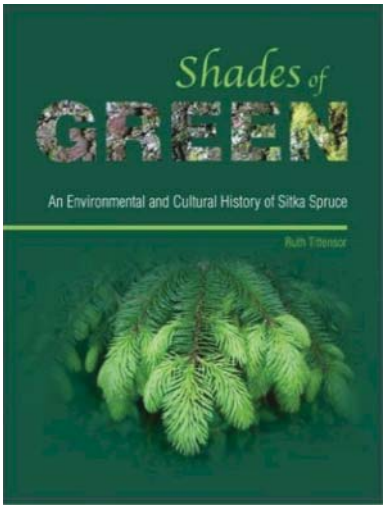
Based on the experiences of Amerindian communities in Guyana, this briefing presents some of the main causes of forest conflicts in the country as well as recommendations for how to address these. In particular, the document presents the following points:

- How lack of full recognition of indigenous peoples' land rights in line with international law, absence of effective FPIC procedures and limited transparency in forest governance are key underlying causes of forest-related conflicts in Guyana;
- Why these legal shortcomings and policy gaps create fundamental flaws in the timber concession allocation system, which generate uncertainty over the legality of timber supply chains and risk further conflicts unless reforms are put in place, leaving future FLEGT licences open to challenge;
- The report recommends that laws, policies and rules governing land tenure and land allocation for commercial timber extraction in Guyana must be reformed to explicitly recognise and protect the inherent collective rights of indigenous peoples to their customary lands and resources; and that new procedures are established to properly apply the FPIC standard.

The report PDF is available to download from www.forestpeoples.org

Shades of Green: An Environmental and Cultural History of Sitka Spruce

Ruth Tittensor – Windgather Press



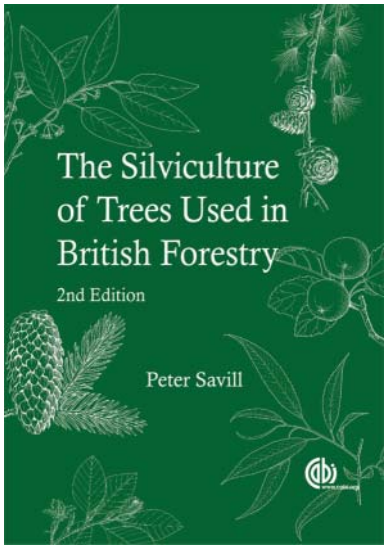
Shades of Green takes a fresh look at the most disliked tree in Britain and Ireland, explaining the reasons it was introduced and why it became ubiquitous in the archipelagos of north-west Europe.

Sitka spruce has contributed to the Pacific Coast landscapes of North America for over ten millennia. For the Tlingit First Nation it is the most important tree in terms of spiritual relationships, art, and products in daily use such as canoes, containers, fish-traps and sweet cakes. Since the late nineteenth century it has also been the most important tree to the timber industry of west coast North America.

The historical background to the modern use of Sitka spruce is explored. The lack of cultural reference may explain negative public response when tree-less uplands in the UK and reland were afforested with introduced conifer species, particularly Sitka spruce, following two World Wars. The multi-purpose forestry of today recognises that Sitka spruce is the most important tree to the timber industry and to a public which uses its many products but fails to recognise the link between growing trees and bought goods. The apparently featureless and wildlife-less Sitka spruce plantations in UK uplands are gradually developing recognisable ecological features. Sitka spruce has the potential to form temperate rainforests this century as well as to produce much-needed goods for society. The major contribution of Sitka spruce to landscapes and livelihoods in western North America is, by contrast, widely accepted. But conserving natural, old-growth forests, sustaining the needs of First Nations, and producing materials for the modern timber industry will be an intricate task.

Silviculture of Trees Used in British Forestry

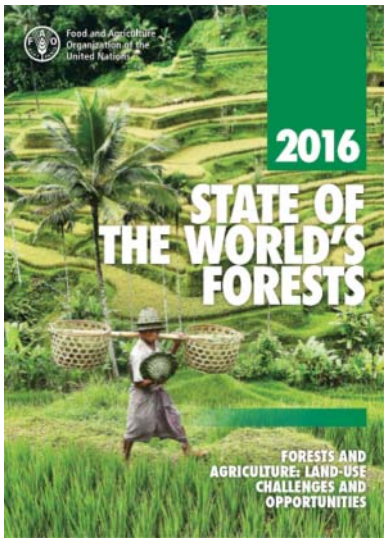
Peter Savill – CABI



Fully updated throughout, this new edition describes the silvicultural characteristics of trees commonly grown in the UK, including all important native species and a selection of some of the most significant exotics. With details of climatic zones, soils, productivity, pests and diseases, this book provides concise but detailed information regarding the establishment and management of forests. Detailed drawings of leaves and fruits are also provided to aid with identification, making this a useful resource for students and forestry professionals.

State of the World's Forests 2016

FAO



While agriculture remains the most significant driver of global deforestation, there is an urgent need to promote more positive interactions between agriculture and forestry to build sustainable agricultural systems and improve food security. This is the key message of the FAO's flagship publication The State of the World's Forests (SOFO). Forests play a major role in sustainable agricultural development through a host of channels, including the water cycle, soil conservation, carbon sequestration, natural pest control, influencing local climates and providing habitat protection for pollinators and other species.

"The 2030 Agenda for Sustainable Development, as well as the Paris Agreement on climate change, recognizes that we can no longer look at food security and the management of natural resources separately," said FAO Director-General José Graziano da Silva in his opening remarks to the Committee on Forestry." Both agreements call for a coherent and integrated approach to sustainability across all agricultural sectors and food systems. Forests and forestry have key roles to play in this regard. The key message from SOFO is clear: it is not necessary to cut down forests to produce more food."

