

CFA Newsletter



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Managing the future through games



Oil palm plantation (Photo: Jaboury Ghazoul)

Oil palm is an emotive topic. It stirs passions, sparks conflicts, and polarises opinions. It is a classic wicked problem where multiple stakeholders differ in both objectives and values. Oil palm has been associated with social marginalisation, community disempowerment, and environmental degradation, but also new economic opportunities, improved rural development, and alleviated poverty.

Science contributes to this debate by providing evidence of the social and environmental outcomes of oil palm expansion, and through the actions of individual scientist who take particular advocacy stances. Yet evidence can be contested, and often is by different agents across the oil palm sector. Science advocacy can advance sustainability concepts, but can also undermine objectivity if scientists begin to be perceived as advancing particular causes and values over others. It is

therefore highly challenging to integrate science evidence into policy and management, particularly within wicked problem contexts.

The Oil Palm Adaptive Landscape (OPAL: <http://www.opal-project.org/>) project, a research programme that addresses issues in oil palm development in Indonesia, Cameroon and Colombia, explicitly recognises at the outset that the knowledge that science provides is but one of several equally legitimate perspectives across the range of stakeholders. OPAL does basic research on various aspects of oil palm development, and the outputs of this research are melded within interactive model representations of the relevant oil palm system. Indeed, the process of building an interactive model involves inviting stakeholders to critique and validate science outputs and the assumptions on which they are based. Once a model's legitimacy and relevance

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has been established, stakeholders can use these models to explore alternative scenarios of future oil palm development.

What are these models? Games. As games, they are fun to play. Players having fun are players that are engaged, and engaged players having fun are more willing to express honest opinions and behaviours despite existing tensions. These games model the resources, the interactions, and the dynamics within the landscape identified through natural and social sciences enquiry, and the elicitation of knowledge from stakeholders. Through a process called Companion Modelling, the OPAL team builds a game where the game board represents the landscape and its attributes. Tokens represent resources that can be moved around, exchanged, sold, or transformed. The rules of the game reflect the dynamics of the system, be they growth rates of trees, productivity of palm oil, changes in biodiversity, or price fluctuations. Players endorse the role of the final missing element of the social and ecological system: stakeholders in the landscape. Players can take the role of smallholder farmers, plantation owners, mill managers, NGOs, or policy makers, positions that may or may not reflect their real-life roles.

The game sessions encourage participants to explore development strategies, and to evaluate the potential consequences of such strategies. In doing so participants interact, at times expressing disagreements and uncovering conflicts, on other occasions forging alliances and identifying opportunities for compromise and collaboration. Contentious issues are raised, but in the context of a game these can be broached and discussed without incurring disrespect. Players harbouring different world-views and norms are better able to appreciate alternative perspectives. The game becomes a tool for better understanding, but also for forging new ideas and strategies for improved oil palm development that addresses the needs and concerns of the participating stakeholder players, as well as the conflicts among them.

In our most recent game sessions in Indonesia, Nur Hasanah, a PhD student in the Ecosystem Management group at ETH Zurich in Switzerland, developed and played a game with several stakeholders, including oil palm smallholders, fishermen, village officials, The Forest Trust, the district Directorate General of Plantations, and others, in East Kalimantan's Tabang sub-district. The game sought to encourage players to understand how decisions are made in a palm oil industry plantation environment, and the consequences of such decisions. In her own words, "the aim of this game is to see what are the best strategies to safeguard environmental services while people can also meet their daily need in relation to the development of palm oil".

Through the game we were able to derive new insights. For example, some players adopted palm oil production having recognised its profitability, which is nothing new, but others did so on account of risks to their current livelihood strategies, with one rice farmer complaining that "flooding is the reason to not plant padi". Engagement through the games also encouraged players to consider and discuss future strategies: "This game teaches us to ... develop a long term strategy and collaborate among neighbours to manage finances wisely" (teacher, Pulau Pinang village). They also uncovered new perspectives on the constraints and risks that smallholder palm oil adopters face: "The point of this game is how to avoid debts brought about by hiring a lot of labour" (village administrator, Buluqsan village).



Playing the oil palm game with district officials in East Kalimantan, Indonesia (Photo: Nur Hasanah)

Of course, these games do not precisely reflect real life settings, but responses from players indicate that they have much realism: "Games like this reflect our daily life, open our experiences to real life, and give us new information for maintaining the environment" (fisherman, Maura Kaman village). The responses from players have also helped us, the project team, gain a better and more detailed understanding of the system including, for example, a recognition that we had underestimated the importance of labour. Perhaps more crucially, the game raised awareness among local communities of the oil palm sector across the landscape: "the game increases our knowledge because it represents the connections between palm oil, rice, and fish" (fisherman, Kehala Ilir village); as well as the need to manage land and avoid degradation, "It is not possible to depend on natural resources only, but the existing land must be maintained optimally" (Head of Hambau village).

Our research approach effectively combines basic science with engaging interactive models that facilitate a two-way exchange of knowledge and information. In seeking to deliver impact from science, our games bring together diverse stakeholders to discuss and debate highly contentious issues in a constructive and non-conflictual manner. Our science is embedded in the structure and rules of the game, and can thus be readily communicated to players, while feedback from players themselves contribute to the further elaboration of our own understanding.

**Jaboury Ghazoul, Nur Hasanah, Anne Dray,
Claude Garcia**

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All quotations translated from the original Bahasa Indonesian. A video that shows the application of the gaming approach to ecosystem management as applied in oil palm landscapes in Indonesia is available at <https://www.youtube.com/watch?v=s3Oy6zOOHYE>

Association news

Dr. Shashi Kant* receives the Order of Ontario



On February 27, 2018, Dr. Shashi Kant was awarded the Order of Ontario, the province's highest honour. The Order is bequeathed by the Lieutenant Governor, and is reserved for those whose contribution has left a lasting legacy in the province, Canada, and beyond. Members of the Order collectively create Ontario's most excellent citizens, whose contributions have shaped, and will continue to shape, the province's history and place in Canada.

Shashi is a Professor of Forest Resource Economics and Management at the University of Toronto, as well as the Program Director for the Master of Science in Sustainability Management program, with an international reputation as an expert in the intersection of forest management and human rights.

He was one of the first in his field to focus on sustainability and the social aspects of forest management. In Ontario, he played a key role in modernizing the province's forest tenure and stumpage systems. Shashi has also worked extensively with Canada's First Nations to ensure their values inform forest management. Overseas, Shashi has contributed to the recognition of

forest rights in India and worked with numerous forest economists in China. He is leading a global think tank – New Frontiers of Forest Economics.

The only Canadian to win the Queen's Award for Forestry, Shashi is the founding Director of the University of Toronto's groundbreaking Master of Science in Sustainability Management program. He has been promoting a unique approach to global sustainability that integrates the concepts of love and sustainability.

Shashi has received major awards and honours in the past, such as the *Queen's Award for Forestry*, the *International Life Science Award*, the *Ontario's Premier Research Excellence Award*, the *Scientific Achievement Award of Canadian Institute of Forestry*, and the *Scientific Achievement Award of the International Union of Forestry Research Organizations*.

The MScSM program and staff at IMI would like to express our deepest congratulations to Dr. Shashi Kant for this well-deserved honour. We are all thankful to work with such an inspiring role model.



utm.utoronto.ca

**Shashi Kant is CFA Regional Coordinator for the Americas and the Caribbean*

Queen's Commonwealth Canopy

The Queen's Commonwealth Canopy makes headlines

It's was a busy time for the Queen's Commonwealth Canopy(QCC) in the run-up to the Commonwealth Heads of Government Meeting held in London in April. Firstly, the meeting was preceded by a spectacular projection of

images related to the QCC onto the walls of Buckingham Palace which was widely reported in the national and international press.



The QCC projection onto Buckingham Palace in April (Credit: The London Evening Standard)



*The Queen and Sir David Attenborough discuss the QCC in
The Queen's Green Planet (Credit: ITV)*

Then, during the week of CHOGM a major TV documentary about the QCC was screened on British television. Entitled *The Queen's Green Planet* it featured the Queen in conversation with the eminent naturalist Sir David Attenborough discussing the creation of the QCC, interspersed with footage of both Prince Harry and Prince William unveiling forest areas dedicated to the QCC in Canada and the Caribbean.

Finally, we were pleased to find that a commitment was made by the leaders of all Commonwealth nations to the QCC in the formal CHOGM communique.

Our plans for the immediate future include encouraging the final few Commonwealth countries to sign-up to the QCC, and developing the second phase of the project.

Forest Scenes

Forest-friendly chocolate



*Janneb Salia and Augustine from the Gola Cocoa team – holding a basket of fermented beans ready to be laid out to dry
(Photo: Katie Sims)*

The Upper Guinean Forest (which borders Liberia and Sierra Leone, two of the poorest countries in the world) was once a vast belt of evergreen and semi-deciduous forest. Exploitation of this lush forest has led to extensive areas being lost to agriculture (including cash crops like cocoa), mining and logging, bringing serious threats to species like Pygmy Hippopotamus *Choeropsis liberiensis*, Western Chimpanzee *Pan troglodytes verus* (both Endangered) and White-necked Rockfowl *Picathartes gymnocephalus* (Vulnerable), not to mention the livelihoods of the Goleagorbu people who rely on the forest.

The largest remaining tract of Guinean Rainforest is found in Sierra Leone, where a flagship conservation effort the Gola Rainforest National Park (GRNP) was established seven years ago. It is a partnership between BirdLife International, the Conservation Society of Sierra Leone (BirdLife Partner), Sierra Leone's government, the RSPB (BirdLife in the UK), and 140,000 Goleagorbu living in Gola's forest edge.

The Goleagorbu people living around the National Park are small-scale farmers, working closely with GRNP to protect their unique landscape. But, how can the protection of the forest become a serious business for the Goleagorbu people? One of the solutions has been found in forest-friendly cocoa.

Until recently, many of the 24,000 farmers in the forest edge area didn't even know what chocolate was. In the past, their cocoa was exported in bulk commodity supply chains – meaning they had no idea where their beans ended up, let alone ever tasting the final luxury, global product (of which farmers would typically receive three to six per cent of a bar's value).

