

CFA Newsletter



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CFA Newsletter

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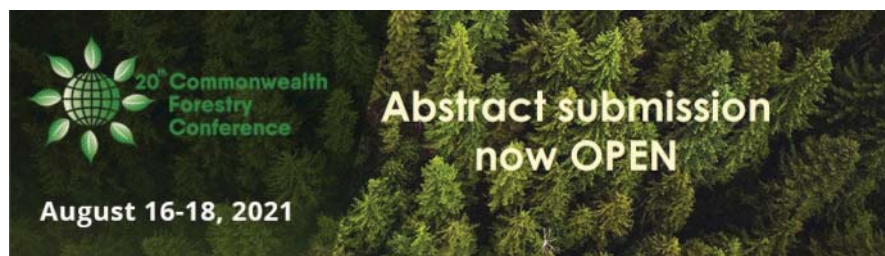
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Online call for abstracts: the initial step in first-ever entirely virtual Commonwealth Forestry Conference August 16–18 2021



The call for abstract submissions for the **20th Commonwealth Forestry Conference (CFC)** is now officially open.

Hosted by the **Faculty of Forestry at the University of British Columbia**, Canada, the global call for abstracts is open to any of the following conference topics:

- new markets
- education and careers
- communication
- climate change
- technology and innovation
- conservation versus consumption
- urban forests

“For this Conference, we are inviting submissions from professionals, scientists and others working and studying these aspects of forests and forestry all over the world, both within and outside of the Commonwealth,” says Dr. John Innes, CFA President and UBC Faculty of Forestry, Dean.

The Conference, held every four or five years, was originally slated to occur in-person on the University of British Columbia Point Grey Campus in Vancouver,

Canada. However, due to the on-going uncertainty with the Coronavirus-19 pandemic, the decision was made to hold the 3-day event totally online.

Over the past year, there have been a number of conferences traditionally held in person that have been held online successfully. While still in their relative infancy, virtual conferences have a number of obvious benefits. Perhaps the two most obvious are the huge reduction in the CFC's carbon footprint and the increase in accessibility to the conference for those who would not otherwise be able to participate in person. Of course, another major benefit is that it will cost much less to attend a virtual conference than a traditional in-person conference.

“The elimination of travel by delegates who come from the far reaches of the globe to attend conferences will mean a significant reduction in carbon emissions. Further, participating in the conference will be easier and more affordable for many. In this way, the exchange of information during the conference has the potential to be much greater and could contribute to greater efficiency in how we deal with the many wicked problems associated with forestry and forest policy.”

Since the first conference in 1920, these meetings have brought widespread awareness of forest resources around the globe and have introduced strategies for their long-term sustainable use. They have enabled the sharing of knowledge and expertise about the management of forests and forest products. With renewed global emphasis on a green recovery following the pandemic, it is now more important than ever to share knowledge about our forests. This year's CFC will also coincide with the 100-year anniversary of the teaching of forestry at the University of British Columbia.

In common with more traditional conferences, there are several ways that you can present your work at the CFC. These include oral and poster presentations and, for students, a three-minute talk competition. However, unlike past conferences, you

have two options for submitting your ideas for a presentation at the conference:

- you can submit either a written abstract, with a maximum of 300 words,
- or you can submit a video (mp4 format, maximum 30 seconds) summarizing your proposed paper.

To submit either, please visit the abstract submission page on the conference website (<https://cfc2021.ubc.ca/>).

We are restricting to the number of abstracts/videos submitted to one for each lead author. However, you can be a co-author on more than one abstract. **The deadline to submit your abstract is April 30, 2021.** Authors will be notified about their abstract acceptance by May 17, 2021.

Association News

Commonwealth Forestry Association (CFA) Nigeria Chapter

*Forest Ecosystem Potentials in Nigeria:
Opportunities for Green Economy in the 21st Century*

COMMUNIQUE



Dr. O.V. Oyerinde (CFA LOC CHAIR), Professor J. A. Fuwape (Vice-Chancellor, Federal University of Technology Akure) and Professor B. O. Agbeja (President, CFA Nigeria Chapter) observing the National and FUTA Anthems before 3rd CFA Conference was declared open on 2nd December, 2020

A virtual Commonwealth Forestry Association Conference was held at the Federal University of Technology Akure, 02–03 December, 2020, organized to cover the following ten sub-themes:

1. Status and extent of Nigeria's forest ecosystem in different ecological zones;
2. New technologies and approaches to sustainable forest management in Nigeria;
3. Forest ecosystem and climate change adaptation and mitigation;
4. Impact of insurgency and human/wildlife conflicts on forest ecosystem in Nigeria;
5. Gender perspectives on forest ecosystem in Nigeria;
6. Forest ecosystem services for mankind in Nigeria;
7. Sustainable development of value-addition of wood products in Nigeria;
8. Sustainable production, harvest and replenishment of non-timber forest products (NTFPs) in Nigeria;
9. Indigenous knowledge of Plants for Repertoire of Medicine; and
10. Forest Governance and Institutions in Nigeria.

The virtual conference was well attended by scientists in the six geo-political zones of Nigeria, Gambia, Canada and Spain.

It was agreed that a green economy is expected to generate more green and decent jobs. Renewable forest resources provide goods and services that must be sustained for their economic values.

Forests have many positive roles to play in a green economy through the protection and delivery of water resources; protection and enhancement of biodiversity and prominent role in climate control and management. However, CFA Nigeria Chapter noted that the forest area in Nigeria has consistently diminished; reducing the prospect for green economy. There is inadequate statistics to make strong predictions of the Nigeria forest ecosystem. Available data are based on conservative projections and guesswork because the forest monitoring and evaluation activity network in the country had been comatose for more than a decade.

Nigeria forest information and data according to the Food and Agriculture Organisation of United Nations (2010) showed that 9.9% of about 9,041,000ha of Nigeria was forested. By 2018, tree cover in Nigeria was 10,326,662ha which represented a marginal increase over eight years' period from 2010 to 2018. Tree cover of 11.3% of the total land area is still far below the recommended 25% by FAO, and demands attention.

It was also noted that part of the reasons why forestry in Nigeria is what it is today may be due to two vital factors. These are, first the values developed for the Forestry sector by the colonial masters which unfortunately has not changed even after over sixty years of independence. Secondly, the way that forestry in Nigeria has viewed the larger world around it and its response to the challenges. Rather than expand its frontiers, forestry went into "recession". Every new government in Nigeria sees forestry only from the view of generating money through

logging. In this way, forestry cannot effectively play any role in the green economy. These two factors have ultimately shaped all the important decisions about forestry so far.

CFA also noted that the Federal Department of Agriculture in Nigeria was created in 1968 while the Federal Department of Forestry was created in 1970. The agricultural sector in Nigeria is proudly thriving and expanding the frontier of knowledge with more than 20 institutes. Examples include *Cocoa Research Institute of Nigeria, National Horticultural Research Institute, Institute of Agricultural Research, National Agricultural Extension Research and Liaison Services, National Cereals Research Institute, National Animal Production Research Institute, National Centre for Genetic Resources and Biotechnology, National Root Crops Research Institute, National Institute for Oil Palm Research, Nigerian Institute for Trypanosomiasis Research*. The forestry sector on the other hand has only one Institute, the Forestry Research Institute of Nigeria (FRIN). Only having one organisation has for many years limited the frontier of knowledge in forest science and technology as compared with Agricultural sector in Nigeria. It is therefore, quite apparent that forest estate (all forest reserves) in Nigeria in the next ten years will be totally encroached, deforested and degraded if urgent steps are not taken.

Commonwealth Forestry Association Nigeria Chapter therefore, agreed on a set of recommendations and actions as follows:

1. All the 36 states in Nigeria should of necessity use 'drones' with experts in Forest and Geographic Information Systems to map out all the constituted state forest reserves in Nigeria with a view to consolidating the remaining forested area and replanting the deforested and degraded areas.
2. Forestry Commission must be instituted in all the 36 states of Nigeria including Federal Capital Territory as an exemplary attribute of Cross River State Forestry Commission to preserve, conserve and manage the biodiversity in all the constituted forest reserves for the posterity and prosperity of Nigerians. This in turn would enable Nigeria to stem the recession and to be reckoned with opportunities for Green Economy in 21st Century.
3. The conference advocated an urgent need for more forestry institutes in Nigeria which would enable coordinated strategies among researchers in forest management; forest policy, law and administration; forest governance and institutions; forest economics; urban forestry; forest ecology; forest extension and rural development; forest biometrics and remote sensing; wood science; pulp and paper; forest and climate change; silviculture and tree improvement, forest mensuration; wildlife and range management; forest landscape and ecotourism; watershed management; agroforestry, etc.
4. Urgent actions are required by relevant government agencies, academia, scientists and all stakeholders to act very fast to combat the perilous and imminent dangers posed by illegal occupants of constituted forest reserves in Nigeria whose impacts are already evident in many sectors of our livelihood.

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President

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Forest Scenes

Ancient woodland management technique provides sustainable timber source and supports the local economy in England



Coppicing is part of sustainable woodland management in parts of England

An ancient practice which provides a constant, sustainable source of timber and creates a diverse range of habitats for insects, birds, wildlife and plants, is being kept alive on the Hadlow Estate in Kent, UK.

A three-acre area of sweet chestnut is currently being coppiced at the Pembury Reserve woodland near Potters Wood, which is part of Tudeley Woods. The 890 acre site between Tunbridge Wells and Tonbridge is managed by the Hadlow Estate in partnership with the Royal Society for the Protection of Birds (RSPB).

Coppicing dates back to the Stone Age and involves the cutting of trees to ground level to create stems or 'stools', so that the chopped wood can be harvested to make fence panels, posts and gates. Far from being a destructive process, coppicing can rejuvenate the tree and encourages multiple shoots to develop and grow. Within six to 15 years it will be ready to coppice once again and the cycle will continue, offering a constant supply of raw materials which support local businesses and the economy.

Kate Teacher of the Hadlow Estate, says: "Coppicing brings a great deal of ecological and wildlife benefits by creating a mosaic of habitats across the woodland, as different areas are felled at different times. It brings light flooding in and onto the woodland floor, with varying degrees of light and shade thanks

to variations in the canopy height of the trees. This in turn creates a diverse, species rich habitat which benefits plants and flowers, insects, particularly butterflies like fritillaries, dragonflies and beetles, and small mammals like mice, dormice and shrews. Birds including tree pipits, yellowhammers and linnets also thrive. The benefits from a sustainability point of view is that the woodland can be carefully managed and the process is prolonging the life of the trees."

These current works have been planned in conjunction with the RSPB to meet the Estate's conservation objectives to improve the woodland ecosystem. Much of the woodland is ancient and semi-ancient woodland, and has been managed with coppicing for hundreds of years, with different areas, known as 'cants' or 'coupes' being chosen in rotation.

