

ANNUAL HIGHLIGHTS



2023

Cover image:

Rural lifestyles are deeply intertwined with the use of bamboo and rattan. Illustrations by Jen Rao.

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International Bamboo and Rattan Organization

Established in 1997, the International Bamboo and Rattan Organization (INBAR) is an intergovernmental development organization that promotes environmentally sustainable development using bamboo and rattan. At the end of 2023, INBAR was made up of 50 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.

22 Member States in Africa

Benin, Burundi, Cameroon, the Central African Republic, Chad, the Congo, the Democratic Republic of 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
BASP	Bamboo as a Substitute for Plastic
BRICS	Brazil, Russia, India, China and South Africa
CBD	Convention on Biological Diversity
CIFTIS	2023 China International Fair for Trade in Services
CONABA	National Bamboo Commission, Panama
COP	Conference of the Parties
COVID-19	coronavirus disease 2019
FAO	Food and Agriculture Organization of the United Nations
FLR	forest and landscape restoration
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPML	Global Partnership on Plastic Pollution and Marine Litter
ICBR	International Centre for Bamboo and Rattan, China
IFAD	International Fund for Agricultural Development
INBAR	International Bamboo and Rattan Organization
ISO	International Organization for Standardization
ISO/TC 165	ISO Technical Committee 165
LDC	least developed country
MIDUVI	Ministry for Urban Development and Housing, Ecuador
NTFP	non-timber forest products
SME	small and medium enterprises
UN	United Nations
UNCTAD	UN Conference on Trade and Development
UNEP	UN Environment Programme
UNESCO	UN Educational, Scientific and Cultural Organization
UNFCCC	UN Framework Convention on Climate Change
UNFF	UN Forum on Forests
UNIDO	UN Industrial Development Organization
WCMC	World Conservation Monitoring Centre

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Foreword from the Board Co-Chair and Acting Chair



On behalf of INBAR's Board of Trustees, I would like to express my gratitude to everyone who has stood by our side since our establishment 26 years ago. It is only with your unwavering support that we have been able to make real positive impacts in the lives of millions around the world.

2023 featured significant accomplishments built upon years of persistent hard work. INBAR hosted the First International Symposium on Bamboo as a Substitute for Plastic in Beijing, uniting key stakeholders from around the world on the importance of using bamboo as a nature-based solution to combat plastic pollution and climate change. As part of the proceedings, China and INBAR co-launched the *Global Action Plan for Bamboo as a Substitute for Plastic (2023–2030)*. This action plan seeks to mobilize stakeholders and galvanize progress toward implementing the Bamboo as a Substitute for Plastic (BASP) Initiative while also accelerating progress on the 2030 Agenda for Sustainable Development. It aims to do so through a number of pathways such as promoting the release of support measures at a faster pace, improving research, encouraging innovative exploration, fostering new market mechanisms, intensifying promotion and consolidating partnerships.

We also made considerable progress in implementing the Pilot Project of the BASP Initiative, launched in July 2023 and continuing into 2024. The Pilot Project represents the vanguard of the BASP Initiative, surveying bamboo resources and investigating industry chains in six representative INBAR Member States in Asia, Africa and Latin America. The goal of the Pilot Project is to foster the creation of new global paradigms and modes related to the entire chain of bamboo products that can be substituted for plastics. Outcomes from the project will promote the industrial development of products related to the BASP Initiative and drive green economic and social development.

In addition to INBAR's laudable efforts to combat plastic with bamboo, our regular membership enlargement, advocacy work and partnership outreach went smoothly. In 2023, we welcomed the Democratic Republic of the Congo as our 50th Member State and the Oriental Republic of Uruguay as our new Observer State, and we are looking forward to welcoming more consumer countries into the INBAR family in the future. At the 12th Session of the INBAR Council, Nepal was selected as the new Chair of the Council and Panama as Vice-Chair for the next term (2023–2024). INBAR also flew the flag of bamboo and rattan at major events in the Host Country, China to further advance INBAR's mission and objectives. I am also very pleased to say that INBAR signed a Memorandum of Understanding with the National Development and Reform Commission for increased cooperation along the Belt and Road Initiative (BRI). This will facilitate the greater inclusion of bamboo and rattan into the strategic actions of BRI countries, many of whom are already INBAR Member States.

Your support over the years has been critical to us executing our sustainable mission. From INBAR, we wish you joy and good health in the Year of the Dragon!

JIANG ZEHUI

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

Foreword from the Director General



In 2023, INBAR played a vital role in promoting global engagement with bamboo and rattan. In November, INBAR hosted the First International Symposium on Bamboo as a Substitute for Plastic Initiative. The event was a spectacular success, bringing together hundreds of stakeholders to meet and exchange knowledge and best practices, explore innovation opportunities, improve market mechanisms and encourage policy formulation. Parallel sessions were held on policy, resource management, private sector development and R&D. During the proceedings, China and INBAR also released the *Global Action Plan* for the BASP Initiative, which will help marshal global resources and key actors to tackle challenges related to plastic waste and climate change.

INBAR continued to vigorously promote bamboo and rattan at events around the world. Our experts spoke and hosted exhibitions at a number of prominent events, including at the United Nations (UN) General Assembly and other UN conferences on climate change, economic and social issues, forestry, industrial development, trade and development, and least developed countries. We also remained highly active in key international fora such as the Intergovernmental Negotiating Committee (INC) on Plastic Pollution, Global Landscapes Forum (GLF), Green BRI and more.

Furthermore, 2023 was a successful year for expanding our partnership network. INBAR joined the Global Partnership on Plastic Pollution and Marine Litter, nested within the UN Environment Programme (UNEP). INBAR was also granted formal Observer status to the UN Conference on Trade and Development (UNCTAD), allowing us to advance the role of bamboo and rattan in international trade frameworks. And, our project work across the mountainous regions of the world was recognized by our entry into the Food and Agriculture Organization's (FAO) Mountain Partnership.

Our regional advocacy also made impressive strides. We reached thousands of bamboo and rattan stakeholders in communities around the world through our webinars and trainings, in addition to conducting regular programmatic work. Three new international construction standards were published, and we saw new bamboo policy developments in Colombia, Ecuador, Ethiopia, Kenya and Peru. In terms of transferring knowledge, 34 major publications including books, working papers and reports were produced and uploaded online, as well as nearly 200 articles published in four languages on the website.

This was also a special year for me personally, as it was my last full year as Director General of INBAR. I am proud of our organization's accomplishments over the last five years when I have been part of the Secretariat. I am very optimistic that with the ever-increasing utility of bamboo and rattan, the importance of these bendable but strong plants will attain greater recognition globally. In that regard, in my new role as Chair of the Board, I will work very closely with my successor and fellow Trustees to enable INBAR to reach higher levels of success as required and expected.

ALI MCHUMO
INBAR Director General

“以竹代塑”全球行动

LAUNCHING OF THE GLOBAL ACTION PLAN FOR BAMBOO AS A SUBSTITUTE FOR PLASTIC



BAMBOO AS A SUBSTITUTE FOR PLASTIC: ROOTS GROWING DEEPER



▲ Conference hall during the opening ceremony of the BASP Symposium.

计划 (2023-2030)

BAMBOO AS A SUBSTITUTE FOR PLASTIC (2023-2030)



In the past decade, the production of plastic has grown exponentially, with around 430 million tonnes now produced per year. However, only an estimated 19% of the plastics produced have been incinerated and a mere 9% recycled. The remaining global plastic waste is either disposed in landfills or released into the environment, where it disrupts natural ecosystems, leaching harmful chemicals into soils and accounting for 85% of maritime waste.

