ITTO

TFU

Promoting the conservation and sustainable development of tropical forests

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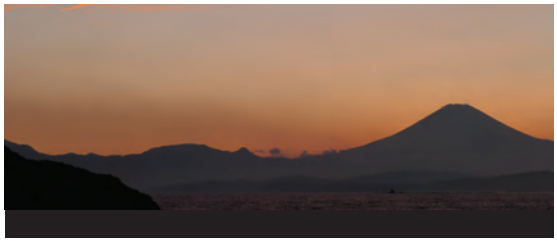
Embracing the equality of women and men

Women have always been part of forestry—as custodians of traditional knowledge, as gatherers and users of diverse forest products, increasingly as forestry professionals, and much more. But rarely have they been on equal footing with men in their access and rights to resources, in forest-related decision-making, and in the opportunities they receive to develop forest-based businesses and careers.

ITTO has taken an important step forward in acknowledging the important roles of both women and men in forestry by adopting the Guidelines on Gender Equality and the Empowerment of Women. This edition of the TFU features articles—written mainly by women—showing some of the ways in which women are making important contributions to sustainable forest management and leading the way to a more egalitarian future.

Stephanie Caswell (page 4) provides an overview of the gender guidelines, which she helped draft. The guidelines have three specific objectives, she says: to enhance the integration and mainstreaming of gender considerations in ITTO's policy and project work; to build the capacity of ITTO and its members to promote gender equality and empower women in the tropical forest sector; and to strengthen the role of women in ITTO's governance and Secretariat. The guidelines, she says, "institutionalize the Organization's commitment to gender equality and women's empowerment" and provide a framework for internalizing gender equality in ITTO policies, plans, programmes, projects, activities and staffing.

Brice Delagneau and Delphine Ahoussi (page 9) report on a community women's group—MALEBI—in Côte d'Ivoire that, with ITTO's help, is restoring a nearby state forest, engaging in agroforestry that is yielding



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Cover image: Forest researcher Adi Estela Lazos Ruíz speaks at a forest restoration workshop in Jamapa, Mexico. *Photo: © Gerardo Sanchez Vigil*

Above: A sunset view of Mount Fuji, Japan. *Photo: G. Dieterle*

foods for the families of participating women, and increasing the efficiency, sustainability and profitability of their charcoal-producing business. MALEBI has been recognized nationally for its great work and is credited with helping trigger moves nationally to mainstream gender in the country's forest sector.

Pradeepa Bholanath (page 13) describes the work of the Guyana Forestry Commission's all-women team responsible for (among other things) the remote-sensing component of forest monitoring for results-based payments under REDD+. According to Towana Smartt (page 16), a member of the team, "women play a very important role in forestry because we have a dynamic array of skills and talents that are often disregarded because we are women. Along with commitment and dedication, women bring a sense of stability to the workplace that usually helps build the strength of the organization". Basantie Sukhu (also page 16), another member of the team, says, "Women are vital to any organization because they bring benefits such as increased employee engagement, creativity and diversity". In her short associated article, Anna Mohase (page 17) describes how opportunities are opening up more broadly for women in Guyana's forest sector.

Adi Estela Lazos Ruíz (page 19) relates her personal journey in forestry, from a suburb of Mexico City to rural Veracruz. A highly qualified professional, Dr Lazos works with women in small communities in the municipality of Jamapa as they restore degraded forest landscapes and develop new sources of income, with assistance from ITTO. Dr Lazos, whose life story "has become interwoven with those of the women of Jamapa", says ITTO's vision of including a gender perspective in its activities through its latest guidelines "is a masterstroke for mainstreaming the role of women in forestry".

Thais Almeida Lima and co-authors present some of the results of research conducted in the Brazilian Amazon with assistance from an ITTO Fellowship. Ms Lima, a student at the University of British Columbia and a Brazilian citizen, is one of many women making their mark in professional forestry.

But the struggle for gender equality is far from won. In a panel discussion on the role of women in ITTO held at the most recent session of the International Tropical Timber Council (reported in TFU 27/4), Cécile Njebet, president of the African Women's Network for Community Management of Forests, said women in forestry still have very limited access to technology, resources, information and training, and they face many problems because of insecure tenure. In most countries, they lack awareness of their rights. Ms Njebet proposed the development of a mechanism for monitoring and evaluating the use of ITTO's gender guidelines as a way of keeping track of progress.

Men should welcome moves to achieve gender equality and the empowerment of women in ITTO's work and forestry more generally. ITTO Executive Director Gerhard Dieterle (page 3) reminds us that gender equality is not a zero-sum game. "The full potential of societies and communities can only be unlocked if men and women work and live together in mutual recognition and support within their cultures," he says. "This means that women and men should have equal access to resources and rights." We should all embrace that.

A question-and-answer session on ITTO's recently adopted policy guidelines on gender equality

Introducing ITTO's gender policy guidelines

with Gerhard Dieterle
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TFU: Why is the adoption of ITTO's Policy Guidelines on Gender Equality and the Empowerment of Women significant?

Dr Dieterle: The formal adoption of ITTO's guidelines on gender equality is a significant step forward in shaping the future of the Organization. It makes a big difference whether an organization makes non-binding statements on the role of gender or adopts formal principles on the subject that can be measured and verified. Men still dominate the formal forest sector today, even though women play crucial roles in the use of forests to improve rural livelihoods, including to supply household energy, medicinal plants and a wide range of non-timber forest products.

Why has ITTO adopted the policy now?

Dr Dieterle: The adoption of gender guidelines was an important missing step in linking ITTO's work to the Sustainable Development Goals (SDGs), the United Nations Global Objectives on Forests and the United Nations Forum on Forests' Strategic Plan 2030. This does not mean, of course, that ITTO was previously indifferent to this important pillar of sustainability—as our numerous successful projects have shown. But adoption of the guidelines means that gender equality and the empowerment of women is now one of the formal pillars in planning, implementing and evaluating projects and activities on the ground. Thus, gender will be reflected in criteria and indicators of our work and in the work of our implementing partners. The adoption of the guidelines will also help in internalizing gender aspects in the policies of ITTO member countries and the private sector and enhancing the role of civil society, especially in rural areas.

Why is it important to empower women in ITTO's work?

Dr Dieterle: What is the alternative? Women play a decisive role in rural societies in tropical timber-producing countries. The wellbeing of families and communities is closely linked to intact natural resources. Many scientific studies have provided evidence that forests can contribute 20–40% of family income, either in cash or in kind, in tropical rural societies. This makes a big difference to poor households. Women therefore look at forests as part of their livelihoods and feel responsibility for what happens in and near them.

We have some wonderful examples from recent ITTO projects in Côte d'Ivoire showing how women are supporting forest restoration near their villages in combination with food production. One of the projects[1] has assisted a women's association to develop a successful sustainable charcoal-making business, which is reaping rewards for villages and families and raising awareness nationally. In the other project, internally displaced and refugee women are working as a team with local women, thus contributing to social cohesion and sharing the benefits of their teamwork. Through collaboration and the sharing of responsibilities they are selling products in the market, which has made them financially more independent.

1 See article on page 8.

Restorers: Dr Dieterle poses with forestry staff and local, refugee and displaced women engaged in an ITTO project to rehabilitate forest near Tien-Oula village, Duekoue district, Côte d'Ivoire. *Photo: P. Masupa/ITTO*

At its last session, the International Tropical Timber Council convened an all-women panel to discuss the role of women in achieving ITTO's objectives. What should that role be?

Dr Dieterle: The roles and contributions of women often go unnoticed and are taken as a given. The panel clearly demonstrated and highlighted the many roles women play, the responsibility and leadership they can take—and the obstacles they still face in both producer and consumer countries.

What does the empowerment of women in forestry mean for men?

Dr Dieterle: The full potential of societies and communities can only be unlocked if men and women work and live together in mutual recognition and support within their cultures. It is an essential ingredient for growth, prosperity and social stability. This means that women and men should have equal access to resources and rights.

The world seems to be changing more quickly than ever, with potential trade wars, political shifts and the increasing impacts of climate change. What more can ITTO do to assist its members and tropical-forest stakeholders in navigating these turbulent times? Is the role of women fundamental to this?

Dr Dieterle: We are indeed living in turbulent times, politically, socially and environmentally. One way or another, societies around the globe are starting to realize that our resources are not endless and that we are using more resources than the planet can sustainably provide. It is clear that poor tropical producer countries will be much more affected than well-off countries by resource shortages and climate change. Forests resources play an important role in many of our producer countries and they produce global public goods for climate, biodiversity and the environment. ITTO's role must therefore be to help restore, manage, use and protect these resources wisely for economic development, environmental and climate resilience and social stability in these countries and for the global good. As I've mentioned, women are essential for achieving these outcomes.

ITTO to co-convene stream on responsible trade and markets at Asia-Pacific Forestry Week

Asia-Pacific Forestry Week 2019
Forests for Peace and Well-being
17-21 June 2019 I Incheon, Republic of Korea

ITTO and several partners will convene Stream 4, "Promoting Responsible Trade and Markets", at Asia-Pacific Forestry Week, which will be held in Incheon, Republic of Korea, on 17–21 June 2019. The stream will address emerging trends in the trade of, and markets for, timber and timber products, actions to promote legal and sustainable timber, and opportunities and challenges for market access.

ITTO's partners in convening Stream 4 are the World Resources Institute, the European Forest Institute, Forest Trends and the Non-Timber Products Exchange Programme.

For more information on Stream 4, contact itto@itto.int

For more information on Asia-Pacific Forestry Week, go to http://apfw2019korea.kr

The gender defender

ITTO's new Policy Guidelines on Gender Equality and the Empowerment of Women will help transform the tropical forest sector

by Stephanie J. Caswell

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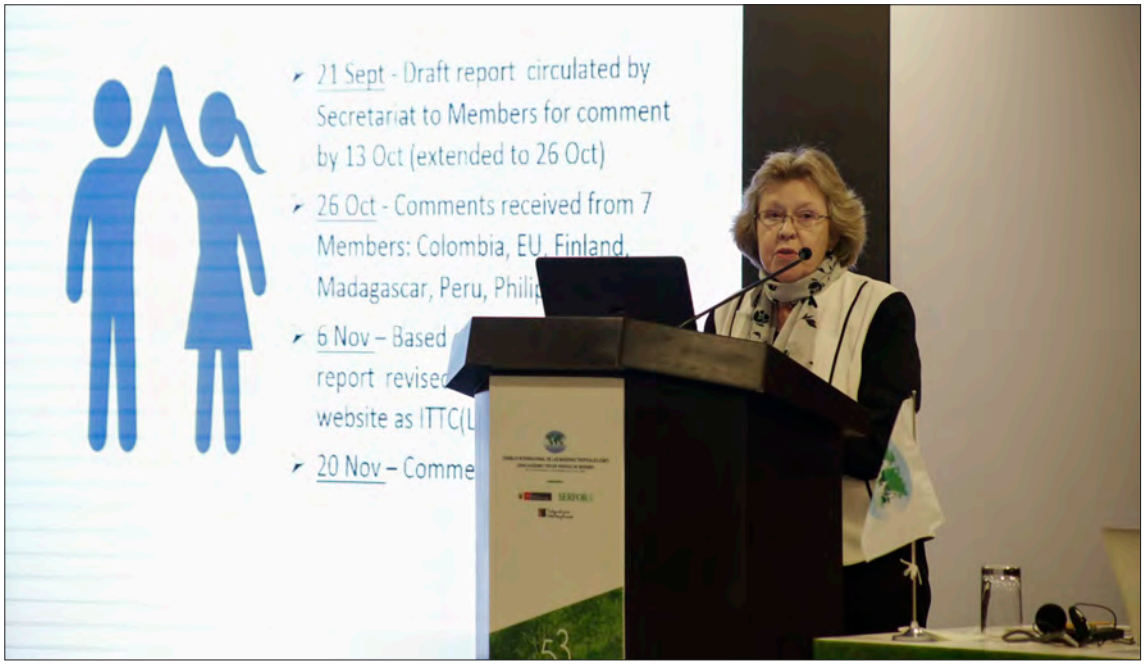

Gender agenda: Stephanie Caswell presents a report on ITTO's (then draft) Policy Guidelines on Gender Equality and the Empowerment of Women at the 53rd Session of the International Tropical Timber Council in December 2017. *Photo: D. Piaggio/SERFOR*

In December 2017 in Lima, Peru, the International Tropical Timber Council took a bold step by adopting its Policy Guidelines on Gender Equality and the Empowerment of Women.[1] ITTO has supported many projects over the years with elements aimed at promoting the role of women in the tropical forest sector, but it has never had an explicit policy on gender. The new policy guidelines institutionalize the Organization's commitment to gender equality and women's empowerment and provide a comprehensive framework for mainstreaming and enhancing gender-equality outcomes across ITTO policies, plans, programmes, projects, activities and staffing.