Across many parts of the world there has been a lack of investment in sustainable cocoa. This not only perpetuates high levels of poverty, but it also drives tropical forest loss, as farmers slash-and-burn new areas for planting more cocoa to support themselves. This, along with the development of sun-tolerant cocoa hybrids – which allow for more intensive, full-sun plantations – has driven significant tropical forest clearance in the main West African cocoa-growing countries of an estimated 2.3 million hectares between 1988 and 2007. And the ultimate driver for this is our love of chocolate.

How can cocoa be deforestation-free?

In 2015, we started to build a cocoa business with the ability to protect the forest. Cocoa farmers came together to form the Goleagorbu Cocoa Producers Organization (GCPO), the foundation of the business operating in the forest edge of the Gola Rainforest National Park.

The park covers an area of more than 70,000 ha. It a global biodiversity 'hotspot' with close to 1,000 identified plant species, half of which are endemic to the Upper Guinea Forest ecosystem. Of the 1,000 species of plant that are known to occur in the park, 232 are tree species. The most common family is identified as Leguminosae, with common species such as *Cynometra leonensis* and *Brachystegia leonensis*. The most dominant tree species is *Heritiera utilis* (Sterculiaceae) (Klop et al 2008). Satellite imagery shows the park as an island of green in a largely agricultural landscape, confirming that the park's forests are continuing to be effectively protected.

The Gola Cocoa team have supported members of GCPO with training in a technique called agroforestry, whereby cocoa trees are strategically planted alongside leafy shade trees which



*Bockarie Sama laying out cocoa to dry
(Photo: Richard Anstead, Twin)*

encourage bird life, nitrogen-fixing trees for soil fertility, bushes of pineapples and chilli peppers, and tendrils of maize. The aim is that cocoa production and quality is optimised without needing to encroach on the forest. Working as a group means that farmers can process their cocoa together, bringing efficiency and consistent quality to the final product. From there, they take it to the local Buying Centre, managed by an elected Buying Officer.

Each centre is equipped with scales, a receipt book and a published price for cocoa per kilo. It may sound simple but farmers had not seen this level of transparency before. As Juma Koroma, one of the Treasurers at GCPO, explains: "I used to sell cocoa to other traders in the area. Traders would often cheat us; they never allowed the scales to face me, so I couldn't see the weight of my cocoa and had no idea what price I should expect. I have now learnt to read the scales myself and know what I deserve for my cocoa."

With a quality forest-friendly product, we can access higher value markets and offer a price which directly rewards farmers for their efforts to protect the forest.

Globally, industry is also waking up to cocoa-driven deforestation, and recent announcements from the 12 biggest cocoa companies herald a commitment to "zero deforestation cocoa supply chains". In a similar vein, our work at Gola is also a flagship for our exciting new venture, Trillion Trees (with WCS and

WWF), that boldly aims to end deforestation by 2050, such as by scaling-up proven projects like this to other parts of the tropics.

What is our next step in making this business work? The development of our own Gola Rainforest Chocolate bar. Some of the first batch of pilot bars were taken to the Goleagorbu farmers. Aminata Berewa, supervisor of the cocoa team, remembers: “The look on their faces was total surprise! They enjoyed tasting it, discovering the flavour, especially knowing it was their own cocoa in the bar. Now they know what is possible if they produce cocoa in a forest-friendly way”.

To find out more about Gola Rainforest Cocoa, please get in touch with katie.sims@rspb.org.uk and visit our website at www.golarainforest.org.

To find out more about Trillion Trees, please go to www.trilliontrees.org and read the next issue of the *CFA Newsletter*.

Katie Sims

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Women are the guardians of the forest. So why does India ignore them in its policies?

A few weeks ago, when Google India marked the 45th anniversary of the Chipko movement with a doodle, it was a refreshing flashback to forest communities sacrificing their lives to protect trees from being felled for timber use.

One of the first such recorded community protests was at Khejarli village in present-day Rajasthan. In this village, around the year 1730, about 300 Bishnois led by Amrita Devi are said to have sacrificed their lives to protect Khejri trees. The Bishnois, particularly the women in the community, considered Khejri trees (*Prosopis cineraria*) sacred because of their multi-use benefits. Amrita Devi, before she was beheaded with an axe bought inside the forest to cut trees, said: “*Sar sāntey rūkb rabe to bhī sasto jān.*” If a tree is saved even at the cost of one’s head, it’s worth it.

Two centuries later, in the 1970s, the Chipko movement across Uttar Pradesh shaped community forest management in India. Women were at the forefront of this movement too, as they hugged trees to protect them from felling by the timber industry.

The reality has not changed much, as is evident from the case of Kabiben Kalara, a member of the Bhil tribe from Rajasthan. In 2016, she was uprooted from her family farmland – which she was claiming under the Forest Rights Act – because of a road widening and upgrading project in Bagidora tehsil of Banswara district. “How many women have to be killed or displaced with their families and face violence before the government realises that forests and water should be protected?” she asked.

‘Wood is good’

A search for the words women and gender in the Draft National Forest Policy, 2018 – which governs the formulation of all laws and schemes related to forestry – returns zero results. While terms like wood, economic or timber appear all over the 10-page draft policy released by the Indian government in March.

“Why do women’s rights to forests...remain a secondary issue?” asked Sarita Katkar, a young Katkari Adivasi from Maharashtra. She belongs to particularly vulnerable tribal groups and believes that for the Forest Department, forests are all about wood. It fails to see the non-timber products which support the livelihoods of over 100 million people in India.

Indeed, in 2017, the ministry launched a “Wood is Good” campaign to promote timber for industrial or commercial use. It collected over Rs 50,000 crore through a Central Compensatory Afforestation Fund, which should have then been used for afforestation. Instead, the fund is being directed mainly towards building timber plantations in forests and private properties, often without the consent of households and gram sabhas.

Brinda Karat, a leader of the Communist Party of India (Marxist), voiced her concern. “[Typically] indigenous trees should be planted. And who knows best about that? Obviously it is tribal communities. But what is happening in all these [forest] areas is, plantations after plantations are being planted according to commercial interest. If you go to any of these new plantation areas, you will see Eucalyptus trees and trees that are useful for paper industries. The Compensatory Afforestation Fund is (a) giving the private corporate a say, (b) destroying the rights of tribal peoples under various legislations, and (c) destroying the conservation and biodiversity of the environment “Many Adivasi women in our village cannot read and write, but they hold indigenous knowledge about every single tree – its use for household consumption, medicinal value, for livestock and for biodiversity,” said Sunita Kanko, a 30-year-old Munda Adivasi schoolteacher in a forested village in Jharkhand. “How can we comment on the draft policy if it is written in English just like in the days of British India? There is no effort by the environment ministry to translate it in other Indian languages. Our forest connects us culturally and spiritually with our ancestors, while policymakers and private companies think of wood as economic gain.”

Uday Mengal, a volunteer helping tribal communities claim their collective forest land rights, agreed. “We were one of the first countries to introduce historic legislation recognising the rights of indigenous peoples and traditional communities through the Forest Rights Act, 2006,” he said. “Ten years later, India has not yet fully implemented this legislation. Such failure has resulted in social movements like the farmer’s march we saw in Maharashtra.”

While India is debating the role of indigenous peoples in forest governance, Colombia’s President Juan Manuel Santos made an unprecedented move a few weeks ago by announcing that the country intended to add 8 million hectares to its protected land, and grant indigenous communities the ability and autonomy to govern their territories.

Women as guardians

“Women are always at the forefront of the fight for environmental rights, but when it comes to rewards, they are always left out,” said Indavi Tulpule of Shramik Mukti Sanghatana, a non-profit that works in Maharashtra’s Thane district. “Forest Department officials often forget the important role women play in forest protection. Every year we have forest food exhibition in tribal villages, and women share information about each of non-timber forest products that is used for food, medicine and preservation of biodiversity. They are the guardians of the forests.”

Sunanda Kewar, the head of a women’s self-help group in the Rajanandgaon district of Chhattisgarh, said, “We go out to collect firewood, collect non-timber forest produce and even to patrol the forest in group of two just like our men in the village because we are equal. But outsiders bring women-insensitive policies that change our relatively equitable world for worse.”

Every year, Adivasis in Jharkhand celebrate the festival Sarhul, by paying respects to prakriti, that is, the gifts of nature, such as fruits, leaves, water, trees. It is a practice followed by forest-dependent communities around the world. Like Jharkhand’s Adivasis, many indigenous communities in the Andean region of Latin America pay respect to the Mother Earth or Pachamama. For them, Pacha forms the central notion of life. In 2010, Bolivia’s Law of Mother Earth (*Ley de Derechos de La Madre Tierra*) recognised the land as sacred and as a living system with rights to be protected from exploitation. India, instead of following this example, has taken steps backward through this draft National Forest Policy. The worst-affected groups when the rights of nature and of indigenous communities are not recognised are women and children.

The environment ministry had invited feedback from the public on the draft National Forest Policy, which received criticism for promoting privatisation of forests. To fix it, there is a

need for gender mainstreaming and women’s involvement in the making of the policy. Some ways to do this are:

- The Section 3.5 suggests afforestation will be intensified to cater to the needs of fuel wood, and that liquid petroleum gas will be promoted. A majority of indigenous women collect dried firewood from forest, saving cost and maintaining forest biodiversity. The idea of intensification should be backed by impact assessment studies on fuel wood energy consumption in India.
- Section 3.6 blindly proposes to improve the income from non-timber forest produce such as seeds, wild edible foods, bamboo, grass, etc., but fails to acknowledge their cultural value, indigenous women’s role in their management and their importance for a tribal household. Economic benefit is secondary and management of this produce has to involve women in every step of the value chain.
- Overall, the draft policy fails to address the fact that India’s grassland and ‘wasteland’ is the richest source of fodder for livestock of smallholders. Its collection is often the responsibility of indigenous women and youth.

