



2021

ANNUAL HIGHLIGHTS



INTERNATIONAL BAMBOO AND RATTAN ORGANISATION

The International Bamboo and Rattan Organisation

The International Bamboo and Rattan Organisation, INBAR, is an intergovernmental organisation which promotes the use of bamboo and rattan for sustainable development.

Copyright and Fair Use:

This publication is licensed for use under Creative Commons Attribution-Non-commercial-Share Alike 4.0 Unported Licence (CC BY-NC-SA 4.0).

To view this licence visit: <http://creativecommons.org/licenses/by-nc-sa/4.0/>

You are free to:

Share – copy and redistribute the material in any medium or format; and

Adapt – remix, transform, and build upon the material.

The licensor cannot revoke these freedoms as long as you follow the licence terms:

Attribution: You must give appropriate credit, provide a link to the licence, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

Non-commercial: You may not use the material for commercial purposes.

Share Alike: If you remix, transform, or build upon the material, you must distribute your contributions under the same licence as the original.

No additional restrictions: You may not apply legal terms or technological measures that legally restrict others from doing anything the licence permits.

Cover image:

The Fish-shaped Bamboo Pavilion (left) and the Waterside Bamboo Pavilion (right) in the INBAR Garden at the International Horticultural Exposition 2021, Yangzhou, China.

International Bamboo and Rattan Organisation

P.O. Box 100102-86, Beijing 100102, China
Tel: +86-10-6470 6161; Fax: +86-10-6470 2166;
Email: info@inbar.int

www.inbar.int

ISBN: 978-92-95123-50-2 (online); 978-92-95123-51-9 (print)

© 2022 International Bamboo and Rattan Organisation (INBAR)

ABOUT THE INTERNATIONAL BAMBOO AND RATTAN ORGANISATION

Established in 1997, the International Bamboo and Rattan Organisation (INBAR) is an intergovernmental development organisation that promotes environmentally sustainable development using bamboo and rattan. It is currently made up of 48 Member States. In addition to its Secretariat Headquarters in China, INBAR has five Regional Offices in Cameroon, Ecuador, Ethiopia, Ghana and India.



16 Member States in Asia-Pacific

Bangladesh, Bhutan, Cambodia, China, Fiji, India, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand, Tonga, and Viet Nam.

20 Member States in Africa

Benin, Burundi, Cameroon, the Central African Republic, the Congo, Eritrea, Ethiopia, Ghana, Kenya, Liberia, Madagascar, Malawi, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, Tanzania, Togo, and Uganda.

12 Member States in the Americas

Argentina, Brazil, Canada, Chile, Colombia, Cuba, Ecuador, Jamaica, Panama, Peru, Suriname, and Venezuela.

ACRONYMS AND ABBREVIATIONS

AECID	Spanish Agency for International Development Cooperation
AV	audiovisual
CEMCA	Commonwealth Educational Media Centre for Asia
CIFOR	Center for International Forestry Research
CIFTIS	China International Fair for Trade in Services
COVID-19	coronavirus disease 2019
COP	Conference of the Parties
FSC	Forest Stewardship Council
FTA	CGIAR Research Program on Forests, Trees and Agroforestry
GLF	Global Landscapes Forum
GiZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICBR	International Centre for Bamboo and Rattan
IFAD	International Fund for Agricultural Development
INBAR	International Bamboo and Rattan Organisation
ISO	International Organization for Standardization
ISO/TC 165	ISO Technical Committee 165
ISO/TC 296	ISO Technical Committee 296
IUFRO	International Union of Forest Research Organizations
NFGA	National Forestry and Grassland Administration of China
UN	United Nations
UNESCO	UN Educational, Scientific, and Cultural Organization
UNFF	UN Forum on Forests
UNFF 16	16 th Session of the UNFF
UNIDO	UN Industrial Development Organization
Yangzhou Expo	International Horticultural Exposition 2021, Yangzhou, China

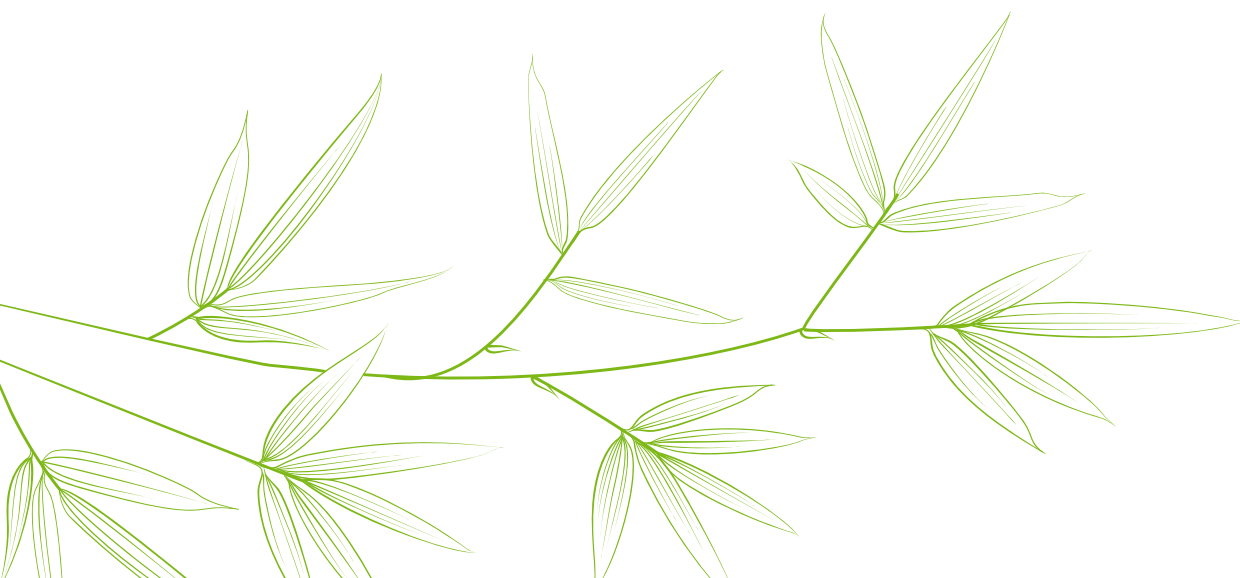


TABLE OF CONTENTS



2
Foreword from the Board Co-Chair and
Acting Chair



3
Foreword from the Director General

4
International Horticultural Exposition 2021,
Yangzhou, China



6
Policy Shaping

10
Knowledge Sharing and Learning



13
Representation and Advocacy

16
Action Research and Country Support



23
Publications

25
Events



FOREWORD FROM THE BOARD CO-CHAIR AND ACTING CHAIR



Thank you for reading the International Bamboo and Rattan Organisation's (INBAR) Annual Highlights 2021.

In 2021, INBAR's mission—"to improve the well-being of producers and users of bamboo and rattan, within the context of a sustainable bamboo and rattan resource base"—was more important than ever before. The coronavirus disease 2019 (COVID-19) pandemic and its associated economic downturn continue to have a disproportionate impact on vulnerable communities, including many people across INBAR's Member States. Climate disasters and other environmental issues have also reinforced the need to build a more nature-based, sustainable relationship with our planet.

INBAR's work in 2021 is a testament to the importance of bamboo and rattan. We have expanded our network, welcoming the Islamic Republic of Pakistan as our 48th Member State. We also increased our advocacy work: meeting with senior policymakers, donors and entrepreneurs from many current and prospective Member States; hosting a dialogue about bamboo's potential in Latin America and the Caribbean; and forging new partnerships with organisations and local governments.

One particular highlight of INBAR's

work was our presence at the International Horticultural Exposition 2021, Yangzhou, China (Yangzhou Expo). With its large bamboo pavilions and beautiful surroundings, the INBAR Garden showcased the potential of bamboo and rattan as nature-based materials for use in construction and everyday life. We were honoured to have a place at this important event, and to raise awareness about INBAR's work.

Aside from policy work and awareness raising, INBAR's project training and online webinar series have continued apace, teaching a new generation of people how to manage and use these plants. These training programmes took place in person and online, through INBAR's expanded series of webinars and longer courses.