Why is gender equality important?

Gender equality and empowering women are essential for achieving the sustainable management of tropical timber-producing forests, which is a core ITTO objective. In many rural communities, women are the primary collectors and users of forest resources, including woodfuel, foods and medicinal products, and they are usually the main caregivers in their households. Women often have substantial traditional knowledge on sustainable forest management, and they are key actors in forest conservation and the restoration of degraded forests. Women make important contributions to forest value chains that generate household income and can be pathways out of poverty. Despite their contributions to forest-based livelihoods, however, cultural and socioeconomic biases often severely limit women's control over forestlands; their access to financial resources, education, training and technology; and their participation in decision-making that affects them. Even when rural women have legal rights, they often lack awareness of these.

Outside rural settings, women in many ITTO member countries are underrepresented in forest authorities, institutions and organizations, especially at senior levels, as well as in tropical forest-based processing and manufacturing industries and international trade groups. This hampers their ability to influence and bring their perspectives to bear on decisions in both the public and private sectors affecting the international tropical timber economy. Another major obstacle to addressing gender inequalities and developing policies for overcoming cultural and socioeconomic biases that favour men is a lack of sex-disaggregated data on the role of women in forestry, particularly in trade and industry.

Sustainable Development Goal 5: a global commitment

World leaders adopted the 2030 Agenda for Sustainable Development in 2015 as a 15-year road map for a renewed global partnership on sustainable development. At the heart of the 2030 Agenda are 17 interrelated Sustainable Development Goals (SDGs), with 169 associated targets that are universal in nature and apply to all countries.

SDG 5 ("achieve gender equality and empower all women and girls") recognizes that addressing gender inequities worldwide is essential for sustainable development. Of the nine targets associated with SDG 5, the tropical forest sector and ITTO can especially contribute to the following five:

1) end all forms of discrimination against women and girls (target 5.1);
2) ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life (target 5.5);
3) institute reforms to give women equal rights to economic resources, as well as access to ownership and control over

1 International Tropical Timber Council Decision 6(LIII) is available at www.itto.int/council_committees/decisions/previous/session/contents_type=790.

Forest users: In many rural communities, women are the primary collectors and users of forest resources, including woodfuel, foods and medicinal products. *Photo: SODEFOR*

land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws (target 5.a);

4) enhance the use of enabling technology, particularly information and communication technology to promote the empowerment of women (target 5.b); and
5) adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels (target 5.c).

Together, these targets provide an umbrella for ITTO's Policy Guidelines on Gender Equality and the Empowerment of Women, which in turn reflect ITTO's ambitions and contributions toward achieving SDG 5.

How were the policy guidelines developed?

As early as 2014—when the SDGs were being negotiated—the International Tropical Timber Council was considering ways to better position ITTO as a potential implementing agency for the Global Environment Facility and the Green Climate Fund, and one of the preconditions for this was having a substantive policy on gender equality. Thus, activity 2 of ITTO's 2015–2016 Biennial Work Programme (later extended to 2017) called for the "development of ITTO guidelines to incorporate gender equity in the Organization's activities, programmes and projects in member countries", and it authorized the hiring of a consultant to assist in this regard.

The Secretariat engaged Dr James Gasana, who presented draft guidelines for achieving gender equality and empowering women to the International Tropical Timber Council in November 2015. Based on members' comments, the Council decided further work was needed to finalize the guidelines. I was engaged to undertake this additional work in 2017, and I presented my report to the Council in December that year. After due consideration, the Council adopted the proposed guidelines with minor textual changes.

Overview of the policy guidelines

ITTO's Policy Guidelines on Gender Equality and the Empowerment of Women has six sections: 1) purpose; 2) rationale; 3) objectives; 4) principles; 5) guidelines; and 6) implementation. The purpose and rationale are addressed above; below is an overview of the other four sections.

Objectives

The policy guidelines have three specific objectives:

1) to enhance the effective integration and mainstreaming of gender considerations in all aspects of ITTO's policy and project work;
2) to build the capacity of ITTO and its members to promote gender equality and empower women in the tropical forest sector; and
3) to strengthen the role of women in ITTO's governance structure, including in the work of the Council and its associated committees, ad hoc expert panels and working groups, and the Secretariat.

Principles

The policy guidelines have six guiding principles. Key among these are principle 3, which recognizes that gender equality is a matter of human rights; principle 4, which recognizes that gender equality is an issue that concerns both men and women; and principle 5, which recognizes that achieving gender equality depends on generating up-to-date information on the situation of women in specific forest-sector and cultural contexts and identifying economic, social and technological inequalities between women and men.

Guidelines

This section constitutes the heart of the policy guidelines. It provides specific guidance on the following eight core elements of ITTO operations:

1) ITTO policies, action plans and thematic programmes
2) ITTO project cycle
3) Capacity building
4) Statistics and information
5) Learning, knowledge management and communication
6) Networking and partnerships
7) Internal functioning
8) Accountability.

Implementation actions

This section informs the reader that the policy guidelines will be operationalized through actions taken within existing resources, as well as through priority activities identified in the Organization's biennial work programmes (beginning in 2018–2019) requiring voluntary contributions from members.

Key elements of the policy guidelines

The guidance set out in section 5 is the actionable part of the policy guidelines. Below are highlights of what this section says about each of the eight core elements of ITTO's operations.

Equals: Gender equality is an issue that concerns both men and women. *Photo: SODEFOR*

Element 1: ITTO policies, action plans and thematic programmes

ITTO's policy papers and guidelines will, wherever relevant, integrate a gender perspective and mainstream gender considerations. ITTO's strategic action plans will incorporate gender mainstreaming as a strategic priority and a key cross-cutting strategy. To the extent possible, ITTO thematic programmes will include one or more objectives to raise awareness of gender roles and norms and to promote gender equality in the programme context.

Element 2: ITTO project cycle

Gender equality will be addressed in all phases of the ITTO project cycle, from project formulation and implementation to monitoring, review and evaluation. All ITTO-funded projects will be gender-sensitive, meaning that gender analyses will be undertaken to examine gender roles, norms and relations and the potential for positive and negative impacts. The ITTO Manual for Project Formulation[2] contains updated guidance on how to conduct a gender analysis.

Wherever possible, ITTO projects will go beyond gender sensitivity to be gender-transformative by including one or more objectives focused on raising awareness and on positively changing (i.e. "transforming") roles, norms and relations to improve gender equality and empower women.

All projects will provide equitable opportunities for men and women in stakeholder consultations and decision-making. ITTO will promote the collection of sex-disaggregated data and use a results-based management approach, based on gender quality indicators, to evaluate gender-related project outcomes and impacts.

Element 3: Capacity building

ITTO will seek to enhance the capacity of member countries to establish, strengthen and implement laws and policies to achieve gender equality and empower women, particularly in the tropical forest sector. The Executive Director will promote a shared commitment to gender equality in the ITTO Secretariat and ensure that staff members have the understanding and training they need to implement the policy guidelines within their remits.

Element 4: Statistics and information

ITTO will integrate gender in its data-collection and statistical processes with a view to generating sex-disaggregated data for relevant ITTO functions and categories of information. This will include data collected through national reporting on ITTO's criteria and indicators for the sustainable management of tropical forests.

Element 5: Learning, knowledge management and communication

ITTO will increase learning on gender equality as part of its knowledge management activities, including by scaling up best practices and improving understanding of gender and the international tropical timber economy. The ITTO Secretariat will develop tools, products and platforms to raise awareness of the importance of gender equality and ITTO's successes in mainstreaming gender in its policy and project work.[3]

2 Available at www.itto.int/projects/formulation_manuals

3 For example, the Civil Society Advisory Group convened a panel on the role of women in achieving ITTO's objectives in November 2018 as part of the deliberations of the 54th Session on the International Tropical Timber Council.

Balance: In implementing the new policy guidelines, ITTO will strengthen its efforts to seek gender balance in its various panels, working groups and other bodies. *Photo: D. Piaggio/SERFOR*

Mainstream: The Council and Secretariat will work with the Trade Advisory Group and the Civil Society Advisory Group to strengthen gender mainstreaming in ITTO. *Photo: D. Piaggio/SERFOR*

Element 6: Networking and partnerships

The International Tropical Timber Council, its associated committees and the ITTO Secretariat will work with the Trade Advisory Group and the Civil Society Advisory Group to strengthen gender mainstreaming in ITTO. The Executive Director will develop alliances with relevant organizations and networks, especially UN-Women, and explore opportunities to develop joint gender-equality initiatives with partners in the Collaborative Partnership on Forests.[4]

Element 7: Internal functioning

ITTO will strengthen efforts to seek gender balance in the Council's bureaus, expert panels and working groups. The Executive Director will ensure an office atmosphere and culture that respects women employees at all levels, enables them to reach their full potential, and promotes inclusion and transparency. The Executive Director will also take gender into consideration in engaging consultants, awarding procurement contracts, and appointing members of Thematic Programme advisory committees.

Element 8: Accountability

ITTO will establish a mechanism and timeline to track and measure progress on elements 1–7. The Executive Director and the Council's associated committees will monitor and regularly report to the Council on the implementation of the policy guidelines. ITTO staff will ensure that implementing agencies and other partners report regularly on gender integration in ITTO-funded programmes and projects.

Looking forward

Operationalizing the Policy Guidelines on Gender Equality and the Empowerment of Women will make gender considerations an integral part of ITTO's decision-making in all areas, including its policies, projects and thematic programmes. In my view, this will significantly increase the Organization's effectiveness in all areas and at all levels.

Activity 10(a) of ITTO's 2018–2019 biennial work programme is a first step in this direction. This activity provides for initial work with an estimated budget of USD 185 000 in five areas: 1) reviewing and updating relevant ITTO manuals; 2) developing and implementing a training module on gender for project proposal preparation workshops; 3) ITTO staff participation in meetings and networking; 4) ITTO staff training; and 5) conducting a study on gender roles in forest industry.

It is essential that ITTO members provide sufficient voluntary contributions to support this initial work to operationalize the policy guidelines. Only by fully funding these modest activities can ITTO begin to demonstrate to the Global Environment Facility, the Green Climate Fund and bilateral donors that the Organization is serious about gender equality and empowering women. By providing regular annual funding beyond 2019 to implement all aspects of the policy guidelines and continually monitoring progress in implementation, ITTO can be a leader in transforming gender roles and norms in the tropical forest sector and thereby in achieving sustainable forest management.

4 The Collaborative Partnership on Forests comprises the secretariats of 15 international organizations with significant forest-related mandates or programmes.

MALEBI: changing minds in Côte d'Ivoire

Women in a community group are restoring degraded forests, growing food, producing charcoal—and shifting attitudes

by Brice Delagneau[1] and Delphine Ahoussi[2]

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[2] President of MALEBI

Future promise: MALEBI members pose as they plant a tree in the Ahua gazetted forest as part of their efforts to restore degraded land and develop sustainable enterprises. *Photo: Afrique Green Side*

Women in the Association of Women Producers and Traders of Secondary Forest Products (MALEBI) are asserting their leadership in communities in the commune of Dimbokro, Côte d'Ivoire, by restoring forests, adopting agroforestry and fighting poverty and food insecurity. With technical support from the Forest Development Authority (*Société de Développement Forestier*—SODEFOR) and financial support from ITTO, the women are developing a wide range of skills while improving circumstances for their families. In the process they are changing attitudes about women in forestry in Côte d'Ivoire.

Established in 2008, MALEBI aims to empower women to develop income-generating activities; improve the living standards of rural people; and organize women charcoal producers and sellers to better manage the resource. In the beginning, MALEBI members produced charcoal unsustainably. According to MALEBI Vice-president Ms Pélagie Kissi: "We used to produce charcoal in the traditional way by cutting down wood in the natural forest. Some years later, we noticed that resources were increasingly scarce".

Forest depletion and the rudimentary production process at MALEBI's disposal jeopardized the sustainability of the enterprise.

"We felled the trees, then piled them up and finally covered them with sand to make the kiln," says Ms Kissi. "However, this method destroys the forest and does not allow us to produce a large enough quantity. We had to work extremely hard for a few 50-kilogram bags of charcoal."

MALEBI reached out to ITTO for technical and financial support. A small grant in 2009 provided the stimulus for MALEBI to improve charcoal production using metal furnaces and efficient, eco-friendly techniques, in the process increasing the standard of living in the local community and raising awareness of the importance of forest conservation. The introduction of the technology has made a major difference.

"With ITTO's support we are now producing large quantities of modern charcoal," says Ms Kissi. "We have trailers, which we use to transport either 300 or 400 50-kilogram bags to Abidjan every two months."