Experts from Torry Hill Chestnut Fencing are undertaking the work. Director John Leigh-Pemberton, explains the process: "When the timber is first cut, each piece is usually 20 to 30ft long. Initially it will be stacked up in the woodland before it is transported back to our factory where the poles are cut to the lengths required. They are then put through a peeler to remove all of the bark.

"Our skilled pale makers then split the wood and we'll usually produce 20,000 pales a day – each one made by hand. Within two or three days they'll be in a fence or someone's



Trees are cut on a six to 15 year cycle

garden. It's quite a swift process. Coppicing has so many benefits and is completely sustainable as there's no need to use any chemicals or fertilisers and you never have to replant new trees."

Another benefit of the process is the beautiful flowers that flourish thanks to sunlight reaching the woodland floor. By the spring, the coppiced woodland will be a sea of colour with a blanket of bluebells. Wood anemones, violets and primroses, whose seeds may have been dormant in the woodland soil, can also appear in areas that have recently been coppiced.

Kate Teacher continues: "This is a wonderful way to keep valuable rural crafts alive and we are pleased as an Estate that we are contributing to the management of woodland using a traditional technique that has been going on for generations, protecting and preserving a long heritage.

"We are proud to be able to continue this tradition which also supports local rural employment and traditional Kentish crafts."

Encouraging farmers to plant trees in their savannas

An ITTO project in Papua New Guinea has created a model reforestation framework to address key constraints to community reforestation



Trial system: NFS field workers inspect teak seedlings growing in ploughed soil, intercropped with pineapple.
(Photo: S. Rollinson)

Log exports from primary forests have made a significant contribution to the economy of Papua New Guinea (PNG). As accessible forests become increasingly depleted, however, the PNG Forest Authority (PNGFA) is focusing increasingly on reforestation as a means to maintain a permanent forest estate that supplies existing and new forest industries. Under its national reforestation programme, *Operation Painim Graun na Planim Diwai* (“Operation Secure Land and Plant Trees”), the PNGFA aims to plant 800 000 hectares of trees for commercial, community and conservation purposes by 2050.

The Pacific 2020 Review (AusAID 2006) concluded that, although there is potential to establish large plantations in the Pacific Islands, community and household arrangements are more likely to succeed due to land-tenure constraints. The review recommended growing high-quality furniture timber such as teak and mahogany and reducing the harvesting of natural forest stands, which would drive up demand and export prices. ITTO’s diagnostic mission to PNG (Lakani et al. 2006) also highlighted the need for government and private sector agencies to build partnerships with customary landowners that stimulate community reforestation.

Project background

ITTO Project PD 552/09 Rev.1 (F) aims to create a model reforestation framework (MRF) that will address the key constraints to community reforestation through the provision of tailor-made awareness-raising, training and support services. The project, which involves partnerships with service providers from the public and private sectors, is focusing on teak but also encompasses other suitable species, such as mahogany and sandalwood. The MRF enables the establishment of model reforestation enterprises (MREs) that promote effective land groups, production systems and business arrangements in the wider community.

The project is being implemented in Central Province, which lies on the country’s southern coast. The topography comprises coastal lowlands and hills that rise up to the rugged Owen Stanley Ranges. There are extensive areas of tropical savanna (163 000 hectares) and grasslands (535 000 hectares) along the lowland coastal areas and the northern ranges, representing 23% of the total land area. The province is also well-linked to the national capital, Port Moresby, and therefore offers good access to the marketing infrastructure needed to target both domestic and international markets.

Creating the model reforestation framework

The project selected three sites in the Kairuku-Hiri and Rigo districts with a population of around 3000 residents (400 households). Working closely with five landowner groups (clans), the project partners developed a MRF that addresses the key constraints to community reforestation through the following tailor-made support:

- information services for reforestation enterprises, field workers and the wider community;
- training services for reforestation enterprises; and
- planting stock and materials for reforestation enterprises.

Access to information

Pacific Island Projects (PIP) was selected to provide project partners and landowners with a one-stop source of information.

A rapid appraisal exercise showed that schools in the three project sites had adequate physical resources (e.g. electricity, the internet and communication equipment suitable for accessing, sharing and using information on Google Drive) to act as community outreach centres under the project. Such centres were duly established, with ongoing support from PIP.

Damien Agai, head teacher at the Gomore Primary School, said he was pleased his school had become a community outreach centre:

“It’s the first of its kind for us to have this centre here at our school. It’s a great privilege to connect us to the whole world through the internet. These resources will greatly benefit our teachers, students and community members of all ages.”



Educator: Damien Agai, head teacher at the Gomore Primary School, says that the resources provided by the project will greatly benefit his teachers, students and community members of all ages. (Photo: S. Rollinson)

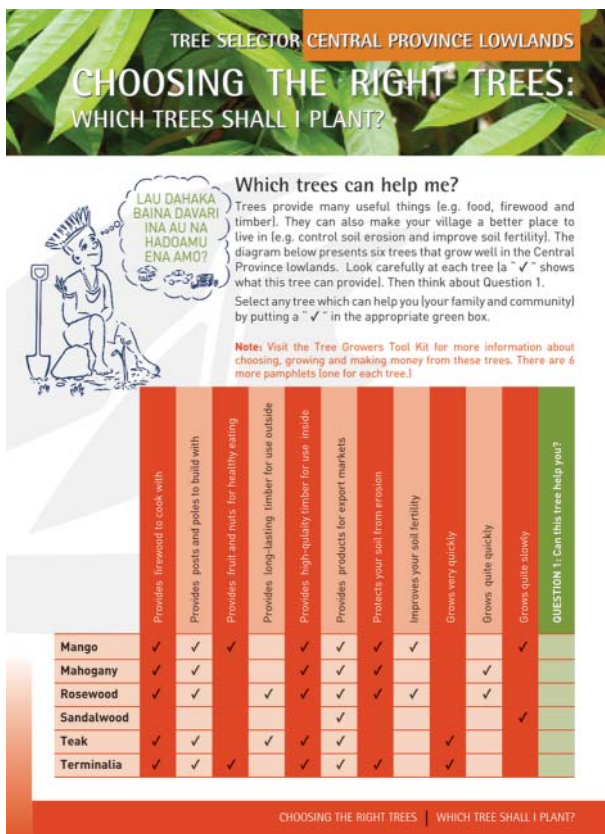
The following three resource packs are now available at each community outreach centre:¹

- 1) The **Landowner Awareness Kit**, which assists the PNGFA to identify landowners and landowner groups ready to plant trees on their land under *Operation Painim Graun na Planim Diwai*.
- 2) The **Forest Learners Kit**, which promotes the benefits of trees and forests to the next generation of landowners through the PNG school curriculum². Fifty-eight new sets of teaching aids were selected to suit the Central Province context (e.g. grassland biomes), as well as fill information gaps (e.g. on climate-change mitigation). There are now more than 100 multimedia teaching aids for elementary, primary and secondary school teachers to choose from.

¹ The resource packs are also available at <http://pip.com.pg>.

² The project has recently assisted the National Department of Education (NDoE) to realign the Forest Learners Kit resources with PNG’s new Standards Based Curriculum in preparation for approval from the NDoE’s Board of Studies and subsequent distribution through the NDoE’s Education Network (EdNet) and PIP’s online platforms.

3) The **Tree Growers Tool Kit** (TGTK), which helps landowners and field workers choose, grow and make money from trees. Seven pamphlets were prepared to promote six high-value trees that grow well in the Central Province lowlands: damson terminalia (*Terminalia sericocarpa*); mahogany (*Swietenia macrophylla*); mango (*Mangifera indica*); rosewood (*Pterocarpus indicus*); sandalwood (*Santalum macgregorii*); and teak (*Tectona grandis*). The TGTK now contains over 250 multimedia resources.



Tree selector: The front page of a pamphlet designed to help landowners decide which trees to plant on their lands. The tree selector accompanies the 6 factsheets for local priority species that grow well in the Central Province lowlands.

Access to training

The National Agricultural Research Institute (NARI), the National Forest Service (NFS) and the Small and Medium Enterprise Corporation (SMEC) continue to provide specialized training services for target communities. The project has assisted these agencies to improve the delivery of their training services with regards to agroforestry (e.g. land-use planning, site-species election, site establishment, fire control, nursery management and harvesting) and business management (e.g. legality, costing, pricing, marketing, cash-flow and start-up capital) using the TGTK's training and awareness resources.

Grade 10 student Koselyn Douglas appreciated the training activities in her community:

"It is a great offer to come to our community and teach us more about trees. Thanks for all the important information. Please continue to help the community understand how trees are very important and valuable".

Access to seedlings

NARI and NFS supply high-quality seeds and seedlings, which are further distributed through local satellite nurseries. The project has assisted in the provision of nursery equipment and materials at the Kuriva Forestry Station (NFS) and Laloki Agricultural Station (NARI). The project has also assisted the two target communities in Rigo district to establish local satellite nurseries that supply high-quality seedlings of high-value trees and food crops that grow well in the Central Province lowlands.



Plant depot: Local distribution centres such as this one in Rigo district provide a cost-effective means of delivering planting stock and materials to reforestation enterprises. (Photo: S. Rollinson)

Promoting model reforestation enterprises

The MRF has encouraged the two target communities in Rigo district to allocate 110 hectares of grasslands for high-value plantations along the Magi highway. Four model reforestation enterprises have been established to date, and 10.6 hectares of teak have been planted at roadside locations. Interplanting with agricultural crops has provided these tree-growers with early financial returns at local and provincial markets. Teak thinnings and prunings have also supplied high-quality building materials for community use. Each community forestry operation promotes the following three key components of a MRE to the wider community:

- 1) a land group that ensures transparent and effective governance;
- 2) a production system for delivering planned products and services; and
- 3) a business arrangement for delivering planned financial returns.



Roadside teak: Each community forestry operation promotes the three key components of a model reforestation enterprise to the wider community. (Photo: S. Rollinson)

Model land groups

Incorporated land groups (ILGs) are a recognized mechanism for enabling customary landowners to take part in the formal economy with support from PNG's legal system. NFS field workers have assisted the target communities in Rigo district with ILG awareness, ILG training, priority setting, land-use planning and participatory clan-land boundary mapping, leading to the formation of three ILGs (another ILG application is underway). Each ILG is governed by its own constitution, management committee and dispute settlement authority and is responsible for managing reforestation activities on its land (on behalf of the clan members).

Model production systems

NARI and NFS field workers have assisted the four clan groups in Rigo district to select the most appropriate production systems for their needs and the local environment. Two production systems were trialled in Rigo district. In one, the sites were ploughed and vegetables were intercropped with teak trees. In the other, vegetables were planted and harvested before the teak trees were planted. Teak seedlings (stumps) were found to grow best in soil ploughed by local tractors during the wet season. Pineapple, corn and watermelon were found to grow well when interplanted with teak trees, which reduced the time spent on site maintenance (e.g. weeding) and provided quick returns for tree-growers.