The first step to overcome the challenge is for the environment ministry to acknowledge that the draft policy fails to discuss gender integration and women’s issues in the management of forests, trees, agroforestry and afforestation. The next step will have to be to open up the dialogue for social and gender inclusion, and to ensure that environmental defenders, including women, are protected through India’s forest policy. With these measures in place, perhaps there would be a chance of saving India’s forests and the communities who depend on them.

Purabi Bose

scroll.in/magazine

How to plant trees while you use the internet



Ecosia is a web search engine based in Berlin, Germany, which donates 80% of its surplus income to non-profit conservationist organizations, with a focus on tree planting. As a “social business”, Ecosia is CO₂-neutral and supports full financial transparency, and is certified by B-Lab as a benefit corporation. As of June 10th, 2018, Ecosia has planted over 29,870,000 trees around the world.

For more information visit <https://www.ecosia.org/> and to see how it works visit <https://youtu.be/t8e8GEn7u7Q>

The UK Women's Forestry Service



*Women of the Forestry Corps sharpening an axe
(IWM Q30720)*

Introduction

British Prime Minister David Lloyd George famously remarked that Britain came closer to losing the First World War through lack of timber than want of food. Of course, both were in acute shortage. This article describes how women helped address the timber shortage through the formation and activities of the Women's Forestry Service, an organisation closely associated with the Women's Land Army. Their successes lead to the re-establishment of both organisations on a larger scale during World War II.

Background

At the start of the Great War in August 1914, Britain was the only major European nation dependent on foreign imports for food and timber. Rather than "being over by Christmas", the war effort placed ever increasing demands on the country's men and resources. With U-boats attacking merchant shipping, and the call up of more soldiers, food and timber were soon in short supply.

A confused and uncertain industry at the start of the war saw large numbers of women out of work. Meanwhile, women of independent means, driven in part by patriotism, volunteered their services to the war effort in large numbers. The Suffragette Movement suspended its political action and offered its organisational capacity to help meet the new demands on the nation.

Out of these rapidly changing dynamics emerged various women's organisations to provide war-time support and services locally, nationally and sometimes abroad behind the frontline. The Women's Land Army and the closely associated Women's Forage Corps and Women's Forestry Service played important roles in the production and distribution of food, animal feed and timber products from the country's farms and woodlands.

Formation of the Women's Forestry Service

By 1916 the need to produce more home-grown food was urgent and considerable efforts were made to encourage women to take up employment on the land, and to persuade farmers to accept them into what was considered work for men. In early 1917 the Ministry of Agriculture started to recruit a

Women's Land Army, with appeals for recruits being issued in March 1917.

In similar vein, the need for home produced timber was also becoming acute, and the Women's Forestry Service (sometimes known as the Women's Forestry Corps) was also started that year, established by Miss Rosamond Crowdy as a section of the Women's Land Army. Prior to that, women had been employed by contractors through employment offices for the cutting and measurement of timber, but in limited numbers and without any central co-ordination.

The Women's Land Army did all the recruiting and selection of candidates for both farm and forestry work. In her sound archive Mrs Helen Poulter recalls responding to a rally in London calling for 'Girls for the Land'. She was asked whether she would prefer to work on a farm or in the forest to which she answered that she "didn't like the idea of working with cows". She was posted to a camp near Singleton in West Sussex to train and work as a cutter^[1].



Women hold banners with slogans as they carry out a recruiting rally for the Women's Land Army in Preston in June 1918.

Training & Activities

The workforce of the Women's Forestry Service was grouped into two categories; 'measurers' and 'cutters'.



The work of the cutters was less skilled and called for physical strength. The first two training camps were started in Newstead, Nottinghamshire and Burnham, Norfolk, where women were trained in the felling and preparation of timber for railway sleepers and pitprops, and the handling of horses to drag away the felled trees. These camps were soon closed down as it was more effective for the women to be trained in gangs on site under a skilled forewoman.

Around 3,000 women were trained as cutters and worked in gangs of 20 to 25 for private employers or divisional officers.

Measuring was considered a more skilled role requiring a broad knowledge of forestry. Recruits were typically educated women who had been teachers or bank clerks. A training camp was set up in Buckinghamshire, under canvas at Penn before being moved to huts at Halton, Wendover. Here they learned how to measure and mark where a tree should be felled and how to assess the cubic content of the resulting logs.

370 women passed their training here and went on to work as forewomen of timber cutting gangs or running sawmills.



Uniforms & Pay

The uniform of the Women's Forestry Service was provided free and was essentially the same as that of the Women's Land Army. It consisted of:

- breeches
- a knee-length overall tunic (with a button-fastening integrated belt)
- boots or high boots (2 pairs per year)
- buskins, leggings or puttees (if issued with short boots)
- a mackintosh
- a jersey
- a soft felt cloche hat



The armbands and hats of the Women's Forestry Service bore distinctive symbols designed by one of the volunteers. For cutters the symbol was of two crossed woodman's axes and a

cross saw. For the measurers the symbol was a tree embroidered in green silk and the letters WFS. These are shown at the start of this article.



Felt hat worn by cutters in the Women's Forestry Service (IWM UNI8247)

The uniform was designed to give the women the same freedom of movement as men doing a physical task. However, the press and postcard publishers treated the land girls and their uniforms with some amusement, some of which today would probably be considered inappropriate.

The WLA handbook advised recruits that:

'You are doing a man's work and so you're dressed rather like a man but remember just because you wear a smock and breeches you should take care to behave like a British girl who expects chivalry and respect from everyone she meets.'

At the end of the war

At the end of the war, politicians and statesmen paid tribute to the various women's organisations whose patriotism and dedication had played an important part in the war effort.

In a speech on 29 June 1918 to mark the silver wedding anniversary of King George V and Queen Mary, the King said:

"When the history of our Country's share in the war is written no chapter will be more remarkable than that relating to the range and extent of women's participation. This service has been rendered only at the cost of much self-sacrifice and endurance. Women have readily worked for long hours and under trying circumstances in our factories and elsewhere to produce the supplies of munitions which were urgently needed at the front and to maintain the essential services of the country."

In October 2014 a bronze memorial statue to both the Women's Land Army and the Women's Timber Corps was formally unveiled at the National Memorial Arboretum in Alrewas Staffordshire.

Although the statue depicts women in World War II uniforms, the inscription recognises the role of the Women's Land Army in World War I and by association that of the Women's Forestry Service.





Members of the Women's Forestry Corps returning after a day's work (IWMQ 30714)

Acknowledgements and Further Reading

I have used several articles available on the worldwide web as references and the main sources are listed below.

Most of the photos have been taken from the Imperial War Museum's archive catalogue, and, where this is the case, I have provided the catalogue reference number. There are many other interesting photographs, together with interview recordings to be found using the IWM search facilities:

<https://www.iwm.org.uk/collections/search?query=women%27s+forestry+service>

Keith Lelliott (Volunteer) for the Woodland Trust's Centenary Woods (First World War) Programme.

An edited version of the same paper was first published online as part of the Imperial War Museum's Womens Work 100 project in February 2018. Further information about the Centenary Woods (FWW) Programme is available at <https://www.woodlandtrust.org.uk/support-us/support-an-appeal/centenary-woods/>

The Woodland Trust Centenary Woods (First World War) Programme

The Centenary Woods (First World War) Programme is being run by the Woodland Trust. This Programme of activity encompasses a diverse range of projects including the creation of four dedicated Centenary Woods, engaging over 100 individual landowners to plant a First World War wood, providing schools and communities with free trees to tracing the Verdun Oaks. HRH The Princess Royal is patron of the Programme. See <https://www.woodlandtrust.org.uk/support-us/support-an-appeal/centenary-woods/>

Sources

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Nepal Foresters' Association (NFA) in my eyes



Visit of Chinese Foresters in Nepal Foresters' Association in May 2018.

Background

The NFA is an association of forestry professionals with a minimum of a bachelors' degree in forestry. The association was established in 1974 by a decision of 42 foresters and presently has 2500 members. Out of them, about 500 have Masters degrees and about 100 have PhDs, mostly from Australia, USA and some European countries. In addition, there are also 40 international members, who are foresters from foreign countries but once lived in Nepal working in different capacities, from volunteers to experts.

Presently about 1400 NFA members are working in government institutions, with about 400 retired and a further 400 working in non-government organizations, business enterprises and social sectors. About 100 are working outside Nepal in different positions including associate professors in universities, and about 200, especially new members, are unemployed or under-employed.

The association elects its officials for the board by voting. According to rules of the association, it has a 13-member board or executive committee which has tenure of three years. The board has a president, a vice president and a general secretary. Following an election for board officials in April 2018, Mr. Kumud Shrestha was elected as President of the association.

As a result of the continuous efforts of its members, the association has succeeded in constructing a small house within a forestry complex in Kathmandu. But the association lacks continuous resources and so this is a challenge for the board and general members. Sometimes the association undertakes consultancy services in technical forestry with government and projects, but raising resources for the association has been a challenge over the last 44 years.

Objectives of the association

The main objective of the association is to increase the technical and social capacities of its members through sharing, coaching and training. In addition, its other objective is protecting the human and professional rights of its members. These objectives can be further clarified as follows:

- Increase professional and intellectual level of members
- Support and advise in order to conduct research
- Make suggestions and support government
- Establish relations with similar international organizations
- Exchange knowledge through workshops and seminars
- Increase awareness at the national level about the social, economic and ecological benefits of SFM (sustainable forest management).
- Protect the professional rights of members

Past activities

In the past, the NFA had a great role in drafting the National Forest Plan 1976, which was the first government document to specify the need for peoples' participation in forest management in Nepal.