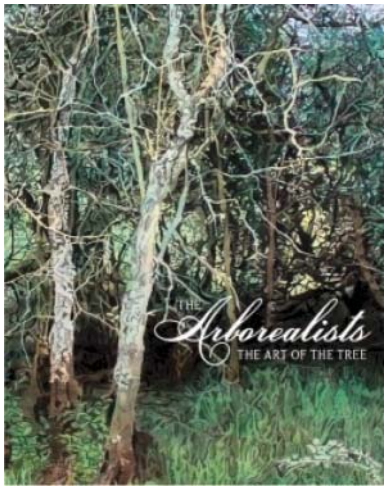
Agriculture accounts for the lion's share of the conversion of forests. According to SOFO, in the tropics and subtropics large-scale commercial agriculture and local subsistence agriculture are responsible for about 40 percent and 33 percent of forest conversion, respectively, and the remaining 27 percent of deforestation happens due to urban growth, infrastructure expansion and mining. On the flip side of the coin, the report stresses that forests serve many vital ecological functions that benefit agriculture and boost food production.

According to SOFO, since 1990, over 20 countries succeeded in improving national levels of food security while at the same time maintaining or increasing forest cover – demonstrating that it is not necessary to cut down forests to produce more food. Twelve of these countries increased forest cover by over 10 percent: Algeria, Chile, China, the Dominican Republic, the Gambia, Islamic Republic of Iran, Morocco, Thailand, Tunisia, Turkey, Uruguay, Viet Nam.

Their successes all relied on a similar set of tools: effective legal frameworks, secure land tenure, measures to regulate land-use change, policy incentives for sustainable agriculture and forestry, adequate funding, and clear definition of roles and responsibilities of governments and local communities.

The Arborealists: the art of the tree

Sansom & Company



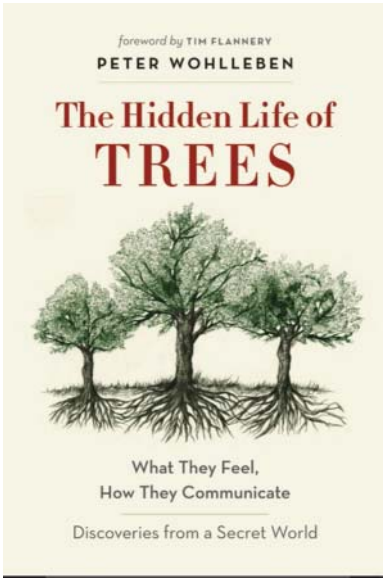
Trees provide a wonderfully versatile subject for artists, not only in terms of the incredible diversity of form, character and colour they provide, whether individually or collectively, but also in terms of the wealth of association, myth, folklore, religious and symbolic significance which they have come to embody. In Britain they have inspired artists from Gainsborough and Constable through to Paul Nash, the Neo-Romantics and the Ruralists.

The Arborealists grew out of the exhibition *Under the Greenwood: Picturing British Trees – Present* held in 2013 at St. Barbe Museum & Art Gallery, an exploration of contemporary artists' responses to the tree. Such was the impact of the show and the spirit of camaraderie engendered in a truly diverse group of artists that they took on a more permanent identity. Under the Arborealists' banner a loose association of artists, including such luminaries as David Inshaw, have come together for exhibitions in galleries across the south. The thirty-seven artists who have contributed to this book include Jemma Appleby, Mary Anne Aytoun-Ellis, Buckmaster-French, Tim Craven, Michelle Dovey, Ffiona Lewis, Annie Ovenden, Julian Perry, Howard Phipps, Michael Porter, Wladyslaw Mirecki and Angela Summerfield.

The work included in this lavishly illustrated book, at turns dramatic and contemplative, demonstrates that trees still have a relevance in contemporary art and retain the power to move us all as a vital element in our landscape and sense of national identity.

The Hidden Life of Trees: What They Feel, How They Communicate—Discoveries from A Secret World

Peter Wohlleben – Greystone Books



Are trees social beings? In this international bestseller, forester and author Peter Wohlleben convincingly makes the case that, yes, the forest is a social network. He draws on groundbreaking scientific discoveries to describe how trees are like human families: tree parents live together with their children, communicate with them, support them as they grow, share nutrients with those who are sick or struggling, and even warn each other of impending dangers. Wohlleben also shares his deep love of woods and forests, explaining the amazing processes of life, death, and regeneration he has observed in his woodland.

After learning about the complex life of trees, a walk in the woods will never be the same again.

Around the World

African forest elephants may face extinction sooner than thought

Forest-dwelling elephants are likely to face extinction far more quickly than previously assumed because their sluggish reproduction rate cannot keep pace with rampant poaching and habitat loss, a new study has found. The first comprehensive research into forest elephant demographics found that even if poaching was curbed, it will take nearly 100 years for the species just to recover the losses suffered in the past decade. The forest elephant population has crashed by more than 60% since 2002, with the species now inhabiting less than a quarter of its potential range of the Congo basin in Africa.

"The slow reproductive rate as well as present poaching rates in the central African area does not bode well for forest elephants," said Andrea Turkalo of the Wildlife Conservation Society, lead author of the research.

Forest elephants are an elusive subspecies of African elephants found in the rainforests of central and western Africa. They are smaller than the elephants that roam the open savannah of Africa and their tusks are straighter and point downwards rather than curve outwards.