Productive partnership: Mr. Ralda (Managing Director, SMEC) presenting the Cooperative Passbook account to the Chairman of Girabu Farmers' Cooperative witnessed by Mr. Kaip (Policy & Aid Coordinator, PNG Forest Authority).
(Photo: D. Kenny)

Model business arrangements

SMEC field workers have assisted the four clan groups in Rigo district to identify the most appropriate business arrangements

for their situation. This has led to one land group forming the Girabu Farmers' Cooperative with PGK 10 000 (US\$ 3 000) deposited into their bank as seed capital account by SMEC. Each land group is now engaged in the preparation of model business plans using selected resources from the TGTK. This includes the production of a land-use plan and estimates of costs and returns for each reforestation enterprise.

Youth leader Raka Rutu is busy promoting the benefits of community reforestation in Rigo district:

"The teak project is an opportunity for us farmers and landowners for reforesting our community. Our future generation can benefit from the trees that we plant"

What next?

On completion of the ITTO project, project partners will continue to manage the MRF using the tools and techniques being tested during project implementation. Although face-to-face awareness, training and support services may be constrained at times by resource limitations, the growing network of community outreach centres and schools should provide an ongoing source of technical information for landowners and the wider community. This is expected to lead to the gradual "scaling out" of MREs across the Central Province lowlands.

The PNGFA's Director Policy & Planning, Ruth Turia, confirms the role of the project and the next steps to be taken:

"The Government of PNG is very grateful to ITTO and the Government of Japan for sponsoring this project, which has enabled the concerned communities in the Central Province of PNG to see the benefit of utilizing their land wisely. This project will have a long-term effect for communities throughout PNG as we scale out the outcome of the project."

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The EU's watershed deforestation moment?



Recently, Ursula von der Leyen signalled the EU's desire to lead the world in the fight against global deforestation. But if the key drivers of deforestation aren't addressed, progress will remain limited.

Until recently, European Union policies to protect forests and biodiversity were a niche concern, pre-occupying few outside the world of green politics.

But with increasing awareness that forests are a key natural defence in the climate emergency, and consumers' growing realisation that their supermarket shelves are laden with goods which destroy forests, forest protection is being talked about in EU corridors of power more than ever.

Further evidence of this came on Monday, when the European Commission President Ursula von der Leyen outlined a bleak vision of the future if we fail to act. Speaking at the *One Planet Summit* in Paris, she described a world of declining physical and mental health; of more poverty, wars and pandemics.

"When we lose forests, we don't 'just' lose green space or natural habitat," she said. "We lose a key ally in our fight against climate change. When temperatures rise and nature disappears, we suffer more natural disasters and zoonotic diseases... if we don't urgently act to protect our nature, we may already be at the beginning of an era of pandemics. But we can do something about it. It needs concerted global action and local sustainable development."

Protecting forests

In a speech of just over 900 words, von der Leyen outlined her ambitions for the road ahead. Much of this was laudable: the first time we have seen such a detailed vision for forests from a European Commission president. But there were areas of potential concern.

Von der Leyen's pledge to protect 30% of land and sea in Europe is praiseworthy. The latest alarming research shows that Europe retains less than 1% of its primary forests, and civil society groups in Romania, Slovakia and Poland, where primary forests are in peril from industrial and illegal logging, are calling for strict protections.

But a note of caution about applying this to the rest of the world: rigorous protections can work in Europe, but in tropical forested countries where forest communities lack rights to land, strict protection has all too often led to violence against local communities. By contrast, evidence shows that recognising Indigenous and forest communities' rights is the best way to ensure forests are protected in the long run. When negotiating

global nature protection goals at the upcoming UN biodiversity summit, the EU must ensure that forest community land rights are respected. Similarly, EU support for restoration initiatives in the Global South could cause harm unless they place the recognition of community rights – and the restoration of forest health and biodiversity – at the centre.

Tree-planting

Her speech also contained a reference to the EU's commitment (in its biodiversity strategy) to plant 3 billion trees in the EU by 2030. Historically, tree planting schemes have tended towards managed monoculture plantations, which have little benefit for the climate or biodiversity. Greater benefits can be achieved by restoring our existing degraded forests. What's more, planting a spectacular number of trees will make little difference if we don't stop the incentives that currently lead to them being razed, particularly the Renewable Energy Directive, which encourages burning wood for energy.

Tackling the impacts of consumption

Von der Leyen's reiteration of the EU commitment to propose "new legislation [this year] to minimise the risk of products linked to global deforestation being placed on the EU market" was welcome (and something that Fern has called for, for seven years). This is a potential game-changer in ending the EU's complicity in global deforestation. It's essential that any legislation includes not only deforestation, but human rights, since – as seen most recently in Brazil – land grabs are intimately linked to deforestation. The legislation must contain sufficient enforcement measures to ensure it works. And it will not work on its own – it must be accompanied by partnerships with producer countries to tackle the supply side drivers of deforestation.

The President's statement "it is our duty to ensure that our Single Market does not drive deforestation in local communities in other parts of the world" omitted, perhaps significantly, any reference to the role that EU free trade agreements play in this. The Mercosur deal (with Brazil, Argentina, Uruguay and Paraguay) is the most eye-catching example, but across the board, the raft of deals the EU has signed in recent years lack enforceable provisions to stop them fuelling deforestation and rights abuses. This needs to change.

President von der Leyen's speech is a watershed in the EU's commitment to protect forests: this is the first time that a Commission President has spoken so extensively and in such detail about deforestation, and an unequivocal sign of the EU's desire to be the global leader on deforestation.

But for the President's vision to be realised, it must focus not only on headline-grabbing goals, but on tackling the major drivers of forest loss – in particular EU trade policy, EU bioenergy policy, and the fragility of community rights over forest land. If these issues are ignored, we can plant all the trees we want, but the forests around us will keep burning.



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The global forest and tree-cover situation in 2020 – a personal view on the need for a common approach to publication of statistics

For a long time man has feared a shortage of wood-products. Shortages of fuelwood, ship timber and mining timber caused by deforestation and forest degradation are old problems. The first session of the FAO Conference in 1945 recommended that a world forest inventory should be undertaken as soon as possible and as a result the first “World Forest Inventory” (WFI) was carried out in 1947/48 based on a questionnaire with the opening words, “The whole world is suffering from a shortage of wood”.

Europe’s need to be rebuilt after WWII and the fear of a shortage of wood acted as a stimulus to continue with WFIs, which were then published for the years 1953, 1958 and 1963. Although the WFI1968 was very ambitious most countries in the South were now independent and had more important problems to deal with than answering questionnaires from FAO. As a result the old WFI was abandoned and FAO cooperated for some years with the Royal College of Forestry in Stockholm (Persson 1974).

In the 1960s ideas about the role of forests in development also became important and influenced inventories. By 1980 TV-films about the destruction of forests, e.g. in the Amazon, had created an interest in deforestation and FAO undertook an ambitious Tropical Forest Resources Assessment (TFRA) where deforestation became the most important issue and which was based on a so-called “expert method” (utilising a wide range of sources of information) (TFRA1980).

In 1974–1980 questionnaires were not used but this changed in 1990. Since FRA2000 a new assessment has been carried out every fifth year utilising gradually improving methods including increased data gathering on issues of “environmental interest”. Since 2014 the World Resources Institute (WRI) has also started to publish material about the world’s forests based on remote sensing, although the information that they publish is often very different from FAO’s and has caused some confusion.

FRA2020 reported that the forests of the world cover 4059 million ha (31% of land) and that net-deforestation was about 4.7 million ha per year. That suggests that what FAO terms forest will disappear in 860 years if development continues as now. However, WRI reports a tree-cover loss (“deforestation”) for 2019 of 24 million ha, suggesting that tree-cover will disappear in about 160 years.

WRI figures come from remote sensing with most of the information related to worldwide forest resources coming from the University of Maryland (UMD). This type of world-wide remote sensing study is usually carried out using large amounts of images from satellites but is characterized by a shortage of field reference data. Most of the results from UMD are now published by WRI and its Global Forest Watch (GFW). The images upon which the material is based has a minimum pixel of 30 meters but what is not always clear is when WRI and UMD report that an area is not “forest” but “tree-covered land” as satellite images used by UMD cannot identify the difference between, for example, a forest and an apple tree plantation.

Although the amount of tree cover reported by UMD varies, figures from WRI appear to be based on 30% crown-cover.

“Tree-covered areas”, according to WRI, include dense forests, city parks with trees, agricultural tree-plantations and dense agro-forestry areas. Large areas with a more open tree-cover and forest areas that are temporarily cleared of trees are not included in the definition of forest. WRI considers the total “tree-covered area” to be about 4 billion ha (or about the same as FAO has recorded as forest). Possibly about one billion ha of what FAO calls forest is not included in WRI’s area of tree-covered land (e.g. open forests and young plantations). Tree-cover loss recorded by WRI includes “deforestation” (change of land-use), clear cuts in forests, burnt areas, storm-felled areas, areas damaged by insects and pests, agricultural tree plantations cleared for renewal, clearing of trees in shifting cultivation etc.

WRI’s main interest appears to be to provide as much information as possible based on remote sensing. However, as satellites cannot identify “forest”, a proxy measure of “tree-covered areas” is used which produces results that can appear to be strange. For example, in Sweden a tree-cover “loss” of 333 000 ha/year was reported by WRI for 2019 while the National Forest Inventory reports a clear-cut area as 187 000 ha, which suggests that the WRI figure probably included some thinned areas. For Sweden, WRI reports a “gain” of 125 000 ha/year when the correct figure should be about 200 000 ha/year, which indicates that Landsat does not identify young plantations. Furthermore, WRI reports that Sweden has 280 ha with plantations while Swedish sources record area as 14 million ha.

Strange results also appear for other countries. In Java (Indonesia), for example, the tree-cover is given as 70% and forest cover as 22% (48% is “other tree-cover”) yet WRI reports tree-cover/forests as 45%. WRI also often reports that a football field of primary tropical forests is cleared every 6 seconds. While that sounds terrible, what does it mean in practice? It suggests that all primary tropical forest will disappear in 293 years which can create misunderstandings when using such figures.

Criticism is sometimes directed towards FAO that its primary source of data collection is via questionnaires as there may be a temptation for countries to provide inaccurate information. Most countries have, however, now carried out some kind of forest inventory and despite certain limitations FAO provides as much detail as possible about what is called “forest” and also other tree-covered areas and this information has improved over time. For example, in FRA2020, over 90% of forest area information came from countries with high reliability, with only 2% from countries with more limited reliability.

When WFI started in 1948 it was understandable that the focus of interest was on forests of industrial interest. However, since then we have learned that in many countries open forests can be of great value for the local population, e.g. Trees Outside of Forests (TOF) and trees in home gardens. Consequently there is a case for changing reporting from from “forests” to “tree-cover”.

In Table 1 different sources have been used to describe and estimate global tree-cover and tree-cover loss.

Table 1. Global tree resources in 2020 according to FAO/FRA. (Million ha.)