In 2022, INBAR will continue to ambitiously promote bamboo and rattan as nature-based solutions for sustainable development. We will be hosting a congress in Africa, as well as the second Global Bamboo and Rattan Congress in China. And throughout INBAR's 25th year, we will continue to advocate for bamboo and rattan's inclusion in global, regional and national plans for economic development and environmental protection. A very happy new year to you all.

JIANG ZEHUI

Co-Chair and Acting Chair of the INBAR Board of Trustees



FOREWORD FROM THE DIRECTOR GENERAL

2021 was another challenging yet fruitful year for INBAR. I am particularly proud of our organisation's achievements given the severity of the ongoing COVID-19 pandemic.

As a global network of Member States, INBAR has remained very busy in both regional advocacy work across Africa, the Asia-Pacific, and Latin America and the Caribbean (page 13) as well as project implementation in several countries (page 16). We have also continued to raise awareness about bamboo and rattan at global events, including the United Nations (UN) conference on climate change, in Glasgow, Scotland, where we hosted a side event on low-carbon bamboo construction (page 9). In China, where INBAR's Headquarters is based, we took part in a number of events, including a conference to showcase bamboo as a plastic replacement, the UN conference on biodiversity, in Kunming, and the 11th China Bamboo Cultural Festival in Yibin, Sichuan province (page 7).

INBAR has also taken its mission online in 2021. We have expanded our webinar series, which in 2021 provided training on a wide range of topics (page 10). We have continued to push forward with a number of important initiatives for bamboo and rattan sector

development, including the development of international standards and ongoing research through our specific Task Forces (page 12). And we have produced important new research and training materials for our audiences around the world. This includes our magazine, *Bamboo and Rattan Update*, which published four issues in 2021, available in Chinese, English, French and Spanish.

The numbers speak for themselves: in 2021, we published over 50 reports, continued work on more than 10 projects, trained in excess of 15,000 people, and conducted almost 30 webinars, online training sessions and study tours. Around the world, we attended countless meetings and forged or strengthened many partnerships with other likeminded people and organisations. We look forward to continuing this work in 2022, when we expect to organise the Africa Bamboo and Rattan Congress in the first half of this year, and the Global Bamboo and Rattan Congress at a later date.

Your support, as ever, is critical to the success of INBAR's mission. I would like to take this opportunity to thank our partners, donors, readers and Member States, and everyone who is involved in advocating for bamboo and rattan as 'fibres of the future'.

ALI MCHUMO
INBAR Director General

INTERNATIONAL HORTICULTURAL EXPOSITION 2021, YANGZHOU, CHINA

INBAR took part in the six-month-long Exposition to raise awareness about bamboo and rattan's potential as sustainable, natural materials.

Between April and October, INBAR hosted a Garden at the Yangzhou Expo. The INBAR Garden, which was located at the centre of the park, had a total area of more than 3000 square metres and featured a number of bamboo structures, including two bamboo pavilions.

With the slogan 'Green City, Green Life', the six-month-long Yangzhou Expo aimed to showcase how horticulture and greening can be an important part of future urban planning and sustainable lifestyles. The Expo contained many different Gardens across an area spanning over 200 hectares in

Jiangsu province, China, and was sponsored by the National Forestry and Grassland Administration of China (NFGA), the China Flower Association and the People's Government of Jiangsu Province.

The most eye-catching structures in the INBAR Garden were two bamboo pavilions, made in very different styles. The Fish-shaped Bamboo Pavilion was a 280-square-metre structure made using round bamboo. It reflected the ingenious application of traditional bamboo building materials in modern architectural design. The Waterside Pavilion, meanwhile, was a traditional Chinese



The Fish-shaped Bamboo Pavilion, located in the north of the INBAR Garden, was a 280-square-metre structure made using round bamboo. From above, the Pavilion resembled the shape of a fish: an auspicious symbol in Chinese culture. The Pavilion shows how traditional bamboo building materials can be used to create modern architectural structures.

structure made using glued laminated bamboo in place of wood, and showed how modern bamboo materials can be incorporated into traditional housing. Both Pavilions were part of a bamboo-filled garden.

Throughout the event, INBAR worked with worldwide partners to hold a number of bamboo and rattan exhibitions, popular science demonstrations, cultural events and other activities to demonstrate the potential of bamboo and rattan as part of greener lifestyles. The most popular event was INBAR's Honour Day, which was celebrated on 8 April. More than 200 guests, including

local government representatives, staff from international organisations, and diplomats from several INBAR Member States, were invited to attend the ceremony, where they watched a cultural performance of songs and music about bamboo and rattan, listened to speeches from senior policymakers, and toured the INBAR Garden.

The INBAR Garden won two awards at the Yangzhou Expo: an award from the International Horticultural Producers Association, and an International Exhibition Park award presented by the organising committee of the Expo.



Top: the Waterside Bamboo Pavilion used glued laminated bamboo to recreate a traditional Chinese structure. Below, left to right: Professor Jiang Zehui, Co-Chair and Acting Chair of the INBAR Board of Trustees, welcoming all participants to the INBAR Garden at the Yangzhou Expo; one of the several cultural performances at INBAR Honour Day; His Excellency Mr. Mpana, Ambassador of Cameroon to China, speaking at the same event.

POLICY SHAPING

INBAR continued to support the inclusion of bamboo and rattan in socioeconomic and environmental development policies at national, regional and international levels.



Representatives from governments and international organisations took part in a panel discussion about bamboo's potential as part of the Latin America and Caribbean Ambassadors' Dialogue.

Promoting diplomatic dialogue in Latin America and the Caribbean

On 18 March 2021, diplomatic representatives from 15 countries attended a Latin America and Caribbean Ambassadors' Dialogue at INBAR Headquarters, to discuss how bamboo can support post-pandemic economic recovery and more sustainable development in the region.

INBAR's diplomatic dialogue, themed around 'Triangular Cooperation, Knowledge Transfer and Best Practices', included a visit to the International Centre for Bamboo and Rattan's (ICBR) product showroom, as well as speeches, videos, and a panel discussion about bamboo's potential in the region.

Latin America and the Caribbean have abundant bamboo resources and a long history

of bamboo construction and craftsmanship. In a video address at the event, the Minister of Agriculture and Livestock of Ecuador, His Excellency Mr. Xavier Lazo Guerrero, said that his country's promotion of the bamboo sector has "allowed for the development of more than 500,000 people" who are indirectly and directly involved in the value chain.

Participants also heard from bamboo companies Ningbo Shilin, based in China, and Bambusa, in Spain, as well as representatives from governments and international organisations, who took part in a panel discussion about the economic and environmental potential of bamboo in the region.

A new agreement for the industrialisation of the bamboo and rattan sector

On 28 October 2021, INBAR and the UN Industrial Development Organization (UNIDO) signed an agreement committing to increased cooperation on developing the global bamboo and rattan sectors.

UNIDO is the specialised agency of the UN that promotes industrial development for poverty reduction, inclusive globalisation and environmental sustainability. It has 170 Member States. Speaking at the signing ceremony, Mr. Li Yong, Director General of UNIDO, said: “INBAR and UNIDO share many common aspirations”, including “working with individuals on the ground to improve their livelihoods and strengthen sustainable models of economic growth.”

In particular, the agreement makes reference to: encouraging agribusiness and rural entrepreneurship; improving standards and certification, and building robust value chains, for bamboo and rattan products; and supporting the exchange of best practices and technologies across UNIDO's and INBAR's networks.

The Co-Chair and Acting Chair of INBAR's Board of Trustees, Professor Jiang Zehui said that the agreement was a real example of “win-win cooperation to advance our vision and contribute to achieving the UN Sustainable Development Goals, and is particularly significant for industrial transformation of the world's bamboo and rattan sectors.”

Supporting local bamboo sector development in China

INBAR's headquarters is based in China, and so INBAR took part in a number of key China-based events in 2021.

On 6 September, INBAR held an event on ‘Replacing Plastics with Bamboo’ at the China International Fair for Trade in Services (CIFTIS) in Beijing, China, in coordination with the China Bamboo Industry Association and ICBR. The event featured representatives from governments, development organisations and the private sector discussing bamboo as an alternative material to plastic. INBAR also hosted a booth for the duration of the event, which showcased bamboo products from across China.