It was previously assumed that the species gives birth at a similar rate to savannah elephants but Turkalo's analysis of births and deaths from 1990 to 2013 in the Sangha Trinational, a World Heritage-listed forest in the Congo Basin, found significant differences.

The research found that not only does it take more than 20 years for female forest elephants to begin reproducing, but they also give birth only once every five to six years. This reproduction rate means that population growth is around three times slower than savannah elephants.

As a result, forest elephants "appear to be significantly more sensitive to human-induced mortality" than their grassland-wandering relatives. Around one in three forest elephant deaths are due to poachers seeking to profit from the ivory trade, or for bushmeat, which is meat derived from non-domesticated wildlife.

Should forest elephants continue to suffer poaching losses, while their homes are razed for timber and agriculture, humans will be responsible for eradicating one of the largest creatures left on the planet.

"I am really worried about the future of this species," said George Wittemyer, a Colorado State University biologist and a co-author of the paper. "They face a very real chance of extinction if ivory poaching continues unabated. Our work indicates that recovery from the extensive poaching they have experienced requires decades, and we really don't see evidence to make us optimistic that we are going to get that sort of reprieve."

Forest elephants are a shy but valuable part of their woodland ecosystem as they disperse seeds far and wide, which is crucial for the survival of various plants. But they are also valued by ivory connoisseurs because their tusks are harder than those of savannah elephants. While the international trade of ivory is banned, a black market operates to satisfy demand for trinkets and bogus medicines in east Asia.

Turkalo said she has seen a "vast change" in forest elephant habitat in the 25 years she has spent studying the animals in central Africa, driven by new development and an increase in the human population.

"We are now surrounded on all sides by commercial logging and because of the influx of people attracted to the area there has been an escalation in poaching," she said. "This poaching feeds directly into the ivory trade since we still have a number of sizable tuskers."

The research, published in Journal of Applied Ecology, cites the "urgent need to stem poaching". A measure to be debated at the IUCN congress in Hawaii this week would ban the domestic trade in ivory, but many elephant conservationists believe far more will need to be done to safeguard the species in the long term.

theguardian.com

South Africa: These 25 Men Will Make You Want To Drop Everything And Plant A Tree

This Arbor Month, a South African NGO, asked brave change-makers to bare it all for trees. And the results are spectacular. What started out as a joke during a brainstorm quickly grew into Greenpop's boldest fundraising effort to date. With the aim of raising awareness and encouraging donations, the "Got Wood?" campaign highlights the various social and environmental benefits of tree planting as well as the current state of deforestation globally. Twenty-five South African men who are committed to making a difference in their communities are featured.

To find out more visit http://www.boredpanda.com/these-25-men-will-make-you-want-to-drop-everything-and-plant-a-tree/

Canada: Chinese-language forest tours to educate more B.C. residents on conservation

Conservationists have their eyes on a demographic that hasn't been tapped into before in terms of educating people about British Columbia's old growth forests. About half a million people in B.C.'s Lower Mainland are Chinese-language speakers, yet most environmental programs and tours are offered in English only, said Ken Wu, executive director of the Ancient Forest Alliance.

The group is partnering with the Stanley Park Ecology Society and Hua Foundation to train volunteers to give tours of Stanley Park in Mandarin and Cantonese. "The goal here will be to increase the level of conservation awareness," Wu said.

Old growth forests that exist in Stanley Park and other areas across the province are vital to the broader ecosystem and climate, Wu said. There has been a growing movement in recent years as diverse groups including businesses and municipalities push for the protection of these areas from logging and development. But the movement to preserve these forests hadn't made a concerted effort until now to include the local Chinese-speaking population, Wu said. "One of the most important ways we can protect old growth forests is to engage a massive part of the population which we haven't engaged in the past."

Wu led about a dozen volunteers through Stanley Park on Saturday to train them on becoming ecological tour guides. The first training day was conducted in English to cover the basics, but subsequent trainings will incorporate more language translation. The tour will not be a verbatim translation of existing English-language forest tours in Stanley Park, but will incorporate expert and crowd-sourced translation. "It's important for us to be able to fill in the knowledge gaps that are often lost in translation," said Kevin Huang, who works with the Hua Foundation.

Getting experts and the general public to weigh in on terms that refer to conservationism, the environment and specific species of animals and plant life will help create a more engaging tour that uses common Chinese terms. "We really try to engage audiences and empower them from their own community angle instead of using straight translations," Huang said.

The tour is designed for all ages but volunteers said they see the greatest potential in connecting with adults and seniors who didn't grow up in a culture of environmentalism. Volunteer Joy Peng said she hopes she can encourage Vancouver's large Mandarin-speaking population to take an interest in protecting forests for future generations. "It would be really great to inspire them because all together, everyone could make a big difference in preserving old growth trees and nature in general," she said.

metronews.ca

Europe: A tree in Greece is Europe's oldest known living tree

European history has had one continuous observer for more than a thousand years: a pine tree in Greece. Dendrochronologists have calculated the tree's age to be at least 1,075 years old, making it the oldest tree in Europe. This little pine, nicknamed "Adonis," has seen world wars, a century of revolutions, the Protestant Reformation, the Crusades, and a good chunk of the Dark Ages.

"The tree we have stumbled across is a unique individual," said Stockholm University graduate student Paul J. Krusic, according to the Washington Post. "It cannot rely on a mother plant, or the ability to split or clone itself, to survive."

He's referring to trees that repeatedly clone themselves, so a tree living now is genetically identical to one living more than 10,000 years ago. Tree systems like those have been called the oldest trees in the world, but the individual trees live only a few hundred years before asexually spawning a replacement clone.