Type of tree-resource	Area	Tree-cover loss 2010–2020
Forest	4059	20–30 ¹
Other wooded land (OWL) ²	1100	1–3
Other land with tree-cover ³	200	2
Agroforestry	1000	5–10
Alleys, windbreaks, small groves etc.	40	1
Land in fallow ⁴	250	
Tree-loss in shifting cultivation	n/a	5–35 ⁵
Total	6500	30–60

¹Consisting of gross-deforestation, clear-cuts in forestry, fires, insect infestation, storm damage and tree fallows cleared in shifting cultivation.

²Areas with a crown cover of 5–10% or bush.

- One finds more forests.

³E.g. Oil-palms, fruit plantations.

⁴Areas under regeneration earlier cleared in shifting cultivation. Previously referred to as agricultural land, now often classified as forest.

⁵Estimate of 5–10 million ha/year cleared.

Below is a short summary of how existing figures could be used to describe the present situation of tree-covered areas (from Persson 2020).

“It has been estimated that 8.7 billion ha in the world could be covered by trees or woody vegetation. Presently about 6.5 billion ha is still covered by woody vegetation. Of this area about 4 billion ha is covered by what FAO calls “forest”. The tree-covered areas not called “forest” (2.5 billion ha) consists of other wooded-areas, agro-forestry areas, agricultural tree-crops, parks, tree-covered fallows, trees outside of forests etc.

The tree-covered area may be cleared by 0.5–1% (30–60 million ha) every year. The reason is traditional deforestation (or change of land use), clear-cuttings in forestry, fires/insects, storm damages, renewal of tree-crops, clearing of tree-fallows, etc. Of this area possibly about 90% is coming back relatively fast. The “forest” area is being reduced by 4.7 million ha/year (the gross-deforestation is about 10 million ha/year). This means that the forests will in theory last for 860 years! Both net- and gross-deforestation have been going down since about 1990. There is as mentioned still some loss of “forests” every year. For some of the other tree-covered types (e.g. agricultural tree-crops, TOF) the area is on the other hand probably increasing. In some decades the net-deforestation may cease (if climate change does not turn things upside down). WRI reports a loss of 24 million ha of dense tree-covered areas in 2019. This is a mixture of different types of land-use, the sum of which is of limited use to know.

Deforestation has been going on since the forests came back after the ice-age. In antiquity it was much deforestation in the Mediterranean area. During the Middle Ages deforestation was heavy in Europe. In the 19th century there was

serious deforestation in Russia and North America. After WWII a lot of deforestation has taken place in many tropical countries. During this later period the forest area has on the other hand increased in many industrial countries. In summary the forests have decreased by 30–40% during the last 3000 years. Deforestation has often gone in waves. During a period deforestation has been heavy in an area but then, of some reason, the forests starts to recover for a period.

The growing stock in “forests” is about 557 billion m³. In other tree-covered areas there may be round 100 billion m³. The volume in tree-covered areas do not seem to change very much.”

At present, global information about the world's forests/tree-cover is produced mainly by FAO, but other organisations also produce forest data e.g. WRI, WWF, UNFF, UNEP, UNFCCC, UNCBD, IUCN, IIASA, JRC, IIED, ODI, CIFOR, IUFRO, Greenpeace, and the Sierra Club. The objectives of these organisations vary but frequently the existence of man is overlooked. It is also often forgotten that forests can regenerate and that there is something called increment. It is perhaps not surprising that the situation can be confusing and in need of clarification. To address this, one approach could be to create a forestry organization similar to the IPCC (International Panel on Climate Change) which would be considered as an independent data source.

Does it matter if incorrect information about forests is being used? It could be argued that Nordic countries are concerned about the effects on markets while some NGOs might benefit from negative news. However, the problem remains that reduced deforestation in tropical countries is seen as an important means of addressing high levels of CO₂ emissions in developed countries. Accurate forestry information in the press seems to rarely be published but could be helped by greater responsibility in data collection by, and agreement between, organisations publishing forestry data.

When the world may be approaching a warming of 3–4°C and an increase in the human population to 10 billion people is likely is it sensible to live in a dream of the untouched wilderness? To have conservation of primary forests as the prime objective? Isn't it necessary to accept that drastic changes will be needed in the coming decades? All that is possible must of course be done to reduce climate change and deforestation, but all must also be done to wipe out poverty. How to find a sensible compromise between conflicting objectives? For this, hard facts are needed.

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Trees, woodlands and flooding in the UK



*The evaporation of rainwater as a rising cloud above the forest canopy following rainfall, known as canopy interception.
(Photo: Tom Nisbet)*

A recent article on how trees and woodlands can affect flooding was published in the *Quarterly Journal of Forestry* (Nisbet and Thomas, 2021), the findings of which are summarised below.

Flooding is the second most serious natural hazard for the UK (HM Government, 2017), with 2.4 million properties at risk of flooding from rivers and the sea in England alone – equivalent to 11% of the land area (Environment Agency, 2009). An additional 3.8 million properties are at risk from surface water flooding due to direct run-off from the land, one million of which are impacted by river and sea flooding.

The probability of flooding is predicted to increase with climate change and could more than double by 2080 relative to 2000, depending on future emissions of greenhouse gases (Sayers et al., 2015). This is because a warmer atmosphere can hold more moisture leading to heavier rainfall and more frequent flooding. Many consider the climate to be already changing, with February 2020 the wettest February in the UK since records began in 1862 (Met Office, 2020).

Faced with this threat, the UK Government continues to invest many £ billions in flood and coastal defences to reduce flood risk. A growing part of the mix is the use of nature-based solutions to mitigate flooding, with a Government commitment to double the number of Natural Flood Management (NFM) projects (HM Government, 2020). This reflects increasing confidence in the ability of natural processes to contribute to flood risk management and a further ramping-up of spend on NFM. Woodland creation and management are a core part of NFM (Ngai et al., 2017) and expected to feature strongly in funded schemes.

How can trees and woodland affect flood flows?

The most obvious way that woodland can attenuate flooding is through the greater water use by trees. Trees can use more water than shorter types of vegetation, particularly due to the interception of rainwater by their aerodynamically rougher canopies (Nisbet, 2005). A distinction can be drawn between conifers and broadleaves, with evergreen conifers tending to have a greater water use (25–45% for conifer versus 10–25% for broadleaf) because high interception losses are maintained throughout the year. This typically results in woodland soils being drier than non-woodland soils, providing greater below-ground flood water storage until soils become saturated. Each mm of water lost by evaporation or stored in the soil equates to 10,000 litres or 10 m³/ha. Interception also operates during individual flood events, reducing the amount of storm rainfall reaching the woodland floor. A recent review of plot studies found losses of 1.5 to 39.4 mm/d, with even higher interception values (100+ mm) for some multi-day, very large storms (Page et al., 2020).

Another way that woodland can affect flood flows is by their soils holding back and delaying the passage of rainwater to streams and rivers. Woodland soils tend to have a more open structure resulting from greater amounts of organic matter, the action of tree roots and soil fauna, and the lower level of soil disturbance. This results in high soil infiltration rates usually of the order of 100s or even 1,000s mm/hr (Archer et al., 2015), which are rarely exceeded by rainfall intensity and thus unlikely to generate infiltration-excess overland flow.

Once heavy rainfall generates surface runoff, trees, undergrowth and deadwood in its path creates hydraulic roughness, which slows and holds back flood flows. Hydraulic roughness is

greatest for mature floodplain woodland with thick undergrowth and much deadwood, as well as for dense, multi-stemmed stands of trees. The effect is most obvious when fallen trees and deadwood form 'leaky woody structures', which delay and push water out of river channels onto the floodplain, enhancing flood storage. Individual structures can store from a few m³ to more than 100 m³, depending on size (Nisbet et al., 2015).



*A leaky woody structure holding back flood waters during a flood event on the Pickering Beck in North Yorkshire.
(Photo: Tom Nisbet)*

How much of a difference can trees and woodland make?

Despite sound understanding of how trees and woodland can affect flood runoff it is much more difficult to translate this into a reduction in downstream flood peaks, and even more so, in terms of flood risk. Quantifying the effect of a woodland on a flood peak requires long-term measurements, comparing the size and relative timing of the peak with and without the woodland. Controlling for changes in background factors such as climate is an added difficulty, as is the accurate measurement of flows when flow measuring structures are typically 'overtopped' during a flood event. Consequently, most flood studies have concentrated on measuring the effects of woodland creation or felling on small, frequent, flood peaks in small catchments. Upscaling the impact of woodland on large flood peaks and in large catchments largely relies on hydrological and hydraulic modelling. Models can be process-driven or more simple representations, often lumping processes together or excluding key factors. These difficulties result in a wide range of predictions (Stratford et al., 2017), and combined with the lack of observed data to validate results, introduces significant uncertainty.

So, faced with these difficulties, what can we conclude about the contribution of trees and woodlands to managing flooding? Research provides high confidence in the ability of woodland and woodland management to affect flood peaks, with catchment studies providing strong evidence that woodland planting

can reduce, and felling increase flood peaks in small catchments (<10 km²). This applies to a range of peak size but the evidence is strongest for small flood peaks (<10 year return period) and very limited for large flood peaks (>100 year return period). The ability of woodland to reduce flood peaks declines with increasing size of flood event, although canopy interception loss continues and is thought to be significant.

There is medium confidence, primarily based on evidence from modelling studies, that woodland can reduce flood peaks in medium sized catchments (10–100 km²), while the effects of felling are likely to be small at this scale. As catchment size increases, the greater is the need to integrate the contribution of woodland creation and management measures with other NFM options, including with traditional, engineering-based techniques.

Logic implies that woodland effects can extend to large catchments (>100 km²) but it will take long-term, strategic planning and co-ordinated action over many years to achieve sufficient woodland creation to make a significant contribution to reducing flood peaks at this scale. This factor combined with the very limited evidence of woodland effects in large catchments provides low confidence in the success of such an approach.

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Publications

COVID-19 and indigenous and tribal peoples: The impacts and underlying inequalities

Forest Peoples Programme

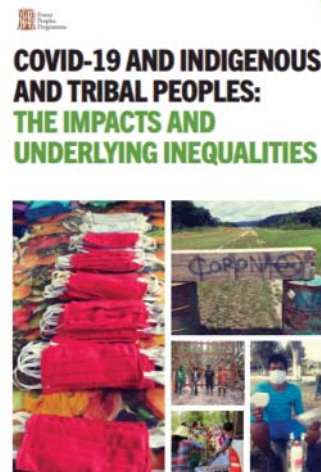
As news of vaccines begins to emerge, signalling at least the beginning of the end of the pandemic that has so altered our ways of living this year, we offer this report as a contribution to understanding the impact of COVID-19 on indigenous and tribal peoples. It joins – and hopes to complement and contribute to – an increasingly broad and nuanced collection of papers, research and stories, and discussions which reflect that this pandemic has had a disproportionate and specific impact on these communities.