In October, INBAR also took part in the 11th China Bamboo Cultural Festival in Yibin, Sichuan province. The event provided a valuable platform to display bamboo crafts in China and discuss the contribution of bamboo forests to sustainable development. In the same month, INBAR attended the Convention on Biological Diversity's Conference of the Parties (COP). At COP 15, which was held in Kunming, Yunnan province, INBAR raised awareness about the importance of bamboo

and rattan as part of biologically diverse tropical habitats, and as a fast-growing alternative to wood.

In 2021, INBAR signed strategic partnership agreements with two local governments in China: Wulong, a district in Chongqing municipal city, in March, and Qingyuan, a county in Zhejiang province, in November. Both areas have abundant bamboo resources and a long history of making bamboo products, and their experiences can be useful for other INBAR Member States. The new agreements commit both parties to work together on organising events which support bamboo market development and eco-tourism.

Finally, INBAR has been working to support and protect bamboo crafts as an important form of ‘intangible cultural heritage’ in China. In July, at the 2021 China (Dongyang) Bamboo Crafts Industry Development Conference, INBAR designated Dongyang city, in Zhejiang province, as an ‘INBAR Bamboo Crafts Training Base.’ The Base should further promote the inheritance of Chinese bamboo craftsmanship, by providing more young people with the skills to take up the profession.



INBAR discussed bamboo and rattan's applications for poverty alleviation, environmental protection and its role in initiatives such as the UN Decade for Ecosystem Restoration.

Raising awareness about bamboo and rattan: INBAR at online events in 2021

INBAR took part in a number of online events in 2021 to promote the role of bamboo and rattan for a wide range of sustainable development purposes.

On 19 March, INBAR Deputy Director General Professor Lu Wenming spoke at an event to mark the International Day of Forests. The event was hosted by the UN Forum on Forests (UNFF) and was broadcast on UN Web TV. Speaking in the Observers section of the event, Professor Lu summarised how bamboo and rattan “have enormous potential to contribute to forest restoration, improving the health and wellbeing of people and planet.” He discussed the plants’ importance as a source of income for rural communities and habitat for different species, as well as a means to restore degraded land and prevent deforestation.

INBAR also hosted a side event at the 16th Session of the UNFF (UNFF 16) in April. Speakers at the event, which was themed ‘From Policy to Action: Forest and Economic Revival with Bamboo’, discussed bamboo’s potential for forest and landscape restoration and as a tool for livelihoods and poverty reduction. In a keynote video message at the event, Professor Lu described how bamboo could contribute to two thematic priorities of UNFF 16: enhancing the economic, social and environmental benefits from forests, and

reversing the loss of forest cover.

In 2021, INBAR also became a supporting partner of the UN Decade on Ecosystem Restoration 2021–2030, which launched on 5 June. The Decade, which is led by the UN Environment Programme and the Food and Agriculture Organization of the UN, aims to push attention towards the importance of ecosystems for sustaining life on earth and the urgent need to protect them. To mark the start of the Decade, on 3 June INBAR hosted a webinar, ‘Integration of Bamboo into Forest Restoration’, during which speakers summarised the ecosystem services provided by bamboo forests and plantations, described how to integrate bamboo into landscape restoration, and considered results and lessons learned from a case study in Chishui, China.

Lastly, in September, INBAR took part in the International Union of Forest Research Organizations’ (IUFRO) Digital Forest Science Forum. IUFRO is a non-profit, non-governmental international network of forest scientists, which promotes global cooperation in forest-related research and enhances understanding of the ecological, economic and social aspects of forests and trees. At the Forum, INBAR staff gave video presentations on bamboo and rattan for sustainable development and bamboo as a viable plastic replacement.

Bamboo at the UN climate conference: an “available, scalable and natural” solution

INBAR promoted bamboo’s role as a carbon sink, a source of biomass energy and a low-carbon construction material at the UN Framework Convention on Climate Change’s annual COP in November 2021.

COP 26 was held in Glasgow, Scotland. Throughout the two-week event, INBAR highlighted bamboo’s potential as a sustainable, low-carbon construction material, which can replace more emissions-intensive products, including cement, steel and PVC. INBAR hosted a booth which featured an eye-catching bamboo–timber gridshell structure, designed by a team from Edinburgh Napier University, and coorganised a side event

on biobased building materials with the International Union of Architects.

As well as showcasing a bamboo construction, INBAR attended several events to raise awareness about bamboo’s role as a source of renewable energy, a carbon sink, and a low-carbon product which can help countries meet their carbon neutrality targets.

In an official statement released during COP 26, INBAR Director General Mr. Ali Mchumo described bamboo as “an available, scalable and natural” resource and “a common climate solution for many developing countries in the tropics and subtropics.”



Top: The INBAR booth at COP 26 featured a bamboo–timber dome. The structure, which was built by a team at Napier University in Edinburgh, Scotland, provides a small-scale example of the strength and suitability of bamboo as a low-carbon construction material. Bottom: INBAR staff also took part in a number of events during the conference.

KNOWLEDGE SHARING AND LEARNING

INBAR shared knowledge and coordinated training programmes to raise awareness and build capacity among its Member States.

Webinars and online courses in 2021

In 2021, INBAR developed a series of targeted, specialised and regional online training courses, including five multi-day courses and two virtual ‘tours’ of bamboo-producing areas, as well as 22 webinars. Each live session attracted hundreds of participants, with thousands more visitors subsequently viewing the webinar recordings.

Originally started in 2020 in response to COVID-19 travel restrictions, INBAR’s e-learning programme has carried out a total of 72 online events, with more than 15,000 live participants from 86 countries. The programme has become a major pillar of INBAR’s outreach and knowledge transfer work. Topics in 2021 included: innovative rattan applications; the creation of policy roadmaps for bamboo sector development; bamboo entrepreneurship; bamboo product

value addition and supply chain development; the market for bamboo in Europe; bamboo’s role in landscape restoration and urban ‘greening’; bamboo textiles; sustainable construction with bamboo; and bamboo standardisation. Participants on INBAR’s longer courses—which dealt with topics such as the basics of bamboo weaving and a two-part virtual study tour of Anji, a bamboo-producing area of China—received exclusive access to webinar recordings and a certificate upon completion of the course.

INBAR Regional Offices also led more tailored courses, such as: ‘Bamboo: A Nature-Based Solution for Restoration in the Amazonian Region’, ‘Bamboo Opportunities for Agribusiness and Forestry in Uganda’, and ‘Investment Opportunities for Commercial Forestry in Kenya’.

Developing standardised bamboo and rattan products

In 2021, the International Organization for Standardization (ISO) published an updated standard on structural design with bamboo poles. The standard, which is a significant step forward for bamboo construction around the world, was developed with support from INBAR staff and members of INBAR’s Bamboo Construction Task Force.

Although bamboo is a common housing material in many parts of the world, until recently there were no international standards to regulate its use. ISO 22156:2021, which was developed by ISO Technical Committee 165 (ISO/TC 165), builds on previous standards published in 2004, providing more comprehensive guidelines for designers and architects about how to build with round bamboo. As a ‘liaison A’ organisation to ISO/TC 165, INBAR will help to disseminate

the standard across its Member States, encouraging national standards authorities to adopt the guidelines and sharing them with universities and architecture firms.

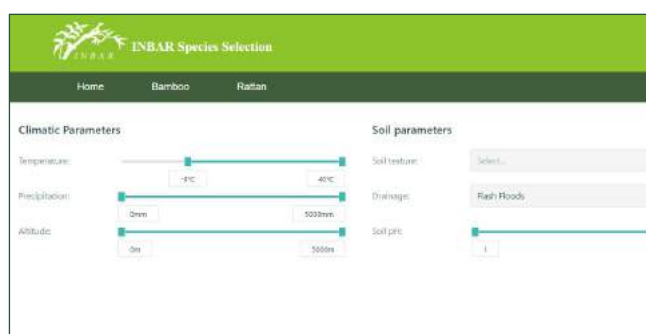
INBAR also remained active in other ISO Technical Committees. In October, INBAR attended the plenary meeting of ISO Technical Committee 296 (ISO/TC 296), which focused on the standardisation of bamboo and rattan materials. The online meeting included an update on the Committee’s work, developing guideline standards for bamboo flooring, charcoal, furniture, and rattan products. In 2021, two standards were published by ISO/TC 296: ISO 21629-1:2021 deals with bamboo flooring for indoor use, and ISO 23066:2021 provides standard terminology related to rattan materials and products.