"Cloning is a very effective evolutionary survival strategy," said Mr. Krusic. "It's cool, but it's not the same. It's not the same as you or I being left alone to our own devices and living for 1,000 years, like this tree."

Some other trees have been estimated to be a lot older than Adonis, but therein lies the rub. Estimation does not make an ancient tree, at least in the eyes of scientists. This tiny tree creates one new trunk ring each year, making it comparatively easy for scientists to determine its age.

According to Mr. Krusic, who was part of the team that counted tree rings for the study, Adonis is actually *more* than 1,075 years old. The scientists who took the pencil-sized core samples from Adonis' tree trunk didn't reach the center of the tree, so it has more rings that they couldn't count.

"I am impressed, in the context of western civilization, all the human history that has surrounded this tree; all the empires, the Byzantine, the Ottoman, all the people living in this region," Krusic said, according to Phys.org. "So many things could have led to its demise. Fortunately, this forest has been basically untouched for over a thousand years."

Elderly trees are rare in Europe, although they are relatively common in other parts of the world, including the United States. The reason has a lot to do with humans – the more human traffic there is in a region, the more likely a tree is to be chopped down for a human purpose, whether firewood or construction or to make room for development.

In Greece, Adonis and its neighbors are just a few miles from civilization, making their survival all the more unusual. Their proximity is very interesting to researchers, who plan to study fallen trees nearby to determine the what fingerprints humans have left on the region.

"That has a story in it. A story about climate change, about human influences," said Krusic, according to the Washington Post. "That's the real story we're working on. This is just something we stumbled upon."

Scientists say that many of the trees in the ancient Greek forest where Adonis was discovered are remniscent of elderly trees they have seen in the United States. And, as it happens, Adonis lives in nature's version of a retirement home – several of Adonis' neighbors are also around 1,000 years old.

Elsewhere, scientists are using trees to push back against human influence. In 2009, The Christian Science Monitor's Andy Nelson reported on dendrochronologists in Vietnam, who use wood dating in ancient Vietnamese forests to monitor how forests have responded to monsoon seasons and precipitation.

"It's not simply that we want to understand the rules of the climate system. . . . We want to understand how those rules interact," said tree researcher Kevin Anchukaitis in 2009. "In chess, each move that a player makes in the game is going to influence the subsequent move, so there are long-term consequences of each individual move."

More recently, in California, researchers seeking to understand how trees can combat drought and climate change have looked to the state's famed sequoia trees, which have withstood extreme conditions while performing essential services to the environment, providing homes for countless animals and converting carbon dioxide into oxygen.

csmonitor.com

Congo Basin mapping project helping forest people defend against destructive deforestation wins prestigious UN award

MappingForRights, a ground-breaking project based in the Congo Basin to help forest peoples counter harmful extractive industry and advocate for legal reforms, was announced in October as one of 13 winners a United Nations climate change awards.

An initiative of the Rainforest Foundation UK and its local partners in the Congo Basin region, the project equips forest peoples with low-cost technologies to map and monitor their lands, and makes this data available on an online platform.

"The UN Momentum for Change Award gives recognition to the growing possibility provided by technology for local communities to gain greater control of their forest lands, and thus contribute to sustainably protecting them and the carbon stores they represent. We hope this will encourage governments to recognise communities' maps and forest monitoring as a basis for stronger tenure and control over the resources they depend on," said Simon Counsell, Executive Director of the Rainforest Foundation UK.

In 2015, the project was further strengthened with the launch of *ForestLink*, a breakthrough forest monitoring system that allows remote communities to capture and transmit alerts on illegal logging and other forms of forest destruction in real-time – even in areas where there are no telecommunication networks.

"Projects like this show how technology can start to shift the balance of power and influence between people on the ground who are often the best managers of their natural environment and the perpetrators of forest destruction and degradation, which is so damaging to the fight against climate change," said Nick Nuttall, UNFCCC Spokesperson.

The heavily forested Congo Basin is a carbon store of global significance. It is under severe pressure from human deforestation but is home to an estimated 50 million forest-dependent people, encompassing some 150 different ethnic groups – some of the poorest and most marginalized people on the planet.

The *Momentum for Change* initiative is spearheaded by the UNFCCC secretariat to shine a light on some of the most innovative, scalable and replicable examples of what people are doing to address climate change. Today's announcement is part of wider efforts to mobilize action and ambition as national governments work to implement the Paris Climate Change Agreement.

MappingForRights was recognised under the Momentum for Change *ICT Solutions* focus area for its work to build resilience to climate change by empowering indigenous peoples and local communities on the frontline of tropical deforestation, giving them the knowledge and technology to secure and defend forests.

Together with the other winning projects, it will be showcased at a series of special events during the UN Climate Change Conference in Marrakech, Morocco (7–18 November 2016).

The mapping initiative has already attracted interest from 70 other indigenous organisations and NGOs in other tropical forest areas, the project leaders said. The initiative is supported by UKAID / Department for International Development, (DfID).

The project is also bringing down the costs of large-scale mapping of this kind. For example, the introduction by the Rainforest Foundation UK of mobile mapping laboratories has reduced the cost from around $4.50 per hectare to less than a dollar. Meanwhile, a real-time alert on illegal logging can be sent to a central database for as low as two cents, less than a text message.

The 2016 Lighthouse Activities were selected by an international advisory panel as part of the secretariat's Momentum for Change initiative, which operates in partnership with the World Economic Forum Global Project on Climate Change and the Global e-Sustainability Initiative.