It is estimated that nearly three-quarters of households in Côte d'Ivoire use wood charcoal or firewood to meet their daily energy needs. Charcoal production in the country increased by 22% in the ten years to 2012 (from 400 850 tonnes in 2003 to 488 128 tonnes in 2012), and firewood production increased by 4% in the same period, to 9.03 million m^3. The Ahua gazetted forest supplies wood for charcoal to meet the cooking and heating needs of citizens in the nearby town of Dimbokro and the capital city Abidjan, and the charcoal business is a significant employer of women and youth.

Despite the success of their charcoal business, however, the MALEBI women were concerned about the degraded state of their forest and they realized that the viability of charcoal production ultimately requires sustainable forest management. The association decided to reforest to ensure the ongoing availability of the forest resource.

To do so, MALEBI again took advantage of ITTO's financial support[1] to reforest an area of 100 hectares of forest in partnership with SODEFOR, which manages the country's gazetted forests.

1 ITTO project PD 725/13 Rev.2 (F).

Carbon credit: MALEBI produces significant quantities of charcoal for sale in Abidjan. *Photo: R. Carrillo/ITTO*

A degraded area in the Ahua gazetted forest was allocated for restoration. Given the difficulty that women generally face in Côte d'Ivoire in accessing land, MALEBI decided to invite other women to join in its activities. At least 50 women from the Tromambo village women's association and the Dimbokro women's federation, in addition to MALEBI, began to reforest the 100-hectare area using acacia (*Cassia siamea*), samba (*Triplochiton scleroxylon*) and teak (*Tectona grandis*) because of the high calorific value (and therefore suitability for charcoal production) of these species. The women selected cassava as the associated crop because of its nutritional qualities and undisputed economic advantages. The combination of trees and annual crops enabled the women to reconcile the short-term subsistence needs of their families for food and woodfuel with the medium-to-long-term need to rehabilitate the forest and provide a sustainable source of wood for the charcoal enterprise.

"We decided to plant cassava because it is extremely nourishing," says Ms Clarisse N'Guessan, President of the Tromambo women's association. "What's more, lots of byproducts can be produced from cassava, such as *koukounde*, *placali*, tapioca, starch and even *attiék*, which are very popular local dishes. Sometimes we sell it to earn a little bit of money. We use this income from our business activities, on the one hand to help our husbands and for our children's education and, on the other hand, to keep ourselves going and to assist each other financially on a woman-to-woman basis."

"With cassava we are able to feed our children," says Ms N'Guessan, "even if they need to eat it three or four times a day. To date, we have cultivated an area of three hectares. We hope to produce more."

Reforesting 100 hectares of forests requires certain skills. The ITTO project has enabled rural women to learn more about sustainable forest management, building capacity in, for example, seedling production, nursery establishment, forest plantation establishment and maintenance, and agroforestry.

"Thanks to ITTO, we learned how to set up a nursery and look after it until the seedlings are planted," says Ms Pepa Traore, President of the Dimbokro women's federation. "A good shadehouse can protect the plants, and regular watering facilitates growth in the nursery."

As part of the reforestation project, the nursery produces about 10 000 forest seedlings per quarter. Developing the nursery involved considerable strenuous work, including the construction of a shed, a shadehouse and digging planting pits; these tasks were done mainly by men assisting MALEBI.

Great strides: The women of MALEBI realized they needed to restore the forest to ensure a sustainable supply of wood for their charcoal business. *Photo: SODEFOR*

The women involved in the project are committed to sustainable forest management, and they want to spread the benefits.

"We have learned a lot and it is our job to train women from other villages so we can share our knowledge," says Ms Traore. "Some women are still unaware that food crops can be combined with reforestation. This agroforestry technique provides an opportunity for us to bring back our forests that are undergoing degradation. So, it is propitious in the fight against global warming."

The achievements of MALEBI have obtained national and international recognition.

In 2017, the Prime Minister of Côte d'Ivoire awarded MALEBI—through the ITTO project—a National Award of Excellence for Best Advocate of Community Development. This is an enormous source of pride for the MALEBI women.

MALEBI's success has triggered gender mainstreaming and promotion in Côte d'Ivoire's forest sector, previously almost exclusively the preserve of men. The World Bank's Forest Investment Program (FIP), for example, has undertaken to mainstream the learnings from the MALEBI experience after noting its achievements, ensuring that women and men are equally involved in FIP's project to restore the country's forests.

Mr N'Dri Joseph Koko, youth president in Tromambo village, provides evidence of shifting local attitudes.

"At first, we refused to let our women work with MALEBI because we did not understand the importance of this initiative," he says. "Today, we have seen that there has been a lot of change. We have seen that women are organized and help us a lot, we men, financially, and in the education

Awardees: MALEBI has won a national award for its community development work. *Photo: R. Carrillo/ITTO*

of our children. Thanks to the ITTO/MALEBI project, a lot of things have changed at home. We have two functional pumps, and one was built with the villagers' own funds. The chief asked for help from these brave ladies and, thanks to the ITTO/MALEBI project, they could disburse money to support the village chief to build our village water pump."

According to a study conducted by the National Technical Surveys and Development Office (*Bureau National d'Études Techniques et de Développement*), Côte d'Ivoire's forest cover declined from 16 million hectares in 1900 to 3.4 million hectares in 2015. To help reverse the deforestation trend, in June 2011 Côte d'Ivoire joined the mechanism known as REDD+ for reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries. The country aims to restore forest cover to contribute to global action on climate change.

Nursery care: Members of MALEBI tend cuttings that will later be outplanted as part of forest restoration efforts. *Photo: R. Carrillo/ITTO*

Food bowl: A MALEBI woman in Tromambo village prepares cassava for a family meal. *Photo: R. Carrillo/ITTO*

MALEBI's work, supported by ITTO interventions, has shifted attitudes towards women and their role in forestry to the point where women have become drivers of change. The MALEBI women have developed a range of skills in sustainable and responsible forest management, and they have become leaders in the integration and promotion of gender in the forest sector in Côte d'Ivoire. But the MALEBI women realize that a great deal of work still needs to be done.

"So, we are asking ITTO to continue to provide MALEBI with technical and financial support so we can go further," says Ms N'Guessan.

Project outputs can be found by inserting the project code PD 725/13 Rev.2 (F) into the ITTO project search function at www.itto.int/project_search

Videos from the project are available at ITTO's YouTube channel at www.youtube.com/ittosfm.
This article contains quotes obtained from those videos.

The results and impacts of MALEBI's work featured at ITTO side-events in December 2018 at the 24th Conference of the Parties of the United Nations Framework Convention to Climate Change in Katowice, Poland, and at the 2018 Global Landscapes Forum in Bonn, Germany. The presentations showed how forest restoration and rehabilitation can be linked to livelihoods, profitable business ventures, climate-change mitigation, gender equality and the empowerment of women.

The increasing role of women in Guyana's forest sector

Women are blazing a trail in monitoring, reporting, verification and other aspects of forestry

by Pradeepa Bholanath

Head, Planning and Development Division
Guyana Forestry Commission
(project.coordinator@forestry.gov.gy)

Overview: Pradeepa Bholanath (right) and an independent reviewer discuss Guyana's Monitoring, Reporting and Verification System. *Photo: GFC*

Forests cover more than 87% of Guyana's land mass, and the forest sector is important for the country's economy, providing close to 20 000 direct jobs. The sustainable management of forest resources is crucial, therefore, for national development and for those who depend on forests for their livelihoods.

The Government of Norway's International Climate and Forest Initiative supports REDD+ implementation in Guyana through a results-based partnership. Guyana's low deforestation rate and high forest cover, and its strong political will to implement a low-carbon, green-development strategy, make it an important pilot country. Results-based support is provided for maintaining low rates of deforestation and forest degradation and is subject to independent monitoring, reporting and verification (MRV).

MRV roadmap

Guyana's national system for monitoring forest cover is called the Monitoring, Reporting and Verification System (MRVS). The MRVS roadmap established the framework for creating the MRVS based on a capacity-building approach; it has been developed and implemented by local Guyanese, largely women, building on existing capabilities in the Guyana Forestry Commission (GFC). The team leading the effort comprises remote-sensing experts, a programme officer and a project leader, all of whom are women.

The roadmap includes a capacity assessment based on comparing existing national forest monitoring technical capabilities with the requirements for implementing the MRVS. The roadmap also features a detailed plan for establishing MRV capacities and bridging capacity gaps.

The roadmap was implemented in three phases between 2009 and 2018: 1) national strategy formulation; 2) country readiness; and 3) implementation. It led to the creation of an efficient national mechanism and institutional framework with competencies in MRV at various levels, including the assessment of forest-area change over historical periods and the measurement of carbon stocks. Subnational REDD+ demonstration activities were developed, along with internal and national communication mechanisms, research on key issues, and engagement with the international community.

Especially in the start-up phase, international experts provided considerable support for training, data collection and MRVS implementation. The MRVS all-women (all-Guyanese) team now undertakes most of these activities, as well as South–South capacity development and local-level community training, and it collaborates with the University of Guyana. Capacity building continues to be integral to the successful implementation and sustainability of the MRVS.

The all-women MRVS team: Staff of the Guyana Forestry Commission's Remote Sensing and Mapping Unit, from left to right: Donnica Thornhill-Gillis and Maria Paul (both GIS remote-sensing analysts), Pradeepa Bholanath (project coordinator), Towana Smartt (GIS remote-sensing manager), Chandroutie Sookdeo (GIS remote-sensing supervisor), and Jasmin Totaram and Bibi Nafeeza Amin (both GIS remote-sensing analysts). *Photo: GFC*

How was this made possible?

Guyana is one of only a few countries providing annual reporting of deforestation and forest degradation, and one of the key reasons for the MRVS's success has been staff retention. Even though Guyana has an extremely high rate of migration, 90% of the MRVS team members have been involved in the project for more than six years (some talk about their experiences in Box 1; in Box 2, Anna Mohase takes a wider look at the changing role of women in Guyana's forest sector).

Another key reason is continued strong political and institutional commitment to the MRVS. Successive governments have prioritized the MRVS as an important part of Guyana's strategy on green development, and it has become a permanent part of the GFC's work programme.

The MRVS is the outcome of a policy but, in implementation, it is mostly a technical process. It has been built on existing capacity and integrated into the existing GFC framework. When work on REDD+ started, the GFC expanded its routine work on monitoring, enforcement and stakeholder compliance with sustainable forest management guidelines. The MRVS and REDD+, therefore, broadened the scope and depth of the GFC's work.

Since the beginning, certain dedicated consultants have helped in building capacities. There are various ways of contextualizing the MRVS, and support from non-governmental organizations and consultants led to a forward-thinking approach.

Multistakeholder approach, with women at the centre

The successful implementation of the MRVS in Guyana is the result of a multistakeholder approach in which women are at the centre and provide leadership. The MRVS team is housed within the GFC, and all mapping aspects and analyses are completed using local staff. A multistakeholder MRVS steering committee has been established, with representatives from government, the private sector, civil society, academia, women's and youth groups, and other interest groups, coordinated by the GFC MRVS project leader (the author).

The multistakeholder approach has extended the reach of capacity-building activities, enabling the targeting of a greater diversity of interest groups and the wider sharing and exchange of knowledge. It has also enabled ongoing cooperation and transparency among the natural-resource agencies responsible for carrying out activities and the mutual sharing of information, datasets, experiences and skills. Since REDD+ activities in Guyana began, a key focus has been on the establishment of partnerships, not only at the national level but also regionally and globally. Through such partnerships, technical agencies have been able to benefit from training, technical exchange and technology upgrades. Moreover, the partnerships have enabled Guyana to share its own knowledge and experiences. The government has been working with a number of partners through both project-related and bilateral donors to secure technical and financial support for building technical capacity and further developing REDD+ and the MRVS. GFC MRVS programme officer Ms Nasheta Dewnath coordinates these key partnerships.

Building from the ground up

Based on the MRVS roadmap, work began in 2010 to develop Guyana's capacity in the assessment and monitoring of changes in forest area and carbon stock. The work was based on the principles and procedures for estimating and reporting forest carbon emissions and removals at the national level specified in the Intergovernmental Panel on Climate Change's *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (Penman et al. 2003) and the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (IPCC 2008).

The MRVS team set out to determine historical and current patterns of deforestation and their drivers. To date, seven national annual assessments have been conducted.

A map of Guyana's forest area as of 30 September 2009 was created for use as the baseline for future comparisons. Subsequent assessments conducted for 2010 and 2011 map and report all conversion of forest to non-forest. The use of appropriate satellite imagery is integral to the accuracy and completeness of the spatial assessment. Two sources of imagery were used for the benchmark and year-1 assessment periods: 30 m Landsat, and the Disaster Monitoring Constellation; the team had to deal with challenges related to persistent cloud cover.