Our report “COVID-19 and indigenous and tribal peoples: The impacts and underlying inequalities” builds on the stories and responses of indigenous or tribal communities and peoples in ten countries. These foundational stories reflect both the specific nature of impacts felt, and also the grounded responses developed by peoples and communities who faced severe lack of direct support from health, hygiene or disease control, and crucial communication and information services of their central government.

The UN Special Rapporteur on the rights of indigenous peoples, in his recent and powerful report into the impact of COVID-19 on indigenous peoples, also highlighted this absence of appropriate State response and the powerful, local efforts made – including voluntary isolation. Data generated by indigenous peoples’ organisations themselves under the Indigenous Navigator tools also reflected a lack of government services and highlighted indigenous responses that emerged from, and strengthened, governance and self-determination at the territorial level.

However darker stories about the roll back of legal protections for the rights of indigenous peoples, raised in our report, have also been researched and recorded, including in the excellent ‘Under the Cover of COVID’, by the Asia Indigenous Peoples Pact and Rights and Resources Initiative. We have seen evictions increase in Kenya. We have seen rushed, on-line and largely inaccessible ‘consultation’ processes in Colombia and in Peru, continued incursions into indigenous territories by private sector actors despite the spreading infections. The Omnibus Law in Indonesia, rushed through during the pandemic, is being challenged by Indonesian organisations in front of the UN human rights system.

As this report outlines, and as has been the case in the face of previous challenges, the ‘original sin’ of State failures to recognise and realise the rights of indigenous and tribal peoples to their



ancestral lands, and to self-determination as peoples, continues to stain their futures. Without security of tenure and self-determination, and full and effective participation in relevant planning and decision-making processes, catastrophic events such as this global pandemic that we are all living through will continue to have disproportionate impacts on indigenous peoples. It is only through recognition and protection of these underlying rights that indigenous and tribal peoples will stand as equals with all other peoples in facing challenges yet unknown.

More information: <https://www.un.org/development/desa/indigenouspeoples/egm-indigenous-peoples-and-pandemics.html>

The 11 country case studies studies are:

- **Bangladesh case study:** Sundarbans mangrove forest communities further marginalised by COVID-19 measures as super cyclone devastates livelihoods
- **Cameroon case study:** Indigenous peoples draw on spirit of solidarity to cope with COVID-19 and the measures to contain it
- **Colombia case study:** Rays of hope and a ‘March of Dignity’ during the COVID-19 pandemic
- **Guyana case study:** Wapichan nao (people) stand strong and resilient through the COVID-19 pandemic
- **Indonesia case study:** Minangkabau community observes lockdown by restoring their forest in West Sumatra
- **Kenya case study:** Forced evictions in the middle of COVID-19 pandemic leaves Sengwer community with no homes
- **Peru case study:** A Kichwa family, hungry and exposed to COVID-19, in eternal exodus
- **Philippines case study:** The Dumagat’s fight against the Kaliwa dam amid the COVID-19 pandemic
- **Suriname case study:** Indigenous village leader becomes teacher during pandemic
- **Thailand case study:** Highland indigenous communities on self-sufficiency, food security and land tenure during COVID-19
- **Uganda case study:** The COVID-19 pandemic sees hunger and poverty on the rise among the dispossessed Batwa

Download the report at <https://www.forestpeoples.org/sites/default/files/documents/JA-450-Covid%20Impacts%20Paper%20ENG%20Single%20page.pdf>

‘Reliving the Memories of an Indian Forester: Memoir of S. Shyam Sunder’ review: Revealing mysteries of the woods in the Western Ghats

Shyam Sunder recalls a life in the wild, from picking the right seeds, keeping avaricious politicians at bay, to saving the last evergreen forests

A career in government could leave an enthusiastic professional disappointed at the hurdles to creative expression and enterprise, and having to live under the shadow of political and administrative compulsions. But happy endings are possible. What it takes to succeed is a strong belief system, clean hands, plain perseverance and a good measure of luck.

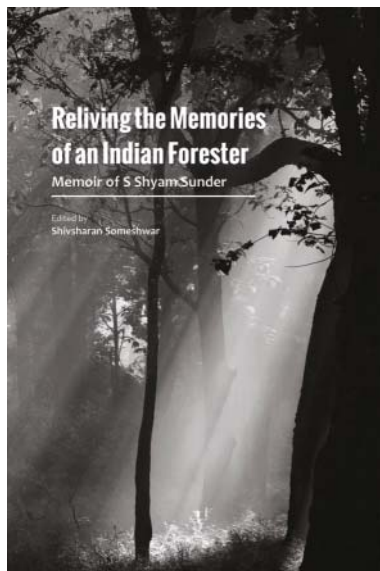
That is the story narrated by S. Shyam Sunder, who began his career as a forester after training in Geology. An astonishing sequence of events led him to a job in the Forest Service in the 1950s and with many twists and turns, concluded with his elevation as the Principal Chief Conservator of Forests for Karnataka.

Away from public view

Forest officers in India work in locations that are away from public view, and perceptive accounts of how they go about their job are rare. Several officers like to keep the mysteries of the woods to themselves, especially when the prying individuals are journalists and researchers. It is equally true that others love partnerships to expand forests and conservation. So when someone is ready to tell a forester’s story, breezily peppered with anecdotes and portraits of people high and low in the system, it is bound to be a refreshing book.

Shyam Sunder, a nephew of litterateur Shivarama Karanth, lays bare all his efforts in this memoir: from picking the most promising trees for planting, monitoring and setting new regulations on the commercial use of forest produce including timber (sometimes levelling the field for villagers vis-a-vis wealthy contractors), keeping avaricious politicians from distributing good forests as patronage, and often ensuring that “development” projects do not devastate the environment, notably the surviving evergreen forests of the Western Ghats.

As a young forest professional, he trained not just in Dehradun’s Indian Forest College, but in France, Ivory Coast and Latin America. Transforming extractive forestry into a socially beneficial enterprise is a demanding goal, considering that the British-era view of the forest was primarily that of an economic resource, seemingly inexhaustible, to be exploited for fuel, furniture, railway sleepers and construction material for everything – including ships that fought wars. Of course, extraction inevitably touched such destructive lows that Karnataka, in the final days of wooden railway sleepers, was ready to offer money to the Union government for wood, but had no more trees to offer.



Species from Africa, America

The prosperity that forests bring in the form of money is best understood by those who sell wood. In the demarcated growing areas, the official post-colonial endeavour was to achieve the highest productivity. Thus, we find the author, in his stint as Divisional Forest Officer in Shimoga putting his studies to the test. He had learnt of bioclimate-based forest classification at the French Institute and he set about sourcing the best seeds from around the world. African mahoganies of the genus *Khaya*, a *Terminalia* species from the Ivory Coast, and non-forest crops such as cocoa, oil palm and avocado came with handsome results. It turns out that tropical species from West Africa and Central America have been grown in Karnataka forests since the 1930s.

“One of the major enactments during my time in the government secretariat was the Tree Preservation Act of 1976,” recalls Shyam Sunder, pointing out that several States had adopted it since. While the law then appeared revolutionary, with a prohibition on felling of trees, he says it would work much better with incentives to grow more trees everywhere, including on private land and urban spaces. Efforts to prescribe minimum tree cover have not succeeded, though. Yet, in reserve forests and converted wastelands, things have worked better.

King cobra and a jumbo

A forester cannot spend life in the woods without encountering diverse wildlife. In Shimoga, Shyam Sunder describes a near-encounter with a king cobra hidden in a tree stump, and a life-saving manoeuvre executed by a colleague, Gaviaiah, who dived and pushed the officer to the ground, away from the snake. In Kollegal, a tusker confrontation on a narrow hillside road during a family trip left everyone shaken. The jumbo decided to retreat down a slope, rather than charge at his jeep.

Throughout the many absorbing accounts of life as a forester, the author comes across as candid and humble, buoyed by a zest for life and relationships. His wife Hira and their children formed the bedrock through the decades, while the camaraderie of talented colleagues, respect from politicians including Chief Ministers like Ramakrishna Hegde and Gundu Rao, and the appreciation of peers burnished his career.

Ramakrishna Hegde showed maturity as an administrator. That becomes clear from an anecdote. The Chief Minister did not react, when the author took a major administrative decision for ethical reasons, disregarding the government’s instructions. Even more striking, Hegde was not offended when he was told to his face by the officer that he should not feel happy at the poor giving him respect with no expectation, since they had got

virtually nothing. What is more, Hegde acknowledged later in life that his view on forestry ('remove green cover to free up land') was wrong, and luckily not pursued.

Aftermath of populist policies

Shyam Sunder, who is a cousin of wildlife biologist K. Ullas Karanth, shines the light on the less salutary effects of populist policies. Rampant loss of forest cover was the direct consequence of political encouragement to encroachment in forest land, until the advent of the Forest Conservation Act (FC Act) in 1980. "That we required the curtailment of state powers reveals a deep erosion of concern for preservation of forests by the States," he says.

But potential forests in Karnataka were often sacrificed. S. Bangarappa as Chief Minister ordered some lands returned to the Revenue Department from forest control, to overcome legal hurdles in distributing them as grants.

If some politicians come across as midgets in the book, others stand tall. Shyam Sunder listened to Rajiv Gandhi tell State governments keen to dilute the FC Act in 1986 to facilitate new roads, that they were already bending rules – old permissions were being used to extend roads. Hegde suggested a land use policy for the country, to end unscientific practices, but "nothing has happened on the issue to this day".

'Do tribals like avocado?'

Indira Gandhi, who aggressively shielded forests through law, was quite intrigued to learn, during a review in the early 1980s, about avocado, an evergreen fruit tree that is said to have originated in Central America, being planted in Karnataka's tribal areas. "Do the tribals like avocado," she asked. Her interest in the fruit sent Gundu Rao into a tizzy.

This memoir weaving past and present is richly detailed, enlivened by a vivid recollection of places, people and shared moments. In one instance, K. Kamaraj did not want plates and paraphernalia for lunch, and insisted on banana leaves at Top Slip near Pollachi. "None had the genuine simplicity of Kamaraj," says the author about the many Chief Ministers he had met, adding, "The only item that did not quite fit in was the yellow tin of cigarettes that he always carried. It was State Express from England."

The considerable botanical insights in the memoir will undoubtedly be enhanced by a dedicated index for trees and plants and a map of India's bioclimatic zones and forest types, while a glossary and an index for all names and places would be useful additions.

Reliving the Memories of an Indian Forester: Memoir of S. Shyam Sunder, Edited by Shivsharan Someshwar, Manipal Universal Press, €450.

thehindu.com



The Use of Woody Biomass for Energy Production in the EU

Fern

The Use of Woody Biomass for Energy Production in the EU", the new study by the European Commission's Joint Research Centre (JRC), has been released. It will inform the revision of EU climate and renewable energy legislation, and it identifies some worrisome trends.