Rainforest Foundation UK

Papua New Guinea activist receives prestigious award for protecting forests

Paul Palosualrea Pavol of New Britain Island, Papua New Guinea (PNG) has won the Alexander Soros Foundation's Award for Environmental and Human Rights Activism. In a statement, the Alexander Soros Foundation said that it had given the annual award to Pavol "for his courage and commitment to protecting his community's land and forests from the illegal and aggressive operations of one of the world's largest logging companies."

Industrial logging is the main driver of forest degradation in the country — and "the majority of timber production in PNG is illegal in some way," according to a 2014 report by Chatham House.

Since 2010, Pavol has been defending the rainforests in his home district of Pomio against the operations of Malaysian conglomerate Rimbunan Hijau, which is responsible for a third of all PNG log exports.

Paul Palosualrea Pavol of New Britain Island, Papua New Guinea (PNG) has won the Alexander Soros Foundation's Award for Environmental and Human Rights Activism. In a statement, the Alexander Soros Foundation said that it had given the annual award to Pavol "for his courage and commitment to protecting his community's land and forests from the illegal and aggressive operations of one of the world's largest logging companies."

Since 2010, Pavol has been defending the rainforests in his home district of Pomio against the operations of Malaysian conglomerate Rimbunan Hijau, which is responsible for a third of all PNG log exports. It's been estimated that 85 percent of people in PNG live off of what they can grow or collect from forests, rivers, and the sea.

"For many generations, my community has farmed, fished and hunted in the forests of Pomio, all while keeping them healthy and standing," Pavol said in a statement. "In only a few years, RH has clear cut many of these forests, leaving behind a desert in their place. As a result, we're starting to lose our customs, our culture and our traditions. We know that this is an uphill battle, but fighting is the chance we have to hold on to our way of life."

Conversion of forests to agricultural land has become a significant issue in PNG in recent years, but industrial logging is the main driver of forest degradation in the country, according to a 2014 report by Chatham House. The London-based NGO determined that illegal logging practices are widespread in PNG, and even went so far as to say that, given the available information, it appears "the majority of timber production in PNG is illegal in some way."

Most of PNG's timber is exported as logs to China, the report states, while a "very small" amount of PNG's exports are bound for Europe and the U.S., though even that amount is declining amidst concerns about illegal logging and stricter import controls.

Pavol's efforts to protect the rainforests in his home district have been met with threats to both his person and his reputation, while he and his fellow protesters have faced intimidation and violence at the hands of police stationed in logging camps, the Alexander Soros Foundation reports. In 2015, backers of an oil palm project even went so far as to obtain a restraining order against Pavol that effectively banned him from moving about his own village.

"Oppressed by the police, abandoned by his government, and equipped with limited resources and little recourse, Paul has put his safety and security on the line to lead a five-year campaign to save his community's rightful land," Alex Soros, founder of the Alexander Soros Foundation, said in a statement. "In fighting to protect his community's land for years with little hope in sight, Paul did not set out to become a hero. He simply wanted to ensure that his family, friends and fellow citizens were able to survive."

Since 2011, Rimbunan Hijau has exported timber worth around $70 million harvested from Pavol's community in Pomio alone. But Rimbunan Hijau is just one of many companies felling PNG's forests at the expense of local communities.

From 2002 to 2011, the PNG government handed out over 50,000 square kilometers (about 19,300 square miles) of land, most of which belonged to indigenous communities, using a mechanism known as a Special Agriculture and Business Lease (SABL) that was originally created to promote agricultural development. London and Washington, D.C.-based NGO Global Witness analyzed official PNG export data and found that almost 40 per cent of timber exports under SABLs through 2014 came from leases that an official government inquiry had concluded were issued illegally and should be revoked or suspended.

Global Witness also found that some 91 percent of the timber felled in PNG is imported by China, where it is turned into furniture, hardwood flooring, plywood, and other wood products. The group has called on the PNG government to cancel all logging permits found to have been issued illegally, and said that China should require businesses importing wood from PNG to ensure that they are not buying timber produced in violation of PNG law in order to help the country tackle illegal logging.

"The story of Paul's 'David and Goliath' struggle against Rimbunan Hijau is only one example of the many struggles playing out across PNG's forest frontier," Alex Soros said. Major timber importers like China are fueling the environmental and humanitarian crisis in PNG by willingly purchasing illicit wood from the country, he added.

"Responsible timber traders and buyers must ensure they can trace their timber back to the forest, and avoid timber associated with the abuses that Paul and his community have bravely spoken out against," Soros said.

"My community depends on our land and forests for our survival, and I cannot stand by and watch it be permanently destroyed," Pavol said. "I have no choice but to stand up and raise my voice because if we do not defend our land, no one will. We started this fight in 2010, and I am not going to stop until there is justice and our land is safe. I am thankful that the Alexander Soros Foundation has recognized me for this award, and I hope that this moment is a major turning point in our fight."

news.mongabay.com

FAO, EU and Government of Uganda launch phase III of commercial forestry project

The Food and Agriculture Organization of the United Nations, the European Union and the Government of Uganda have jointly launched the third phase of the *Sawlog Production Grant Scheme* (SPGS III) aimed at consolidating gains of SPGS II while mitigating the effects of climate change through intensive afforestation.

By July 2020, the 55-month project is expected to have established close to 32,000 hectares of commercial timber and bio-energy plantations while integrating research for development of plantations, processing and value addition, utilization and market with emphasis on coordinated commercial forestry processes and services.