The resolution provided by this imagery enabled the identification of change boundaries, drivers of change and areas of forest degradation. In particular, it was found that high-resolution imagery provided more precise mapping of forest degradation than did medium-resolution imagery. Consequently, substantial progress in the mapping of forest degradation was made in year 2: 5460 hectares were degraded in that period, as measured by direct interpretation (based on a degradation study) of 5 m Rapid Eye satellite imagery. For years 3 (2012), 4 (2013) and 5 (2014), high-resolution satellite imagery was available, providing national-scale, wall-to-wall coverage.

For 2015–2017, the GFC used the European Space Agency's Sentinel-2 satellite imagery (which has a resolution of 10 m in the relevant spectral bands) for mapping deforestation. Data from this source are free of charge. Landsat-7 and Landsat-8 imagery (30 m resolution) was also used for persistent-cloud areas in the Sentinel-2 imagery and to pinpoint the time of change more precisely for deforestation events. Wall-to-wall coverage was acquired for Sentinel-2, Landsat-7 and Landsat-8 imagery for August–December 2017, resulting in multiple acquisitions per location from each sensor. Ancillary FIRMS (MODIS) fire hotspot data were acquired and used to aid in the classification of areas deforested due to fire.

All mapping for the MRVS is done according to standard operating procedures, thereby ensuring full consistency in interpretation and data treatment. Training procedures, and the establishment of automated data processing,

Table 1: Annualized deforestation, Guyana, 1990–2017

Reporting period	Year	No. of years	Satellite image resolution	Forest area	Annualized change	
				('000 ha)		(%)
Initial forest area 1990	1990		30 m	18 473.39		
Benchmark (Sep 2009)	2009	19.75	30 m	18 398.48	74.92	0.021
Year 1 (Sep 2010)	2010	1	30 m	18 388.19	10.28	0.056
Year 2	2011	1.25	30 m & 5 m	18 378.30	9.88	0.054
Year 3	2012	1	5 m	18 487.88*	14.65	0.079
Year 4	2013	1	5 m	18 475.14	12.73	0.068
Year 5	2014	1	5 m	18 470.57*	11.98	0.065
Year 6	2015–2016	2	10 m & 30 m	18 452.16	9.20	0.050
Year 7	2017	1	10 m & 30 m	18 442.96	8.85	0.048

* Continual forest-area updates based on remapping or introduction of higher-resolution 5 m resolution imagery.

ensure that the MRVS conforms to quality-control standards to provide reliable mapping results. In addition, independent accuracy assessments are conducted as a verification procedure (as defined by IPCC 2008).

Figure 1 shows the results of the deforestation assessment conducted in 2017; the deforestation rate has been declining since 2012. Table 1 presents additional information on the assessment.

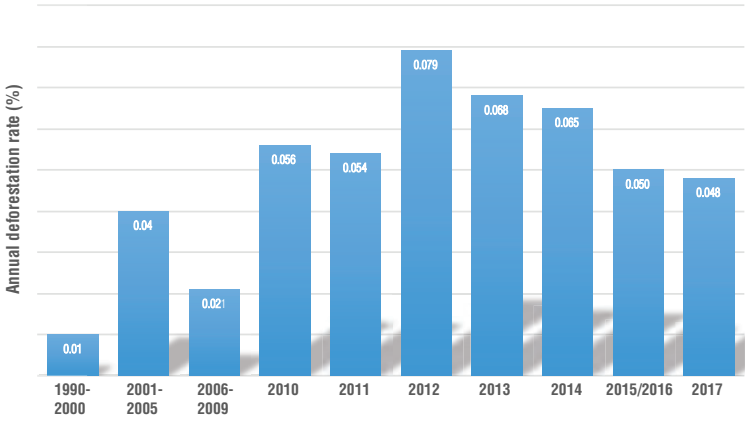
Independent experts at the University of Durham in the United Kingdom of Great Britain and Northern Ireland assessed the accuracy of the estimates obtained using the MRVS for all years and endorsed the robustness of the results. All forest-area assessments are also subject to independent third-party verification. Thus, independent third-party verification has been integrated into the MRVS from the outset and has become a standard element of the process. This has helped in identifying gaps early and developing a robust system that meets rigorous international standards; the use of a phased approach to developing the MRVS has also enabled learning from early lessons.

Drivers of forest change

Figure 2 shows that mining, including the development of mining infrastructure, is a major driver of forest-area change in Guyana. Nearly all (96%) deforestation has occurred in state forest areas—that is, in forests owned and managed by the state. Temporal analysis of forest change since 1990 indicates that most change is clustered around existing road infrastructure and navigable rivers. Such information provides a useful basis for planning an ongoing monitoring programme focused on forest-change hotspots. For example, MRVS assessments can be used to design REDD+ activities aimed at maintaining forest cover in conjunction with the continuous improvement of livelihoods for Guyanese people.

In addition to serving as a key input to policy and planning, the MRVS has enabled a performance-based system for receiving payments under the bilateral cooperation on climate and forests between the governments of Guyana and Norway. Work on the MRVS is continuing in 2019.

Figure 1: Annual deforestation in Guyana, by period, 1990–2017



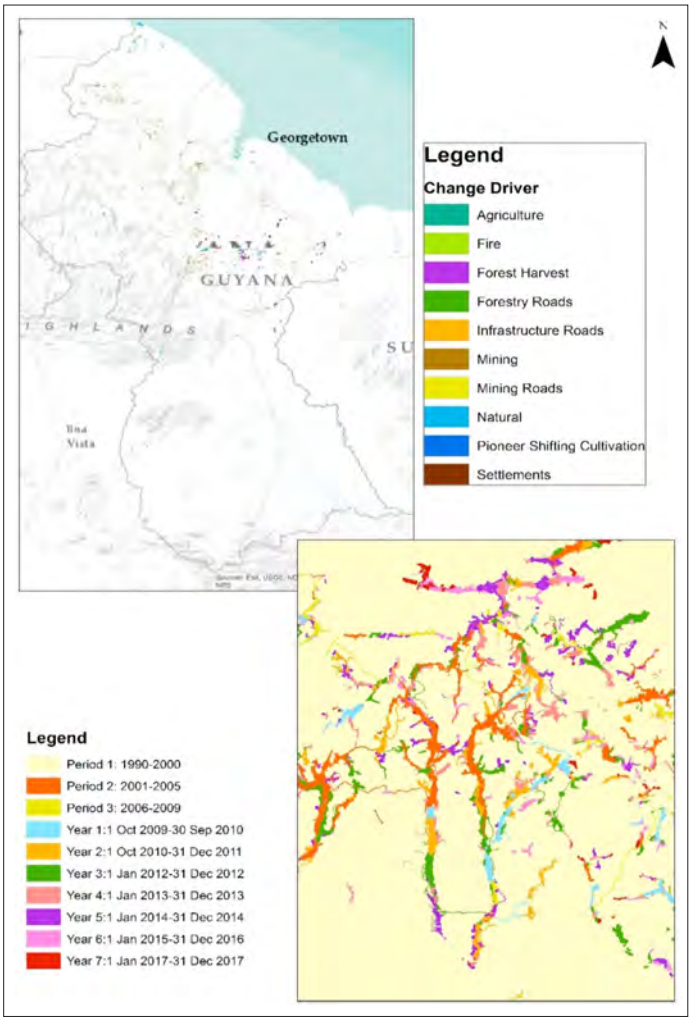
National carbon monitoring

The Remote Sensing and Mapping Unit has also been working to develop a long-term, robust and scientifically sound national forest carbon monitoring system (FCMS). In this system, data generated in the monitoring of Guyana's forest carbon stocks are linked to estimates of historical emissions calculated in the forest-area-change assessments. This work served as the starting point for producing reference levels for Guyana and estimating annual carbon emissions and removals. A key outcome of the FCMS has been the development of a national look-up table of emission factors that meets international standards. Thus, Guyana was one of the first six countries worldwide to submit national reference levels to the United Nations Framework Convention on Climate Change. The submission included standards for uncertainties associated with ground data and the development of quality-assurance and quality-control procedures for all data collection and analyses.

Keeping its women

Through the implementation of the roadmap, Guyana has made significant achievements in implementing the MRVS, which has enabled the country to report on the "REDD+ interim indicators" (as outlined in the memorandum of understanding between Guyana and Norway), the results

Figure 2: Example of forest-change mapping in Guyana



of which are presented in annual "MRVS interim measures" reports. The Guyana–Norway partnership has shown that some of the methods discussed internationally—especially partnerships between developed and developing countries—can be made to work. Among other things, Guyana has accomplished pioneering work and substantial capacity improvements; is able to measure and monitor both deforestation and forest degradation; and is developing protocols for measuring and monitoring the individual drivers of forest change.

As the GFC heads into a new phase of its forest monitoring, it continues to place high priority on building skills and retaining human resources. Skilled forest-sector workers are tending to move to other sectors or leave Guyana altogether, attracted by higher remuneration and shorter hours, among other things. Nevertheless, women are tending to stay at the GFC, moving upward in the organization more quickly than their male counterparts. With the MRVS operated by highly skilled and motivated female analysts and managers, the future looks promising for Guyana at it continues to implement its MRVS.

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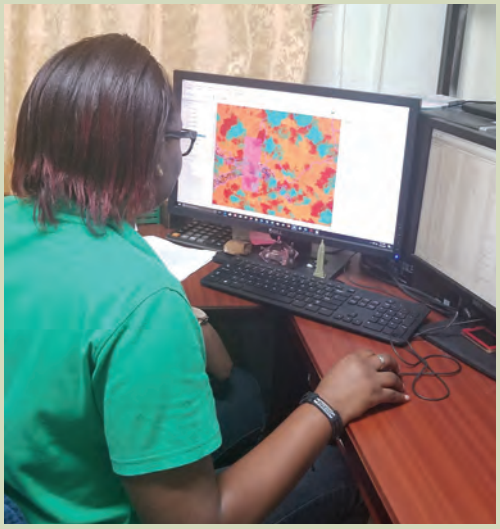
Box 1: Staff of the GFC's Remote Sensing and Mapping Unit talk about their experiences



Smartt worker: Towana Smartt views a GIS image as part of her work as manager of the GFC's Remote Sensing and Mapping Unit. *Photo: GFC*

Towana Smartt

I consider it a privilege to be part of the GFC and more specifically the team that is directly involved in the MRVS process. Working at the GFC has allowed me the opportunity to meet and interact with a diverse group of people, whom I was able to learn from and to inform about what Guyana is doing and the progress we have made as it relates to the MRVS. It has given me the opportunity to develop much-needed skills through multiple capacity-building activities.

I believe women play a very important role in forestry because we have a dynamic array of skills and talents that are often disregarded because we are women. Along with commitment and dedication, women bring a sense of stability to the workplace that usually helps build the strength of the organization. The MRVS team for forest-area assessment is all women, and I think it has caused people to respect us as women based on the quality of work we do and the dedication we show towards the project. The all-women team has also brought stability, enabling a smooth flow in every phase. It has helped us dispel the myth that women can't work together.

Basantie Sukhu

Working at the GFC in the MRVS project has been an asset to me. With a bachelor's degree in biology, I had no prior knowledge of geographic information systems (GIS) or remote sensing. The job provided

me with the opportunity to learn about these and apply them, not just at work but in everyday life. The job also provided opportunities for personal growth and development.

In the MRVS, a team of seven women undertakes the remote-sensing component, which is a good example to look at when concentrating on the role of women in the workplace. Women are vital to any organization because they bring benefits such as increased employee engagement, creativity and diversity. Having women in workplaces is important: it encourages women to be strong and independent, to have goals and career aspirations, and, in turn, to be an inspiration. It also encourages a more literate society of women, inspires younger women to be educated, breaks gender stereotypes and encourages equality between men and women.

Jasmin Totaram

GIS is built on a foundation of remote-sensing processes, and it has made tremendous recent advances. From a career perspective, GIS has immense scope in the field of large-scale mapping (monitoring deforestation and degradation throughout Guyana). Women play an essential role in forestry. Women today have highly specialized knowledge of trees and forests in terms of biodiversity, sustainable management and conservation practices. This gives women the opportunity to make contributions to the forest sector. Women also play a vital role in the MRVS. Women involved in the MRVS are open to more opportunities, such as training, seminars, field exercises and workshops, and these enable women to make valuable contributions to the MRVS and the forest sector.

Bibi Nafeeza Amin

My job is so much more than a pay cheque; it is a place I can go to improve my skillset, contribute to the greater good, and work with inspiring people. My job gives me a sense of accomplishment, especially when we are up against deadlines. I am pretty much satisfied and content with my job and what it has to offer.

Women play important roles in the achievement of sustainable forest management, as well as co-benefits such as improved governance, gender equality, and progress towards a low-carbon economy. The MRVS's processing and reporting is all done by women, who play vital roles in producing excellent results.