Presently, the Nepal Foresters' Association has taken initiatives in spreading the concepts and actions of SFM, through:

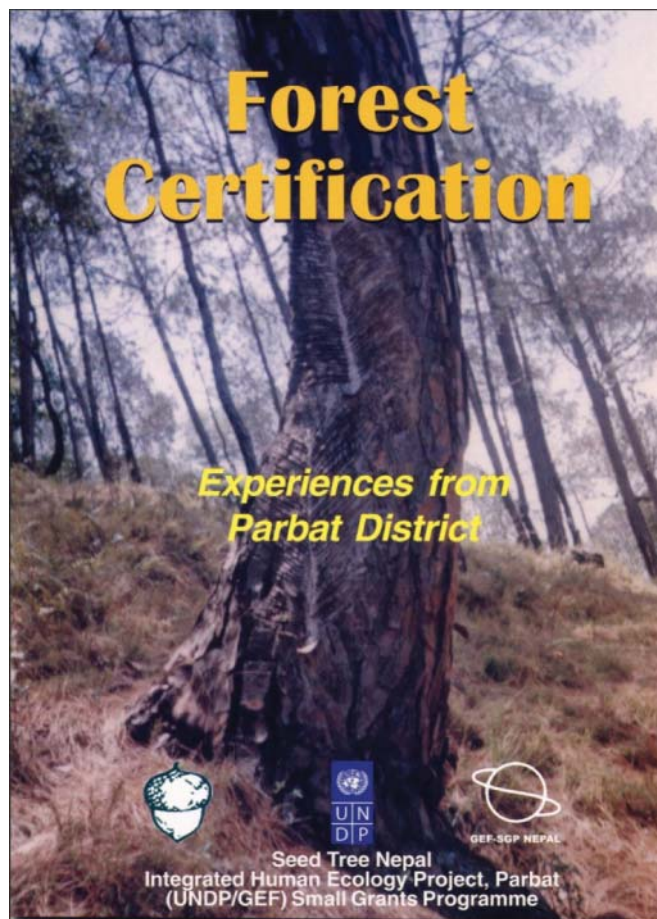
- Forest Certification
- Forestry Sector Reinvention.
- Climate Change: Potential of REDD (Reducing Emission from deforestation and degradation in developing countries).

Major activities undertaken by the NFA

- Preparing and updating Community Forestry Guidelines
- Supporting government in its implementation of the DFCC concept
- Developing the forest fire notification system through use of mobile phones
- Training on SFM (sustainable forest management)
- Raising the voice of professional foresters who face grave concerns due to de-motivation from higher government official.
- Raising timely issues in favour of SFM.
- Printing booklets for information dissemination
- Maintaining relationships with journalists
- Publishing Journals
- Other activities demanded by time

NFA in forest certification

The NFA initiated forest certification under the support of the Small Grants Programme/ UNDP/GEF, UNDP for 6 years. During the project the NFA advocated very strongly in favor of forest certification and incorporated forest certification in the curriculum of forestry education at bachelor and masters levels. It also succeeded in incorporating forest certification in the curriculum of the public service commission, which recruits government employees. In addition, according to the demands of national stakeholders it also developed the book of forest certification. The NFA also conducted training in forest certification in different parts of the country. In fact, it is the NFA which mainstreamed forest certification in Nepal with very few financial resources.



NFA in the democratization of the forestry sector

The NFA succeeded in involving all sectors in the process, where the following stakeholders were involved:

1. Community Based Organizations and local NGOs
2. Forest User Group Based Organizations (Federation of Community Forestry Users, Nepal, Association of Collaborative Forest Users, etc)
3. Local government (District Forest Coordination Committee, District Development Committee. Municipalities, Village development committees)
4. Trade Unions' Representatives
5. Womens' group representatives (Himawanti Representative)
6. Forest Based Industries
7. Journalists / Media persons
8. Forestry Experts/ Professionals
9. Professional Organizations Representative (Ranger Association, Soil conservation Society)
10. Professors/student of forestry colleges/ Universities
11. Government organizations (Regional Directors, Department of Forests, Department of National Parks, Department of Soil Conservation and Watershed Management.
12. Others important organizations

For the study the following process was adapted:

- NFA conducted 36 focus group discussions at grass-root and district level targeting various streams of stakeholders
- *National Workshop on Democratization, Governance and Sustainable Development of Forestry Sector* was held on 5–7 July, 2007
- The thematic papers were updated with the comments and suggestions of the workshop participants and finalized.

As the result of the study reforming strategies were proposed in the following nine themes:

1. Economic and financial issues
2. Environmental issues
3. Governance & decentralization issues
4. Legal and policy issues
5. Institutional/human resources issues
6. Programmatic issues
7. Geographic & physiographic issues
8. Human and social issues
9. Forest-based Poverty reduction issues

Conclusion

The Nepal Foresters' Association is a civil society institution undertaking various initiatives for SFM and related Issues. The NFA is committed to collaborate with government, development partners and other agencies for SFM, pro-poor forestry and biodiversity conservation, policy reforms, forest governance, institutional development, and issues related to community forestry, climate change and biodiversity.

In addition, the NFA demonstrated it a common forum for all foresters in Nepal. It has its own small house and meeting hall which has a capacity of 100 persons. Therefore, the NFA has demonstrated its capacity to make a positive contribution in the development of forestry in Nepal.

However, due to inadequate financial resources the NFA has problems in the disseminating capacities required by new foresters and local communities. As a result the NFA requests the global forestry family to help its endeavor by supporting the participation of Nepalese foresters in the form of training, workshops, study tours and the support NFA financially.

Kumud Shrestha
President, NFA

Women are championing mangrove conservation in Nigeria



*Nigeria's first women-driven mangrove restoration project is already succeeding © Enobong Bassey
By Jude Fubnwi*

A group of women are working tirelessly to reverse life-threatening challenges facing local economies in Nigeria, as the country's declining mangrove forests face extinction – after decades of degradation. The Society for Women and Vulnerable Groups (SWOVUGE) is helping communities to restore and sustainably manage mangrove forests in the five villages of the Ukpom Okom District in South East Nigeria.

The Ukpom Community Mangrove in Akwa Ibom State is an important breeding site and home to numerous species of wildlife such as crocodiles, tortoises, turtles, fish, shrimps, crab, snails, clam and oysters. A large population of people also depends on resources from this rich mangrove forest to support their livelihoods.

However, limited knowledge about sustainable resource management in the communities has exposed the mangrove to activities that threaten its biodiversity. Overharvesting of mangrove forest products, including trees used for firewood in homes, or to dry fish or build canoes, have reduced the mangrove at an alarming rate. Patches of the forested mangrove have also been cleared for housing development, putting the ecosystem services and economic benefits of the mangrove at risk.

To preserve mangrove's bounty and ensure that communities continue to benefit from its resources, the Critical Ecosystem Partnership Fund (CEPF) has provided financial support to SWOVUGE through BirdLife International, in our capacity as regional implementation team for the Guinean Forests of West Africa Hotspot. The funds will support a mangrove restoration project on the site.

The project, funded under the Small Grants programme and referred to as the "Ukpom-Okon Community Mangrove restoration and tree planting project, Nigeria", empowers women to conserve the very essence on which their livelihoods depend.

"Nigeria has no gazetted mangrove protected areas. Apart from this ongoing project, there has been no internationally supported women-driven project on mangrove restoration in the country," said Emem Umoh, Coordinator of the project.

At least seven women are on the frontline, working with communities and coordinating all project-related activities to ensure that everyone in the five villages benefits from the project during its two-year cycle, with special attention to women beneficiaries. More than 330 women have been reached directly through different workshops organized in various communities to raise awareness about the importance of mangrove restoration and tree planting.

"We tell them to encourage other women to participate in project activities," said Ms Umoh.

"I did not know, until now, that felling of mangroves indiscriminately could damage resources if trees are not planted to replace the felled ones," explained 53-year-old Christiana Akpan, leader of a women's group from the Ikot Etegne community who attended one of the sensitization workshops.

Barely nine months after the project was launched, over 400 trees have been planted in key areas and 600 more have been earmarked for distribution to women in the communities as part of efforts to promote agro-forestry practice. Two nursery sites have been established in two communities to grow the *Rhizophora* species of mangrove tree and over 400 seedlings grown.

Birdlife.org

Youth

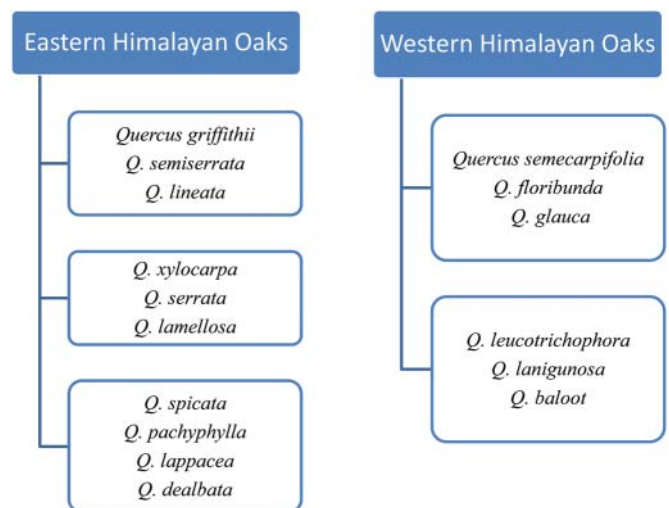
Oaks of India: regeneration and management

Forests constitute a very important resource base in the Himalayas, the world's youngest mountain range, which covers nearly one-fifth of India's land area. These forests, despite being very rich in their floral composition are, by and large, dominated by a few widely distributed plant genera, essentially and importantly including the species of *Quercus* commonly known as oak. Oaks are the dominant, climax tree species of the moist temperate forests of the Indian Himalayan region. About 35 species of *Quercus* are distributed between 1000–3500m elevations either in abundance or somewhat narrowly from the north eastern to the westernmost part of the Himalayas. There are 16 species of oaks growing in India, ten in eastern Himalayas and six in the western Himalayas.

The Eastern Himalayan broadleaf forests are diverse and species-rich, with a great diversity of oaks and rhododendrons in particular. The ecoregion has two broad forest types: evergreen and deciduous. Evergreen forests are characterized by oaks, chiefly *Quercus lamellosa*, together with *Rhododendron arboreum* and *Rhododendron falconeri*. By contrast, the Western Himalayas are endowed with diverse vegetation types, ranging from tropical moist deciduous to temperate and

sub-alpine forests, grasslands, alpine scrub and meadows. The Western Himalayan evergreen broadleaf forest is also dominated by oaks.