In order to propose "win-win" practices and avoid "lose-lose" situations that damage both climate and ecosystems, the JRC identifies the impact of management practices on biodiversity and the climate. In the resulting matrix, only two of 24 management practices are deemed 'neutral/positive'. This includes fine woody debris removal – but as has been pointed out, it is hard to see what industry would bother with that. For 19 other practices, the JRC sounds an alarm.

The JRC also points to a significant increase overall in EU use of woody biomass, about 20 per cent since 2000 – and an increasing tendency not to disclose its source. Primary woody biomass makes up at least 37 per cent of wood for energy production. Worryingly, they register that 14 per cent is reported 'uncategorised', although: "Based on our analysis of the woody biomass flows, the source is more likely to be primary wood. ... Unfortunately, we observe that the tendency of reporting as

unknown origin the wood used for energy production is increasing." In sum, almost half of the wood used in energy production comes from the forest, not the leftovers from sawmills and pulp mills.

Other significant issues are flagged: for instance, increased logging for bioenergy entails the need to reduce emissions in other sectors to make up for lost carbon storage, a factor not adequately considered in many Member State National Energy and Climate Plans.

The JRC report underscores the weaknesses of the current policy framework and its inability to mitigate the risk that bioenergy will harm forests and climate. Fern policy advisor Linde Zuidema says, "The findings of this study scare me: the climate and biodiversity crises need urgent solutions but the EU is adding more fuel to the fire by increasingly relying on wood burning to reach renewables targets. This is EU climate policy going rogue. We hope this report will be a wake-up call for the Commission to overhaul the Renewable Energy Directive to keep bioenergy in check, and prioritise cleaner sources of renewable energy."

Download at <https://publications.jrc.ec.europa.eu/repository/handle/JRC122719>

Podcast: Let's talk trees

When we hear the word 'science,' we often think about equations and a technical approach to problem solving. This podcast series brought to you by the Center for International Forestry Research (CIFOR) and the World Agroforestry (ICRAF) aims to go beyond the numbers. By looking at the science of forestry, agroforestry and



landscapes through stories, real-life experiences and the lives of people around the world, we aim to make that knowledge and information more human, relevant and understandable. Because what's the use of research if we don't understand it?

<https://radiopublic.com/lets-talk-trees-WRld0x>

Podcast goes behind the scenes in the battle to mitigate wildfires

The podcast *Life with Fire* explores the wildfires a warming world will create – and why we need to involve everyone if we are going to learn how best to live with them

Life with Fire: Amanda Monthei

It isn't surprising that most people associate fires with death and destruction. Wildfires are getting worse every year around the world, destroying property, killing people and wiping out wildlife and habitats.

But for Jeremy Bailey, a fire manager at the Nature Conservancy in Utah, fire is a natural process that revitalises the landscape, much like rain. "When I think about fire, it always brings me a pleasant feeling," he says.

He is the first guest on *Life with Fire*, a podcast hosted by former wildland firefighter Amanda Monthei. After an introductory show, each episode features an interview with an expert, perhaps a historian or a meteorologist, that sets out to show that harrowing news accounts of wildfires during fire seasons don't tell the whole story.

"Wildfire is a deeply nuanced subject that shouldn't be minimised to the same talking points every summer and then forgotten about every winter," says Monthei.

The effect of climate change on wildfires is a big talking point on the show because it creates more favourable conditions for fire and lengthens fire seasons. However, a few guests suggest that climate change isn't the only culprit.

In a compelling episode about the historic firestorm that hit northern California in September, resulting in some of the area's largest ever blazes, Nick Nauslar at the National Interagency Fire Center in Idaho talks about the factors that had to line up for such unprecedented fires to occur. As well as the absence of summer monsoons and presence of persistent heatwaves, it still took lightning and strong winds to generate those vast blazes.

Another big issue the show tackles is the fact that we can't put out all wildfires, so we will have to manage them. Bailey is a fan of controlled fires. These "prescribed fires" are often started to clear the low vegetation, such as bushes and dead plants, that typically fuels severe wildfires. Planned blazes are mainly used to mitigate the risks of catastrophic fires, but he thinks they have wider potential.

The podcast also discusses how to encourage women and ethnic minority groups into fire-related jobs, and how to retain them, as these jobs are still largely done by white men. Lenya Quinn-Davidson, who started a training scheme for women in fire, thinks people with diverse backgrounds are needed to help tackle the growing severity of wildfires. "Innovation at its core requires diversity because you have to have people thinking about issues in different ways and bringing different types of solution to the table," she says.

One criticism of *Life with Fire* is that although later episodes are accessible to a general audience, the podcast takes time to get into its stride. Presenting the topics it covers in a different order would have helped guide people with no knowledge of fire science.

Upcoming shows will be more international as Monthei talks to fire practitioners from around the world.

She is particularly excited about an episode that will focus on fire management techniques used by Native American people in northern California. The hope is that these could inspire better solutions. "I think telling stories and sharing new perspectives and communicating important research is a critical first step," says Monthei.

newscientist.com

Obituaries

CHRIS DONE (1946–2020)



Alan and Chris enjoying a quiet coldie, after the presentation for the Papuan Rally 1973 (Photo: Chris Done)

Chris commenced his PNG career with the Dept of Forests TPNG as a cadet forest officer in 1966 at the University of New England Armadale NSW and then the Australian National University where he graduated in 1968 with a BSc (Forestry).

From 1969 to 1975 Chris initially was employed with the Headquarter Timber assessment group on large scale forest resource inventories as Tonolei Harbour Cape Rodney, Madang and Kiunga. before becoming Officer in Charge of Brown River Forest teak plantations out of Port Moresby.

During this period, Chris is best remembered as a mad rally driver with forester Alan White. Family cars were co-opted and transformed into high performance, state of the art rally machines (in his dreams) and off they went, from the Port Moresby Motor Sport Club, into the “wilds” of Papua. During their celebrated careers, Alan and Chris swapped roles. Alan became the ultimate navigator, and Chris tried to point the car in the right direction as much as possible

In 1975, Chris was transferred to Bulolo as OIC Bulolo Wau District responsible for the Araucaria plantation establishment and management program.

Long term PNG forestry colleagues as Paul Ryan, Jim Riley and Jim Belford recall Chris as a bloke who would always get in and help, with a good sense of humour, and a good bloke to be with in the bush, or in town. They have no doubt that his PNG challenging experiences stood him in good stead in the next phase of his illustrious career when he joined the Western Australian Forest Department in 1975.

Chris’s achievements were summarized in the article “A legend of WA’s bush now admires it from above” by Steve Butler’s Bush legends article in the *West Australia* newspaper of Saturday 12th December 2020. The double-page article in the newspaper declared Chris as a “bush legend”.



If we take this shortcut here, we should be able to get ahead of the field. Papuan Safari 1973 (Photo: Chris Done)



Perhaps that short cut was not a good idea after all, 1973 (Photo: Chris Done)

A precis of Chris's WA career has been provided by WA forestry identities Rick Sneeuwjagt and Roger Underwood.

From 1976–1985 Chris worked for the Forests Department of Western Australia initially as District Forest Officer Nannup then from 1979 he established the role of Regional Forest Officer of the WA Forests Department's Kimberley Region. This involved amongst other things, the promotion of "Greening the North" in the Kimberley by encouraging planting and caring for trees on stations and communities and in townships.

Chris pioneered Indian Sandalwood (*Santalum album*) growing in Northern Australia. Chris Done is widely renowned as Australia's foremost Sandalwood expert. Chris planted the first Indian sandalwood trees at the Ord River Irrigation Area in 1980. At the same time, he established a small plantation on his own land which became the first sandalwood trees commercially harvested in the area. Today, Australia has a multi-million-dollar sandalwood industry with its thousands of hectares of plantations in the Kimberley, the NT and Qld.

Chris was promoted in 1981 to the newly created position of Regional Manager for the Kimberley based at Kununurra where he was renowned as a pioneer land manager and practical conservationist.

Chris travelled extensively throughout the Kimberley Region and knew almost every inch of this magnificent land and coastline. He developed a detailed knowledge of flora and fauna, geology, history, culture, fire management and land management issues. He developed an expert knowledge of Aboriginal rock art including co-authoring a book on the rediscovery of the 'Bradshaw' art site in the remote NW Kimberley.

From 1985 Chris worked for CALM WA as Regional Manager of Kimberley Region. In this position he undertook regional integration of the three amalgamating agencies (National Parks Authority, Wildlife section of the Dept of Fisheries and Wildlife and the WA Forests Department). Chris was responsible for all regional activity including management of National Parks and Nature Reserves and Marine Reserves (2.5 million hectares).

Chris played a key role in establishing the Purnululu National Park and numerous other Parks and reserves. Up to the present time he continued to provide leadership as Chair of the Purnululu World Heritage Area Advisory Committee

Rick Sneeuwjagt WA State Fire Manager had much to do with Chris in the development and application of unique fire management practices in the Kimberley. Chris was a major force in confronting the need for improved bushfire management in the Kimberley, and in the early programs of aerial burning up there. Chris acted as Navigator in the Kimberley's first aerial burn. He was also one of the first fly-in firefighters, helicoptering in to fires in the Bungles (as he told this story in typical understated fashion in the book *Firefighters* edited by Roger Underwood). It was Chris who took the initiative to form a Top End Fire conference, bringing together fire people from throughout the Kimberley, the NT, and Tropical NQ. The first meeting in Kununurra, organised by Chris, was attended by about 25 officers and park rangers. It became an annual event.

He retired from CALM in September 2003 to pursue private interests. From March 2004 until January 2007 Chris was employed by Tropical Forestry Services (TFS) as Operations Manager (Kununurra) and from February 2007 as Senior Forester. TFS first planted Indian Sandalwood in Kununurra in



Kununurra nursery 1994 (Photo: Chris Done)

1999 and has since planted over 1,200 hectares of commercial Sandalwood plantations on behalf of almost 700 individual growers and companies associated with TFS. TFS is a specialist Indian Sandalwood plantation manager and is committed to the long-term development of an Australian grown Indian Sandalwood industry.

His other pursuits included various contracts as a consultant in land management (particularly for conservation purposes), assessment of rural lands for possible conservation and development purposes, small scale biological surveys, tropical forestry management and regular contract work (monitoring watering regimes, assessing growth rates, involved in developing management guidelines, developing OHS procedures, etc.) within the Ord River sandalwood industry.

In recent years, after nearly 40 years in the Kimberley, Chris retired to Nannup. He continued to travel to the Kimberley for work, including as a guide and guest lecturer for a tourism cruise boat company along the Kimberley coast, continuing a role he has undertaken from the 1990s.