Researching bamboo, rattan and agroforestry

Between 2017 and 2021, INBAR was a partner of the CGIAR Research Program on Forests, Trees and Agroforestry (FTA). Led by the Center for International Forestry Research (CIFOR), FTA is a 'research for development' programme that aims to enhance the role of nature-based solutions in sustainable development, food security, and climate change mitigation and adaptation.

Over the last five years, INBAR's work with FTA has focused on addressing several key knowledge gaps about bamboo and rattan in order to raise awareness about these plants and their potential to contribute to sustainable development. From 2017 to 2021, INBAR published more than 70 research reports and papers on a range of topics, from conservation of bamboo and rattan resources to bamboo agroforestry, bamboo bioenergy, and bamboo's role in carbon storage, ecosystem services and landscape restoration.

Key outputs include: a better understanding of bamboo and rattan species' economic importance and local suitability, and tools to help identify them; more evidence about bamboo agroforestry and bamboo leaves as a nutritious source of fodder; the potential of bamboo bioenergy and the key challenges facing its uptake; a manual for assessing bamboo forest biomass and carbon stock, and clear guidance on how to integrate bamboo into carbon market schemes; and a new framework for assessing the ecosystem services of bamboo forests. Results have been disseminated through various activities and events, including FTA conferences, INBAR webinars, CIFOR-INBAR workshops, and the UN climate conference in 2021. They have also been adapted for inclusion in relevant policy instruments at international and national levels, including national bamboo strategies and carbon markets.



Top: INBAR staff presenting at the FTA–Kunming Scientific Conference in 2021. Bottom: the site-species selection tool for bamboo and rattan species, developed with FTA support. Right: some of the publications produced with FTA funding.



Standards like ISO 22156:2021 should pave the way for more constructions like the Gallery Bridge restroom, a bamboo structure created by ATA Studio in Nanjing, China, and featured in the 2021 December issue of INBAR's magazine Bamboo and Rattan Update. Credit: Timeraw Studio.

Building a knowledge base

Since it was established in 2015, INBAR's Bamboo Construction Task Force has been a leading force in generating and sharing new research about bamboo construction around the world. In 2021, as well as contributing to the new standard ISO 22156:2021 (page 10), the Bamboo Construction Task Force continued to work on additional ISO standards relating to various aspects of engineered bamboo composites and products, and on two books, which are expected to publish in 2022.

In 2021, INBAR's Task Force on Rattan continued work on guidelines for a number of topics: inventory techniques for rattan resources, physical grading of rattan canes, and priority species of economically important rattan canes. Once published, the guidelines will be a freely available resource supporting INBAR Member States, researchers and natural resources managers on how to manage rattan sustainably.

The Task Force on Bamboo for Renewable Energy also completed a few work items in 2021, including the ongoing development of guideline standards on the design and construction of a bamboo charcoal kiln and about making and selling bamboo charcoal. In October 2021, the Task Force organised a conference on the potential of bamboo for renewable energy in Cameroon, with the participation of more than 10 international experts.

Finally, in 2021, INBAR established the Task Force on Sustainable Bamboo Management. In future years, experts on this Task Force will develop INBAR voluntary guideline standards about how to use bamboo for different purposes, including forest landscape restoration, and criteria for the certification of natural and established plantations.

REPRESENTATION AND ADVOCACY

INBAR's Regional Offices continued to engage with countries around the world to raise awareness about bamboo, rattan, and INBAR's work.

Central Africa

In 2021 the Central Africa Regional Office supported regional Member States to host a range of events about bamboo and rattan.

In March, the Office organised a virtual high-level discussion on the role of supportive policy for the sustainable development of the bamboo and rattan sectors, with the participation of the Ministers of Forestry from Cameroon and Ecuador; in June, to celebrate World Environment Day, the Office coorganised an awareness-raising event about bamboo in Yaoundé, in partnership with Cameroon's Ministry of Environment, Nature Protection and Sustainable Development, and the University of Dschang; and in September, the Office cohosted an awareness-raising workshop in Bangui, the Central African Republic, on the role of bamboo and rattan for job creation, climate change mitigation and

adaptation, and the restoration of degraded lands. The workshop was organised with the Central African Republic's Ministry of Water, Forests, Hunting and Fishing.

As well as these meetings, the Office also took part in the International Craft Fair 2021 in Cameroon to showcase regional bamboo and rattan craftsmanship.

During 2021, the Central Africa Regional Office raised awareness about the potential of bamboo and rattan for sustainable development among non-Member States and met with high-level representatives from the Democratic Republic of the Congo, Equatorial Guinea and Gabon. In August, the Office supported the Government of the Democratic Republic of the Congo to organise a National Bamboo Policy Workshop in Kinshasa.

East Africa

The East Africa Regional Office continued to play a major role in coordinating the establishment of the China-Africa Bamboo Centre, which was announced in 2018 and will be based in Ethiopia. Staff communicated with a number of key stakeholders, including: the Chinese Embassy in Ethiopia; Ethiopia's Environment, Forest and Climate Change Commission; the Ethiopian Embassy in China; the Ethiopian Environment and Forest Research Institute; the China International Development Cooperation Agency; and NFGA. A location and land plot for the Centre has now been decided. This positive work resulted in the 2021 Forum on China-Africa Cooperation adopting an action plan to continue to support the construction of the Centre.

The Office has also been providing technical support and help to entrepreneurs

and investors who would like to do business in the bamboo sector. In 2021, the Office supported many queries from East Africa's private sector on issues related to bamboo farm management, production quality, launching a new bamboo business, investment opportunities, and ways to improve production and processing. The Office also arranged a virtual meeting between key international investors, including the European Innovation Council and the International Finance Corporation, to promote investment in the region's bamboo pulp and paper sector.

In 2021, the East Africa Regional Office helped organise two in-country study tours in Ethiopia and Kenya, which attracted more than 140 participants from across Africa. The tours were organised as part of the Dutch-Sino-East Africa Bamboo Development Programme and the Inter-Africa Bamboo Smallholder Farmers Livelihood Development Programme.

Latin America and the Caribbean

In 2021, INBAR's Latin America and the Caribbean Regional Office undertook a number of activities to promote bamboo as a key component of economic growth and post-pandemic recovery in the region.

In Colombia and Peru, staff met with several high-level government representatives, including the Vice Minister of Agriculture and Rural Development for Colombia and the Director of the National Forest and Wildlife Service for Peru, to discuss ongoing efforts to strengthen the bamboo sector in those countries. INBAR also continued efforts to enlarge membership across Latin America and the Caribbean, and remained in contact with representatives in the Dominican Republic and Mexico, as well as current INBAR Observer State Costa Rica.

Bamboo is an important construction material across many parts of Latin America, and so in 2021, INBAR coorganised a number of workshops and events on this topic. These included: a bamboo construction workshop in Buenos Aires, Argentina, with the well-known architect Horacio Saleme; a bamboo construction workshop for refugees in Manta, Ecuador; a seminar on bamboo housing's earthquake resilience in Portoviejo city; and an event organised by Ecuador's Ministry

of Housing about bamboo as a sustainable construction material.

In the last quarter of 2021, the Latin America and the Caribbean Regional Office also completed a visit of several countries in the region. In Panama, INBAR and the Ministry of Environment coorganised a four-day workshop on bamboo handicrafts and opened a small facility for bamboo crafts with a farmers' cooperative in Coclé province, Panama. In the Dominican Republic, INBAR cohosted a symposium on bamboo for economic development with the National University Pedro Henríquez Ureña, which attracted more than 70 participants. In Costa Rica, 32 people took part in a three-day workshop on sustainable bamboo construction and built a bamboo greenhouse in an activity implemented jointly with INBAR, bamboo company BambuTico and the Ministry of Agriculture.

In 2021, the Latin America and the Caribbean Regional Office took part in a number of online events, including the Global Landscape Forum's (GLF) online event 'GLF Amazonia' in September, the 32nd session of the Latin American and Caribbean Forestry Commission, the Sacha Prize 4th Edition, and a number of field and virtual activities for World Bamboo Day across Member States.



Beneficiaries of the Bambuzonia project taking part in World Bamboo Day.