Box 2: A wider view of women's work in Guyana's forests

by Anna Mohase

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Forestry and logging in Guyana go as far back as the twelfth century. An industry that was once dominated by the male presence and was almost entirely about timber harvesting has not only diversified its economic focus but now also embraces gender equality. Significant strides have been taken in, for example, value-added products, technology, downstream processing, product diversification and tourism. There has also been a shift in gender roles in the forest industry. With the country's natural resources coveted across the globe, a strong partnership with the Government of Norway to protect Guyana's natural resources has enabled a tremendous shift in national-level capacity building and human resource mobilization. Coupled with growing support from the international community, many Guyanese are pursuing careers in forestry and related fields.

Traditionally, women's roles in forestry have focused on household nutrition, subsistence needs and forest-based income-earning activities. In the last two decades, however, the number of female professionals in relevant fields has grown immensely. More women are working in fields such as GIS, forest resource management, biology, information technology and forestry training than ever before.

The boom in the ecotourism industry has also seen a rise in women entrepreneurs, who are following their dreams of carving out careers and obtaining financial security by establishing ecolodges, tour services and adventure travel in Guyana's pristine rainforests. Women are producing online blogs, websites and other materials promoting Guyana's natural wonders. Domestic airlines have dedicated services in support of ecotourism. This ecotourism boom has helped shift the focus from traditional forest activities towards modern economic opportunities.

Women in forestry: GIS Unit manager Towana Smartt (left) and Assistant Commissioner of Forests, Ms Simone Ben, are among many female forestry professionals making an increasing mark on Guyana's forest sector. *Photo: GFC*

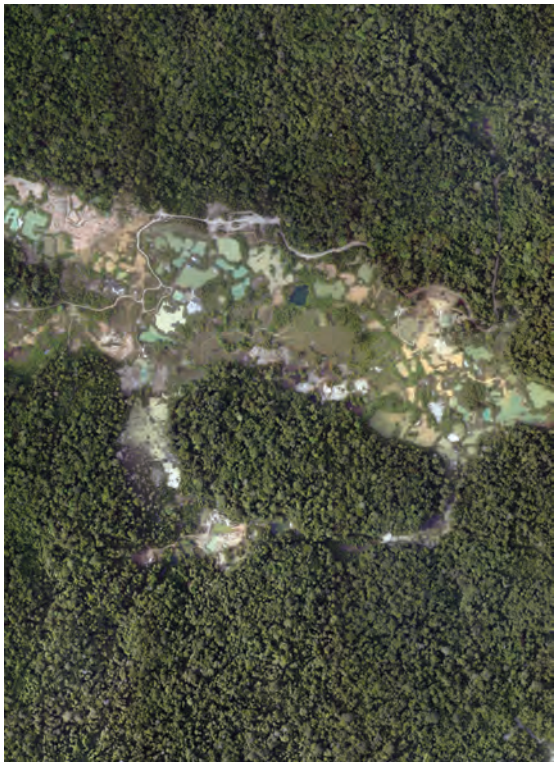
Pristine: Guyana's vast tropical forests are attracting increasing numbers of tourists, and many Guyanese women are providing ecotourism services. *Photo: GFC*

With the world increasingly recognizing the importance of natural forests and the need to conserve and protect them, Guyana has stepped up as a champion against climate change. The partnership with the Government of Norway and the implementation of Guyana's REDD+ strategy have enabled carbon-stock research and the development of the MRVS, among other things, much of it managed and implemented by female professionals.

An increasing number of female students are studying in the Faculty of Forestry at the University of Guyana. Graduate women are being welcomed into the GFC management programme to provide them with the necessary skills and experiences for successful careers in forestry. Fifty years ago, the GFC employed few women, and those who were employed were mostly in clerical positions; today, however, women comprise about 45% of the workforce, with many developing careers in technical and managerial roles. The GFC's board of directors has several female members, including its chairperson, Ms Joslyn Dow, herself a trailblazer in women's advocacy, the environment, development and forest industry.

In addition to the contributions of such professionals to forestry, women are pursuing their love for hands-on forest work. The number of women forging businesses in the forest-related private sector is growing, and many women now own forest operations and manage state-forest harvesting permits. Female entrepreneurs are focusing on various areas, from conventional forest enterprises to downstream processing and value-added businesses. Women spearhead seven of Guyana's 69 community forestry associations, and they are empowering other women in their communities to participate in logging operations. In 50 of these associations, women are predominantly employed as loggers.

The strides being made by women are helping the forest sector flourish by bringing innovation, creativity and hard work, adding talented young minds to an already dynamic workforce.



Difficult to hide: An aerial view of forest mining activities. Such inroads into Guyana's largely intact forests are now being monitored closely.

The women of Jamapa

A forestry professional and women in local communities in Veracruz, Mexico, have shared a journey towards empowerment and community growth

by Adi Estela Lazos Ruíz

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Chairpersons: Women in El Piñonal village talk about their work as managers of the El Piñonal Nursery. *Photo: Gerardo Sanchez Vigil*

I could not have been born in a more urban setting—a suburb of Mexico City. When I was a young girl, contact with "nature" came only when we went to a park or zoo on weekends or to the beach on holidays once a year. I was a happy and well-loved girl, and this was my everyday life. Forests, rivers, seas and mountains were far from my reality—but they fascinated me.

This fascination led me, eventually, to a career in research on rainforests and other forest formations and the perceptions of rural people about forests. I participated in two (now-completed) ITTO-financed projects[1] led by Dr Patricia Moreno-Casasola at the Institute of Ecology, both of which included strong research components focused on ecosystems and involving the communities using these forests. Working with communities requires a sound basis of trust, which takes time to build but is essential for success. I had the opportunity to carry out many interviews and to work directly with coastal communities in the state of Veracruz, Mexico. One study area was in the communities of El Piñonal and La Matamba in the municipality of Jamapa, where, thanks to the ITTO projects, many local women are active participants in forest research and production.

Jamapa and its women

Jamapa has remnants of flood forests interspersed among pastures for livestock and agriculture. It is a very old landscape that has been inhabited since pre-Hispanic times, but major changes have taken place in recent decades, especially with the construction of roads and the cultivation of new agricultural products. On the one hand, this has provided communities with increased access to services; on the other, it has led to deforestation and a loss of knowledge on the use and management of plant and animal resources.

The main economic activities in the area are agriculture and cattle ranching, and women usually take care of their children and homes. Everyone knows how to do many things, however, and can perform many jobs (e.g. selling products and providing transport services) to help provide for their families. A lack of employment is one of the main problems affecting these rural communities.

Women of El Piñonal Nursery and Creative Hands of La Matamba

An objective of the ITTO projects was to promote and develop alternative productive activities for the communities. Patricia Moreno-Casasola worked extremely hard to this end, hand-in-hand with project technicians,

Heads down: Women and men take part in a training exercise at El Piñonal. *Photo: Gerardo Sánchez Vigil*

1 RED-PD 045/11 Rev.2 (M): "Environmental assessment and economic valuation of ecosystem services provided by coastal forests (mangrove forests, flood forests, rainforests and scrub forests on dunes) and their replacement agrosystems on the central coastal plain of Veracruz, Mexico"; and PD 349/05 Rev.2 (F): "Criteria for the management of mangrove and flood forests in the central coastal plains of Veracruz, Mexico: a community management tool".

especially biologist Abraham Juárez Eusebio (sadly, now deceased); several graduate and post-graduate students, including me, worked on their theses in the area of influence. The team started by engaging with the communities and identifying the activities that interested them, including the conservation and sustainable use of natural resources and complementing ecological research with income-earning opportunities. The team provided training for community members on a wide range of topics, worked alongside them, and offered ongoing guidance and support (which continues today, even after project completion).

A group of women encouraged to participate in the projects began their great adventure with the development of the "Women of El Piñonal Nursery" (*La Mujer del Vivero El Piñonal*), a nursery established for the production and sale of native forest species for forest restoration projects. These women quickly mastered the technical aspects of nursery management. They gathered available traditional knowledge and complemented it by learning to identify different native tree species, select the best individuals, observe their phenology, collect and germinate seeds, grow seedlings, prepare the substrate, schedule watering cycles, and maintain their nursery in good condition. This knowledge and technological expertise is important because little information is available from other sources on the wide diversity of native species suitable for forest restoration.

The group has engaged in several reforestation campaigns, planting more than 10 000 trees in river margins and living fences. These activities entail the participation of many members of the community, helping spread the women's restoration message widely. The women have plans to continue planting trees to restore local watercourses.

Empowerment is contagious: The Women of El Piñonal Nursery organized and participated in the Day of the Tree. *Photo: Women of El Piñonal Nursery*

Another project activity facilitated the establishment of a group of women called "Creative Hands of La Matamba" (*Manos Creativas de La Matamba*), who were trained to produce handicrafts from seeds and other materials grown in the area. Thus, efforts to conserve and restore forests led to new sources of income for these women.

Soil toil: A group of women work in the Women of El Piñonal Nursery. *Photo: Gerardo Sánchez Vigil*

Young artist: This boy contributed a drawing to the Day of the Tree. *Photo: Women of El Piñonal Nursery*

Women in the communities were also involved in producing a manual on medicinal plants.[2] A couple of generations ago, when there was little access to modern medical services and medicines, plants were commonly used to treat illnesses. The women readily accepted the idea of producing a manual because they realized they possessed a great deal of knowledge that had never been compiled. It should be noted that there was once much more forest cover than today and thus a greater diversity of plants available for medicinal purposes. Although allopathic medicine is used widely today, people still rely heavily on traditional medicines, which they consider more natural and to have fewer side-effects.

Members of the research team conducted interviews and field trips to help prepare the manual, which comprises a compendium on 44 plants and their uses in traditional medicine in rural Veracruz. Many of the plants are also available in other parts of Mexico, as well as in other countries around the world. The manual contains information on the scientific and common names of the species, the usable parts of each plant, the diseases that can be treated, methods for preparing the medicines, the places where the plants can be found, and other features, including illustrations and photographs. For example, infusions of leaves of the avocado tree (*Persea americana*) are used to treat cholesterol and diabetes; the bark of cedar trees (*Cedrela odorata*) can help treat hernias and cysts; and cuajilote fruit (*Parmentiera aculeata*) can reduce kidney pains. The manual is an important scientific work and also reflects community traditions. Traditional knowledge is being lost at a rapid rate, making the work both urgent and vital.

2 Available (in Spanish) at: www.itto.int/files/itto_project_db_input/3000/Technical/Manual%20plantas%20medicinales.pdf

Lessons learned and challenges

In addition to the technical training provided by the projects, the women learned many other lessons, such as how to better relate to people outside the community; public speaking; organizing; negotiating; arranging documentation; and engaging with other institutions. The project gave the women opportunities to meet with each other and thereby gain support in facing up to project-related and personal challenges.

The women went through a complicated and difficult time in their efforts to gain recognition in their communities and to demonstrate their ability to implement their projects. They had to show they were capable of doing all their daily chores in addition to the work involved in managing and operating the nursery, conducting other activities and participating in training. It was difficult to convince some women to engage with the projects because they already had many chores. For many community members, the economic side of the equation is closely linked to the time they have available—if they do not work on a given day they do not earn income, and this makes it difficult to decide how to best invest their time. Nevertheless, those women who chose to participate in the project pressed forward and showed it was possible.

The women continue to make progress today, despite ongoing challenges. For example, they need to:

- *Improve marketing channels and conditions for the sale of seedlings and handicrafts*: having a good product is not enough to sell it successfully. Other strategies are required to link local production to larger markets.

- *Strengthen the group's legal structure to gain access to other types of support and financing:* this usually requires considerable documentation and financial outlays, as well as appropriate computer and internet skills.
- *Maintain motivation at a stage when time and effort are being invested but economic benefits are not yet realized.*
- *Find a permanent meeting place where they can take courses and offer training to other community members*: men in the communities have community houses (*casas ejidales*) where they can meet, but women lack similar spaces.

Another challenge is the need to recognize that gender equality is a crucial means for defending the egalitarian rights of every person to be healthy, to discover and explore their talents and potential, and to feel valued in their communities. Achieving widespread recognition of this will involve a significant cultural change for entire communities. Women can take the lead by educating their households.

Interweaving stories, empowering ourselves

I am impressed when I hear the Jamapa women talk about the value of forests when they present their work. The pride with which they speak is inspiring. The empowerment of a person is contagious, and her example encourages others to empower themselves as well.

This is clearly seen in the events the women of Jamapa organize. One of these was the "Day of the Tree" in 2014, which included a traditional cavalcade; giveaways of tree seedlings; talks about the importance of forests; and a reforestation exercise. Caridad Tronco, a member of the team, told the audience: "We have 300 people gathered here today: if each one of us plants a small tree, imagine what a difference that would make! We would even have a better climate in a few years". The project is having a multiplier effect in the region: this is not something being said by outsiders but by people within the community, who now have a clearer understanding based on their personal experiences.