SPGS III is a project of the Government of Uganda funded by the European Union to a tune of UGX 60 Billion and an additional UGX 144 million for technical staff support from FAO, and counterpart financing from the Government of Uganda estimated annually at UGX 878 million, that is intended to help meet the medium and long-term industrial and market demand for sawlog products in Uganda.

The Minister for Water and Environment Hon. Sam Cheptoris, while launching the project in at Ferdsult Forest Plantation in Lugazi, Buikwe District, said that SPGS III is timely given that it comes at a time when forest cover is drastically reducing at an annual rate of 120,000 hectares.

"We are now witnessing the effects of climate change as a result of mass deforestation. I call upon every one of us to do something to green the environment by averting the alarming rate of deforestation and reverse the ongoing rampant clearing of forests for charcoal by encouraging people to grow their own forests for wood," Hon Cheptoris said.

The Minister further stated that Uganda is predicted to be water stressed by 2025 and that this will drastically impact agricultural production, food security, biomass, water supply, energy production, infrastructure, health systems, incomes, livelihoods and overall development if no action is taken now.

The Head of Cooperation at the European Union Delegation in UgandaMs. Michelle Labeeu commended the Government of Uganda for the successful execution of SPGS I and II which she said fully demonstrated that commercial forestry is a viable agribusiness.

"Both phases provided learning experiences for the stakeholders, most of which will guide the new phase," she noted, adding that SPGS III will address processing and value addition especially for the plantations established in phase I which are due for harvesting.

She lauded FAO's high level of expertise and experience in forestry and programme implementation and a management – a combination that is expected to deliver excellently in the new phase.

For the European Union, the initiative is important because it provides an alternative source of timber and other forestry products leading to reduced pressure on natural forests.

The FAO Country Representative Mr. Alhaji M. Jallow said that the new phase of SPGS will see Uganda benefit from a sustainable supply of high quality sawlogs for timber and poles, and less reliance on imported products, while at the same time increasing incomes of the rural populace, which FAO believes will free people from hunger and malnutrition.

"SPGS III will be promoting commercial tree planting by small, medium and large scale growers, and community groups to increase their income, while at the same time helping to mitigate the effects of climate change," he noted.

Mr. Jallow further appreciated the funding from the European Union, and the trust vested in FAO for the execution of this national project whose value added will include research and development for seed improvement of both the indigenous and exotic tree species to ensure production of high quality sawlogs.

fao.org

Global: 'Let mangroves recover' to protect coasts

Allowing mangrove forests to recover naturally result in more resilient habitats that benefit both wildlife and people, say conservationists. In Indonesia, a Wetlands International project uses permeable dams to restore sediment needed for the trees to grow. The charity says early results suggest "ecological restoration" is more effective than planting programmes.

More than half of the world's most at-risk habitats have been felled or lost over the past century, UN data shows.

Mangroves are a group of about 80 different salt-tolerant species of trees that are able to live along the intertidal zones of coastlines in tropical and sub-tropical regions. The characteristic root systems of these trees allow them to withstand the ebb and flow of daily tides. The roots also act as buffers, slowing the flow of the tidal waters, allowing sediment to settle and build up as nutrient-rich mud. The unique habitats provide valuable shelter and breeding sites for fish, as well as stabilising coastlines, reducing erosion from storm surges and tsunamis.

A report by the International Union for Conservation of Nature (IUCN) shortly after the 2004 Asia tsunami, which killed more than 200,000 people in nations lining the Indian Ocean, highlighted how in-tact mangrove forests provided protection to coastal communities. It reported that two people were killed in a Sri Lankan village with dense mangrove and scrub forest, but up to 6,000 people lost their lives in a settlement that was no longer protected by similar vegetation.

Following the 2004 tsunami, the importance of robust and resilient mangrove forests became widely recognised, explained

Femke Tonneijck, Wetlands International's programme manager for coastal wetlands. "This resulted in many mangrove restoration efforts around the world, many of which were implemented through planting programmes by NGOs, governments and business," she said. "Now we are seeing that many of those planting efforts are failing, and there are a number of reasons for this. One of the most important reasons is that there is a wrong species-to-site match because mangroves have a natural [gradient] from land to sea, in which there is a mix of species that are best adapted to the level of salinity, wave exposure and submergence.

"This is why we now focus more on ecological mangrove restoration," Ms Tonneijck told BBC News. She said researchers had been carrying out a series of studies on this approach to conservation and it had been shown to deliver "much better results".

"This is because if you have a mix of natural species, ages and root types, as well as different types of fruit, fodder and timber, the diversity makes the system more resilient, as well as a forest that offers multiple benefits to a diverse group of stakeholders, as there are different species of fish taking shelter in the different root systems," she added.

However, planting programmes still remained popular because many schemes, often government-funded, measured success on the number of trees planted rather than the longer term survival rate. "Also, there is no measurement of ecosystem services returning, such as coastal protection, and this may give people a false sense of protection," Ms Tonneijck warned.

In 2011, Wetlands International was invited to undertake an ecological mangrove restoration project in Central Java by the Indonesian government's marine and fisheries department. Two villages in the area had been lost and the sea was encroaching inland up to three kilometres, destroying arable land. Ms Tonneijck explained how the team restored the conditions needed for the mangrove to return to landscape. "Working with Deltares, the Dutch knowledge institute, we were inspired by Dutch and German marshes where land was regained by putting permeable dams in place," she recalled.

"These permeable structures let waves pass through with sediment and behind the structures the sediment can settle. Once it had settled then the mangroves were able to come back into the area. We started first with a small pilot, and as the sediment trapping worked really well, we decided to set up a larger project that was supported by Dutch funds and the Indonesian government as well."