South Asia

The South Asia Regional Office was active in a number of online events and training courses in India, raising awareness among everyone from students to government workers. INBAR staff spoke at a Corporate Social Responsibility Conference organised by Amity University, and addressed students at Nalanda University about bamboo's role for sustainable development. Staff also attended a fair organised by India's North East Centre for Technology Application and Reach, and delivered a session during a one-week compulsory training course for Indian Forest Service officers, to raise awareness about the country's bamboo resources, management and potential. More generally, the Office took part in three different webinars organised during World Bamboo Day, to introduce INBAR's work in the country.

Aside from taking part in online events, the South Asia Regional Office has continued to strengthen partnerships with stakeholders across India's bamboo sector. The Office provided strategy support to the Indian Plywood Industries Research and Training Institute, and met with various relevant national ministries including the Ministry of



Participants on an Indian training workshop supported by INBAR in 2021.

Micro, Small & Medium Enterprises, and the National Bamboo Mission.

The Office has also continued to explore avenues for cooperation across the Asia-Pacific region. This included organising a regional consultation meeting about economically important bamboo species, to validate the findings of a new INBAR report, and ongoing dialogue with the South Asian Association for Regional Cooperation Development Fund about possible projects in the region.

West Africa

INBAR's West Africa Regional Office has been particularly active in bamboo planting activities in 2021. The Office supported the national 'Green Initiative' in Ghana, which aims to plant five million trees annually, by working with the government's Bamboo and Rattan Unit to donate 15,000 bamboo seedlings for planting along the banks of the Volta River. To celebrate World Bamboo Day, the Office also partnered with the Okyeman Environment Foundation to plant over 2000 bamboo seedlings along the degraded banks of the Birim River.

Throughout the year, staff sensitised several communities on the ecological and socio-economic importance of bamboo, highlighting its potential to create jobs,

improve incomes and reduce degraded landscapes.

In 2021, the Office also organised a partnership-building visit to five West African countries: Benin, the Gambia, Liberia, Nigeria and Sierra Leone. Staff met with focal Ministries in these countries to advocate for the development and implementation of bamboo and rattan development strategies.

Finally, the Office organised events which engaged a wide range of stakeholders, from international development organisations, private sector actors, entrepreneurs, bamboo farmer cooperatives and government agencies, to push for a strong and enabling environment for bamboo and rattan sector development.

ACTION RESEARCH AND COUNTRY SUPPORT

INBAR continued to pilot case studies and support the scaling up of best practices across its Member States.

Supporting bamboo livelihoods for smallholder farmers

In 2021, INBAR's Inter-Africa Bamboo Smallholder Farmers Livelihood Development Programme, funded by the International Fund for Agricultural Development (IFAD), continued to develop bamboo as a pro-poor source of livelihoods in Cameroon, Ethiopia, Ghana and Madagascar.

The project trained a wide range of beneficiaries on aspects of bamboo agroforestry, bamboo product creation and business development through a combination of workshops, Farmer Field Schools and two newly established training centres in Cameroon and Ghana. In total, in 2021 more than 8000 people, most of them smallholder farmers, were trained through the project.

In addition to being a valuable source of income, bamboo leaves can also provide year-round fodder for livestock. In 2021, the

project team undertook a bamboo fodder trial in partnership with the Animal Science Department of the Kwame Nkrumah University of Science and Technology in Ghana, and piloted a new bamboo fodder processing machine. A research paper on bamboo fodder is ongoing and will be published in 2022.

Looking to the future, the project team is keen to ensure the long-term promotion of bamboo sector development in East Africa after the project ends in 2022. In 2021, the project team organised a number of awareness-raising forums and activities with policymakers, including two national bamboo policy workshops in Ethiopia and Ghana. In addition, an Integrated Knowledge Management System is being developed, which will provide wide access to training materials, manuals and policy documents related to bamboo development in Africa.



A participant on a study tour in Ghana learning about bamboo bicycle making.

Bambuzonía: promoting bamboo in the Amazon region



A beneficiary of the Bambuzonía project.

The ‘Bambuzonía’ project, financed by IFAD, has been active since 2020, encouraging the uptake of bamboo as part of Colombia, Ecuador and Peru’s strategies for agriculture, land restoration and climate change.

On one level, the project encouraged policymakers to integrate bamboo into their development agenda: in 2021, with INBAR’s support, one national bamboo strategy was published by the Government of Peru and a subnational bamboo development action plan was developed, which covers the Amazonian provinces of Napo, Pastaza and Morona Santiago in Ecuador.

The project was also active at the local level, providing capacity-building training to a wide range of people, from smallholder

farmers to technical specialists, on bamboo resource and value chain development, as well as organising ‘roundtable’ workshops and meetings, which aimed to coordinate local bamboo activities. Overall, more than 4500 people, including women, youth, and indigenous people, benefitted from the project. In addition to formal training, the project developed and disseminated a wide range of technical and interactive publicity materials, including an educational bamboo video game, a Bambuzonía radio programme, and a ‘Rural Youtubers for Bamboo’ campaign.

Finally, the project continued to demonstrate bamboo’s usefulness as a tool for restoring degraded land and as an alternative source of income for the Amazon region. In 2021, nine bamboo nurseries were supported, 185 hectares of land were restored and more than 40 kilometres of farm boundaries and shelter belts were planted with bamboo to provide an effective barrier against wind and soil erosion.

The project will finish in 2023, by which time more than 2000 rural smallholder farmers in Colombia, Ecuador and Peru should have improved their livelihoods and expanded their income using bamboo. According to project manager Carlos Falconí: “Promoting the creativity and entrepreneurial capacity of young people and women using bamboo not only creates additional income for their families, but also contributes to the Amazon biome by reducing deforestation and restoring degraded areas.”

Using South-South cooperation to drive bamboo sector development

Since 2019, INBAR has been implementing a new subproject funded by the China–IFAD South-South and Triangular Cooperation Facility. The main objective of this subproject, which aims to enhance the impact of the Inter-Africa Programme (page 16), is to transfer existing solutions, knowledge and technologies from across Africa and China to specific African countries.

So far, the project has hosted a number of knowledge-sharing and networking events, including three study tours to Ethiopia, Ghana and Kenya with a total of 154 participants, as well as a regional awareness-raising symposium in Ghana and a bamboo renewable energy conference in Yaoundé, Cameroon.

The project is also pushing forward the development and uptake of bamboo and

rattan standards in Africa to help countries create high-value products and access international markets. In November 2021, a training workshop on standards was conducted in Accra, Ghana. Two new Task Forces, on sustainable bamboo management and bamboo biomass energy, are working

to develop voluntary guideline standards specifically to improve the quality of bamboo and rattan products made in African countries. The project also engaged with the African Organisation for Standardisation to establish a committee which develops bamboo- and rattan-related standards at the continental level.

Restoring degraded land in Cameroon

INBAR is a key partner of The Restoration Initiative, an international project funded by the Global Environment Facility, which aims to overcome existing barriers to land restoration in a number of countries. In Cameroon, INBAR is the executing agency of the project that promotes bamboo and other non-timber forest plants as effective tools for land restoration, and provides income for rural communities.

In 2021, the INBAR team in Cameroon continued to build political interest in restoring degraded land with bamboo. The project finished work on a 'Restoration Opportunities Assessment Methodology' report, which identified opportunities

to restore degraded lands in Cameroon and appropriate interventions to do so. The team also worked closely with the Cameroonian government to prepare a national strategy for forest landscape restoration in Cameroon, called the 2020–2030 National Plan for the Fight Against Forest Landscape Degradation, and train forest administrators in areas such as bamboo agroforestry.

Work also continued on restoring land, with more than 100,000 plants from bamboo and other non-timber species being produced, and over 100 hectares of land restored. Almost 500 local stakeholders were trained on land restoration practices and value chain development.



Bamboo planting in Mountain Bamboutos, an ecosystem hotspot in Cameroon.

Creating media materials for business development in Asia

INBAR is working on two projects with the Commonwealth Educational Media Centre for Asia (CEMCA). In Brunei and Malaysia, INBAR is working with CEMCA to transfer technical knowledge, skills and technologies for making engineered bamboo products. Like many Asian countries, Malaysia and Brunei have the required bamboo base for creating high-value products, but they lack the technical skills and technologies to harness these opportunities. In 2021, INBAR and CEMCA developed an audiovisual (AV) module for making bamboo scrimber, laminates and related products. These modules will be finalised and used for technical training in 2022.