My life story has become interwoven with those of the women from Jamapa, who showed me how much we from the city can learn from people living in rural areas. They coexist with the forests, rivers and landscapes of my childhood dreams. They possess a wealth of empirical knowledge about the environment, which is essential for managing the ecosystems on which we depend in both rural and urban areas. Growing urbanization is seriously endangering the forests and the knowledge that communities hold about those forests, requiring urgent actions such as those stimulated by the ITTO projects. These projects have been the "detonators" for long-term processes: their impacts did not end when the money ran out but, rather, are continuing onward because they changed people's lives.

ITTO's vision of including a crosscutting gender perspective in all its activities, as articulated in the ITTO Policy Guidelines on Gender Equality and the Empowerment of Women,[3] is a masterstroke for mainstreaming the role of women in forestry. The power to change things for the better, to which all women—those who work in forests, and those who live there—are entitled, is essential for ensuring the sustainability of the forests.

Publications and other project materials can be found by inserting the project code RED-PD045/11 Rev.2 (M) into the ITTO project search function at: www.itto.int/project_search

3 Available at www.itto.int/projects/formulation_manuals

Fellowship report

High-resolution satellite images could help improve the monitoring of selective logging in the Amazon

by Thais Almeida Lima,[1] Rene Beuchle[2] and Verena C. Griess[1]

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Filling the knowledge gap: ITTO Fellow Thais Almeida Lima gathers information in a felling gap in a licensed SFM unit, Amazonas, Brazil. *Photo: R.S. de Andrade/IPAAM*

Selective logging is a pervasive activity in the Brazilian Amazon, with the area logged per year is equivalent to that reported as deforested (Asner et al. 2005), mainly through illegal and unsustainable operations. In addition, fraudulent logging permits constitute a barrier to legal and sustainable timber markets (Brancalion et al. 2018).

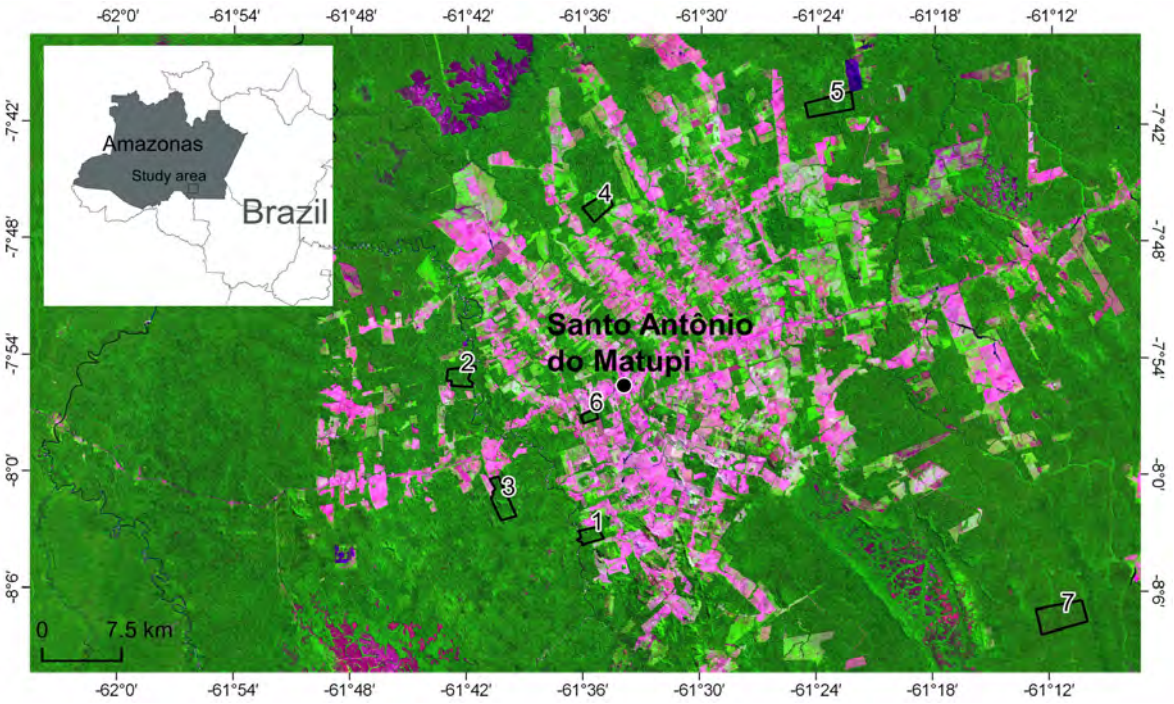
Illegal logging is deleterious not only for the environment: governments collect no taxes or royalties from it; such operations fail to respect the basic rights of their workers; and it can be a catalyst for socio-environmental conflicts and violence. On the other hand, legal forest harvesting and sustainable forest management (SFM) are officially encouraged: in fact, the only legal way of harvesting native forests in Brazil is through SFM, and an intricate system of laws, regulations and constraints has been created for ensuring the legality of timber harvesting and trade. Nevertheless, Brazil faces many challenges in improving forest governance.

Covering about 3 million km^2, the Brazilian Amazon forest is huge, and there is an overall lack of professional staff and resources, making effective forest monitoring and law enforcement—essential for curbing illegal logging—problematic. Recently, remote-sensing data have been used to map logging areas, mainly using medium-resolution satellite imagery such as the Landsat series. The Brazilian Forest Service and the National Institute for Space Research have implemented a system called DETEX, based on Landsat data, to monitor logging activities in forest concessions.

Despite the unquestionable importance of Landsat for forestry monitoring in recent decades, its 30-m spatial resolution could be too crude for mapping small-scale logging. The European Space Agency (ESA) recently launched the Sentinel-2A and Sentinel-2B satellites (in June 2015 and March 2017, respectively) and is making the data freely accessible. Sentinels 2A and 2B are "twin" satellites with the same optical sensors, providing multispectral imagery in 13 spectral bands at different spatial resolutions (10–60 m) with a revisiting frequency of five days. Therefore, mapping selective logging using these new launched satellites could represent a major advance towards effective and efficient monitoring systems.

To test the performance of Sentinel-2 for mapping selective logging, we carried out a remote-sensing analysis and a field survey in seven licensed SFM units near the southern border of Amazonas state, Brazil. This article presents some of the main results of research, which was carried out with assistance from the ITTO Fellowship Programme.

Landmark: A log landing in a licensed SFM unit in Amazonas, Brazil. The presence of logging infrastructure such as roads and log landings can be detected using satellite images. *Photo: R.S. de Andrade/IPAAM*



Long view: The location of the seven licensed SFM units surveyed in the study, and the town of Santo Antônio do Matupi. *Photo: Background image: RGB (11, 8, 4) composite of a Sentinel-2B image from July 2017; Map: T.A. Lima*

Santo Antônio do Matupi: Brazil's "wild west"

Located on the southern border of Amazonas, the region known as Santo Antônio do Matupi has become one of the most important timber trade zones in the Amazon. It lies towards the western end of the legendary Transamazon highway (BR 230), which stretches 4000 km from João Pessoa on the east coast of Brazil to Lábrea in Amazonas. The area has dozens of sawmills and a town that has developed from a small rural settlement established in the late 1990s to a city of almost 10 000 inhabitants. The town's unplanned development, unpaved streets and lack of governance have earned it a reputation as the "wild west of Amazonas". It is a relatively new logging frontier, and it is surrounded by large areas of natural forest. Many SFM areas have been established in the region since 2008, making it a suitable area for testing Sentinel-2 capabilities for the detection and mapping of selective logging.

Wild west: The unpaved Transamazon highway (BR 230) forms the main street of Santo Antônio do Matupi. *Photo: T.A. Lima*

Mapping logging from space

In the study, the mapping of selective logging was restricted to forested areas; thus, non-forested areas such as water bodies, savannas and deforested areas were excluded. A change-detection index was used for mapping potentially logged areas. The Delta Self-Referenced Normalized Burn Ratio Index (represented as ΔrNBR) was developed for tropical forests in Southeast Asia but can easily be adapted for other places (Langner et al. 2018). We used the index to map changes in forest canopy cover in SFM units near Santo Antônio do Matupi between 2016 and 2017. A field survey was carried out in seven SFM units in October 2017 to provide ground-proofing data.

The Institute of Environmental Protection of Amazonas State (IPAAM) is in charge of issuing logging permits in Amazonas after the analysis and approval of SFM plans. Logging intensity is limited by law to 25 m^3 per hectare per year in those portions of SFM units suitable for timber extraction. The units we visited were selected from IPAAM's database based on ease of access and logistics. We collected data on the location (as obtained from a geographic positioning system) and logging infrastructure defined as felling gaps, skid trails, logging roads (secondary roads) and log landings. Later, these data were used in the ΔrNBR mapping exercise using Sentinel-2 images.

Measuring logging impacts

Across the seven surveyed units, logged area varied as a percentage of the total unit area in the range of 1.91–11.6%, and the total forest-cover change was just 4.87% (Table 1). The field work recorded the geolocations of 155 sampling points among the various logging infrastructures, as follows: log landings = 30 data points; felling gaps = 61; logging roads = 32; and skid trails = 32. The use of Sentinel-2 satellite images

was most successful in detecting log landings (93.3% of data points detected), followed by felling gaps (47.5%). The mapping was less successful in detecting logging roads (25%) and skid trails (6.3%). Although logging roads had low detectability using the methodology, they were clearly recognizable in RGB (bands 12, 8, 4) compositions using visual interpretation. Skid trails were confirmed as "below-canopy" disturbances, being almost undetectable using optical remote sensors.

Table 1: Logged area and percentage of logged area mapped using Sentinel-2 data

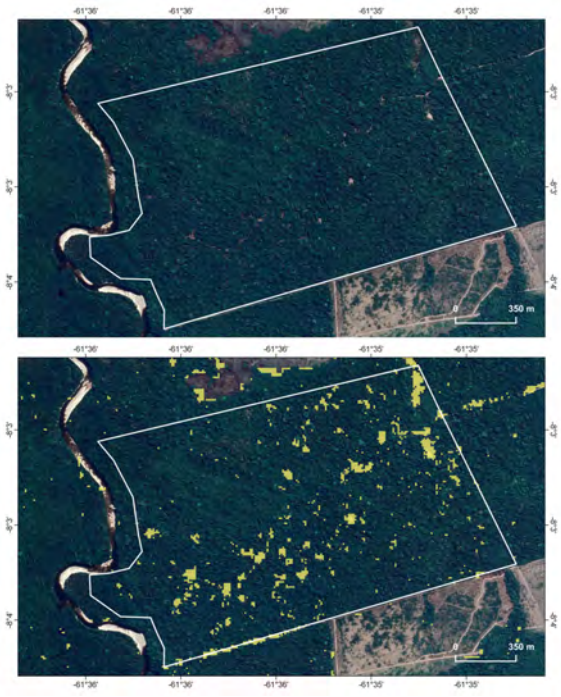
Study site	Total area of SFM unit (ha)	Logged area mapped (ha)	Percentage of logged area (%)
1	266	13.6	5.10
2	374	7.14	1.91
3	512	25.2	4.93
4	391	17.1	4.39
5	681	19.3	2.83
6	125	14.5	11.6
7	1009	66.5	6.59
Total	**3358**	**164**	**4.87**

Conclusion

The impacts of logging activities mapped in the present study were low compared with conventional (high-impact) and illegal logging (Tritsch et al. 2016), highlighting the importance of promoting SFM in the Santo Antônio do Matupi region. Recent research has shown that SFM plans are poorly implemented in Pará state (Brancalion et al. 2018). We believe that the path towards achieving SFM will necessarily involve a consistent and transparent monitoring system that makes data available publicly. This article shows that Sentinel-2 data can contribute significantly to this goal.

Acknowledgement

The authors thank the Amazonas State Government and IPAAM for logistic support during the field survey; IPAAM analysts Aline dos Santos Britto and Raimundo Saturnino de Andrade for their help in the collection of field data; and foresters Fabio Azevedo, Thuany Bitencort and Marilia Caporazzi for their logistical support in Santo Antônio do Matupi. This research was funded by the ITTO Fellowship Programme, IPAAM and the Idea Wild Foundation. It comprises part of Thais Lima's PhD project, which is funded by the University of British Columbia in Vancouver, Canada.