Himalayan Oaks found in forests in Eastern and Western regions are listed below.



Oak forests are sources of fuelwood and fodder, and play a vital role in the conservation of soil, water, and the native flora and fauna. Regeneration, one of the major problems facing forests of Western Himalaya, is influenced by the interaction of biotic and abiotic factors. One of the main pressures on oak forests is the uncontrolled lopping and felling of trees for fuel wood, fodder and grazing.



Growth of oak under nursery conditions after two months.

Regeneration of oak

- Successful regeneration of tree species is a function of three major components:
 - ability to initiate new seedlings
 - ability of seedlings and saplings to survive
 - ability of seedlings and saplings to grow.
- The causes of failure in regeneration include lack of viable seeds due to insect and animal predation, unfavourable micro-sites, and overgrazing by domestic livestock. Other reasons for dwindling oak forests are erratic seed production, poor seed viability, defoliation, acorn predation and increased incidences of fire.

- It is also observed that oaks in the accessible Government forests have been mutilated by continuous lopping such that they are rapidly dying out. Few patches of intact oak forests are present in the region today and the remaining intact patches are also changing rapidly due to invasion by alien invasive species, such as *Eupatorium adenophorum*, *Lantana camara* and more aggressive species such as chir pine (*Pinus roxburghii*). The replacement of oak by pine has become an ever increasing trend.

Management

In order to improve oak survival and growth it is important to:

- (1) make oaks more competitive
- (2) reduce competition from other species
- (3) protect the area in which they grow from practices such as grazing, burning, logging and lopping.

Conservation of these valuable species would not be possible without the active participation of local communities. By improving their living standards and giving benefits of conservation to them, long-term conservation goals can be achieved. In order to improve the understanding of ecosystem functions and processes and to develop a holistic description of the landscape, both intensive studies on small areas and assessment of much larger areas are required.

*Anuradha Thakur has been working as an Assistant Professor in the Department of Agriculture, Chandigarh University, Punjab since July 2017. Her study on regeneration of Ban Oak (*Quercus leucotrichophora* A. Camus) was carried out under nursery conditions at Dr Y.S Parmar University of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh, India, and in forest areas in the vicinity. She can be contacted at anugogle@gmail.com.*

Around the World

Commonwealth: MSc Tropical Forestry scholarships at Bangor

Bangor University is delighted to announce that up to 5 scholarships from the Commonwealth Scholarship Commission are available for study on MSc Tropical Forestry (distance Learning) for September 2018 entry. The scholarship also includes a generous travel bursary to enable scholars to attend an international summer school in July/August 2019 as well as a small study grant to assist scholars with distance learning study costs.

Applicants from the following developing commonwealth countries are eligible for the scholarship: Ghana, Guyana,

Kenya, Lesotho, Malawi, Papua New Guinea, Tanzania, Uganda and Zambia.

Details of the scholarship and the course can be found at <https://www.bangor.ac.uk/senrgy/postgraduate-courses/tropical-forestry-msc-international-commonwealth-scholarship-distance-learning> and the application process is at <https://www.bangor.ac.uk/senrgy/postgraduate-courses/tropical-forestry-msc-international-commonwealth-scholarship-distance-learning#apply>

For further information please contact distance@bangor.ac.uk

Global: Trees may have a ‘heartbeat’ that is so slow we never noticed it

Trees may seem sedate but it turns out they are more active than we thought. Many trees move their branches up and down during the night. The findings hint that the trees are actively pumping water upwards in stages, and that trees have a slow version of a “pulse”.

“We’ve discovered that most trees have regular periodic changes in shape, synchronised across the whole plant and shorter than a day-night cycle, which imply periodic changes in water pressure,” says András Zlinszky of Aarhus University in the Netherlands.

In a study published in October 2017, Zlinszky and his colleague Anders Barfod used a form of laser-scanning normally deployed to monitor tall buildings. They scanned 22 species of tree for one night each in windless, lightless conditions to see if the trees’ canopies changed shape.

In seven species, branches moved up or down by about a centimetre. These see-saw oscillations in branches were most pronounced in magnolia trees, averaging up to 1.5 centimetres. The cycles repeated every 3 to 4 hours.

We got a heartbeat

Now the pair have an idea for what the movements could represent. They think they might be evidence that trees have a “heartbeat”, and that they are actively pumping water up from their roots in pulses that last hours.

Previously it was thought that trees don’t do that, but simply wait for the evaporation of water from leaves to passively “pull” the water up.

“In classical plant physiology, most transport processes are explained as constant flows with negligible fluctuation in time, especially at the level of the entire plant, or on timescales shorter than a day,” says Zlinszky. “No fluctuations with periods

shorter than 24 hours are assumed or explained by current models.”

Moving the water up in stages might save energy, says Zlinszky. “If water is pumped between sections, only the hydrostatic pressure of an individual section would need to be overcome by transport, not the full pressure resulting from the height of the tree.”

A small squeeze

It’s not clear how a tree might pump water upwards. Zlinszky and Barfod suggest that the trunk might gently squeeze the water upwards, pushing it up through the xylem: a column of dead cells through which most water moves up the trunk.

They say this idea is supported by previous studies by other teams, which found that tree trunks sometimes shrink at night by up to 0.05 millimetres.

“We suggest a so-far-unknown pumping mechanism,” says Barfod. It may be that living cells in the xylem can change size, creating a squeezing action.

They also think that water-transport proteins called aquaporins in the membranes of the cells may play a key role in this process. Aquaporins are known to trigger rapid changes in water flow.

In 2016, Zlinszky and his colleagues showed that birch trees “sleep” at night, resting their branches by drooping them as much as 10 centimetres. These movements were “circadian”, meaning they reflected the day-night cycle: the branches returned to their normal position by morning. However, the newly discovered movements operate on shorter timescales that cannot be circadian.

[newscientist.com](http://www.newscientist.com)

Ethiopia: Participatory forest development, management

Ethiopia is not only a country that speaks out loudly about climate change in international arenas. It is also committed to contribute its own share to protecting the environment and reducing the impacts of climate change. The government has been making maximum effort to protect forest resources in different parts of the country.

Dagne Mamo, Participatory Forest Management Director at the Ministry of Environment, Frost and Climate Change said in forest protection, the efforts of the government alone have not brought about viable changes. Hence, participatory forest management system was introduced to ensure active participation of the public in forests development.

As to Dagne, as per participatory forest protection works, religious institutions and various communities have been actively engaged in various forest related livelihood activities including beekeeping and forest coffee production. As a result, the forest development schemes are supporting communities in

generating additional incomes and the participatory forest protection tasks have been bringing about viable changes in protecting forests from destruction.

Religious institutions have also been widely participating in forest protection activities. Indicating that the ministry had no prior information about forests in religious institutions, it has begun information gathering works in 2000 selected institutions. The tree species protected in these institutions are not found in any other places. Parallel to this, indigenous seed multiplication works have also been taking place in these selected institutions. Accordingly, forest area identification and registration works have been carried out.

Enterprises in Amhara and Oromia states are striving to protect forest resources by assuming the responsibility of utilizing forest resources for the desired purpose. What is more, tree plantation campaigns have been carried out every year to rehabilitate lost forest areas. As the communities realize the benefits of the forest development, they tend to engage in more.

Forests that are developed for the sake of business would meet the input demands of factories in different sectors. Forest developer enterprises in Amhara and Oromia have been striving to modernize forest protection works.

The ministry has been working to raise awareness of the society to ensure forest protection in areas where it has not been that much effective before. It has also been taking legal measures on individuals/factories who are engaged in stinging trees.

Some sources indicated that, by the end of the 19th century, forest coverage in Ethiopia was 40 per cent. However, due to manmade causes related to agricultural land expansion, construction, application of wood energy as well as poor protection mechanisms, the country's forest resources have declined at an alarming rate and at some point the coverage was only four percent.

Later on by the extensive effort of the government and the participation of the public, it was managed to recover portion of the forest lost. In fact, the forest coverage has now reached 15 percent. In the second Growth and Transformation Plan, it was planned to protect two million hectares of forest through participatory forest management and development. Nowadays, over 1.5 million hectares of forest land are protected.

As to Dagne, emerging industries and the private sector need to work closely with forest protection authorities as the expansion of industries has had negative impact on forests and the protection of forests.

Of the various efforts exerted by the ministry, one is raising awareness of the society towards a new proclamation with the

view to maximizing the participation of the private sector, State Minister Kebede Yimame said.

A new proclamation was also passed to encourage private forest developers to engage widely in the sector, as it facilitates the necessary professional support and incentive for those who are willing to invest in the sector, Kebede opined.

The proclamation invites the private sector to develop forests and get benefit out of it. As forest development is a long term investment, the State Minister pointed out that it is not expected that investors would be willing to engage in it extensively.

"As it requires long period of time to harvest, there is always a risk. So, the new proclamation would help to overcome such risks," he noted.

Explaining that farmers are benefiting from the sector, Kebede said that the trend has been changing for the better in this regard. For the most part, farmers are the main providers of various wood products for local consumption.

In addition to maximizing benefits via supplying wood products for local consumption, currently farmers are exporting various wood products to neighboring countries, Kebede indicated.

In 2016/17 alone, Amhara State farmers have earned 26 million USD exporting wood products to Sudan, while the State earned 14 million USD in the first nine month of this budget year. Forest development has now changing the livelihood of farmers, he added.

allafrica.com

Brazil backs 'Guardians of the Amazon' in their war on loggers

In a rare move, Brazil is providing armed back-up to indigenous people protecting the world's most threatened tribe from illegal loggers, a decision that campaigners lauded as a "landmark" in efforts to halt deforestation in the Amazon.

Officials moved in to the Brazilian rainforest after a group of from the Guajajara tribe, who call themselves The Guardians of the Amazon, seized a logging gang and burnt their truck, rights group Survival International said.

"Over the weekend, a team of Ibama [Brazil's environmental protection agency] and environmental military police arrived in response to The Guardians' call for help," said Sarah Shenker, a senior campaigner with Survival. to shortlist

"That was a landmark moment, I would say, because The Guardians hardly ever receive support," she told the Thomson Reuters Foundation by phone.