Wetland International's Building with Nature programme is now looking at restoring the "mangrove greenbelt" throughout the district. "In the area where it is eroding, we are applying these permeable dams and we have already placed two kilometres of them," Ms Tonneijck revealed.

"As well as the mangroves slowly coming back in, we are also seeing that people are becoming very enthusiastic and they really want to do something – people immediately want to start planting as soon as there is sedimentation. So we have started a dialogue explaining why we are preferring to wait for nature to come back."

bbc.co.uk

Global: Indigenous rights are key to preserving forests, climate change study finds

The world's indigenous communities need to be given a bigger role in climate stabilisation, according to a new study that shows at least a quarter of forest carbon is stored on communal land, particularly in Brazil. The research by a group of academic institutions and environmental NGOs is the most comprehensive effort yet to quantify the contribution of traditional forest guardians to reduce emissions of greenhouse gases.

Authors say the expansion of tribal land rights is the most cost-effective way to protect forests and sequester carbon – an issue that they hope will receive more prominence at the upcoming United Nations climate conference in Marrakech.

The paper by the Rights and Resources Initiative, Woods Hole Research Centre and World Resources Institute aims to encourage governments to recognise indigenous land rights and include tribal input in national action plans. Currently this is not the case for 167 of 188 nations in the Paris agreement, including Indonesia and the Democratic Republic of the Congo, which are home to some of the world's biggest forests. It is also likely to feed into a growing debate in Brazil, which has won kudos for recognising more indigenous land than any other country in the past decade but is now under a new government that has yet to be tested in international climate talks.

Based on satellite surveys of 37 tropical countries, the study estimates community-claimed lands sequester at least 54,546m tonnes of carbon – roughly four times the world's annual emissions. Ownership of a 10th of that land is public, unrecognised or contested, which raises the risk that it could fall into the hands of developers, farmers, miners or others who want to clear the forest for short-term financial gain at the expense of long-term environmental costs.

The authors argue there is a greater economic benefit from leaving the property in the hands of traditional residents and strengthening their ownership rights so they can protect the land.

Alain Frechette of Rights and Resources, one of the report's authors, urged national governments and negotiators to make indigenous communities a more central part of climate policies.

"When communities have secure forest rights, not only are forests better protected, but communities fare better. It's what economists call an optimal solution. Everyone wins," he said. "By contrast, large-scale development initiatives produce quick wins, but the long-term environmental, economic and political costs are not taken into account. They are just pushed on to future generations."

"As well as reducing 20–30% of carbon dioxide emissions, the forests provide benefits of clean water, pollination, biodiversity, flood control and tourist attractions that are said to be worth $523bn to $1.165tn in Brazil, $54–119 bn in Bolivia, and $123–277bn in Colombia over the next 20 years.

The data shows the most important region is Latin America, where 58% of emissions come from deforestation, more than double the global rate of 24%. Without protection, much more could yet be released. Five of the top 10 countries for forest carbon are in the continent. Brazil with 14,692 megatonnes has twice the amount of the next biggest country, Indonesia. Having expanded indigenous land considerably since 2003, Brazil – and later Bolivia and Colombia – initially slowed deforestation. The World Research Institute estimates that tropical forests without such protection were two to three times more likely to be cleared.

But in recent years, forest destruction in Brazil has started to creep up again and many environmentalists are worried that the new centre-right government of Michel Temer could accelerate this trend. Since the impeachment of former president Dilma Rousseff in September, the new government has cut the budget for the National Indian Agency (better known by its acronym Funai), and removed many of its key personnel.

"There are causes for concern," said Victoria Tauli-Corpuz, UN special rapporteur on the rights of indigenous peoples. She urged Brazil not to backtrack. "As this report shows, if Brazil enhances its respect for indigenous peoples' rights, they will be able to contribute more to the Paris agreement. It will be to their benefit. They can measure that in terms of the amount of tonnes of carbon that are being conserved."

Paulo Moutinho, director of the Amazon Environmental Research Institute, called on the new government to declare the 71m hectares of currently undesignated public forest – equivalent to all the land cleared in the past 40 years – protected or indigenous land.

Although he acknowledged that this would be difficult to push past the strong agribusiness lobby in congress, he said farmers would eventually realise that strong forests were necessary not just for the global climate but for local rainfall patterns and irrigation.

"There is still time to do something impressive," he said. "The world expects strong action from Brazil. It would be nice to consolidate and expand protected areas. Otherwise, it will be impossible to achieve what we have promised to the world."

theguardian.com

India: The Mother of Trees

It is perhaps the greatest environmental love story of all. Saalumarada Thimmakka, a day labourer and Bekal Chikkayya, a cattle herder, both from Hulikal village in Bangalore district, defying all the taunts from society for being childless, decided to plant trees and treat them like their children. It may have seemed like the whim of an eccentric couple but they lived up to their promise taking care of the saplings of Banyan trees, sometimes carrying water for them a good four kilometres. They were, after all, their most beloved, their children, and over 50 years these saplings grew into gorgeous banyan trees, providing a wondrous 5 km canopy from Kudur to Hulikal. Although her beloved life partner passed away in 1991, Saalumarada, (now 105 apparently, has been awarded for her work), continued to raise her children – more than 380 of them in Karnataka.

Contrast this with the millions of trees being mercilessly cut every day all over the world to make fancy furniture or make way for the accommodation of an ever burgeoning population. In our own country, once known for its overwhelming greenness, around 2,000 hectares of forest are lost (says a 2009 FAO report) due to overpopulation, weak legislation and of course the mother of all evils, GREED. The loss must be many times more by now.