At the same time, plastics also contribute to climate change. Mainly produced by fossil fuels, greenhouse gases are emitted throughout the life cycle of plastics. As plastic use and resulting waste increases globally, these emissions are expected to double by 2060 if the world does not introduce new policies. Plastic pollution has hence become one of the main contributors to the triple planetary crises of climate change, biodiversity loss and pollution.

However, there is ample space for decision-makers to take meaningful steps to solve these transboundary challenges. This will require coordinated effort from actors in government, the private sector, producers, civil society, media, academia and international organizations. As an intergovernmental organization, INBAR works alongside other international organizations, particularly within the UN system, to strengthen comprehensive frameworks and agreements such as the INC on Plastic Pollution, align incentives and develop institutional synergy to achieve the UN Sustainable Development Goals.

INBAR's flagship project, the BASP Initiative, is a pioneering initiative co-launched with China that seeks to leverage INBAR's global resources and network to use bamboo to mitigate plastic pollution, tackle climate change and accelerate the implementation of the UN 2030 Agenda for Sustainable Development. Part of this mission, INBAR also facilitates the development of HS codes and standardization for bamboo products that can be substituted for plastics while also encouraging preferential purchases/tariffs to promote trade, offers guidance to policymakers on establishing a healthy business environment, fosters multistakeholder collaboration whether South-South, Triangular or any other form of cooperation, and launches

▲
*Launching of the Global
Action Plan for the BASP
Initiative at the First
International
Symposium on Bamboo
as a Substitute for
Plastic.*

public awareness campaigns to help inform consumers about the benefits of bamboo products. INBAR also conducts research into innovative products and techniques, building linkages across the value chain and acting as a global knowledge broker. All of these actions and more are critical to mainstreaming bamboo in sustainable development planning and meaningfully reducing plastic use.

The Pilot Project of the BASP Initiative has been underway since summer 2023, involving the coordination of a number of international research institutes. The goal of the Pilot Project is to foster the creation of new global paradigms and modes related to the entire chain of bamboo products that can be substituted for plastics, and also to investigate the feasibility of scaling up bamboo production to strategically substitute for plastic products in six representative countries across INBAR's network. These countries include Malaysia and Viet Nam in Asia, Cameroon and Ethiopia in Africa, and Brazil and Ecuador in Latin America. To date, the survey work has been organized around genetics, cultivation, performance, products and assessment, with interdisciplinary experts joining the team to help refine the project design across different national contexts while identifying hot spots for follow-up research.

One of the capstone events of the BASP Initiative to-date has been the First International Symposium on Bamboo as a Substitute for Plastic. Marking the one-year anniversary since the launch of the initiative, the symposium was held in Beijing from 7 to 8 November 2023 under the theme "Collaborative Innovation to Globally Promote Bamboo as a Substitute for Plastic," receiving a significant amount of media coverage both domestic and international. Hundreds of stakeholders from around the world were in attendance to exchange knowledge and best practices, explore innovation opportunities, improve market mechanisms and encourage policy formulation, ultimately seeking to facilitate the achievement of the 2030 Agenda for Sustainable Development. The symposium also featured opening speeches from VIPs, keynote presentations and parallel sessions on policy, resource management, private sector developments and R&D.

During the opening ceremony, the *Global Action Plan for Bamboo as a Substitute for Plastic (2023–2030)* was officially released. This will function as the main framework for coordinating and implementing the BASP Initiative through targeting the following six goals: Releasing support measures at a faster pace; improving research levels; encouraging exploration in innovative fields; promoting the development of market mechanisms; intensifying promotion; and consolidating the foundation of partnerships. With these pillars in place for implementing future project work, bamboo is now set realize its full potential as a critical tool capable of ushering in a biobased low-carbon economy and making a serious dent in reducing plastic pollution.

The achievements of 2023 built on the groundwork laid in 2022. In June 2022, the BASP Initiative was included as one of the deliverables at the High-level Dialogue on Global Development at the 14th BRICS Summit. In September of that same year, China's State Councilor and Foreign Minister Wang Yi announced that China and INBAR would launch the *Global Action Plan* of the BASP Initiative as a clarion call to mobilize INBAR Member States. Finally, in November 2022, this momentum reached a crescendo when China and INBAR formally launched the BASP Initiative at the Second Global Bamboo and Rattan Congress in Beijing.



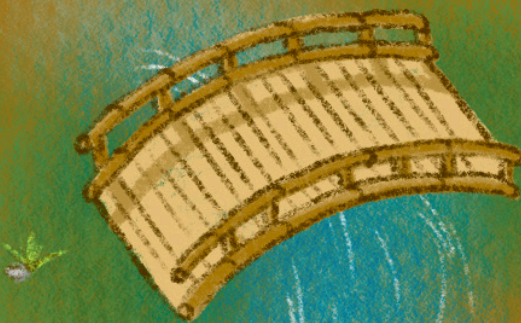
▲ *Bamboo can be sourced for over 10,000 products that are durable, high quality and low carbon.*



▲ *Carrying salable goods with a bamboo basket. Credit: Muhammad Amdad Hossain*

POLICY SHAPING

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





Flying DRC's flag at INBAR

On 1 March 2023, the Democratic Republic of the Congo (DRC) formally acceded to INBAR, becoming INBAR's 50th Member State. One of Africa's largest countries, the DRC is home to a vast array of biodiversity and exceptional natural resources, including bamboo and rattan. Located in Central Africa, much of the DRC's territorial borders overlap with the Congo rainforest. As a massive carbon sink, this rainforest has been called the "lungs" of the planet, storing even more carbon than the Amazon.

INBAR has a long history of working across Central Africa. INBAR has endeavored in the region to enhance incomes, livelihoods and the adaptive capacities of African smallholder farmers, women and youth to climate change by upscaling and increasing their participation in climate-smart bamboo value chains. This comes as part and parcel of the Inter-Africa Bamboo Smallholder Farmers Livelihood Development Programme. Working as a partner organization in The Restoration Initiative, INBAR has helped restore degraded soils across Cameroon using bamboo and other native, non-timber forest products. INBAR also

recently joined the Congo Basin Forest Partnership, helping bring bamboo into the fight to safeguard Central Africa's forestland.

The Government of the DRC acknowledges the untapped potential of bamboo as a tool for socio-economic development and environmental protection in the country. Increased project scope and outreach activities carried out by INBAR in the Central African region can now deliver benefits to users and producers in the DRC. Given that no inventory has been done on the status of bamboo or rattan in the DRC, this will be a priority for future project work in INBAR's newest Member State.

Bamboo shows up big at UN Climate Change Conference

From 8 to 10 December, INBAR participated in the 28th Conference of the Parties (COP 28) to the UN Framework Convention on Climate Change (UNFCCC), held in Dubai, United Arab Emirates. INBAR organized three side events and an exhibition booth, aiming to showcase the potential of bamboo in the fight against climate change.

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A ceremony at INBAR Headquarters celebrated the joint accession of DRC and Chad, which also joined INBAR at the end of 2022.



▲
Bamboo's versatility was recognized as a key nature-based solution at the 2023 UN Climate Change Conference.

The first side event, held on 9 December, was organized at the UNFCCC Global Innovation Hub on Bamboo Based Innovation for Upscaling Landscape Restoration and Green Growth in Developing Countries. The session highlighted bamboo's potential for landscape restoration, green growth and sustainable development. Key points included innovative approaches to bamboo planting material production and sustainable harvesting and management. The session also emphasized the importance of building robust supply chains, adopting circular economic models, promoting diverse products and industries and facilitating South-South technology and knowledge transfer to accelerate the development of the bamboo sector in developing and least developed countries around the world.

The second side event on Bio-Economy Value Chain Development for Climate Change Mitigation and Resilience: Bamboo & Amazon Products was organized by INBAR and the Center for Management and Strategic Studies of Brazil on 10 December. The side event highlighted how bio-economy value chains are important to achieving goals like carbon neutrality and build resilient

economies. The session featured lessons learned and knowledge advances on bamboo value chains globally, as well as on Amazon forest products that can help countries in the Global South achieve the 2030 Agenda for Sustainable Development.