South America's largest country is grappling with scores of deadly land conflicts, illustrating the tensions between preserving indigenous culture and economic development.

The Arariboia area in north-east Brazil is home to the Awa indians, several hundred hunter-gatherers described by Survival

International as the most threatened tribe in the world because they have nowhere to retreat to if their forest is cut down.

The government has struggled to protect the vast territory amid budget cuts and increasing political pressure to opening up indigenous reserves to mining, Survival said.

A spokesman at Ibama declined to comment on the ongoing operation. The indigenous affairs agency, Funai, did not immediately respond to requests for comment.

Brazil's remote tribes depend on large areas of unspoiled forest land to hunt animals and gather the food they need to survive.

They are particularly vulnerable when their land rights are threatened because they lack the natural immunity to diseases that are carried by outsiders.

The joint patrol is moving into another area where The Guardians found a second loggers' camp, Shenker said. Three Guardians were killed by loggers in 2016 and they often face death threats and arson attacks, she said.

smh.com.au

Global: Food and forests – We can have them both

Agriculture provides most of the world's food. It also contributes the most to global deforestation. This does not mean, however, that we need to choose between feeding a rapidly growing population and protecting the forests that are so essential to our wellbeing.

While many countries have first depleted their forests before seeing a rebound in tree cover, this “business-as-usual” scenario is not inevitable. But changing it does require a paradigm shift. In part, it means redefining what “successful” pathways to sustainable development look like, so that they resonate with local leaders and reflect local realities – and thus gain political support. In addition, transitioning away from the status quo depends on forming new and creative partnerships between companies, communities, governments, and investors.

How to bring about this new food-and-forest paradigm? An ongoing study – funded by the Program on Forests (PROFOR) and led by the World Bank's Agriculture and Environment Global Practices along with experts from many agricultural and environmental organizations – is trying to find concrete answers. The team is focusing on six agricultural commodities: three that are heavily implicated in deforestation activities (palm oil, soy and beef), and three that could include planting trees in their cultivation (cocoa, coffee and shea butter). In an initial synthesis study, the researchers draw out some key lessons for removing deforestation from agricultural supply chains sooner rather than later, and for increasing the planting of trees in agricultural lands. Here are just six of their takeaways:

1. Success starts with the farmer. There are many agricultural practices which, if implemented at scale, can benefit crop yields while slowing deforestation or increasing tree cover. Not only must farmers be fully equipped with this information, but they should be consulted and supported in making the transition to sustainable production systems.
2. It is important to recognize and reward innovators. A system based entirely on punishing those who contribute to deforestation is unlikely to be effective in the long run. A more promising approach is to reward farmers who use creative, forest-friendly practices, while widely promoting the monetary and ecosystem benefits of these methods.
3. Corporations' sustainability pledges are important but not sufficient. A new and promising trend is the

emergence of technical, commercial, and financial partnerships between companies, farmers, communities, and regional authorities.

4. Government policies and programs need to be updated. In many cases, existing regulations prevent farmers from harvesting and marketing trees, deterring them from planting trees in agricultural landscapes. Ministries of agriculture and of environment need to work together to revise these legal frameworks so that farmers can sustainably grow and harvest trees on their lands.
5. Regional action is critical. Efforts to combat deforestation in the agricultural sector sometimes fail because supply chains transcend national boundaries. Large-scale transformation is possible, but it needs to be backed-up by multi-stakeholder processes that lay out a shared vision for a region.
6. The costs of forest loss need to be communicated more clearly. Forest conservation is often viewed through the lens of foregone agricultural profits. Governments should do a better job of communicating why forests are so crucial. For instance, improved management of shea trees in Sahelian countries could strengthen economic returns and ecological stability, with possible knock-on benefits like sustained income generation, jobs for women and youth, and lower incidence of conflict and migration induced by poor access to natural resources.

Initial findings from the synthesis study, “Leveraging agricultural value chains to enhance tropical tree cover and slow deforestation (LEAVES),” will be shared at the Global Landscapes Forum (GLF): The Investment Case in Washington, D.C. on May 30th. Its authors hope to start building momentum for their new approach to productive and sustainable agriculture.

“Although the private sector has been the main driver behind sustainability initiatives like Brazil's Soy Moratorium and Cattle Agreement, support from the World Bank was instrumental,” said Dora Nsuwa Cudjoe, Senior Environmental Specialist, and Co-Task Team Leader of the LEAVES knowledge product at the World Bank. “The Bank can show the same level of engagement in the agroforestry commodities like coffee, cocoa, and shea, to help scale up private sector efforts. The opportunity is here.”

profor.info

Ivory Coast to spend \$1.1b to rehabilitate country's forests

Ivory Coast will spend 616 billion CFA francs (\$1.1 billion) over the next 10 years to rehabilitate and regrow the country's forests that have shrunk as cocoa output expanded, a government spokesman said.

The West African country, the world's biggest producer and exporter of the chocolate ingredient, had 16 million hectares of forests in 1960, but this has fallen to 3 million hectares, Bruno Kone told reporters in the commercial capital, Abidjan.

Besides protection and rehabilitation, the project “also takes into account Ivory Coast's international commitments to preserve the environment and assist in the fight against climate change,” Kone said.

bloomberg.com

Global: Rich nations restore their own forests but trash those elsewhere

Don't be too proud if your country is busy replanting its lost forests. While it's true that many rich countries are restoring their own forests, they are also indirectly responsible for deforestation elsewhere.

A new study finds that richer nations grow their forests, while poorer nations lose them. Since ever more nations are becoming wealthy, in theory this could drive global reforestation.

The authors say that more developed countries intensify agriculture on the best farmland, and give the rest back to nature. This trend is helped by farmers abandoning their plots to work in cities, and by a reduced need for firewood.

That suggests that poor rural folks are – inadvertently – the bad guys. But it is not that simple.

When nations get rich, their well-off inhabitants have enough money to buy food and other commodities grown by deforesting other countries. Rich countries don't stop deforesting; they export it. And Europeans, who turned from net forest destroyers to forest nurturers as long ago as the mid-19th century, may be the prime example.

Pekka Kauppi at the University of Helsinki, Finland and his colleagues studied trends in economic development and forest cover around the world.

From 1990 to 2015, forests grew by 1.3 per cent in high-income countries and by 0.5 per cent in higher-middle-income countries. But forests shrank by 0.3 per cent in lower-middle-income countries, and by 0.7 per cent in those at the bottom of the pile.

The team found that nations followed a predictable path from forest loss to forest gain as they developed their economies. China transitioned soon after 1970. Between 1990 and 2015, 13 tropical countries began forest expansion. The small oil-rich state of Brunei, on the tropical island of Borneo, is the only wealthy country still losing forests.

Forests can even expand in countries with fast-growing populations. Since 1970, India has more than doubled its population while going from net forest loss to net gain.

According to UN forest data used in the study, global net deforestation declined from 7.3 million hectares a year in the 1990s to 3.3 million hectares a year in the early 2010s.

However, the suggestion that getting rich is the key to saving forests may be misplaced. While the study paints an environmental halo around rich countries, there is evidence that they are simply exporting the problem.

The European Union is expanding its own forests, but it is “the world's second-largest driver of deforestation, after China,” says Hannah Mowat of FERN, a European campaign group focused on forests.

In 2013, a study for the European Commission found that EU consumption of everything from beef and palm oil to rubber and sugar was responsible for a tenth of global deforestation, and 36 per cent of the destruction from internationally traded commodities. Over 18 years from 1990, that equated to an area of forests the size of Portugal.

Kauppi says more research is needed about this. “We don't know the net impact of international trade on forest carbon trends,” he says.

His team also argues that the reforestation of rich countries could be good news in the fight to stop climate change, because forests are “carbon sinks” that absorb carbon dioxide. “The large sink of carbon... will persist, if the well-being continues to improve,” they write.

However, this may also not be true. The area of a forest doesn't correlate well with the amount of CO₂ it stores. Europe's forest cover has grown by a third since 1900. But a switch from natural broadleaved forests to fast-growing conifer monocultures means those forests have actually emitted carbon, according to a 2016 study by Kim Naudts of the Max Planck Institute for Meteorology in Hamburg, Germany.

Journal reference: *PLoS ONE*, DOI: 10.1371/journal.pone.0196248

newscientist.com

Africa: Giant African baobab trees die suddenly after thousands of years

Some of Africa's oldest and biggest baobab trees have abruptly died, wholly or in part, in the past decade, according to researchers.

The trees, aged between 1,100 and 2,500 years and in some cases as wide as a bus is long, may have fallen victim to climate change, the team speculated.

“We report that nine of the 13 oldest ... individuals have died, or at least their oldest parts/stems have collapsed and died, over the past 12 years,” they wrote in the scientific journal *Nature Plants*, describing “an event of an unprecedented magnitude”.

“It is definitely shocking and dramatic to experience during our lifetime the demise of so many trees with millennial ages,” said the study's co-author Adrian Patrut of the Babeş-Bolyai University in Romania.

Among the nine were four of the largest African baobabs. While the cause of the die-off remains unclear, the researchers “suspect that the demise of monumental baobabs may be associated at least in part with significant modifications of climate conditions that affect southern Africa in particular”.

Further research is needed, said the team from Romania, South Africa and the United States, “to support or refute this supposition”.

Between 2005 and 2017, the researchers probed and dated “practically all known very large and potentially old” African baobabs – more than 60 individuals in all. Collating data on girth, height, wood volume and age, they noted the “unexpected and intriguing fact” that most of the very oldest and biggest trees died during the study period. All were in southern Africa – Zimbabwe, Namibia, South Africa, Botswana, and Zambia.

The baobab is the biggest and longest-living flowering tree, according to the research team. It is found naturally in Africa’s savannah region and outside the continent in tropical areas to which it was introduced. It is a strange-looking plant, with branches resembling gnarled roots reaching for the sky, giving it an upside-down look.

The iconic tree can live to be 3,000 years old, according to the website of the Kruger National Park in South Africa, a natural baobab habitat.