INBAR is also working with CEMCA in Sri Lanka and Bangladesh to create AV training materials on bamboo furniture-making and provide hands-on training to artisans and potential entrepreneurs in both countries. While bamboo furniture is a lucrative field, providing a fast-growing replacement for hardwood, it requires different skills to build. The project has developed AV materials and a manual about bamboo furniture-making, and will organise future workshops in 2022 to help furniture-making artisans build new skills, and attract potential entrepreneurs. These AV materials will also be rolled out in other countries, including India.

Bamboo for post-pandemic economic resilience in India

In 2021, INBAR started a new project to support livelihoods with bamboo in India. The project, which is funded by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), is aimed at communities that have suffered as a result of the market disruptions caused by COVID-19, particularly those working in informal sectors.

So far, the project has undertaken a study of the existing and potential market for bamboo

products, and organised a consultation meeting with some of the world's leading designers and design schools, including the World University of Design, the National Institute of Design, and the Indian Institute of Fashion Technology, to explore bamboo product ideas.

The market study report and action strategy will be finalised in 2022, along with profiles of five impactful product ideas for scaling up.

Promoting global bamboo and rattan value chains

INBAR contributes to the multimillion dollar 'Trade Hub' project led by the UN Environment World Conservation Monitoring Centre and funded by the United Kingdom's Global Challenges Research Fund. The Hub aims to support the development of products that have a positive impact on biodiversity and local livelihoods, including bamboo and rattan.

In 2021, INBAR worked on a number of reports to better understand the status of bamboo and rattan value chains. The first was *A Review of International Bamboo and Timber*

Trade Regulations: A Multijurisdictional Study, which analyses the impact of international timber regulations on bamboo trade; two more studies, which look at the impacts of bamboo forests, products and trade on biodiversity and the impacts of Forest Stewardship Council (FSC) certification on bamboo forests, are being prepared. These reports paint a clear picture of the multiple impacts of global bamboo and rattan value chains on environments and socioeconomic development.



Participants on an international construction course in 2021 visited the “Mágico Pile” housing plan in Montecristi, Manabí.

Back to school: teaching bamboo construction in Manabí, Ecuador

Established in Manabí province, Ecuador, the Manabí Bamboo Workshop School is an ongoing project run by INBAR and funded by the Spanish Agency for International Development Cooperation (AECID). The School aims to build a future generation of construction professionals who are familiar with bamboo house-building techniques and requirements.

The School formally opened its doors in 2021 and currently has 84 students enrolled in classes. A curriculum has been developed, which provides more than 1000 hours of technical and practical education in sustainable bamboo construction. The project also supported 28 master-level students to learn about bamboo construction. Feedback has been positive, with one student saying, “Due to a lack of money and the long distance, it was not possible for me to go to university, but now through the Bamboo Workshop School, I am learning many topics related to construction that will apply [to projects] in my home and community.”

Outside the School, the project team is advocating for bamboo construction in Manabí more generally. The team designed a number of bamboo structures for tourist and community use, produced a manual and videos about how to maintain bamboo structures, provided training to more than 200 producers through the Bamboo Farmers Field School, and organised a study tour for 20 community leaders. The project also supported the promulgation of two municipal ordinances and a new bank credit line that encourages local bamboo management and construction.

In 2021, INBAR and the Ikiam Amazon Regional University in Ecuador also began a new joint initiative to support the uptake of sustainable construction in Ecuador, using bamboo and other local materials. The project, which is funded by AECID, will develop an Ibero-American network of universities and research institutes that work with bamboo, and create a repository of scientific and technical studies, as well as support new research and innovations related to the use of bamboo for construction.

Using bamboo for forest restoration in Viet Nam

Since 2018, INBAR has been partnering on a project managed by the nonprofit organisation RECOFTC - The Center for People and Forests, which aims to support long-term forest landscape restoration through three pilot studies in the Mekong region. It is funded by Germany's Federal Ministry for Environment, Nature Conservation, Building and Nuclear Energy. INBAR is in charge of one of the three pilot studies, which is using bamboo to restore land in Viet Nam.

In 2020, the project helped more than 100

households establish legal rights to manage their local bamboo forests and trained a number of forest managers in sustainable management of local Lung bamboo. In 2021, the project worked to secure these gains in the long-term: local stakeholders developed a number of forest management plans to ensure the long-term protection of the forest and new bamboo plantations, and strengthened private and community partnerships. A number of new Lung bamboo businesses have also been established.

Boosting bamboo weaving for low-carbon livelihoods in China

Chishui, an area in Guizhou province, China, is part of the Danxia China World Heritage site and a place famous for local bamboo weaving skills. For several years, INBAR and the UN Educational, Scientific and Cultural Organization (UNESCO) have worked with Chishui authorities to promote bamboo weaving as a sustainable source of income in the area. In 2021, these efforts continued with the launch of a new initiative, the 'Chishui Sustainable Livelihood Development Activity'.

The project team selected four representatives from Chishui to attend the 11th Chinese Bamboo Cultural Festival in October in Yibin, Sichuan, to raise awareness about,

and help pass on, this intangible cultural heritage. Work also began to train a new generation of bamboo weavers: in December, a month-long course trained 25 women in the craft of high-value bamboo weaving.

The project's overall aim is to create a model for sustainable livelihoods that can contribute to China's new target of carbon neutrality by 2060 and that can be exported to other parts of China. Over the next three years, the project will focus on quantifying the carbon storage and climate resilience benefits of working with bamboo, and creating sustainable socioeconomic development across the World Heritage site.



A trainee in Chishui learns how to create woven bottle coverings as part of the INBAR–UNESCO project.



The Dutch-Sino-East Africa Bamboo Development Programme trained more than 4000 beneficiaries in 2021.

Developing East Africa's bamboo sector

In 2021, the Dutch-Sino-East Africa Bamboo Development Programme, funded by the Ministry of Foreign Affairs of the Netherlands, made further progress towards developing the bamboo sector in Ethiopia, Kenya and Uganda.

Efforts to build capacity and transfer new skills about various aspects of bamboo management and use were an important component of project work in 2021. Staff organised over 100 training sessions on a range of topics to do with bamboo resource development and value chain development, benefiting more than 4000 trainees. In addition, the project supported bamboo curriculum development for Technical and Vocational Education and Training programmes in Kenya and Ethiopia. Four community training centres and two model bamboo charcoal enterprises were established, to provide a hub for future training and knowledge-sharing among communities.

Developing a bamboo sector requires more than training: it also needs a reliable supply of bamboo. In 2021, the Dutch-Sino-East

Africa project team oversaw the restoration of 1200 hectares of land with bamboo, brought a further 600 hectares under sustainable management, and supported more than 100 bamboo nurseries that produced over 1.5 million bamboo plants. Three supply chains were established by linking 15 cooperatives.

Research was also conducted to identify bamboo species that are environmentally suitable and commercially important for planting across Ethiopia, Kenya and Uganda, and to identify the chemical, physical and mechanical properties of Ethiopian indigenous bamboo species.

Lastly, the project team also worked to raise the profile of bamboo as a lucrative income-generating scheme, hosting or taking part in a number of awareness-raising events for local communities, as well as banks and financial institutions. These awareness-raising events reached the highest levels of policymaking: in 2021, the project supported ministries in Ethiopia, Kenya and Uganda to establish units dedicated to bamboo development.

PUBLICATIONS

A full list of INBAR publications can be found on the online Resources Centre: www.inbar.int/resources/. All the publications listed below are in English unless otherwise stated.