The third side event titled Mitigating Plastic Pollution and Climate Change with Bamboo convened at the China Pavilion on 10 December. The session focused on demonstrating the feasibility and strategies for promoting bamboo as a substitute for plastic. Recently, INBAR released the *Global Action Plan for Bamboo as a Substitute for Plastic (2023–2030)*, outlining a series of actions that seek to mobilize global resources and key stakeholders in the fight to combat plastic waste and climate change.

The BASP Initiative focuses on providing bamboo-based solutions to address plastic pollution and contribute to climate change mitigation. The Pilot Project of the BASP Initiative is now underway, with scoping studies being undertaken in six pilot countries to investigate the feasibility of scaling up bamboo products in different national contexts.



Growing INBAR partnerships

INBAR's West Africa Regional Office moved its office to Ghana's capital, Accra, in 2023. To mark the occasion, on 1 February, Mr. Francis Yaw Opoku, Minister Counselor at the Embassy of the Republic of Ghana in Beijing, China, toured the grounds of the new office and engaged in a lively discussion with on-site staff on a wide variety of topics.

In addition to this construction project, Opoku also highlighted the wish of both himself and Ghana's Ambassador to China to resume annual bamboo and rattan training in Ghana in the post-COVID-19 era, and expressed his desire for a collaborative multi-stakeholder meeting that included relevant governmental bodies, INBAR and the International Centre for Bamboo and Rattan (ICBR) to discuss work plans going forward. The immense potential for Chinese investors to allocate capital into Ghana's bamboo sector to spur new job opportunities was also emphasized. Such investment could not only help generate new green industries in Ghana, but also better integrate global value chains and create scenarios of mutual benefit for both countries.

Launched in 2012 at the UN Conference on Sustainable Development (Rio+20), the Global Partnership on Plastic Pollution and Marine Litter (GPML) is a multi-stakeholder partnership that brings together actors working to prevent marine litter and plastic pollution. The GPML also functions as a platform for a wide range of actions, such as knowledge and experience sharing, coordination, identifying gaps and emergent issues, and harnessing the expertise, resources and enthusiasm of all stakeholders working in the fight to safeguard the planet's marine biomes from the scourge of plastic pollution.

On 22 February, INBAR became a full member of the GPML. Given that there currently exist over 10,000 documented products and applications of bamboo that can contribute to the reduction of marine litter and plastic pollution, as well as our long history of productive collaboration with UNEP, which provides secretariat services for the GPML, it is a natural alliance between like-minded international bodies who are working together to address issues global in scope. INBAR is excited to work across this multi-stakeholder partnership with other actors to generate meaningful

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INBAR's side events at COP 28 showcased successful stories from the Global South.

solutions and marshal resources to the transboundary problem of marine plastic pollution.

The 70th Session of UNCTAD convened in Geneva from 19 to 28 June. The Trade and Development Board meets annually to oversee the activities of the organization. On the final day of the meeting, when instructional, organizational, administrative and related matters were scheduled on the agenda, after discussion among UNCTAD Member States and with no objections (by consensus), INBAR was granted Observer status.

INBAR and UNCTAD have a productive history of cooperation. Experts from INBAR collaborated with UNCTAD to author the report *Commodities at a Glance: Special Issue on Bamboo*, providing several key statistics and data. This publication was presented at UNCTAD's Multi-year Expert Meeting on Commodities and Development as a critical document for elucidating the multifunctional uses of bamboo, its potential as a modern building material and capability for delivering benefits to developing countries. Also at the meeting, bamboo was allocated one full day for discussion, reflecting the growing role of the forest resource in trade and development planning.

The participation of INBAR in the activities of UNCTAD will help to facilitate South-South trade, investments and technology and knowledge transfer, benefiting INBAR's Member States and more while promoting policy frameworks that enable the development of green economies with bamboo and rattan. Furthermore, INBAR, as an international commodity body for bamboo and rattan, aims also to enhance efforts with partners like UNCTAD to boost the integration of bamboo and rattan into international trading systems.

Another key development among INBAR's growing alliances, on 21 June, INBAR officially became a member of the Mountain Partnership as the 21st intergovernmental member organization. This partnership functions as a broker for joint activities, facilitating connections between countries and institutions while creating conditions for technical cooperation and resource mobilization at national, regional and global levels. It also forges linkages with existing multi-lateral instruments such as the three Rio Conventions and other mountain-related regional instruments like the Alpine Convention and Carpathian Convention. Now that INBAR has joined its ranks, it will be able to exchange knowledge, information, expertise and resources with global members of the Mountain Partnership, and work in collaboration with members on initiatives in mountainous sustainable development, bringing bamboo and rattan to bear as nature-based solutions for mountains and the communities who dwell in their shadows.

Many of INBAR's 50 Member States are mountainous and face common, complex challenges. Safeguarding forests, restoring degraded landscapes, protecting biodiversity, conserving soil and water, and strengthening livelihoods are all important and interconnected actions in the sustainable development playbook. The exploration of a green and resilient development model for mountain communities that balances economic, environmental and social development to improve local livelihoods and living environments has been a core component of INBAR's mandate over the years. INBAR's recent entry into the partnership will generate synergy for scaling up support and also strengthen the bonds between INBAR and stakeholders, allowing for more comprehensive, adaptive and holistic responses to the urgent threats and

climate disasters facing mountains and their vulnerable communities.

Flying the INBAR flag worldwide

2023 was a banner year for global co-operation. As the door finally closed on the COVID-19 pandemic, international events were finally able to be convened in person for the first time in several years. INBAR took full advantage of the opportunities, with robust participation in China and abroad on a range of important meetings.

INBAR attended two major international events in China in 2023. Ali Mchumo, INBAR Director General, participated in the High-Level Seminar: Building a New Vision for the Green Silk Road organized by the BRI International Green Development Coalition. Held in Beijing on 17 October, the international forum hosted leaders from around the world. During his address, Mchumo spoke on the role of INBAR in development circles, where INBAR acts as a global knowledge broker, project implementer and strategic model for South-South cooperation, as well as mentioning that the vast majority of INBAR's Member States are also signatories to the BRI.

In addition to this prestigious event, INBAR sent a delegation to the Third Mountain Futures Conference: Mountain Communities in the Kunming-Montreal Global Biodiversity Framework. Convened from 16 to 18 April in Kunming, Yunnan Province, the conference revolved around four main themes central to supporting biodiversity: Scientific Exploration, Ecological Restoration, Indigenous Wisdom, and Future Living. Tefera Belay, INBAR Programme Development Officer, gave a presentation on the role of bamboo in restoring ecologies and generating ecosystem services, as well as represented

Lu Wenming, INBAR Deputy Director General, in delivering the closing remarks for the conference.

INBAR also proactively hosted three major meetings in 2023.

The 12th Session of the INBAR Council was held at Headquarters on 28 March alongside the Flag-Raising Ceremony for the Republic of Chad and the Democratic Republic of the Congo (DRC). Over 80 delegates from 39 countries were in attendance, including two ministers, ten ambassadors and five *chargés d'affaires*. At the Council meeting, the 2023 INBAR Work Plan and Budget were approved, the term of the Director General was extended by one year, and Nepal assumed the position of INBAR Council Chair of the 13th Session while Panama assumed the position of INBAR Council Vice-Chair. The Flag-Raising Ceremony formally signaled that Chad and the DRC are now parts of a broad coalition of countries advocating for the sustainable development of bamboo and rattan as nature-based solutions with access to trainings, policy input, capacity building and other project work facilitated by South-South and Triangular Cooperation.