The tree serves as a massive store of water, and bears fruit that feeds animals and humans. Its leaves are boiled and eaten as an accompaniment similar to spinach, or used to make traditional medicines, while the bark is pounded and woven into rope, baskets, cloth and waterproof hats.

The purpose of the study was to learn how the trees become so enormous. The researchers used radiocarbon dating to analyse samples taken from different parts of each tree’s trunk. They found that the trunk of the baobab grows from not one but multiple core stems. According to the Kruger Park, baobabs are “very difficult to kill”.

“They can be burnt, or stripped of their bark, and they will just form new bark and carry on growing,” it states. “When they do die, they simply rot from the inside and suddenly collapse, leaving a heap of fibres.”

Of the 10 trees listed by the study authors, four died completely, meaning all their multiple stems toppled and died together, while the others suffered the death of one or several parts.

The oldest tree by far, of which all the stems collapsed in 2010/11, was the Panke tree in Zimbabwe, estimated to have existed for 2,500 years. The biggest, dubbed Holboom, was from Namibia. It stood 30.2 metres (99 feet) tall and had a girth of 35.1 m.

theguardian.com

Canada is now home to the world’s largest stretch of protected boreal forests

More than half of Canada’s landmass is comprised of boreal forest—a vast and tree-filled region that extends across the country. To help conserve the forest, the province of Alberta has designated four new protected parks in its northeastern region, reports David Thurton of the CBC. When added to other contiguous conserved lands in Alberta, the new parks make up the largest stretch of protected boreal forests on the planet.

Logging and other industrial activities, like oil sands development, will not be permitted in the new parks, which have been named Kazan, Richardson, Dillon River and Birch River. As part of its conservation efforts, Alberta will also expand the existing Birch Mountains Wildland Provincial Park.

With the exception of Dillon River, all of these lands border the Wood Buffalo National Park, a Unesco World Heritage Site that hosts the largest wild bison population in North America. And taken together, the protected areas span more than 67,700 square kilometers (about 26,140 square miles)—“an area twice the size of Belgium,” as Hamdi Issawi of the *StarMetro Edmonton* points out.

The new parks were announced in 2012, but only formally established this week, according to Emma Graney of the *Edmonton Journal*. The plan was finally put into action thanks to a unique collaboration between conservationists, Indigenous communities, government groups and one of the largest producers of crude oil from Canada’s oil sands.

The Tallcree First Nation played an important role in the negotiations. The group’s tribal government agreed to relinquish a timber quota in the area, which was purchased by the Nature Conservancy of Canada (NCC) for \$2.8 million. The majority of the funding, according to an NCC press release, was provided by the oil company Syncrude Canada, which hopes the creation

of new protected land will offset some of the disturbances caused by its industrial activity.

As Issawi reports, the Tallcree subsequently gave the \$2.8 million to the Alberta government for the creation of the Birch River park.

“I believe there should be a balance between developing economic opportunities and protecting our land, so that it is not depleted of all the resources that it gives, allowing us to live our traditional lives of hunting, fishing, trapping and harvesting medicine,” Chief Rupert Meneen of the Tallcree tribal government said at a press conference this week, according to Issawi.

The Alberta government is planning to establish an Indigenous Guardian Program, which will appoint First Nations and Métis people to maintain the new parks and offer education to visitors.

Canada’s boreal forest is vital to the health of the planet. These lush lands provide us with clean air and water. They also offer a home to migratory birds and other species—including threatened animals like the peregrine falcon, wood bison and woodland caribou. What’s more, Canada’s boreal forest area is an important carbon sink, meaning that it absorbs more carbon from the atmosphere than it releases. And by keeping carbon out of the atmosphere, the forest can prevent climate change from getting worse.

“The impact of this conservation project reaches well beyond the region, the province of Alberta or even Canada,” John Lounds, President and CEO of the NCC, explains in the organization’s statement. “This is conservation on a global scale. Nature can only benefit when people work together.”

smithsonianmag.com

Kenya: Hope for evicted forest people as Kenya vows to honour landmark ruling

Kenya's Ogiek people are optimistic of returning to their ancestral forests as the government has pledged to honour a landmark ruling ordering reparations for forced evictions, in a judgment that could impact others with similar land claims.

Evictions have ceased and the Ogiek are rehabilitating parts of the Rift Valley's Mau Forest one year after Africa's highest human rights court told Kenya to compensate the forest-dwellers for violating their land rights, an Ogiek campaigner said.

"The community looks a bit psychologically stabilised," Daniel Kobei, executive director of the Ogiek Peoples' Development Program, a complainant in the case, told the Thomson Reuters Foundation. "They have hope they will get back their land."

The Tanzania-based African Court on Human and Peoples' Rights ruled last May that Kenya violated the Ogieks' land rights by evicting them from the Mau Forest – Kenya's largest water catchment area – in the Rift Valley.

Campaigners supporting communities living on protected lands across Africa hailed the court's first decision on indigenous people's rights as a major victory.

A government taskforce, set up in November, will give its recommendations in June on how to implement the ruling, Korir Sing'oei, a member of the 17-strong body and a legal advisor to the deputy president's office, said on Thursday.

The Ogiek could be restored to their original land or given alternative sites, the government said when it appointed the taskforce last year.

"Everything we are looking at now has to do with restitution of land and other forms of remedies," Sing'oei said. "I don't think, at this point in time, there is any talk around financial compensation."

Environmentalists have long campaigned for better protection of the Mau Forest as Kenya has been hard hit by unlawful settlement, logging and charcoal production in its indigenous forests, all of which are government-owned. Indigenous communities argue that the best way to protect forests is to give them ownership of the land on condition that they conserve it.

"Mau is a very fragile ecosystem of huge environmental and ecological significance to the country," said Sing'oei, adding that restoration of the forest to the Ogiek would require it to be converted from government to community or private land.

"Determining the beneficiaries is a huge project . . . There are many people who present themselves as Ogiek, and they are not, or there are some people who are Ogiek and are not included." The case has nationwide implications, he said.

"This is a forest community and so this decision has a precedence value vis-a-vis other communities that are similarly situated," he said. "There is no magic bullet to this implementation. It's going to be a fairly lengthy process."

news.trust.org

Romania breaks up alleged €25m illegal logging ring

Romania's security forces have mounted a series of raids to break up an alleged €25m illegal logging ring, in what is believed to be the largest operation of its kind yet seen in Europe.

Officers from Romania's Directorate for Investigation of Organised Crime and Terrorism (DIICOT) swooped on 23 addresses – including factories owned by the Austrian timber group Schweighofer Holzindustrie, according to local press reports.

A government statement yesterday said that they had "reasonable suspicion that, since 2011, several individuals have constituted an organised criminal group, the members of the group acting to hijack public auctions organisation at the level of forestry departments."

Some civil servants were also involved in the "tree-cutting offences," the release said.

The case involves deforestation in the Carpathian mountains which shelter some of Europe's last virgin forests – similar in nature to Poland's Białowieża but on a larger scale.

Greenpeace estimates that three hectares of spruce, beech, fir and sycamore trees are lost every hour in the 200,000-hectare Carpathian biodiversity haven.

Deforestation is a live issue in Europe, with a mooted palm oil ban currently being discussed by EU institutions to protect rainforests in south-east Asia.

Yesterday's crackdown in the Carpathians followed an EIA report in 2015 which found evidence of illegally sourced wood entering Schweighofer's supply chain.

David Gehl, the Environmental Investigation Agency (EIA)'s Eurasia programmes coordinator, told the Guardian: "This is the first time that a company has really been held to account for illegal logging on this scale in Europe. It sends a huge signal to the timber industry that illegal logging in Europe's last great ancient forests will have consequences."

The EIA's report catapulted illegal logging to national prominence in Romania, triggering nationwide protests and a probe by the country's environment ministry, seen by the Guardian, which laid the basis for the police action.

The report accused Schweighofer of failing to comply with legal timber sourcing obligations and said its approach "creates prerequisites for a crisis of softwood on the market".

The company's timber suppliers "cannot justify the legal origin of the wood because they don't have any contractual relationship with other companies," it said.

The document also reported suspicions that “forestry staff from some authorised forestry structures” were participating in illicit logging activities through supply chains that aimed “to give the appearance of legality”.

A company statement sent to the Guardian confirmed that Romanian authorities had searched Schweighofer’s mills in Sebes and Radauti, as well as its offices in Bucharest.

A spokesman said: “Holzindustrie Schweighofer is cooperating with the Romanian authorities and fully supports their efforts in the investigation.”

Sources close to the company described yesterday’s raid as “a nationalist and populist spin operation” designed to distract attention from problems in Romania’s forestry sector.

“You will see other stories involving Austrian companies in the next weeks,” the source said. “It is a difficult environment for investors in Romania now. The circumstances are not delightful.”

theguardian.com

Global: Drones plus AI help to spot sick trees and plants in time

They might be small, but bark beetles can ruin a forest. In the US, they have devastated tens of millions of hectares in the past decade alone. In Europe, however, a combination of drones and artificial intelligence might be giving trees a fighting chance.

Bark beetles burrow into trees and lay eggs under the surface of the bark, where the larvae feed on the tree’s inner layers and eventually chew their way out. All of this damages the tree’s vascular system, fatally weakening it.

Within months of an infestation, great swathes of forest can be irreversibly damaged, leaving only grey leaves and dead wood. If the problem is spotted in time, foresters can cut down infected trees or apply pesticides. But they have to know it is happening.

This is why Skylab, a drone and software company based in Hamburg, is scanning spruce forests in Germany. The multispectral cameras used can image the ground below at a resolution of 2 centimetres, and are mounted on large drones that can fly for an hour per charge. The drones cover up to 150 kilometres a day, looking for signs of infestation.

Healthy leaves with plenty of chlorophyll absorb nearly all the blue and red rays in sunlight, but reflect more green light and infrared. However, stressed plants produce less chlorophyll and reflect more light across most of the spectrum. The cameras can pick up these differences, creating maps of forest health.

Machine learning algorithms trained on the data can then churn out a disease risk index for each tree. This is calibrated using spot tests on the ground.