Annual Highlights

INBAR Annual Highlights 2020 (Chinese, English, French and Spanish)

Bamboo and Rattan Update

Volume 2 Issue 1 (March): 'Vernacular Bamboo Architecture' (Chinese, English, French and Spanish)

Volume 2 Issue 2 (June): 'Out of the Woods? The Future of Rattan' (Chinese, English, French and Spanish)

Volume 2 Issue 3 (September): 'Bamboo: Fibre of the Future' (Chinese, English, French and Spanish)

Volume 2 Issue 4 (December): 'Building the Future with Bamboo' (Chinese, English, French and Spanish)

Fact Sheets

Bamboo and the Circular Economy (French and Spanish; English version published in 2020)

Bamboo as a Source of Bioenergy (French; English version published in 2020)

Bamboo, Rattan and Biodiversity (French and Spanish; English version published in 2020)

Bamboo as a Plastic Alternative (Chinese, English, French and Spanish)

General Information

About INBAR (Chinese, French and Spanish; English version published in 2020)

A Brief Review of INBAR in 2020 (Chinese only)

Technical Reports

INBAR Technical Report #43: *Development and Submission of Life Cycle Inventory Data for Bamboo-based Construction Materials*

Trade Reports

Trade Overview 2018: Bamboo and Rattan Commodities in the International Market

Trade Overview 2019: Bamboo and Rattan Commodities in China

Trade Overview 2019: Bamboo and Rattan Commodities in the International Market

National Bamboo Strategies

Ghana Bamboo and Rattan Development Strategic Plan, 2020–2024

Working Papers

A Review of International Bamboo and Timber Trade Regulations: A Multijurisdictional Study

Análisis costo-beneficio de la incorporación del bambú en sistemas ganaderos y lineamientos de política para su uso en Colombia [Cost-benefit Analysis of the Incorporation of Bamboo in Livestock Systems and Policy Guidelines for Its Use in Colombia] (Spanish only)

Análisis de los Marcos Regulatorios y de las Políticas para el Desarrollo del Bambú-Guadua en Colombia [Analysis of Regulatory Frameworks and Policies for the Development of Guadua Bamboo in Colombia] (Spanish only)

Análisis de Políticas para el Desarrollo del Bambú en las Provincias de Napo, Pastaza y Morona Santiago, Ecuador [Policy Analysis for the Development of Bamboo in the Provinces of Napo, Pastaza, and Morona Santiago, Ecuador] (Spanish only)

Bamboo for Charcoal Production in Africa: Experiences from Ghana

Bamboo Pellets for Sustainable Bioenergy Production in Ghana

Bamboo Seed Sourcing/Selection Study in Ethiopia

Country Profile of Climate Change Mitigation Potential of Implementing Sustainable Management for Bamboo Forests in Kenya

Ecosystem Services and Cost-Benefit Analysis of Natural Forests and Mixed Bamboo Systems in Peru

Farmer Field Schools on Sustainable Management of Clumping Bamboo Facilitators Manual: Part 1

Farmer Field Schools on Sustainable Management of Clumping Bamboo Facilitators Manual: Part 2

Growth Potential and Sustainability of Economically Important Rattan Species in Agro-Ecological Zones of Cameroon

Identificación y Diseño de Incentivos Financieros y No Financieros para el Uso del Bambú en la Construcción [Identification and Design of Financial and Non-financial Incentives for the Use of Bamboo in Construction] (Spanish only)

Integration of Bamboo Forestry into Carbon Markets

Políticas que promueven el desarrollo del bambú en las provincias de Chanchamayo, Oxapampa, Satipo y Rioja, Perú [Policies That Promote Bamboo Development in the Provinces of Chanchamayo, Oxapampa, Satipo, and Rioja, Peru] (Spanish only)

Servicios Ecosistémicos y Análisis Costo-Beneficio de Bambú en el Perú [Ecosystem Services and Cost-benefit Analysis of Bamboo in Peru] (Spanish only)

The Potential of Bamboo for Climate Change Mitigation in Ethiopia

The Potential of Bamboo for Renewable Energy: Main Issues and Technology Options

Academic articles published by INBAR staff in 2021

- Abebe, S., Minale, A. S., Teketay, D., Durai, J., and Long, T. T. (2021). 'Biomass, Carbon Stock and Sequestration Potential of *Oxytenanthera abyssinica* Forests in Lower Beles River Basin, Northwestern Ethiopia.' *Carbon Balance and Management* [online]. Accessed 6 January, <https://doi.org/10.1186/s13021-021-00192-5>.
- Camargo, J. C., Mejía, L., Londoño, X., Muñoz, J., Carmona, T., and Jacome, P. (2021). 'Potencial nutricional de especies de bambú para alimentación de rumiantes. Caso de estudio en La Zona Cafetera de Colombia' [Nutritional Potential of Bamboo Species for Ruminant Feeding. Case Study in the Coffee Zone of Colombia]. *Revista Científica Ecuador es Calidad* [online]. Accessed 6 January, <https://doi.org/10.36331/revista.v8i1.135>.
- Kaushal, R., Kumar, A., Alam, N. M., Singh, I., Mandal, D., Tomar, J. M. S., Mehta, H., Lepcha, S. T. S., Long, T. T., and Durai, J. (2021). 'Assessment of Eco-Hydrological Parameters for Important Sympodial Bamboo Species in Himalayan Foothills.' *Environmental Monitoring and Assessment* [online]. Accessed 6 January, <https://doi.org/10.1007/s10661-021-09231-7>.
- Kaushal, R., Kumar, A., Patra, S., Islam, S., Tomar, J.M.S., Singh, D.V., Mandal, D., Rajkumar, Mehta, H., Chaturvedi, O. P., and Durai, J. (2021). 'In-Situ Soil Moisture Conservation in Bamboos for the Rehabilitation of Degraded Lands in the Himalayan Foothills.' *Ecological Engineering*, 173 [online]. Accessed 6 January 2021, <https://doi.org/10.1016/j.ecoleng.2021.106437>.
- Kaushal, R., Tewari, S., Thapliyal, S. D., Kumar, A., Roy, T., Islam, S., Lepcha, S. T. S., and Durai, J. (2021). 'Build-Up of Labile, Non-Labile Carbon Fractions under Fourteen-Year-Old Bamboo Plantations in the Himalayan Foothills.' *Heliyon* [online]. Accessed 6 January, <https://doi.org/10.1016/j.heliyon.2021.e07850>.
- Oumer, O. A., Tesfaye, K., Feyissa, T., Yibeyen, D., Durai, J., and Hyder, M. Z. (2021). 'cpDNA-Gene-Sequence-Based Genetic Diversity, Population Structure, and Gene Flow Analysis of Ethiopian Lowland Bamboo (Bambusinae: *Oxytenanthera abyssinica* (A. Rich.) Munro).' *International Journal of Forestry Research* [online]. Accessed 6 January, <https://doi.org/10.1155/2021/9976087>.
- Patra, S., Kaushal, R., Singh, D., Kumar, R., Gadedjisso-Tossou, A., and Durai, J. (2021). 'Surface Soil Hydraulic Conductivity and Macro-Pore Characteristics as Affected by Four Bamboo Species in North-Western Himalaya, India.' *Ecohydrology & Hydrobiology* [online]. Accessed 6 January 2021, <https://doi.org/10.1016/j.ecohyd.2021.08.012>.

EVENTS

Events in italics are INBAR webinars.