INBAR also hosted the Consultative Forum of the Regional Group of Latin American and Caribbean Countries on 16 March. This event brought together ambassadors and diplomats from 16 countries in the region to discuss the potential of bamboo and rattan for sustainable development in the region and to enhance the role of bamboo as a promising solution for pro-poor livelihood development and green economic growth while providing environmental benefits from its versatile uses.

The final major event held by INBAR was the Working Group Meeting of the 13th INBAR Council Session. This meeting



▲
 Forum at INBAR HQ highlighted the increased role bamboo to play in driving sustainable development in Latin America and the Caribbean.

covered several key items, including the Board of Trustees' Report on INBAR's Work Progress for 2023, call for recruitment of a new Director General and presentation of the Work Plan for 2024. At the end of the meeting, the Council Chair Representative thanked the INBAR Director General for his excellent leadership and contributions during his five-year term.

INBAR's presence was also felt at prominent events abroad. In particular, INBAR personnel were present at major UN events, where they advocated for bamboo's incorporation into sustainable development planning and strategic work.

INBAR joined world leaders from 193 countries in New York to participate in the 78th session of the UN General Assembly. Ali Mchumo, INBAR Director General, and Borja De La Peña, INBAR Global Policy Officer, participated in events and held discussions with government heads, organization leaders and other dignitaries on a wide range of topics. These face-to-face meetings are critical for building trust and support with our partners in the diplomatic and non-governmental world.

The 2023 Partnership Forum for the Economic and Social Council was also held in New York, bringing together Member States and stakeholders to highlight the role that partnerships can play in driving action on implementing the sustainable development agenda. INBAR hosted a side event on innovative partnerships and the global plastic crisis. Lu Wenming, INBAR Deputy Director General, delivered the keynote speech, highlighting bamboo's role as a nature-based solution and its usefulness as a green alternative to many harmful plastic products. His speech also emphasized the SDG-aligned goals of the BASP Initiative, INBAR's flagship project on combating plastic pollution and addressing climate change.

From 5 to 9 March, INBAR participated in the Fifth UN Conference on Least Developed Countries (LDC5) hosted in Doha. INBAR hosted a side event titled Upscaling Investments for Pro-Poor Bamboo Industry and Enterprise Development for Enhancing Livelihoods and Environments in the LDCs, where speakers demonstrated bamboo's potential for pro-poor livelihood development and green economic recovery from COVID-19. In addition, INBAR designed



and hosted a booth, attracting high-level visitors such as Inger Andersen, Executive Director of UNEP, Qu Dongyu, Director-General of the FAO as well as ambassadors and organization chiefs.

INBAR also hosted a side event at the 18th session of the UN Forum on Forests (UNFF) from 8 to 12 May in New York on Bamboo for Triple Bottom Line Benefits. Lu Wenming, INBAR Deputy Director General, urged global actors to come together and tap into the potential of bamboo to confront the growing plastic pollution crisis and achieve other sustainability goals. The event united stakeholders to showcase applications of bamboo for forest and landscape restoration coupled with economic, social and environmental benefits, and also featured a robust Q&A facilitated by Li Yanxia, INBAR Senior Programme Officer.

In 2023, INBAR continued to advocate for bamboo as a nature-based solution to plastics as part of its role on the INC on Plastic Pollution. In 2023, the INC convened two sessions. INC-2 was held in Paris, where INBAR hosted one side event and one bamboo exhibit. Following this, INC-3 took place in Nairobi, Kenya, where INBAR also hosted an exhibition.

The ultimate task of the INC is to develop an internationally legally binding instrument on plastic pollution, including in the marine environment, based on a comprehensive approach that addresses the full life cycle of plastics, and to finalize a draft text by the end of 2024.

From 4 to 5 July, the UN Industrial Development Organization (UNIDO) task force on the Global Biodiversity Framework convened an Expert Group Meeting in Vienna to explore the complex relationship between biological diversity and industrial development in support of the targets outlined by the Convention on Biological Diversity (CBD) and COP 15 outcomes. Pablo Jácome, INBAR Regional Director for Latin America and the Caribbean Region, participated in the meeting, emphasizing the need for UNIDO to play a central role in mainstreaming biodiversity within industrial policies and fostering private sector engagement. In the meeting, bamboo emerged as a key resource for promoting biodiversity-positive business initiatives, especially in the Global South. Collaboration between UNIDO and INBAR holds immense potential to contribute to the vision outlined by the CBD, envisioning a world where biodiversity

▲
FAO Director-General
Qu Dongyu tried on a
bamboo watch at LDC5.



▲
 Products showcased
 at the 14th session of
 UNCTAD's Multi-year
 Expert Meeting on
 Commodities and
 Development.

is valued, conserved and sustainably utilized by 2050.

From 9 to 11 October, UNCTAD hosted the 14th session of its Multi-year Expert Meeting on Commodities and Development in Geneva. An INBAR delegation led by Li Lan, INBAR Director of Host Country Affairs, presented on industrially manufactured bamboo products and their wide applications. A bamboo product exhibition also operated during the conference at the Palais des Nations.

Beyond the conferences and meetings associated with the UN system, INBAR also relentlessly promoted bamboo and rattan at numerous other major events. The Global Landscapes Forum (GLF) Nairobi 2023, launched from 12 to 16 October, hosted an INBAR side event on bamboo entitled, Can Bamboo Save African Livelihoods? where Lu Wenming, INBAR Deputy Director General, gave the opening address alongside Jayaraman Durai, INBAR Director of Global Programme. Their presentations showcased INBAR's efforts over the years to galvanize actors into prioritizing bamboo in green economic development planning. Later on, Selim Reza,

Programme Manager of INBAR's Dutch-Sino project in East Africa, spoke in greater detail about the role of small and medium-sized enterprises and industry value chains for supporting bamboo restoration in Africa.

After the GLF conference ended, the Forests & Livelihoods: Assessment, Research, and Engagement meeting kicked off, also held in Nairobi. The goal of the meeting was to increase forest benefits for poor forest-proximate people and their communities, involving the better management of forest resources. René Kaam, INBAR Central Africa Regional Director, attended the event and offered the contribution of bamboo to realizing this goal, drawing upon lessons learned from past and ongoing work in Cameroon.

And finally, INBAR had a presence at the European Bamboo Expo 2023. Held in Dortmund, Germany from 2 to 3 June, the expo was a meeting point for professionals, stakeholders and decision-makers in the bamboo industry with a global perspective. Staff from INBAR's Dutch-Sino-East Africa Bamboo Development Programme were in attendance at the inaugural event in the EU.



Refining policy to improve bamboo and rattan management

Working within the framework of the INBAR Strategy 2015–2030, INBAR’s Latin America and the Caribbean (LAC) Office plays a pivotal role in advancing the integration of bamboo and rattan into socio-economic and environmental development policies at various levels.

In Ecuador, notable progress has been made on this through sustainable construction bamboo projects, funded with the support of AECID. One significant initiative includes the establishment of municipal regulations aimed at incentivizing the utilization of bamboo. An exemplary case is seen in the Municipality of Chone, located in the Province of Manabí, an area home to substantial bamboo resources. This ordinance, tailored to local contexts, offer a range of incentives to encourage the incorporation of bamboo into construction practices. These incentives encompass financial benefits such as deductions in plan approval and construction permit fees proportional to the bamboo content in the structure. Additionally, property tax reductions are granted for homes incorporating bamboo

and for farms registering bamboo areas or initiating new bamboo plantations.