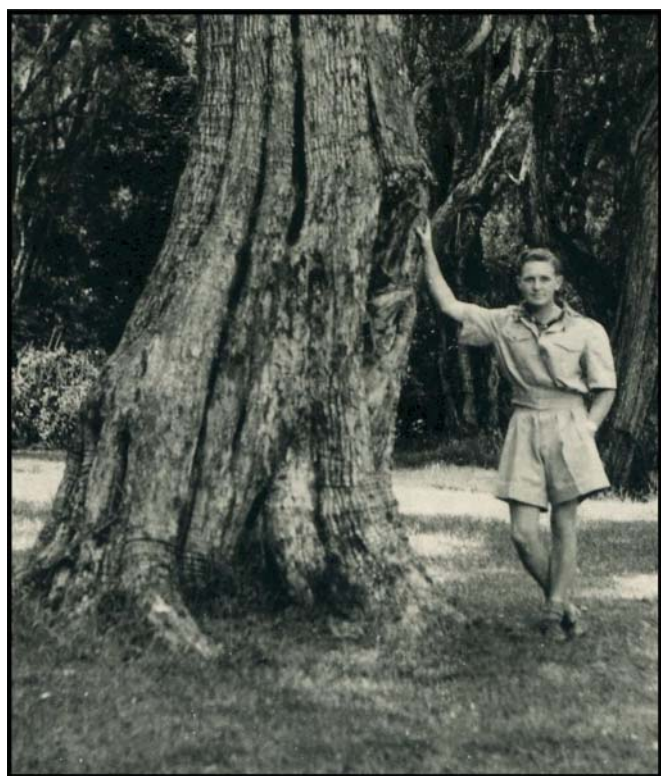
Roger Underwood regarded Chris as "one of the best", a champion mate and forester. He was a terrific DFO at Nannup and then a magnificent regional manager and pioneer land manager and practical conservationist in the Kimberley, the pioneer of the Indian sandalwood industry in the Ord, an expert botanist and expert on Aboriginal rock art. A tough bushman, but also a gentleman, and always good for a yarn and a laugh.

Chris is admired across the country for his integrity, his unassuming leadership, his practicality and common sense, his broad botanical and forest knowledge, his nature-based tourism and management skills, and his deep love of the bush, and love of life. In recent days as we became aware of Chris' serious medical condition, he has been showered with well-deserved complements and tributes from a wide range of people who have worked alongside him.

Another example (attached) is a letter of tribute from the Minister for Environment, Hon Stephen Dawson MLC written on 8 December 2020 in which the Minister on behalf of the WA Government and everyone in WA thanked Chris for his long list of achievements and the enduring legacy Chris has created.

**Obituary prepared by Dick McCarthy,
Rick Sneeuwjagt and Roger Underwood**

Ken Sargent (1924–2020)



Ken Sargent in Kenya

Born in 1924, and brought up in Keswick, Cumbria, Ken had the English Lake District at his doorstep. Little wonder that he developed a life-long interest in the environment and its management.

He was educated at Keswick Grammar School and at Edinburgh University where he read Forestry, graduating in 1945 with the Elizabeth Sinclair Irvine prize as best student. He was posted to the Kenya Forest Department in December 1945. During 12 fascinating years in Kenya, working on a wide variety of field assignments, he became deeply interested in the role of forestry in the environment and its interrelationship with other sectors. In 1952 he was posted to Nairobi as Personal Assistant to the Chief Conservator of Forests where he met and later married Gwen (nee Church) who, through her magnificent support, played a major role in the success of Ken's subsequent career.

Following 4 years as Divisional Forest Officer at Mombasa, where his involvement in rural development intensified, he was awarded a Commonwealth Fund Fellowship of the Harkness Foundation for advanced study and travel in the USA. This involved studies in Public Administration, Economics and Land Use Planning at Harvard University under the personal direction of Professor J.K. Galbraith in 1957. A subsequent and extensive travel itinerary arranged by the US Forest Service gave Ken an in-depth perspective into the administration of forest resources and their role in national planning, also into the techniques of Agricultural Extension.

1958 saw a posting to Nyasaland as Conservator of Forests (Extension) which gave him an opportunity to extend his interests in rural development and the integrated planning of natural resources. This led, in 1962, to promotion to the post of Under

Secretary in the Ministry of Natural Resources. His wide ranging activities included a visit to Taiwan to study national economic planning and agricultural development and in 1965 he presented a key-note address on Forest Policy, Administration and Legislation to the first Tropical Forestry Symposium, sponsored by the Ford Foundation, at Duke University, USA.

1965 saw further promotion to the post of Permanent Secretary to the Ministry of Economic Development with responsibility for the co-ordination of all national development aid together with the planning, implementation and evaluation of all development projects. In 1966 Ken was elected an Honorary Member of the Society of American Foresters, and appointed an OBE in 1967.

Following a reorganisation of Government Portfolios in Malawi in 1968, Ken left Africa to join the Forestry Department of the Food & Agriculture Organisation (FAO), being posted to Malaysia to be in charge of the Forest Industries Development Project.

Over a 7 year period, utilising the broad experience he had gained in Africa, assisted by a highly motivated team of international experts and Malaysian counterparts, with exceptional co-operation from the Government and FAO, the project successfully pioneered the construction of an econometric model to assist in the formulation of policies and strategies for the fully integrated development of the Malaysian Forestry Sector, within the parameters of National Development Policy. The processing of huge volumes of interactive field data resulted in the output



Ken Sargent in retirement

of alternate strategies, each with its associated economic and social advantages and disadvantages; they were used by the Federal Government as a basis for policy decisions. The model was subsequently refined by the World Bank for broader application in developing countries. In recognition of this success, Ken was presented with the prestigious B.R. Sen Award of FAO (1974), being the first Englishman and the first Forester to receive this honour.

The following four years were spent based at FAO HQ in Rome as Co-ordinator of the Global Pulp and Paper Industries Project. Extensive world travel enabled Ken to greatly extend his already wide knowledge of the world's forests, their problems and potentials. The final four years of his career were spent on a World Bank/UNDP/FAO Forest Development Project in Portugal. He retired in 1983.

Shortly after retirement Ken suffered a major heart attack. He quickly redirected his infectious enthusiasm from field work to community affairs where he was, successively, Treasurer and Chairman to a Housing Association providing residential homes for the elderly. He remained active in his local community.

In 2012, at the age of 88, he produced a private publication "Beyond the trees – a forester's reminiscences of adventure, international travel and a fascinating career". This 243 page book summarised his life, work and personal development, illustrated with maps and photographs.

Ken is survived by his wife, Gwen, and his two sons, Michael and Peter.

Peter Sargent

Around the World

Brazil: Amazon deforestation surges to 12-year high under Bolsonaro

A vast expanse of Amazon rainforest seven times larger than Greater London was destroyed over the last year as deforestation surged to a 12-year high under Brazil's far-right president Jair Bolsonaro.

Figures released by the Brazilian space institute, Inpe, showed at least 11,088 sq km of rainforest was razed between August 2019 and July 2020 – the highest figure since 2008.

Carlos Rittl, a Brazilian environmentalist who works at Germany's Institute for Advanced Sustainability Studies, said the numbers were "humiliating, shameful and outrageous" – and a clear sign of the damage being done to the environment since Bolsonaro took office in January 2019.

"This is an area a third the size of Belgium – gigantic areas of forest that are being lost simply because under Bolsonaro those who are doing the destroying feel no fear of being punished," Rittl said.

"Bolsonaro's great achievement when it comes to the environment has been this tragic destruction of forests which has turned Brazil into perhaps one of the greatest enemies of the global environment and into an international pariah too."

Brazil's vice-president, Hamilton Mourão, tried to put a positive spin on the bleak figures as he visited Inpe's headquarters in the city of São José dos Campos on Monday. Mourão claimed the annual increase of 9.5% was less than half the anticipated figure of about 20%.

"We're not here to commemorate any of this, because it's nothing to commemorate. But it means that the efforts being launched [against Amazon deforestation] are starting to yield fruit," Mourão claimed.

Environmentalists, who blame Bolsonaro's deliberate weakening of enforcement efforts for the rise, scoffed at that reading. "This number is an outrage – it doesn't tell us anything positive about the Bolsonaro administration at all. On the contrary, it shows that despite the [Covid-19] quarantine, environmental crime has increased," Rittl said.

Mourão's comment about the smaller-than-expected rise was "like saying that we were expecting 300,000 Covid deaths and we 'only' had 200,000," Rittl added.

Cristiane Mazzetti, a Greenpeace spokesperson for the Amazon, said: "This is an even worse number than 2019 and a direct reflection of the Bolsonaro administration's anti-environmental policies which have weakened the monitoring agencies and used misguided strategies to fight deforestation, such as deploying the armed forces rather than environmental protection agents."

"These numbers show us that we are continuing to move in the wrong direction than the one needed to deal with the climate emergency and the biodiversity crisis."

The Observatório do Clima group said soaring destruction came as no surprise to those "following the dismantling of environmental policy that has been underway in Brazil since January 2019".

"The numbers simply show that Jair Bolsonaro's plan has worked. They are the result of a successful project to annihilate the ability of the Brazilian state and its monitoring agencies to care for our forests and fight crime in the Amazon," it said in a statement.

theguardian.com

Japan developing wooden satellites to cut space junk

A Japanese company and Kyoto University have joined forces to develop what they hope will be the world's first satellites made out of wood by 2023. Sumitomo Forestry said it has started research on tree growth and the use of wood materials in space. The partnership will begin experimenting with different types of wood in extreme environments on Earth.

Space junk is becoming an increasing problem as more satellites are launched into the atmosphere. Wooden satellites would burn up without releasing harmful substances into the atmosphere or raining debris on the ground when they plunge back to Earth.

"We are very concerned with the fact that all the satellites which re-enter the Earth's atmosphere burn and create tiny alumina particles which will float in the upper atmosphere for many years," Takao Doi, a professor at Kyoto University and Japanese astronaut, told the BBC. "Eventually it will affect the environment of the Earth." "The next stage will be developing the engineering model of the satellite, then we will manufacture the flight model," Professor Doi added.

As an astronaut he visited the International Space Station in March 2008. During this mission, he became the first person to throw a boomerang in space that had been specifically designed for use in microgravity.

Sumitomo Forestry, part of the Sumitomo Group, which was founded more than 400 years ago, said it would work on developing wooden materials highly resistant to temperature changes and sunlight. The wood it is using is an "R&D secret" a spokesman for the company told the BBC.

Experts have warned of the increasing threat of space junk falling to Earth, as more spacecraft and satellites are launched. Satellites are increasingly being used for communication, television, navigation and weather forecasting. Space experts and researchers have been investigating different options to remove and reduce the space junk.

There are nearly 6,000 satellites circling Earth, according to the World Economic Forum (WEF). About 60% of them are defunct (space junk). Research firm Euroconsult estimates that 990 satellites will be launched every year this decade, which means that by 2028, there could be 15,000 satellites in orbit. Elon Musk's SpaceX has already launched more than 900 Starlink satellites and has plans to deploy thousands more.

Space junk travels at an incredibly fast speed of more than 22,300 mph, so can have cause considerable damage to any objects it hits. In 2006 a tiny piece of space junk collided with the International Space Station, taking a chip out of the heavily reinforced window.