Logging detector: Upper image: an SFM unit selectively harvested in 2017 (very-high-resolution image from Google Earth). Bottom image: the final classification map derived from Sentinel-2 imagery with selectively logged areas in yellow (background map from Google Earth for comparison). *Map: T.A. Lima*

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Market trends

Can wood panels help slow global warming?

by Dr Morwenna Spear

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Locked-up carbon: A detached timber-frame house can store up to 13 tonnes of sequestered carbon. *Photo: iStock/kummeleon*

There has been a lot of interest lately in timber in buildings and the aesthetic benefits and beauty of the natural appearance of wood, especially cross-laminated timber (CLT). Barely a week goes by in the United Kingdom of Great Britain and Northern Ireland (UK) without another good example of innovation or sustainable construction using wood.

It would be true to say that people are getting interested in what timber can offer. There are benefits from the speed of delivery that modern methods of construction, such as timber-frame and CLT, can provide. Then there is the construction skills shortage and the potential to re-train and re-skill with the assembly techniques that are needed for timber-frame and structural-insulated-panel construction systems to deliver long-needed housing. No wonder the timber-frame sector has been reporting steady growth—and is now used in 28% of housing starts in the UK!

People are also realizing what we (in the timber business) sometimes take for granted: wood is a sustainable resource. And I think we are more likely to forget this in wood-based panels than in most other forest product sectors.

After all, oriented strandboard (OSB) is tucked away in wall structures, and particleboard and medium-density fibreboard are hidden under layers of whichever laminate is fashionable this season. It's easy to forget that these panel products are delivering a service, week in, week out, in our homes, furniture and work spaces.

We also tend to forget how much carbon these panel products are keeping out of the atmosphere. Forests sequester carbon dioxide when trees grow and lay down timber in their stems, roots and branches.

There has been a lot of talk about the role of forests in doing this and the consideration of forest carbon pools. But there is also a pool of sequestered carbon in the timber and panels in our homes.

A recent study we carried out at the BioComposites Centre showed that a detached timber-frame house may contain around 8 tonnes of wood (in structural elements alone), of which about 2 tonnes is wood-based panels. In total, this may be storing up to 13 tonnes of sequestered carbon.

Once built, this timber-frame house is likely to stand for considerably longer than its 60-year design life. Let's say it lasts for 100 years before someone redevelops that area of town: that's 100 years over which that volume of carbon dioxide is stored—and not in the atmosphere.

This is why the Intergovernmental Panel on Climate Change has begun to recognize sequestered carbon in harvested wood products in its carbon calculations. It is also why standards committees are starting to see the need to report sequestered carbon for construction products.

Sequestered carbon needs to be reported separately from embodied carbon, for clarity. But there is a strong case for recognizing the carbon-storage benefits associated with timber and wood-based materials alongside the carbon emissions of producing and using these materials.

Changes are also afoot in the construction sector. The UK's Building Research Establishment Environmental Assessment Method was revised in 2018 to include life-cycle analysis in a more detailed form than previously, meaning that designers and engineers will become more conscious of embodied carbon.

The UK's Royal Institution of Chartered Surveyors has issued guidance on the calculation of whole-building environmental product declarations (EPDs), again leading to greater awareness of the environmental profiles of buildings. The product EPDs produced by manufacturers in the wood-panel sector will be used in these calculations.

Now is a good time to remember that wood-based panels form part of building systems that not only deliver lower-carbon buildings but also provide a significant pool of sequestered carbon.

This is an edited version of an article published in the December 2018/January 2019 issue of Wood Based Panels International and online at www.wbpionline.com/features/can-panels-help-slow-global-warming-6910450.

Global plywood industry update

by Richard F. (Dick) Baldwin, PhD, and Richard W. (Rich) Baldwin, MBA

The table shows how the share of global plywood production changed, by region, between 1967 and 2017. China manufactured 73.1% of the world's plywood in 2017, with the rest of Asia producing 15.4 million m^3, for a total Asian share of 82.7% (compared with 20.8% in 1967 and 51.4% in 1997). North America produced 6.0% of the world's plywood in 2017, and a few European and South American countries collectively manufactured most of the remainder.

The North American industry was "right-sized" during the Great Recession. Georgia Pacific permanently closed 13 of the 22 factories it operated in the southeastern United States. Other manufacturers in both southeast and western North America (principally British Columbia, Oregon and Washington) also closed operations around that time.

The annual production capacity of North American softwood and hardwood plywood mills is now about 17 000 million m^3, with softwood production at around 80% of cumulative rated capacity and hardwood at about 50%.

Continuing transformation

Growth in Asian production and consumption can't continue at the present pace given the decelerating growth of the Chinese economy and the constrained wood-fibre supply, and North American supply roughly matches demand. However, changes are inevitable in both regions. What, then, is the future of the industry in Asia, North America and the rest of the world, and what will be the tenor of future updates?

The consumer continues to consider that plywood is a unique product because its strength and appearance attributes are not easily duplicated. Balancing supply and consumption in North America, and continuing to grow volume elsewhere, will hinge on a number of factors, including general economic conditions and the relative strength of the US dollar.

Plying: Workers handle veneer sheets in a plywood mill in Côte d'Ivoire. *Photo: R. Carrillo/ITTO*

A developing model to grow the North American industry embraces basic plywood technology but broadens the use of the key veneer and adhesive components. The plywood that has existed for more than 100 years continues to be a major product and, simultaneously, there is a new generation of veneer-based technologies. Laminated veneer lumber (LVL) is one such product, built to achieve a certain strength and other values. Similar to the ongoing process of OSB supplanting plywood sheathing, LVL commonly replaces timber, steel and concrete structural beams in construction. The product has gained broad acceptance in North America and is now positioned to be accepted in the rest of the world. Plywood technology is spurring the development of additional veneer-based panel products.

This is an extract from a comprehensive study published in the December 2018/January 2019 issue of Wood Based Panels International and online at www.wbpionline.com/features/global-plywood-industry-update-6908934

Global plywood production, by region, 1967–2017 ('000 m^3)

Year	Africa	North America	South America	Asia	Europe	Oceania	Total
1967	227	15 049	470	5556	5304	128	**26 734**
1977	406	20 897	996	13 249	5807	128	**41 483**
1987	592	23 639	1500	19 153	5466	180	**50 530**
1997	538	19 435	2147	28 816	4770	361	**56 067**
2007	856	15 343	5314	62 251	7695	579	**92 038**
2017	862	12 221	5087	132 791	9026	588	**160 575**

A tabling of views

A recent study by the Independent Market Monitor assessed the impacts of timber legality on the European Union's wood-furniture sector

by George White

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Your move: A chess table made of tropical timber harvested in Guatemala. *Photo: Instituto Nacional de Bosques, Guatemala*

The furniture industry in the European Union (EU) is one of the main sectors involved in the trade of forest products originating in countries that have signed or are negotiating voluntary partnership agreements (VPAs) with the EU. Assembled wood furniture consistently accounts for nearly 40% of the total value of EU imports of timber and timber products from VPA partner countries, which also supply EU furniture manufacturers with a range of wood raw materials, including logs, sawnwood, mouldings, veneer and plywood. The distribution channels and factors affecting competitiveness in this industry are distinct from those in the traditional wood-importing sector.

An earlier report by the International Tropical Timber Organization (ITTO) and the Independent Market Monitor (IMM) (ITTO & IMM 2017) concluded that, "there is a need to significantly increase coverage in other sectors, notably furniture manufacturing and retailing, and joinery and engineered wood products". The study reported here, therefore, was conducted to provide a more comprehensive baseline as well as to provide a structure for the IMM's long-term monitoring of trends in the wood-furniture sector.

The study involved a series of semi-structured interviews—conducted by IMM's network of national correspondents in April and May 2018—with representatives of 47 companies based in the seven major European markets: Belgium, France, Germany, Italy, the Netherlands, Spain and the United Kingdom of Great Britain and Northern Ireland. Combined, these countries account for 83% of the furniture imported to the EU from VPA countries. It is estimated that there are 130 000 furniture companies in the EU, and approximately 90% of the furniture consumed in the EU is manufactured in Europe. Exporters based in the VPA countries, therefore, are entering a crowded and fiercely competitive market.

The companies that participated in the study represented a broad sample of the value chain across the seven countries, from very large retailers through to medium-sized furniture manufacturers and distributors. The range of furniture products covered includes indoor furniture of all types and outdoor furniture; in addition, a number of companies import raw materials such as sawnwood and panels, as well as furniture components, for furniture manufacturing within the EU.

The companies interviewed currently source—or have sourced in the past—from nine of the 14 VPA countries. Indonesia is the most popular VPA country (in terms of trading relationships), followed by Viet Nam and Malaysia. Overall, China is the origin of the majority of wood furniture purchased by the companies interviewed.

With a total of more than 850 suppliers of furniture from outside the EU, the companies were asked about their perceptions of quality, price, lead times from order to delivery, logistics (the ease of moving products) and the range of products available from various countries and regions. When asked to compare these variables on a country-by-country basis, it was clear that both western and eastern European EU countries were perceived as most competitive across the range of factors considered. The third-most competitive region identified was that of non-EU countries in eastern Europe. Viet Nam, Indonesia and China were perceived to be the next-most competitive.

The survey included questions on purchasing policies. Around one-quarter (11 of 47) of the companies interviewed did not have written environmental purchasing policies. For those that did have policies, the dominant feature was a requirement for "legality" or legal compliance regarding

wood origin or trading (20 companies); the remainder (16 companies) were pro-certification, with a preference for the Programme for the Endorsement of Forest Certification and/or the Forest Stewardship Council.

Products licensed under the EU Forest Law Enforcement, Governance and Trade (FLEGT) initiative were valued by 45% of those interviewed (typically those sourcing from Indonesia). An additional 19% of those interviewed stated that FLEGT licensing could play a role in their purchasing decisions if it were available in other countries. Overall, the companies interviewed were positive towards the FLEGT process, although the lack of availability of licensed products from countries other than Indonesia was a common concern. Some respondents expressed doubt that the FLEGT process had led to on-the-ground improvements in forest governance. The chief benefit identified for those favourably disposed towards FLEGT licensing centred on the linkage with the EU Timber Regulation and the simplified due-diligence process.

The study asked interviewees for their views on the outlook for tropical timber in the European furniture trade. Forty-three percent considered that the market for tropical wood furniture would grow or stabilize in the next decade, and 32% thought demand and volume would shrink (25% expressed no opinion). The wide range of alternative materials and consumer and specifier attitudes towards tropical timber were seen as the main negative drivers.

Fashion largely drives the style and design of wood furniture, with end consumers destined to buy 80% of production. A complex web of interconnected drivers determines the choice of wood and accompanying colours and features. Consumers, retailers and manufacturers have a huge range of options for materials, and the choice of wood in furniture *per se* is no longer guaranteed. Retailers and manufacturers are promoting certified wood and certified tropical wood to varying degrees; FLEGT-licensed timber has a role to play—but only at a business-to-business level.

The report makes the following recommendations:

- Minimize the bureaucracy involved in the process of importing FLEGT-licensed timber to maximize the business benefits for operators.
- Encourage those companies not yet using FLEGT-licensed timber to do so.
- Demonstrate the benefits of the FLEGT-licensing scheme in Indonesia to build trust.
- Clarify within the trade the impacts and achievements of FLEGT-licensed timber and timber legality assurance schemes.
- Speed up the introduction of FLEGT-licensed timber supplies from other VPA countries.

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This is the executive summary of: White, G. 2018. *A tabling of views: scoping study for assessing the impacts of timber legality on the European Union's wood-furniture sector and the associated tropical timber trade*. ITTO Technical Series No. 47. ITTO, Yokohama, Japan (available at www.itto.int/technical_report).

Tropical and topical

Complied by
Ken Sato

Central Africa to receive EUR 20 million from European Union for Congo Basin forests

The European Union (EU) has signed three grant contracts worth a total of EUR 20 million to help finance biodiversity conservation efforts in the Congo Basin, according to an article by Jean Marie Takouleu in *Afrik 21*. Some of the funds will be spent in the Virunga National Park in the Democratic Republic of the Congo, which is home to populations of gorillas and elephants that are endangered due to poaching and conflicts between armed groups. In an effort to address the problem, the Alliance Virunga is promoting access to electricity for 4 million people living in communities around the park. The alliance also intends to tackle the charcoal trade, which is the main source of funding for some armed groups flourishing in the region. The contracts for this and other work were signed at the 18th Meeting of the Parties of the Congo Basin Forest Partnership in Brussels in late 2018.

More information: www.afrik21.africa/en/central-africa-eu-grants-e20-million-for-biodiversity-protection

Traceability system improves forest governance in Panama

A timber traceability system was recently put in place in Darien, Panama, thanks to a project financed by ITTO and executed by WWF-Panama in collaboration with the Panama Ministry of Environment. The system, which tracks timber from the forest to the consumer, has already reduced forest illegality, with benefits for forests, managers, companies and the Ministry.