In Colombia, within the framework of the Bambuzonía Project supported by the International Fund for Agricultural Development (IFAD), the local government of the Caqueta Department has also taken similar steps by endorsing an ordinance promoting the sustainable management of bamboo. The goal is to foster a culture of protection, sustainable production and utilization of bamboo within the local government, with the overarching goal of enhancing competitiveness and efficiency in production sectors. This development holds particular significance for Colombia, given that the Caqueta Department grapples with extensive deforestation issues largely attributed to intensive livestock management. The initiative contributes to regional conservation efforts and underscores the vital role bamboo plays in sustainable development and environmental preservation.

Progress is also being made to inform policy development in Panama for safeguarding its bamboo forest resources from deforestation and degradation through INBAR’s role on the National

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Colorful bamboo products and materials on display at INBAR’s booth at GLF Nairobi 2023.



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Hands-on training is a key component of capacity building for INBAR's projects in Latin America.

Bamboo Commission (CONABA). In Panama, CONABA is one of the oldest official coordinating bodies in the region. Its objective is to serve as a multidisciplinary technical advisory group tasked with formulating and proposing the creation and monitoring of the national bamboo program. This program promotes the planting, management and rational utilization of bamboo across various agronomic, botanical, medicinal, artisanal and industrial sectors in Panama.

Through INBAR's LAC project, Bamboo-Based Solutions — Araucalima Region, supported by AECID, CONABA receives assistance in organizing and digitizing its commission documents related to member relations, actions and proposals generated since its inception, thus establishing a comprehensive historical record of its activities. Additionally, INBAR, in its role as Technical Secretariat, is aiding in the development of CONABA's Work Plan, taking into consideration experiences from other LAC countries. At the same time, the "Join the World of Bamboo" campaign seeks to identify more national stakeholders involved in bamboo-related endeavors, fostering new ideas to contribute to the creation

of a bamboo roadmap or strategy for the country to protect its native bamboo resources.

INBAR continued to offer policy guidance outside of the LAC region. For example, in Kenya, three national standards were published during 2023, including 1) Bamboo particle board — Specification, First Edition; 2) Disposable bamboo tableware — Specification, First Edition; and finally 3) Bamboo toothpicks and skewers — Specification, First Edition.

In addition to these national standards, a regional workshop was held to introduce technical guidelines and provide guidance to national standard authorities on how to develop and/or adopt bamboo standards and monitor compliance, with in-depth discussion of international standards as well as helping raise awareness among producers about the standard requirements for international markets. The workshop was also aimed at developing the capacities of East African producers and standards authorities for learning more about bamboo products, processes and technical guidelines. Participants from Ethiopia, Kenya and Uganda from government



agencies, national standard organizations, bamboo industries and the private sector attended the workshop.

Work also continued to unfold in Ethiopia, where seven new standards were rolled out to support the bamboo sector. They are in the following areas: 1) Bamboo charcoal part 1: Generalities; 2) Bamboo-based activated carbon: General specifications; 3) Vocabulary related to bamboo and bamboo products; 4) Bamboo charcoal part 2: Fuel applications; 5) Bamboo charcoal part 3: Purification application; 6) Bamboo flooring: Indoor use; and 7) Bamboo structural determination of physical and mechanical properties of bamboo culms, test method. These standards will help guide the high-quality development of the industry in the country and ensure end-users receive products that are reliable and meet quality control benchmarks, allowing bamboo items to stack up against other well-regulated products and materials.

At the same time, in 2023 INBAR also organized a workshop in collaboration with the Ethiopian Forestry Development. The goal of the workshop was to motivate regional states into

integrating bamboo strategic planning into their mainstream initiatives and strengthen support to bamboo small and medium enterprises (SMEs) and cooperatives.

In Uganda, standard development work persisted on four standards regarding 1) Bamboo toothpicks part 2; 2) Bamboo: Normative reference; 3) Dry salted bamboo shoots; and 4) Bamboo terminology. INBAR also held an awareness workshop to sensitize Ugandan financial institutions about the investment potential of the bamboo sector, highlighting potential enterprise collaborations between investors, entrepreneurs and monetary institutions. This came as a response to the *Strategy and Action Plan for Bamboo Sector Development (2019–2030)* of the Government of Uganda, which seeks to increase and add value to bamboo development, sustainable management and utilization efforts. One of the major pillars of the plan is to develop pro-poor industries and SME value chains that would create income and employment for smallholders, women and youth.

▲
Ethiopia is endowed with substantial bamboo resources estimated at about 1.4 million hectares.

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

For INBAR's Central Africa Regional Office, 2023 was rich with awareness-raising and targeted advocacy on the potential of bamboo and rattan as nature-based solutions to help countries in the Congo Basin address environmental and social problems. In May 2023, with the support of the Governments of Kenya and Ethiopia, the Office organized a study tour for delegates from Chad and the DRC across Kenya and Ethiopia. The aim of the study tour was to share experiences from Ethiopia and Kenya with delegates in order to promote the transition to a dynamic bamboo economy in Africa by demonstrating innovations, best practices and experiences. In the same month, the Office also cooperated with the Ministry of Environment, Fisheries and Sustainable Development of Chad to organize a consultation workshop for bamboo and rattan development in Chad. Similarly, the Office worked in tandem with the DRC to organize a consultation workshop for the framing of support activities for the development of bamboo and rattan sectors in the country.

On 25 October, the Office joined the rest of the diplomatic corps in Cameroon

to celebrate the 78th United Nations Day under the theme "Taking into account measures relating to the fight against climate change." As an Observer to the UN, INBAR participated in the day's celebration, donating 250 bamboo brooms and contributing to Cameroon's national efforts to enhance the cleanliness of its cities. Produced by women, the brooms are a model product that can be used to generate green jobs across Cameroon.

Another key event in which the Office participated was the end-of-the-year meeting for Gourmettes, an association advocating on behalf of women in Cameroon. In solidarity with other members of the diplomatic corps, the event brought together stakeholders to raise awareness and critical funds for supporting vulnerable individuals in Cameroon. The main goal was to promote bamboo and rattan as sustainable resources particularly useful to women and youth for strengthening livelihoods.

East Africa

In 2023, the East Africa Regional Office of INBAR undertook a number of activities to promote bamboo development

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Women played an active role in the first workshop to be held in Chad since the country became INBAR's 49th Member State.



▲
Nearly 300 bamboo growers and development actors in Ethiopia's Ari Zone undertook training on sustainable bamboo management.

across the area. The Office organized a study tour to Ethiopia for delegates from Nanjing Forestry University, China, allowing them to observe firsthand the country's advancements in the bamboo sector. Additionally, the Office facilitated meetings with stakeholders to deepen understanding and discuss bamboo and rattan processing, utilization technologies, scientific research and technical training. A similar study tour was also organized for government officials from Chad and the DRC to share experiences. Bamboo awareness and sensitization workshops were also conducted in Malawi and Rwanda.

The Office continued to coordinate regular programmatic work across the region, including three major projects: The Dutch-Sino East Africa Bamboo Development Programme: Phase-II (Ethiopia, Kenya and Uganda); Improving the Economic Conditions of Peoples with Disabilities Through Capacity Building Training and Use of Bamboo in Ethiopia; and Building Circular Economy and Climate Change Resilience Through Bamboo Supply Chain Development in Ethiopia. In addition to implementing project work, technical support was continually provided to INBAR Member

States in the region throughout the year in order to strengthen bamboo resource development, sustainable utilization, bamboo research, policymaking and strategy development. Finally, preparatory work continued on the China-Africa Bamboo Training Center. Regular meetings were held with the Ethiopian Forest Development and other stakeholders, and the Office organized field visits for high-level officials from China and Ethiopia to support the construction process.