INBAR–Wulong Strategic Partnership Signing Ceremony , 1 March, Wulong, China	INBAR signed a partnership agreement with this bamboo-producing area to promote local market development and ecotourism.
<i>Webinar: Intelligent Manufacturing of Bamboo Products</i> , 2 March	<i>How innovative machinery and optimised production processes are revolutionising the bamboo sector.</i>
<i>Webinar: Bamboo Policy: A Roadmap for Bamboo Development</i> , 9 March	<i>Analysing the best ways to regulate and support the national bamboo sector.</i>
Workshop for International Women's Day: 'The Role of Women in Agricultural Development' , 8 March, Morona Santiago province, Ecuador	The Latin America and the Caribbean Regional Office cohosted this workshop.
Latin America and Caribbean Ambassadors' Dialogue , 18 March, Beijing, China	A dialogue with policymakers and international organisations about how bamboo can support post-pandemic economic recovery in the region.
International Day of Forests: UNFF Event , 19 March, Virtual event	INBAR spoke at this event, which was broadcast on UN Web TV.
<i>Webinar: Bamboo Landscapes in Forest Cities</i> , 6 April	<i>An introduction to bamboo's uses for urban greening, hosted at the International Forest City Conference 2021.</i>
Yangzhou Expo , 8 April to 8 October, Yangzhou, China	INBAR took part in this six-month-long event to showcase bamboo's importance as a nature-based solution. On 8 April, INBAR celebrated its Honour Day at the Exposition.
<i>Webinar: Bamboo Textiles Industry Development</i> , 13 April	<i>An overview of the production and market potential of bamboo textiles.</i>
Ghana Bamboo Study Tour , 27 to 30 April, Ghana	Delegates from 13 countries took part in this tour of Ghana's successful bamboo businesses.
UNFF 16 , 29 April, Virtual event	INBAR hosted a side event at the Forum: 'From Policy to Action: Forest and Economic Revival with Bamboo'.
The Third Jian'ou Bamboo Industry Development Summit Forum , 20 May, Jian'ou, China	INBAR delivered a presentation providing a global overview of bamboo sector development.
<i>Webinar: Integration Of Bamboo into Landscape Restoration</i> , 3 June	<i>This webinar was held to coincide with the start of the UN Decade on Ecosystem Restoration, of which INBAR is a supporting partner.</i>
FTA Kunming Science Conference , 22 to 24 June, Kunming, China/Virtual event	INBAR presented recent research at this event in its role as partner of the CGIAR FTA Program.
'Science · Art · Life' Exhibition , 28 June, Shanghai, China	INBAR organised an event at this exhibition about bamboo's contributions to a more sustainable future.
Regional Symposium on Investing in Bamboo , 6 to 7 July, Accra, Ghana	A discussion on how African countries can develop and industrialise their bamboo sectors.
2021 China (Dongyang) Bamboo Crafts Industry Development Conference , 11 July, Dongyang, China	INBAR coorganised this conference, which promoted national bamboo crafts and established an INBAR Bamboo Crafts Training Base.
Ethiopia Bamboo Study Tour , 25 to 27 August, Ethiopia	Delegates from 19 countries attended this tour of Ethiopia's bamboo sector.
<i>Webinar: Anji Bamboo Study Virtual Tour (Part I): Supply Chain Integration for Maximum Utilisation and Value Addition</i> , 24 to 26 August	<i>The first of a two-part webinar series 'visiting' one of the top bamboo-producing areas in China.</i>
2021 CIFTIS , 2 to 7 September, Beijing, China	INBAR had a booth at this Fair and cohosted a seminar on 'Replacing Plastics with Bamboo' on 6 September.

32nd Session of the Latin American and Caribbean Forestry Commission , 6 to 10 September, Virtual event	INBAR staff proposed a project for bamboo development in the Caribbean region, which was endorsed by attendees.
Online Course: Bamboo Cluster and Supply Chain Development for Strengthening Bamboo Value Chains , 7 to 10 September	<i>This longer INBAR online training course looked at value chains for different bamboo products.</i>
Online Course: Standardisation of the Bamboo Industry , 15 September	<i>An introduction to technical guidelines and standardisation processes for bamboo products.</i>
World Bamboo Day , 18 September, Worldwide event	INBAR Regional Offices and Member States hosted several events to mark this international day.
GLF Amazonia , 21 to 23 September, Virtual event	INBAR hosted an event on 'Bamboo: A Nature-based Solution for Restoration in the Amazonian Region' at this digital conference.
Online Course: Tropical Sympodial Bamboo Resource Management , 22 to 24 September	<i>Basic skills for establishing and managing bamboo nurseries and plantations.</i>
IUFRO World Day: Digital Forest Science Forum 2021 , 28 to 29 September, Virtual event	INBAR gave two presentations at this event about bamboo and rattan's contributions to sustainable development and about bamboo as a plastic alternative.
Convention on Biological Diversity COP 15 , 11 to 15 October, Kunming, China / Virtual event	INBAR attended this event in its capacity as an Observer to the Convention on Biological Diversity.
Online Course: Bamboo Weaving Art and Techniques , 12 to 14 October	<i>A demonstration of basic bamboo weaving techniques and technologies.</i>
Webinar: Bamboo Entrepreneurs Forum – Corporate Responsibilities , 16 October	<i>A discussion with bamboo business leaders from different countries.</i>
11th Chinese Bamboo Cultural Festival , 19 to 21 October, Yibin, China/Virtual event	INBAR cohosted this event, which included speeches, a product fair, and a field trip to bamboo-producing areas of Yibin, Sichuan province.
Webinar: Anji Bamboo Study Virtual Tour (Part II): Supply Chain Integration for Maximum Utilisation and Value Addition , 26 to 28 October	<i>The second of a two-part webinar series exploring Anji county in China.</i>
Conference on the Potential of Bamboo for Renewable Energy , 26 October, Yaoundé, Cameroon/Virtual event	INBAR coorganised this conference, which discussed the opportunities for bamboo energy and the way forward for the sector.
INBAR–UNIDO Strategic Partnership Signing Ceremony , 28 October, Virtual event	INBAR and UNIDO's agreement commits both organisations to increased cooperation on developing the global bamboo and rattan sectors.
UN Framework Convention on Climate Change COP 26 , 31 October to 12 November, Glasgow, Scotland	INBAR had a booth at this convention and hosted or took part in several side events on bamboo construction and bamboo energy.
INBAR–Qingyuan Strategic Partnership Signing Ceremony , 1 November, Qingyuan, China	INBAR signed a partnership agreement with this bamboo-producing area to promote local market development and ecotourism.
Flag-raising Ceremony for the Accession of the Islamic Republic of Pakistan to INBAR , 10 November, Beijing, China	Representatives from INBAR partners and Member States celebrated the accession of the network's 48 th Member State at INBAR Headquarters.
Kenya Commercial Forestry Investment Conference , 2 to 5 November, Kenya	The second day of this event featured a session on 'Bamboo Production, Processing and Utilisation'.
Kenya Bamboo Study Tour , 28 November to 2 December, Kenya	The trip took 35 delegates on a tour of Kenya's most successful bamboo enterprises.
Online Course: Sustainable Management of Tropical Sympodial Bamboo Resources , 14 to 16 December	<i>This workshop featured demonstrations from the Yunnan Academy of Forestry and Grassland.</i>
Webinar: European Bamboo Business: 'A New Deal' , 20 December	<i>A look at the bamboo sector in Europe and opportunities for its expansion.</i>



Top: 'With Brick', the prize-winning image, shows workers traversing a bamboo ramp. Credit: Enamul Kabir. Bottom, left to right: the second prize went to 'Learning From Mother', about bamboo weavers in Bangladesh; the third prize was awarded to 'Productive During The Pandemic', which shows a rattan furniture seller in Indonesia stacking chairs. Credits: Ashiqur Rahman Sakib (left); Bastian AS (right).

INBAR international photo competition 2021

The 2021 INBAR bamboo and rattan photography competition shone a light on how bamboo and rattan are an integral part of lives and livelihoods around the world.

Between April and August, INBAR received over 130 photographs from 28 countries. The prize-winning image, 'With Brick', was

submitted by Enamul Kabir from India and shows workers at a brickmaking area of West Bengal traversing a bamboo ramp. Other winning and highly commended images featured bamboo basket weavers in Bangladesh, a rattan furniture seller, bamboo houses, bamboo shoot collecting, and a bamboo-clad car.

The full results can be viewed online at: www.inbar.int/event/photocompetition2021/



Pakistan becomes INBAR's 48th Member State

On 1 July 2021, the Islamic Republic of Pakistan formally acceded to INBAR. It is INBAR's 48th Member State and its 16th in the Asia-Pacific region.

Speaking at the flag-raising ceremony on 10 November, His Excellency Mr. Moin ul Haque, Ambassador of Pakistan to China, said of bamboo: "It is difficult to imagine any other crop with such diverse uses for humankind. Bamboo is employed as a food item, an important construction material, for making musical instruments, paper and pulp, and many other uses... Bamboo's wider application across many industries is helping to protect precious timber resources from depletion."

He also expressed his hope that bamboo and rattan could become key tools in Pakistan's sustainable development as part of initiatives such as the country's 'Ten Billion Tree Tsunami' project.

Pakistan has a long relationship with INBAR and was an Observer at the organisation's formal establishment back in 1997. In her speech, Professor Jiang Zehui, the Co-Chair and Acting Chair of INBAR's Board of Trustees, told participants that she had met with His Excellency Mr. Imran Khan, Prime Minister of Pakistan, in 2019, and that His Excellency Mr. Moin ul Haque had subsequently visited INBAR Headquarters in 2020. Another delegation of spouses and staff from the Embassy, led by His Excellency Mr. Moin's wife Mrs. Farah Moin, visited in January 2021.



www.inbar.int | info@inbar.int

Headquarters: Beijing, China

Regional Offices: Yaoundé, Cameroon | Quito, Ecuador | Addis Ababa, Ethiopia | Kumasi, Ghana | New Delhi, India