A video of the project is available at www.youtube.com/watch?v=zlqV-sx5a38&t=3s

Licences of several Cameroon logging companies suspended due to illegal activities

The Briefing Note for the Competent Authorities implementing the European Union Timber Regulation reported in September 2018 that several companies under investigation by the Standardized System of Independent External Monitoring in Cameroon have had their extractive licences suspended because of illegal logging activities. The companies were variously found to be non-compliant with the norms of exploitation, committing logging document fraud, exploiting beyond their standing-order limit, and conducting suspected unauthorized logging of national forests.

Source: http://ec.europa.eu/environment/forests/pdf/Briefing_note_Sept_-_Oct_2018_Public.pdf

Wildlife traffickers thriving on border between Belize and Guatemala

Guatemala's environmental prosecutor has revealed the existence of "criminal structures" in the border area between Belize and Guatemala involving farmers, intermediaries, public officials and Asian financiers, according to an article written by Rodrigo Soberanes and published on the Mongabay website in early March. Rosewood, a high-value tree species exported to Asia, is one of the targets of illegal harvesting and trade, along with scarlet macaws and parrots. Experts and officials consulted for the article agreed that the problems in the adjacency zone—a 1-km band on each side of a contested stretch of the border between Belize and Guatemala—could be summed up under three main themes: poverty, corruption, and the long-running border dispute between the two countries over about 12 000 km^2 of land.

Source: https://news.mongabay.com/2019/03/wildlife-traffickers-thrive-on-guatemalas-murky-border-with-belize

Institutional alliance in Peru to strengthen forest and wildlife management

Peru's National Forestry and Wildlife Service (SERFOR) and Forest Resources and Wildlife Oversight Agency (OSINFOR) have signed an interinstitutional cooperation agreement to enable the exchange of experiences and information on the supervision, control and use of natural resources. Both agencies aim to use the agreement to strengthen their functions and increase efficiency and effectiveness in achieving their institutional objectives.

Source: ITTO Tropical Timber Market Report*, 23:4, 16–28 February 2019 (www.itto.int/direct/topics/topics_pdf_download/topics_id=5955&no=1).*

Secondary tropical forests recover species richness within 50 years

A study published in Science Advances in March by Danaë Rozendaal and co-authors has found that secondary tropical forests regrowing on abandoned agricultural lands take a median time of five decades to recover the species richness of old-growth forest (achieving 80% recovery after 20 years). The full recovery of species composition, however, takes centuries. The authors recommend a dual strategy that maintains both old-growth forests and species-rich secondary forests for biodiversity conservation in human-modified tropical landscapes.

More information: http://advances.sciencemag.org/content/5/3/eaau3114

Brazil receives USD 96 million for reducing deforestation

Brazil has become the first country to receive financial resources from the Green Climate Fund (GCF) for reducing greenhouse-gas emissions from deforestation. The payment by the GCF is based on results achieved by Brazil in the Amazon biome in 2014–2015, as validated by the United Nations Framework Convention on Climate Change. The payment represents a small fraction of the volume of results reported by Brazil in 2014–2015; nevertheless, the United Nations Development Programme reports that it will be instrumental for piloting a new programme called "Floresta", which will focus on ecosystem restoration, the prevention of forest degradation and incentives for ecosystem services in the Amazon biome.

Source: www.undp.org/content/undp/en/home/news-centre/news/2019/Brazil_receives_USD_96_million_for_having_reduced_its_deforestation.html

Recent editions

Complied by Ken Sato

White, G. 2018. *EU voluntary private-sector timber procurement policies & the role of FLEGT licensing: an IMM study*. ITTO, Yokohama, Japan.

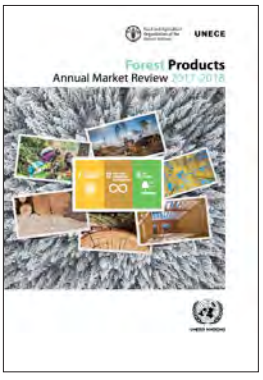
Available at www.itto.int/direct/topics/topics_pdf_download/topics_id=5962&no=1&disp=inline

Private-sector procurement policies are prominent in the global North and among companies with global reach. A new study by the Independent Market Monitor identifies more than 100 organizations, tools, initiatives, templates and sets of guidance that could influence company timber procurement policies in the European Union (EU). The study assesses 65 potential sources of influence to identify attitudes and support for key indicators such as timber certification, legal compliance and EU Forest Law Enforcement, Governance and Trade licensing.

Lujan, B. 2018. *A comparison of supply chain tracking tools for tropical forest commodities in Brazil*. Environmental Defense Fund, New York, USA.

Available at www.edf.org/sites/default/files/documents/Supply_Chain_Tracking_Tools.pdf

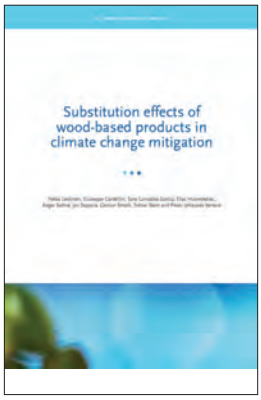
This report provides a comprehensive comparison of supply-chain tracking tools for three tropical forest commodities—cattle, soy and timber—in use in Brazil. In addition to detailing the objectives, methodologies, scope and cost of each tool, the report describes the advantages and challenges of each system and concludes with a comprehensive comparison. The report will inform private-sector entities, other supply-chain actors and consumers about the various supply-chain monitoring tools available to help reduce and eliminate deforestation from tropical forest commodity production, and it will serve as a guide to help companies identify the most suitable tools for increasing supply-chain transparency and traceability.



UNECE. 2018. *Forest products annual market review 2017-2018*. United Nations Economic Commission for Europe, Geneva, Switzerland

Available at www.unece.org/fileadmin/DAM/timber/publications/FPAMR2018.pdf
ISBN: 978-92-1-117174-7

This report provides a comprehensive analysis of markets in the UNECE region (comprising Europe, the Commonwealth of Independent States and North America) and reports on the main market influences outside the region. It covers a wide range of forest products from the forest to the end-user: from roundwood and primary processed products to value-added and housing. Statistics-based chapters analyze the markets for wood raw materials, sawn softwood, sawn hardwood, wood-based panels, paper, paperboard and woodpulp. Other chapters analyze policies and markets for wood energy. Underlying the analysis is a comprehensive collection of data. The report highlights the role of sustainable forest products in international markets and discusses policies on forests and forest products and the main drivers and trends. The report also analyzes the effects of the current economic situation on forest product markets.



Leskinen, P., Cardellini, G., González-García, S., Hurmekoski, E., Sathre, R., Seppälä, J., Smyth, C., Stern, T. & Verkerk, P.J. 2018. *Substitution effects of wood-based products in climate change mitigation*. From Science to Policy No. 7. European Forest Institute, Joensuu, Finland.

Available at www.efi.int/sites/default/files/files/publication-bank/2018/efi_fstp_7_2018.pdf
ISBN 978-952-5980-69-1

This study examines the most up-to-date knowledge on the effects on greenhouse-gas emissions of various wood products compared with alternative materials. It also identifies research gaps that should be covered to improve understanding of substitution effects.

Besseau, P., Graham, S. & Christophersen, T. (eds.) 2018. *Restoring forests and landscapes: the key to a sustainable future*. Global Partnership on Forest and Landscape Restoration, Vienna, Austria.

Available at www.forestlandscaperestoration.org/sites/forestlandscaperestoration.org/files/resources/GPFLR_FINAL%2027Aug.pdf

ISBN No: 978-3-902762-97-9

This publication provides facts, figures and key messages to encourage more investment in forest and landscape restoration, leading to more restoration action. The report outlines how to reach the 2020 and 2030 targets and how to best collaborate using regional and global platforms.

Meetings

ITTO meetings

10–12 April 2019
FAO–ITTO National Workshop on Forest Products Statistics in Viet Nam
(By invitation only)
Da Nang, Viet Nam
Contact: FPS@fao.org
The goal of this meeting, which will be co-organized by ITTO and FAO, is to strengthen Viet Nam's national and international collaboration on forest product statistics.

11–13 June 2019
Second Expert Group Meeting on Forest Landscape Restoration in the Tropics
(By invitation only)
Lüderenalp, Switzerland
Contact: ma@itto.int
Among other things, this meeting will review concepts and approaches on the restoration of degraded tropical forest landscapes, including management objectives and short-, mid- and long-term investment strategies.

2–7 December 2019
55th Session of the International Tropical Timber Council and Sessions of the Associated Committees
Lomé, Togo
Contact: www.itto.int/events/event/id=5400
The International Tropical Timber Council is ITTO's governing body. It meets once a year to discuss issues related to the legal trade of tropical timber and the sustainable management of tropical forests. Council sessions are open to official delegates and accredited observers.

Other meetings

6–10 May 2019
14th Session of the United Nations Forum on Forests
New York, USA
Contact: www.un.org/esa/forests/forum/current-session/index.html

7 May 2019
60th Session of the Advisory Committee on Sustainable Forest-based Industries
Vancouver, Canada
Contact: Thais.LinharesJuvenal@fao.org

7–9 May 2019
RISI 6th Annual Forest Investment Conference
London, UK
Contact: https://events.risiinfo.com/investment-conference

8–11 May 2019
World Conference on Forests for Public Health
Athens, Greece
Contact: https://fph2019.org

8–12 May 2019
49th Session of the Intergovernmental Panel on Climate Change
Kyoto, Japan
Contact: www.ipcc.ch/meeting-doc/ipcc-49

13 May 2019
GLF Kyoto 2019
Kyoto, Japan
Contact: https://events.globallandscapesforum.org/kyoto-2019

19–23 May 2019
A Century of National Forest Inventories: Informing Past, Present and Future Decisions
Oslo, Norway
Contact: https://nibio.pameldingssystem.no/nfi100years

20–22 May 2019
4th World Congress on Agroforestry
Montpellier, France
Contact: https://agroforestry2019.cirad.fr

22–24 May 2019
Urban Forests: Full of Energy
Cologne, Germany
Contact: https://efuf2019.wordpress.com

23 May–3 June 2019
18th Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora
Colombo, Sri Lanka
Contact: www.cites.org/eng/cop/index.php

27–31 May 2019
LIGNA 2019
Hannover, Germany
Contact: www.ligna.de/home

16–29 June 2019
Ecuador Forestry business and Agri-/Aqua-business Investment Tour
Ecuador
Contact: https://danaevents.co.nz/2019ecuador

17–21 June 2019
Asia-Pacific Forestry Week 2019
Incheon, Republic of Korea
Contact: AP-Forestry-Week@fao.org

22–23 June 2019
GLF Bonn 2019
Bonn, Germany
Contact: https://events.globallandscapesforum.org/glf-bonn-2019

24–26 June 2019
Gabon Wood Show 2019
Libreville, Gabon
Contact: www.gabonwoodshow.com

1–2 July 2019
Global Forum on Forest Governance
London, UK
Contact: www.illegal-logging.info/content/29th-global-forum-forest-governance-1-2-july-2019

9–18 July 2019
High-level Political Forum on Sustainable Development
New York, USA
Contact: https://sustainabledevelopment.un.org/index.php?menu=4444

1–3 August 2019
Forestrise 2019: Innovative and Integrative Wood Industries
Nagano, Japan
Contact: www.forestrise.jp

28–30 August 2019
7th Tokyo International Conference on African Development
Yokohama, Japan
Contact: https://ticad7.city.yokohama.lg.jp/english

9–12 September 2019
30th Session of the North America Forestry Commission
Missoula, USA
Contact: www.fao.org/forestry/31920

23 September 2019
2019 Climate Summit
New York City, USA
Contact: www.un.org/en/climatechange

24–27 September 2019
21st International Nondestructive Testing and Evaluation of Wood Symposium
Freiburg, Germany
Contact: www.iufro.org/science/divisions/division-5/50000/50100/50109/activities

29 September–5 October 2019
XXV IUFRO World Congress
Curitiba, Brazil
Contact: www.iufro2019.com

21–25 October 2019
ATIBT Forum
Shanghai, China
Contact: www.atibt.org

28 October–1 November 2019
7th International Wildland Fire Conference
Campo Grande, Brazil
Contact: www.ibama.gov.br/wildfire2019-eng

4–7 November 2019
Joint Session of the 40th European Forestry Commission: 77th UNECE Committee on Forests and the Forest Industry
Geneva, Switzerland
Contact: www.fao.org/forestry/efc/72568

11–22 November 2019
25th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change
Santiago, Chile
Contact: https://unfccc.int/calendar

30 November 2019
GLF Luxembourg 2019
Luxembourg
Contact: https://events.globallandscapesforum.org/glf-luxembourg-2019

11–19 June 2020
IUCN World Conservation Congress
Marseille, France
Contact: Goska.Bonnaveira@iucn.org