West Africa

INBAR's West Africa Regional Office continued to advance its sustainable mandate across the continent. On 5 June, the Office joined millions around the world to mark the 2023 World Environment Day Celebration under the theme "Solutions to Plastic Pollution," a theme particularly relevant to INBAR's project portfolio given the recent prominence of the BASP Initiative. Alongside over 150 countries and participants from around the world, the Office organized a bamboo product exhibition in Abidjan, showcasing the ways in which bamboo can be strategically substituted for plastic



products, while also highlighting the role of bamboo for encouraging sustainable development in Africa. The exhibition drew the attention of high-level visitors such as H.E. Jean-Luc Assi, Minister of the Environment and Sustainable Development of Côte d'Ivoire, and Inger Andersen, Executive Director of UNEP.

In addition to this, the Office collaborated with Ghana's Ministry of Lands and Natural Resources and the Forest Plantation Development Fund Management Board to organize a two-day advocacy and sensitization workshop on bamboo and rattan development for the Queen Mothers Association in the Ashanti Region. This event generated awareness about the importance of restoring Ghana's degraded landscapes with bamboo and demonstrated that galvanizing key stakeholders, such as local tribal leaders in Ghana is an important component for executing the government's flagship program, Green Ghana. In addition, observing Green Ghana Day on 9 June, under the theme "Our Forests, Our Health," INBAR participated in a special event for members of the diplomatic corps stationed in the country. Experts from the Office spoke at the opening ceremony, promoting the unique and

versatile nature of bamboo for land restoration, and also planted 200 bamboo seedlings later that day as part of the campaign's activities.

The Government of Senegal received substantial support from the Office. INBAR together with the Ministry of Environment and Rural Development organized the Sensitization and Institutional Advocacy Meeting for the Security and Forest Guards in the Bamboo Value Chain. The meeting facilitated knowledge transfer regarding efficient modes of harvesting, transporting, value addition and sale of bamboo while deepening local knowledge.

South Asia

INBAR's South Asia Office continued to work to strengthen an array of innovative partnership linkages. The Office is engaged in triangulating Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and Dalmia Cement's joint efforts to substitute fossil fuel consumption with bamboo in Dalmia's cement plants and similar manufacturing units in India. The scientific management of bamboo, from

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Guests visited the Dahliafleur Nature Reserve in Abidjan, including Inger Andersen (center), Executive Director of UNEP, as part of World Environment Day 2023.



▲
Participants of the Bambuzonia project traveled to different parts of India in a study tour.

plantation to utilization, is helping drive this work, which is intended to ultimately help achieve carbon neutrality goals. In particular, the initiative focuses on restoring degraded land and strengthening ecosystem services, as bamboo can also deliver additional income to farmers while helping manufacturing companies generate profit in a sustainable manner.

Moreover, the Office continues to faithfully execute its Triangular Cooperation between India, Germany and Ghana with funding from GIZ to promote bamboo-based enterprise development and create sustainable and high-value economic opportunities for farmers, artisans, enterprises, designers, traders and exporters. A team of delegates from Ghana visited India last year to tour bamboo industry clusters and institutions, which was intended to support a bevy of skills and knowledge training. The trilateral project will be scaled up based on lessons learned from implementation in phase one. The second phase has been designed and will assist in scaling up the scope of the project. In addition, another exposure visit was arranged for delegates from Latin American countries to learn more about the bamboo sector in India.

The Office also continued to be involved in a broad range of important events, organizing a Special Technical Session on Bamboo for Climate Resilience and Disaster Management at the 6th World Congress on Disaster Management in India to inspire learning from successful trials with replication potential, and suggest ways for strengthening climate action and disaster resilience in local economies using bamboo. The Office also actively participated and contributed at a two-day intensive discussion of the County Led Initiative under the UNFF organized by the Ministry of Environment, Forest and Climate Change, Government of India. Finally, Sangeeta Agasty, Regional Director for the South Asia Region, spoke at the 1st Asian Conference On Triangular Cooperation, promoting the uses of bamboo for ecosystem services and economic, social and environmental benefits.

Latin America and the Caribbean

In 2023, the Latin America and the Caribbean Office maintained its steadfast support to INBAR Member States while also fostering potential partnerships with new nations, holding meetings



across the region with key decision-makers to advocate for bamboo initiatives and forge new relationships. The Office supported a wide range of events, such as the online conference on Empowered Women of Bamboo Regions and the inaugural cycle of Bamboo Webinars by the International Network of Universities and Research Centers Related to Bamboo (RIUCI-bambú), along with the Online Training Course on Sustainable Development of Bamboo and Rattan Industries. Bamboo Week 2023 was organized in Cusco, Peru along with the Training Course on Bamboo Sustainable Management and Uses in Venezuela, both of which underscored INBAR’s commitment to capacity-building endeavors. The Office also had a significant presence at key international events such as the International Conference on Bamboo Development in Southern Countries in Sao Paulo, Brazil in the beginning of December, which attracted over 150 participants and government authorities from Uruguay, Argentina, Bolivia, Chile, the United States, the United Kingdom, Qatar and Brazil, the Expert Group Meeting on Biological Diversity and Sustainable Industrial Development in Austria, and the Interregional Dialogues EU-LAC in Guatemala.

Special missions were also undertaken to Brazil and the Dominican Republic, where engagements with national authorities from various ministries and congresses emphasized the potential for bamboo cooperation and membership expansion. In the dynamic landscape of Latin America and the Caribbean, bamboo initiatives are now burgeoning across the land, encompassing innovative construction, manufacturing, handicrafts, bioenergy and climate change mitigation efforts. With such fruitful prospects, the work of the Office in the region plays a central role in these sustainable endeavors. All of these activities and more have been built upon the strong existing partnership with donors and collaborators such as AECID, IFAD, the International Development Bank, FAO, Binational Plan – Peru and the EU.

China

In 2023, INBAR’s Host Country Affairs Department worked hand-in-hand with the Host Country on a wide range of important activities. In October, INBAR signed a Memorandum of Understanding with the National

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LAC Regional Director Pablo Jácome (back row, striped shirt) participated in a UNIDO task force on the Global Biodiversity Framework. Credit: UNIDO



▲
 INBAR's spacious
 exhibition at 2023
 CIFTIS in Beijing held
 at the China National
 Convention Center.

Development and Reform Commission of the People's Republic of China on Jointly Promoting the Silk Road Economic Belt and the 21st Century Maritime Silk Road Initiative. INBAR also had a strong presence at the 2023 China International Fair for Trade in Services (CIFTIS), the largest comprehensive exhibition for global trade in services. INBAR's 190-square-meter all-bamboo exhibition was themed around the "Bamboo as a Substitute for Plastic Initiative." Furthermore, INBAR organized the First International Symposium on Bamboo as a Substitute for Plastic in Beijing, seeking to facilitate the achievement of the 2030 Agenda for Sustainable Development, and also launched the *Global Action Plan for Bamboo as a Substitute for Plastic (2023–2030)* during the opening ceremony, which will function as the main framework for implementing the BASP Initiative.

In addition, INBAR also supported partners in government such as the Ministry of Commerce, National Forestry and Grassland Administration (NFGA) as well as other official agencies at provincial and city levels to co-organize events like the 12th China Bamboo Culture Festival; International (Anji)

"Bamboo as a Substitute for Plastic" Innovation Conference; the Bamboo as a Substitute for Plastic Forum (Consumer Fair); 2023 International Bamboo Brand Expo and the 4th China (Yibin) International Bamboo Industry Development Conference; the 3rd China International Consumer Products Expo; and more. INBAR also collaborated with the Kunming Institute of Botany and the Xishuangbanna Tropical Botanical Garden as well as the International Comprehensive Mountain Development Center, the International Bamboo and Rattan Center, and the National Academy of the Forest and Grassland Administration of China (NAFGA) to organize a series of international conferences to train early-career cross-border researchers.