The idea is that workers can focus on disease hotspots first. “When you detect these stress signals, you can work out the densest infestation spot,” says Skylab’s Rene Heim.

The team is also using the technology to monitor apple orchards for early signs of apple scab, a disease that blights the crop and knocks 90 per cent off its value, and to check vineyards for signs of fungus associated with a number of destructive diseases.

Skylab is not the only player in this field. Drones paired with machine learning and spectral imaging equipment are already helping to identify farmland that needs more watering or specialist treatment, while a team in Denmark is using drone-mounted cameras to spot weeds and mark them for precision herbicide treatment.

Danny Donoghue at Durham University, UK, says unmanned aerial vehicles lend themselves to these kinds of applications. “This technology opens up new opportunities for environmental monitoring at the scale of the individual plant that was not previously possible,” he says.

newscientist.com

Poland broke EU law by logging in Bialowieza forest

Poland violated EU law by ordering large-scale logging in one of Europe’s oldest woodlands, the Bialowieza forest, the European Court of Justice has ruled. Bialowieza forest has been designated a Unesco World Heritage site and is home to Europe’s largest herd of nearly extinct bison. But Poland argued its decision to order a three-fold increase in logging was necessary to combat beetle infestation. Poland says it will respect the ruling.

The court’s decision is a defeat for the country’s conservative-led government. The ECJ said Poland had “failed to fulfil its obligations” in directives covering the habitats of animals and birds. While the whole of the Bialowieza forest in Poland is

protected under EU directives, only 17% of that area has been designated a national park where no logging takes place.

The court used particularly strong language to criticise Poland’s argument that it was responding to a “constant spread” of infestation of spruce bark beetles. It said the infestation “was not identified in the slightest” as a threat in the government’s 2015 management plan. The nationalist Law and Justice party (PiS) took office in late 2015.

The ECJ ruling was hailed by environmental activists. The group ClientEarth said the decision was for now only on paper and called for the government in Warsaw to scrap its original approval of logging.

A conciliatory response from Poland

By Adam Easton, BBC News Warsaw

The verdict was as expected in Warsaw. Poland's new Environment Minister, Henryk Kowalczyk, has said he will respect the court's ruling. Poland's new Prime Minister, the German- and English-speaking former banker Mateusz Morawiecki, who was appointed in December, is a moderate who has taken a much more conciliatory line in an attempt to resolve Poland's list of disputes with Brussels over logging, judicial reform and accepting migrants.

One of his first announcements was to say that Poland would respect the court ruling on the Białowieża forest. He then dismissed the man who ordered the logging increase, Jan

Szysko, in a reshuffle in January. Election season has already started in Poland ahead of this year's local ballots. Mr Morawiecki was appointed in part to appeal to centrist voters.

Poland is also aware that it must engage constructively with Brussels if it is to improve its bargaining position during negotiations to decide the scale of the EU's next multi-annual budget. Poland is the biggest recipient of funds under the current EU budget.

The logging case is one of several key issues that have clouded relations between Poland's Law and Justice government and the EU.

bbc.co.uk

China: Study reveals new forests aren't really forests

In 1998, severe flooding caused by heavy rains and exacerbated by deforestation killed more than 4,000 people in southern China. To reduce the chances of such an event happening again, China instituted ambitious reforestation policies in the hopes that planting trees would help stabilize soil and sop up deluges.

At a glance, it seems to have been a success. By 2013, China's Grain-for-Green Program had convinced farmers to plant more than 69.2 million acres of trees on what once was cropland and scrubland. By 2015, the country's tree cover had increased by 32 percent.

But a closer look reveals that all this new tree cover isn't actually forest, according to a recent study. It finds most reforestation efforts simply planted one tree species, making a plot of reforested land ecologically akin to a monoculture plantation.

The study, published last month in *Biological Conservation*, was conducted by scientists at institutions in the U.S., UK and China. They analyzed satellite imagery and interviewed 166 households that participated in Grain-for-Green between 2000 and 2015 in China's Sichuan Province.

These interviews revealed that these households paid attention to government policies and tended to plant species that were promoted. This decision was largely based on how much money they stood to make through government incentives aimed at encouraging the planting of certain types of trees – at times even cutting down actual forest to do so.

The researchers say the fault lies in the failure of these policies to differentiate monoculture tree cover from real forest.

"This creates a perverse incentive to establish tree plantations and displace native forests, which is precisely what we see here," said Fangyuan Hua, co-lead author of the study who conducted the research as a postdoctoral researcher at Princeton and is now at the University of Cambridge.

But where the researchers see failure, they also see hope. They write that their findings indicate households tend to conform not only to government policy but also community standards. If China aims its reforestation policies at actual reforestation and forest protection while at the same time strengthening compensation incentives to landholders and engaging in "social marketing to encourage land-use decisions that will result in more biodiversity and other ecological benefits," they say the country's reforestation efforts could achieve a more positive impact.

"Profitability plays a significant role in all of this," Hua, said. "It is clear from our interviews that how much money a household stands to make determines what they'll do with their land. This really highlights the role that proper incentives can play in encouraging more environmentally friendly uses of land, like protecting and restoring native forests."

mongabay.com

Europeans now burn more palm oil in their cars than they eat

Bad news for the rainforests of Malaysia and Borneo: palm oil use in the European Union rose 7 per cent in 2017 compared with 2016. Global demand for palm oil is driving the clearance of these rainforests to make way for more plantations.

EU consumption grew even as the use of palm oil in foods and cosmetics fell slightly. The increase was almost entirely due to the rising use of biodiesel made from palm oil.

Around 51 per cent of the palm oil used in the EU is burned in cars and trucks, according to figures from data company Oilworld. Another 10 per cent goes on heating and electricity. Foods and cosmetics account for just 39 per cent.

EU laws effectively stipulate that normal diesel must be blended with biodiesels made from vegetable oils, and palm oil is the cheapest kind. Yet the EU's own studies show that using palm oil as a biofuel increases rather than decreases greenhouse emissions.

"Burning palm oil in cars and trucks to meet Europe's green energy targets must be the single stupidest thing we do in climate policy," says Laura Buffet of Transport & Environment, which campaigns for cleaner transport.

In January, the EU's Parliament voted to stop using palm oil as a biofuel, but the final decision rests with the European Commission.

Newscientist.com

Japan: Disaster-hit Fukushima struggles to secure forest industry workers but efforts slowly bearing fruit

In a mountainous area in Fukushima Prefecture, junior high school students saw at trees as professional forest workers give them instructions and pointers.

"I can smell and feel the warmth of the trees," says one of the students participating in the field trip to Iwaki's Tabito district.

The trip is one of several local efforts to nurture a dwindling number of potential successors to conserve one of Fukushima's most important resources. While dealing with an aging population and restricted zones set after an earthquake and tsunami triggered reactor meltdowns in March 2011, the prefecture has been struggling to secure younger workers to sustain and revive its forests.

"We hope more and more children will be interested in working in the forest industry," said Hirataka Midorikawa, 46, a forester and member of a local timber group that for 10 years has organized classes to give students experience in forestry.

The Tabito district is known for rich forests which occupy 90 percent of its land and a once-thriving timber industry.

Although more than 14,000 people worked in Fukushima Prefecture's forest industry in 1960, the number had dropped to 2,183 by 2015, primarily due to a graying population. Many forest owners are also believed to have left the industry due to declines in timber prices.

In Tabito, the number of foresters has plunged below half of its peak level. Midorikawa, who studied forestry at the Tokyo University of Agriculture, returned to his hometown to "keep the local industry running." Inheriting mountain forests that were originally taken care of by his great-grandfather, he now produces cedar and cypress timber to be mainly used as building materials.

Midorikawa joined the local timber group in 1995 and worked on branding locally produced timber in Tabito. His group's effort to familiarize children with the industry through the classes and public displays of handmade Christmas trees and *kadomatsu* (New Year's decorative pine branches) has been a success, as some young forest workers have joined the group.

But with entry into some forests restricted following the 2011 meltdown at the Fukushima No. 1 nuclear power plant, the number of new workers to join the prefecture's forest industry in fiscal 2016 fell to 84, about one-third of the pre-disaster level.

With thinning operations stalled in some areas, young successors are "urgently needed to revive forests," an industry worker said.

A forest industry association in Fukushima has been helping young workers improve their skills through training in logging or other tasks.

The prefectural government also subsidizes incomes for timber workers and allows local high school students to inspect professionals' jobs on-site.

"We'd like to change the notion that (the forest industry) requires grueling work, since mechanization has progressed," said a Fukushima government official in charge of promoting the local timber industry.

In the town of Minamiaizu, loggers are trying to boost the business by branding their lumber as environmentally friendly.

At a local timber company, certified cedar logs are marked in green to show they meet the criteria set out by the Sustainable Green Ecosystem Council. The SGEC is a third-party group in Japan that certifies timber from forests which clear specific criteria, including those where measurements are taken to maintain soil and water resources when trees are cut.

As of April, about 13,000 hectares of forests in 11 municipalities in the prefecture have been certified by the council.

"If we encourage a greater use of SGEC-certified lumber, consumers will have greater awareness of environmental sustainability," said Shun Matsuzawa, 30, an executive at a Minamiaizu-based nonprofit organization of 20 forestry companies which promotes member companies' SGEC-certified lumber.

The group's effort is beginning to pay off. One of the member's SGEC-certified cedar timber has been shipped to Tokyo to be used in the construction of facilities for the 2020 Games.

Minamiaizu used to be well-known for forestry, with many locals working in the industry.

But as the market shifted to imported lumber and the industry shrank nationwide, the number of timber businesses in the town declined to less than a third of the 70 companies it boasted in its heyday.

That's when the certification system caught the attention of Matsuzawa and others in the town.

In 2015, the Forestry Agency designated the organization as a role model to promote the usage of certified timber.

"Our effort is bearing fruit," Matsuzawa said.

But hurdles remain.

Since the SGEC certification system isn't widely recognized, it hasn't triggered a large number of shipments so far.

"The central and prefectural governments should create a system that would promote the use of certified timber," said an official who works in Minamiaizu's lumber business.

japantimes.co.jp