You don't even need statistics to know how much greenery we have lost. Just look out the window. If you are among the majority of the 17 millions of residents of this claustrophobic city, chances are all you will see is a skyline of concrete and more concrete, with maybe a smattering of something green here and there. In some areas, trees as old as a hundred or more have been leveled to the ground to make way for high rise apartment buildings, malls, parking lots or for rows of ugly shops selling hardware, sanitary ware, automobile spare parts and what not. This is the scene pretty much all throughout the urban areas of the country while villages have been denuded to accommodate smoke-emitting brick kilns. In hilly areas like the Chittagong Hill Tracts, hills have been butchered for human settlement, along with all the trees. And now the worst killing of all – the Sundarbans where mangroves will be brutally decimated to allow for a mammoth coal plant to spew out ash and for heavy industries to cough up their noxious fumes. Surely trees will die, along with them all those beings that depended on them. Humans, unfortunately, have started on a suicidal path, killing what can be described not as their children but rather their mothers who have all along sacrificed everything, to keep their wards alive.

For without the rows of trees in coastlines that shielded us from the monsters called Aila and Sidr, how will we be protected from their vicious onslaught that will drown our villages, our homes and ourselves? Who will provide the cooling shade and sustenance for weary travellers battered by the sweltering sun? And those of us who have forgotten to think beyond our Dhaka, how much thicker will the smog get as we get more and more cars on the streets, more air-conditioning for our greedy ventures? Who will inhale all the carbon monoxide and other noxious gases now that we have done away with all those Krishnachura, Bunyan, Rain Trees, Koroi, Mango and Jackfruit trees and those whose names we do not know, that once lined our streets? Now we must inhale the artificial venoms we have created and subject our young ones to wheezing lungs that may or may not survive the years of slow poisoning.

But it was not always so brutal, I might say to my grandchild (if I am lucky enough to live that long). Once upon a time we loved trees like our children. We planted saplings and watered them with utmost care. We had gardens in almost every home where the fragrance of Hasnahena, Gondhoraaj, Beli, Rajanigondha and Jasmine would intoxicate the evening breeze. They were havens for the children to climb those

intricate networks of branches to get to the treasure of mouth-watering peara, jaam, tetul, aam, lichu, betphol, jamrul and boroi. The trees were in abundance in the streets, inside houses, in parks that have long gone extinct along with their green gems. Houses were decorated, not with shiny, gaudy steel, but with cascading bougainvillea of every shade – pink, fuchsia, yellow and fiery orange. There was oleander, magnolia, joba, dahlia, gada and shy periwinkle to create a fairy kingdom for butterflies and bees and tiny birds to find their nectars. And then when we got sick, there was the neem tree to provide leaves of soothing baths during chicken pox, the orhohor leaves to ease our jaundice.

Now all we can do is sigh with nostalgia for a time lost forever. Now we must drive for miles before we can escape the ugliness of the barren, concrete jungle we call home to find a few patches of green. Thankfully there are still some trees bravely standing tall, trying hard to take in the fumes emitted by our deadly contraptions, defiantly facing the lecherous eyes of those humans waiting for the opportune moment to strike and steal.

For some reason, the story of Salumaraada made me think of two guava trees in the house I once lived in. One was right in front near the gate and the other at the back leaning against an intermediary terrace. It was a special variety of guava – green on the outside and salmon coloured inside, the taste equally exquisite. They were my mother's favourite trees and she took great pleasure in picking them from the terrace and giving the treats to her children. But a few odd years later, one of the trees became visibly sick – perhaps it had been struck by lightning or its roots had been made weak by the storm. Perhaps it had caught some terminal disease. Right before my eyes, everything became black – the branches, the leaves, even the fruit. Soon its twin on the other side followed suit as if in grief for its lost mate. The death of those trees was a bewildering tragedy for us, especially my mother for whom trees always provided her solace. How I wish I had found Salumaraada then. She would have known how to keep these children of nature alive.

Aasha Mehreen Amin in **thedailystar.net**

Gabon logging study suggests higher, more accurate carbon measure

Central African forests with logging industry exposure may contain more than three times the carbon-emitting deadwood that's left behind than previous estimates have suggested. That's according to a recent study published in *Global Change Biology* that details the work of a Duke University-led team trying to better understand how to calculate the environmental impact of deadwood, the debris left on the forest floor after logging. The researchers measured 47 forest sites in Gabon, 19 of them logged and 28 unlogged, to survey the real volume and density of the byproduct.

Most tropical countries are required to provide estimates to the United Nations Framework Convention on Climate Change, detailing how much carbon is stored in their forests, to establish metrics on reducing carbon emissions and deforestation. The numbers help to determine their eligibility for climate finance compensation programs, and to measure their progress in the fight to reduce greenhouse gases.

When calculating forest carbon, the existing models assume that the deadwood accounts for about 9 percent of all biomass in forests. What the Duke team found was that in Gabon, the more accurate figures are about 30 percent in logged forests and 18 percent for unlogged sites. The measurement disparities are likely true elsewhere in Central Africa's humid tropics and in the Americas.

"That's a huge difference, with broad implications for regional forestry practices and policies, as well as global carbon emissions," said John R. Poulsen, assistant professor of tropical ecology at Duke's Nicholas School of the Environment.

The study, part of Gabon's Natural Resource Inventory Initiative, is the first large-scale analysis of deadwood in Central Africa and currently the largest anywhere in the tropics.

AfricaTimes.com