Throughout the year, INBAR Headquarters received officials from local governments in Anji, Qingshen, Yibin, Yong'an, Taojiang, Ningbo, Chongqing, Shenzhen and Beijing. Guests from academia and research institutions visited INBAR alongside industry leaders from the private sector. INBAR also worked with Beijing's municipal government to design and build a large, elegant bamboo structure in Wangjing Subdistrict,



providing a pleasant environment to pedestrians and promoting bamboo architecture in public.

Unveiling the splendor of bamboo and rattan

This year marks the fourth consecutive year of INBAR's International Bamboo and Rattan Photography Competition. Three categories were used to sort submissions: Alternatives to Plastic; Hand-in-hand With Nature; and Everyday Livelihoods. Receiving hundreds of photos from around the world, the selection committee had an extremely difficult task to select the winners for 2023. Winners were spotlighted on INBAR's homepage and also awarded cash prizes. A heartfelt thank-you to all those who participated, and congratulations to the winners!

CATEGORY I: ALTERNATIVES TO PLASTIC

First place, "Playing in The Bamboo Forest" by Wahyu Budiyanto from Indonesia

Second place, "Fishermen and Bamboo Weirs" by Nyein Nyein Htwe from Myanmar

Third place, "Bamboo Basket Weaving Women" by Chan Thar from Myanmar

CATEGORY II: HAND-IN-HAND WITH NATURE

First place, "Communication" by Kishore Das from India

Second place, "Childhood" by Aditi Singh Roy from India

Third place, "Bamboo for the Next Generation" by Danilo O. Victoriano Jr. from the Philippines

CATEGORY III: EVERYDAY LIVELIHOODS

First place, "Bamboo Water Wheel" by Myat Zaw Hein from Myanmar

Second place, "Happiness in Rattan Business" by Mervyn Brondial from the Philippines

Third place, "Fisherman and his Fishing Bamboo Traps" by Ko Gyi Kyaw from Myanmar

▲
"Communication" — A bamboo bridge gracefully spanning a river, serving as a lifeline for the local community's commute on foot and bikes. Credit: Kishore Das

ACTION RESEARCH AND COUNTRY SUPPORT

INBAR continued to pilot case studies and facilitate the exchange of best practices across its Member States.



Driving positive changes across East Africa

In 2023, the Dutch-Sino East Africa Bamboo Development Program: Phase II, funded by the Ministry of Foreign Affairs of the Netherlands continued to make serious progress in facilitating the transfer of knowledge, technologies and policy recommendations from China and the Netherlands to Ethiopia, Kenya and Uganda. The ambitious project has resulted in positive changes across East Africa, helping to build supply chains and strengthen SMEs and industries, equipping stakeholders with the necessary skills and capacities, boosting efforts in research and development as well as promulgating best practices for the sustainable management of bamboo resources.

The project delivered achievements in a range of areas. In total, 39 technical skill development trainings reached a total of 1248 beneficiaries on diversified bamboo products and on business development services. In addition, 2328 women were trained on bamboo charcoal collection and improved cooking stoves. At the same time, one course curriculum related to technical and vocational education and training was completed alongside two trainings that benefited 56 teachers in Ethiopia and Uganda. Three training programs were organized for 233 members on cooperative management. Finally, a Forest Stewardship Council and Chain of Custody consultation workshop was organized for diverse stakeholders in Ethiopia to validate the Ethiopian Interim National Standards.

In addition to capacity building, major efforts were undertaken in advancing the type of basic research that is crucial for science-informed sustainability projects. Three bamboo species were

tested for natural properties relating to species, age and product as well as machine compatibility: *Oldeania alpina*, *Oxytenanthera abyssinica* and *Dendrocalamus asper*. Five tissue culture protocols have also been developed for *Bambusa vulgaris*, *D. giganteus*, *D. yunnanensis*, *D. membranaceus* and *D. asper*. Moreover, three site-species matching studies have been published in three scientific peer-reviewed journals.

Tangible actions have bolstered the overall resilience and efficiency of the fledgling bamboo industries across these three East African countries. The project supported 36 bamboo nurseries leading to the production of 1.68 million bamboo seedlings. Large swaths of land also benefited, with nearly 1700 hectares restored with bamboo plantations and 2169 hectares of bamboo forest and farms brought under sustainable harvesting and management regimes. This has positively impacted 3715 smallholder farmers planting bamboo and undertaking sustainable management. Finally, in addition to this, six new bamboo cooperatives were registered.

Noteworthy accomplishments also occurred in awareness raising and market development. Beneficiaries of the project participated in three national exhibitions, one regional exhibition and one international exhibition, helping promote bamboo in the public discourse. There were also three radio talk shows and 14 awareness-raising events on International Women's Day and World Environment Day, which featured the participation of nearly 6000 participants, including high-level decision-makers such as Inger Andersen, Executive Director of UNEP.

Enhancing restoration in Cameroon

As a key partner in The Restoration Initiative (Cameroon), an international project funded by the Global Environment Facility, INBAR works across Cameroon to implement strategies and actions designed to reverse land degradation and boost land restoration. Objectives of the comprehensive multi-stakeholder project include improving the engagement of Cameroon's Government with land restoration and sustainable land management, evaluating the potential of bamboo and non-timber forest products for biodiversity conservation, green livelihoods and carbon storage, strengthening institutional capacity and finance mechanisms for large-scale restoration, and disseminating best practices.

In 2023, Cameroon's policymaking enormously benefited from project engagement. Key achievements included publishing Forest and Landscape Restoration (FLR) good practices in conjunction with the Ministry of Environment, Protection of Nature and Sustainable Development. The project also supported the Ministry of Forestry and Wildlife in the development of an electronic platform for information exchange between suppliers and buyers of bamboo and non-timber forest products (NTFPs). One study was also prepared that will assess the potential of bamboo as a sustainable source of household energy in Cameroon, with the potential for informing rural energy policy.

In addition to meaningful policy inputs, stakeholders also benefited from project work. Over 470,000 bamboo and other NTFP seedlings were produced as a result of supporting a network of 12 nurseries, with 562 hectares of degraded and forest land restored. These restoration actions have directly yielded

the mitigation of nearly 132,000 tons of carbon dioxide equivalent emissions. Moreover, a training workshop on bamboo agroforestry was held in Limbé with 30 participants from the Bakossi-Bayang-Mbo landscape.

Regular programmatic work also continued smoothly. This included submitting the necessary documents to potentially unlock greater funding from the Global Environment Facility. Advocacy notes were submitted on bamboo charcoal, securing land for restoration activities, and in Restoration Opportunities Assessment Methodology for FLR projects in the country. Three stories were produced and published in the TRI newsletter. Finally, a project coordination meeting as well as project steering committee were both successfully convened.

Green jobs for Ghana

With joint funding from INBAR as well as the Government of Ghana and GIZ India, the project entitled Developing Bamboo- and Rattan-based Enterprises for Sustainable Livelihood and Income Generation in Ghana aims to develop bamboo and rattan enterprises for sustainable livelihoods and income generation in the named country.

In 2023, a training of trainer's workshop, which seeks to empower local teachers to trigger a cascade effect of knowledge dissemination in local communities, was organized. In total, 43 bamboo and rattan masters benefited from the training. Another important knowledge transfer event occurred as part of the project in which project partners in Ghana embarked on study tour of India's bamboo production facilities. At the same time, technical support was provided for the

establishment of a bamboo innovation hub in the country, and project staff also facilitated the establishment of three bamboo enterprises.

Strengthening climate change resilience with youth entrepreneurship and sustainable management

With financial support from IFAD and Cameroon's Ministry of Environment, Nature Protection and Sustainable Development, the project titled 'Increasing Local Communities' Resilience to Climate Change Through Youth Entrepreneurship and Integrated Natural Resources Management began last year in Cameroon, with already much to show for it.