[bbc.co.uk](https://www.bbc.co.uk)

Turkey: Drones help protect forests

As it seeks to preserve its growing forests, both against pests and fires, Turkey taps into new technology. A new set of high-technology drones, which can create 3D models of disaster sites, are being used to extinguish forest fires effectively in northwestern Turkey. The Regional Directorate of Forestry in Bursa province purchased the drones in cooperation with Bursa Technical University. The drones can also track pests and protect the flora and fauna.

For the past two years, the directorate has allocated TL 1 million (around \$135,000) for the drones, which successfully killed pests that had spread to a large part of the forested area between the Inegöl district of Bursa and the Domanic district of western Kütahya province.

The first high-tech drone purchased in 2019 was used in six forest fires in Bursa, Istanbul, Izmir and Çanakkale provinces in the consequent year. Thanks to the L1 camera attached to the new drone, 3D maps can be captured and transferred to the fire operations center.

The directorate's head, Yalçın Akın, told Anadolu Agency (AA) on Friday that the devices have made an important contribution to the live monitoring of fires and determining extinguishing strategies. "We use it for tracking and determining the coordinates of living and nonliving moving objects in our forests, day and night," Akın said, adding that they are also useful in preventing illegal mining activities and felling of trees. He said to be able to use the drone technology, 110 technical personnel were trained both theoretically and practically in the field and they obtained a commercial drone pilot certificate. "We

have 14 drones, three of which are industrial. Two of them have thermal cameras and two of them have multispectral cameras," he added.

Akın said that they use the multispectral camera as an alternative method of combating the chestnut gall wasp, a pest that attacks sweet chestnut trees.

Ali Ihsan Kadioğulları, a professor at Bursa Technical University, said the new drones have a range of 15 kilometers (9.3 miles) and are resistant to temperatures between minus 20 degrees Celsius (minus 4 Fahrenheit) and 50°C (122°F). Stating that the device can get as near as 2 kilometers (1.2 miles) to the flames with its thermal and hybrid camera, he said: "Its air time is better than the previous ones. The previous high-tech drones could stay in the air for 25 minutes, but the new drone can stay in the air for 45 minutes." Kadioğulları said the device can be controlled by two people at the same time, and added that it can fly in rainy and snowy weather conditions and also in intense fog and smoke. "It has a night vision feature. It is a drone that we can use in search and rescue activities," he said, adding that its long flight time makes it compatible with new cameras.

He said they also make orthophoto maps using the drones as they can see an average of 80–100 hectares of area, which will increase to 250–300 hectares with the new drone. Kadioğulları stressed that the new drones, which can be flown even in strong winds, can fly to a height of up to 6,000 meters (19,685 feet) above sea level, and is both dust and water resistant.

[dailysabah.com](https://www.dailysabah.com)

Nigeria: Federal government cannot destroy bandits' hideouts in forests

Minister of Information, Lai Mohammed has given reason the federal government will not destroy forests where bandits use as hideouts to carry out kidnappings in the country.

Mohammed, speaking with Channels Tv on how to eliminate bandits, said the ecosystem will be affected if the government destroys the forests.

He noted that the better solution to eliminating bandits from the forest was to have better consultation between sub national government, the federal government and security agencies.

The minister said: "We cannot destroy the forest because of climate change. The better approach is not to destroy the forest because it would affect the eco-system but what we need is

better consultation with sub national government and security agencies on how to secure the forest to make them safe for everybody.

"Those forest are used as hideouts but I think with technology today and when all our platforms are delivered, it will no longer be business as usual as the forest will not save those criminals and bandits but again we need collaborative effort of everyone."

The minister assured Nigerians that security is top priority in the Buhari-led administration.

dailypost.ng

Global: Wood buildings should be a requirement of any climate change policy

A new meta-study offers the strongest evidence yet that timber buildings can drastically reduce carbon emissions in the construction industry.

It's not as visibly bad as the belching smokestacks of the coal industry or the gas-chugging backups on suburban highways, but the building industry is a major contributor to climate change. From their materials to their construction to their energy needs over time, buildings generate nearly 40% of global greenhouse gas emissions. Of that, around a quarter is embodied carbon, or the sum of emissions that resulted in the production, transportation, and use of building materials. What a building is made of can have a huge climate impact.

One simple solution is to switch to wood, which sequesters carbon, as a primary building material. According to a new meta-study, switching to wood on a wide scale could bring emissions down by using a material that naturally absorbs and sequesters carbon from the atmosphere. Over just the next 20 years, 420 million tons of carbon dioxide could be sequestered within wooden buildings in Europe – the equivalent of a year's worth of emissions from 71 million homes or 108 coal plants.

Spread out to a global scale, there is massive potential for wooden buildings to become long-lasting carbon sinks, according to Ali Amiri of Aalto University in Finland, one of the authors of the study. As forests are planted to meet a potentially growing demand for wood, Amiri says, "we can store and store and store."

Wood represents a much greener alternative to the materials often used in construction: concrete and steel. The production of these two materials adds up to roughly 15% of global CO2 emissions. Shifting more construction to wood would help bring those numbers down.

Amiri's study looked at the carbon storage of 50 wooden buildings, comparing structures with different sizes, uses, and locations. Amiri and his coauthors used this data to develop three levels of carbon storage, depending on the amount of wood used for both the buildings' structures as well as their internal furnishings, like counters and chairs.

At the low end, buildings using only some wood could store 20.5 pounds of carbon dioxide per square foot. At the high end, in buildings made almost entirely of wood, that figure could be about 61 kilograms (134 pounds) per square foot. Estimating a gradual increase of wood in new buildings over the course of two decades, and looking specifically at the average amount of new housing built annually in Europe, the researchers found that stored carbon could hit a total of 420 million tons by 2040.

The source of this wood is another question. Though Amiri says forestry practices in places like Europe and North America are generally sustainable, illegally logged wood is a major problem globally, and one that would have to be reckoned with.

For builders and designers, making the transition will require shifting away from materials like concrete and steel. And though small buildings have long relied on timber for construction, wood is becoming a more viable alternative to concrete and steel. The development of structural mass timber products like compressed laminated timber have allowed wood to be used in much taller buildings than in the past, including mid-rise towers that can reach more than a dozen stories using wood alone.

For all but the tallest buildings, Amiri says, wood can be a practical material. And the industry is catching up, with mid-rise mass timber buildings being developed from Portland, Oregon, to Toronto to Norway.

Before becoming a researcher, Amiri worked in the building industry, designing and building apartment buildings. They mostly used concrete and steel. "Because I have been in building construction, I have seen what is happening and what we need in the future," Amiri says, noting that he sees a lot of potential in using wood in construction, and is planning to continue his research to explore how wood construction can become more of a standard practice internationally. "We can do something for the world."

fastcompany.com

Europe: DIY shops selling wood taken illegally from Russia, report alleges

DIY shops across Europe are selling wood taken illegally from Russia's far-east taiga region, where corruption is contributing to the rapid destruction of virgin forests, a report has claimed.

More than 100,000 tonnes of lumber have entered Germany, France and other EU countries as part of one of Russia's biggest illegal timber scandals, it is alleged. The business is in turn linked to two companies registered in the UK. The report, by the environmental group Earthsight, suggests trees in Siberia are being plundered at an alarming rate. The remote region is home to bears, wolves, lynxes and endangered tigers. Its peat and frozen soils store vast amounts of carbon.

There have been unprecedented wildfires in Russia in 2019 and 2020 as a result of global heating. According to Greenpeace, 13.5m hectares of natural areas have been destroyed so far this year, an area bigger than Greece. A timber conglomerate in the Khabarovsk Krai region is allegedly behind much of this illegal timber trade. The firm, the BM Group, denies wrongdoing. Its president, Alexander Pudovkin, was arrested last year and is under investigation together with two government officials, accused of abuse of office.

According to Russian prosecutors, Pudovkin has admitted paying kickbacks in return for lavish state subsidies and forest concessions. He is due to stand trial.

Contracts were given to Pudovkin without tender, prosecutors allege, with state funds handed over for a sawmill that was never built.

In March 2019, Russia's domestic FSB spy agency raided the Khabarovsk offices of the BM group, seizing computer hard drives and a safe. The prosecutor's office initiated a criminal investigation. As a result, the firm was removed from a federal list of priority investment projects.

Prosecutors claim its affiliate Asia Les logged 600,000 cubic metres of wood illegally. They allege licences for logging were obtained through bribery and fraud. The project was fraudulently misrepresented as being compliant with the requirements for state aid, they add.

The BM group says the legality of this timber has yet to be settled in court. Most of the Asia Les wood went to neighbouring China. But larch also found its way to Europe, where it was sold for home cladding and to build yachts.

The wood was allegedly shipped from St Petersburg to the German port of Kiel and from there to DIY stores across the continent. Destinations included Germany, Estonia and France. The trade, which the report says is illegal, took place despite an EU ban on the import of suspicious timber. Rules oblige importers to carry out checks.

The BM group said it had "valid forest leases" for its logging activities. It added that it complied with Russian legislation, logged a smaller area of forest than claimed and helped the local indigenous population. It dismissed Earthsight's report as "biased" and "incorrect". Pudovkin and Asia Les did not comment.

Two UK-registered companies are BM Group customers, according to customs records. One, Goka, shares an address with a Covent Garden massage parlour. Its Russian co-director, Ekaterina Burnistova, said the firm had "no role" with the BM Group. The other, Miramex, is a letterbox firm in Scotland. Its opaque corporate owners are based in the tax haven of St Kitts and Nevis. They could not be reached.

The BM Group has chopped down and degraded an area of virgin forest the size of London, UK, the report alleges, citing recent satellite images. It is a profitable business. Asia Les has felled taiga forest worth a staggering €870m, Earthsight estimates.

After the scandal broke in 2019, the report says many European importers continued to purchase suspect wood. Some even increased their orders. The larch found its way into French high street DIY stores, and a large German chain, it is alleged. It may also have ended up in the UK.

Over the past five months, Khabarovsk has seen large-scale anti-government street protests. They follow the arrest by Moscow authorities of the region's popular governor, Sergei Furgal. It was Furgal who removed Asia Les from a list of federal investment projects, after one of his former officials was accused of taking bribes.

The Earthsight findings follow a previous investigation that revealed illegal wood from Ukraine was on sale in Ikea branches in Europe. The group's latest report, titled Taiga King, suggests the authorities responsible for enforcing EU law have not got to grips with the problem.

EU and UK lawmakers are debating tougher rules to tackle Europe's role in driving global deforestation through its consumption of wood and other "forest risk commodities" such as beef and soy.

"Yet again, European consumers have been revealed to be aiding and abetting the destruction of the world's precious forest," Earthsight's director, Sam Lawson, said on Wednesday.

"Governments must act urgently to prevent this, both by passing new laws and better enforcing existing ones. They must stop hiding behind these flawed green labels."

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