The initial stage of capacity building has been successfully completed. Two field visits were arranged to the Waza National Park and Bénoué National Park to sensitize local communities and identify suitable sites for establishing nurseries and farmer field schools, which is an approach that focuses on group-based and experiential learning processes to solve production problems. Three training programs on bamboo agro-silvopasture were conducted for 139 smallholder farmers from Waza, Bénoué and Dschang. One training of trainer's workshop kicked off for five eco-entrepreneurs on bamboo bio-char production and crafts.

In addition to delivering skills to local stakeholders, the project is also delivering much-needed resources to locales where they have the most meaningful impact. To that end, one nursery was established in Waza National Park, along with 15 kilograms of bamboo seeds and shade nets to facilitate cultivation. Also, two videos of field activities were produced, which will

be useful reference material for growers and technicians.

Boosting the circular economy and climate change resilience

Ethiopia also benefits from another project on Building a Circular Economy and Climate Change Resilience through Bamboo Supply Chain Development with funding from AECID. This project began in 2023 and has already delivered promising results.

Part of the focus of the project is to equip stakeholders with valuable skills relevant to their livelihoods. To that end, project staff have held four technical skill development trainings for 114 beneficiaries on diverse bamboo products. Two trainings were also held relating to the sustainable management and harvesting of bamboo for 368 participants. All of these events saw a high level of participation from women.

Tangible outputs from last year's project work included the establishment of six bamboo nurseries and the production of over 600,000 quality planting materials. Almost 300 hectares of degraded land were restored with bamboo. Furthermore, a demonstration plot was established in the Sidama region for showcasing best practices on sustainable management and harvesting. The project also supported the maintenance and expansion of working sheds for two SMEs in Hawassa. Support was given to four bamboo SMEs to participate in two trade fairs and exhibition events. Finally, a robust supply chain was built, linking 60 bamboo growers and 25 SMEs from Addis Ababa. The supply chain was further refined using accurate data from a highland bamboo resource assessment as well as a biomass and carbon estimation carried



▲
Training on sustainable bamboo management and harvesting is building capacities for growers in Ethiopia.

out at Arbegona in the Sidama region.

Bambuzonía finishes strong in Colombia, Ecuador and Peru

INBAR's flagship project in Latin America and the Caribbean came to a close in 2023. Known informally as "Bambuzonía" or The Innovation and Promotion of Bamboo Through Action Research Processes for a Resilient Agriculture in Colombia, Ecuador and Peru, the project was supported with generous funding from IFAD. Project goals included harmonizing policies, encourage sustainable harvesting, management and farming practices, develop a broad technical base for further development, and conduct cross-country knowledge exchange and promotional activities.

The final year of program implementation saw many notable accomplishments. In the policy arena, the National Bamboo Development Strategy of Peru (2022–2025) was proclaimed. In Colombia, a national bamboo competitive agreement proclaimed Vide National Law 2206 to encourage the productive use of bamboo. In Ecuador, bamboo

development plans were drafted for the provinces of Napo, Pastaza and Morona Santiago. An international seminar on bamboo policy and industry development was organized for over 100 participants to inform relevant stakeholders on the policy and industry development of the sector. Business round tables were also organized as well, with four at the national level and one at the regional level, hosting 110 participants.

Project work also continued on the ground. Eight nurseries were supported, leading to the production of over 110,000 plants. Over 150 smallholders benefited from guidance in the implementation of bamboo farming systems and sustainable management practices. Knowledge regarding the bamboo value chain was disseminated to 441 beneficiaries. Approximately 22 kilometers of bamboo farm boundaries or shelter belts were planted in addition to 23 hectares of bamboo plantation established and/or managed.

Efforts to bolster communications and outreach also went well. Seven local fairs and exhibitions were organized, seeing the participation of 70 entrepreneurs to carry forward the message of bamboo



enterprises. In total, 14 communications and knowledge products were also published, including a Basic Construction Guide, Harvesting and Treatment of Guadua, videos on bamboo management, and an online course uploaded to one of Ecuador's knowledge platforms.

On the research side, studies on allometric and environmental research were published. Three reports on national bamboo markets were prepared for Colombia, Ecuador and Peru. Proposals with both financial and non-financial incentives were prepared for stimulating bamboo development in all three countries. Finally, technical reports were published to aid in the identification of bamboo species.

In addition, two study tours were held. The first one facilitated the visit of 13 participants to India. The second was a regional tour to Sustainable Construction Workshop Schools in Ecuador, which saw the participation of 18 students from Colombia's National Training Service. These study tours helped facilitate cross-border knowledge exchange for learning about best practices and adapting them to local contexts.

Facilitating knowledge transfer and advancing research

The project on Support for Research, Development and Innovation and Higher Education in Sustainable Construction in Ecuador funded by AECID concluded in 2023 with a series of impressive outcomes.

RIUCI-bambú, a network of universities and research centers built within the framework of the project, aims to promote scientific research and knowledge exchange in different fields to strengthen the overall development of the bamboo sector. In 2023, eight new institutions joined the network, bringing the total to 43 from 13 different countries.

Other accomplishments of the project include the development of three new bamboo innovations for use in the construction industry; supporting four research proposals; organizing an international seminar in Panama that hosted participants from 11 countries; and establishing a website to function as a digital repository for publications and technical documents relating to bamboo, as well as further boosting communications efforts of the network.

▲
Awajún women from the Peruvian Amazon craft a wide variety of bamboo jewelry.

Supporting the revitalization of Manabí Province

In Ecuador, the project on Support for Economic and Productive Revitalization in the Province of Manabí Through Sustainable Development with Bamboo financed by AECID intends to jump-start the local economy in Ecuador's Manabí Province in response to the devastation wrought by the COVID-19 pandemic, particularly focusing on strategic public-private partnerships.

In 2023, a training-of-trainers workshop was held on the sustainable management of bamboo. In total, 25 stakeholders attended the workshop, coming from the International Union for Conservation of Nature's nature-based adaptation project, the Ministry of Agriculture and from municipal and provincial governments. In addition, a bi-national study tour across the province was facilitated for Ecuadorian and Colombian individuals from the Bambuzonía project and also technicians from local municipalities. Last, a virtual course for bamboo construction hosted 157 participants from Ecuador's Ministry for Urban Development and Housing (MIDUVI) and municipal governments to learn about bamboo construction inspection.

The project also delivered substantial practical results. Nine bamboo farmer field schools were implemented in three provinces, educating 172 participants. Tool kits were also provided to all participants for implementation. In addition, several construction works were completed in 2023, including three bus stops in El Carmen, a roof for a municipal school classroom, classrooms for a public school in Puerto Lopez, roofs for classrooms at the Santa Ana Church, and 19 bamboo homes for social housing as part of MIDUVI's SDG Cities project in Olmedo Canton. Furthermore, the

project supported graduates from the first batch of the Workshop School to elaborate and deliver construction plans and budgets to contractors, including bamboo structural frames that were part of the MIDUVI's new social housing design for the Amazon and coastal region of Ecuador.

Championing bamboo across LAC

The ongoing project named Promote Bamboo as a Nature-based Solution for Livelihood Development and Environmental Management for Climate Change Mitigation and Adaptation in the Latin America and Caribbean Region is broad in geographic scope, working across Costa Rica, Panama, Cuba, the Dominican Republic, Colombia, Ecuador and Peru. This project is funded by AECID through their ARAUCLIMA Programme, seeking to bolster capacities among rural producers to provide sustainable management of bamboo resources, including climate-smart practices and to identify income generation opportunities.

In 2023, a study on bamboo resource assessment kicked off across Costa Rica, Panama, Cuba and the Dominican Republic. At the same time, another study on policies and regulations supporting and/or inhibiting bamboo development in the same countries was also conducted. Five videos were produced showcasing the many uses of bamboo across Panama, Costa Rica and Cuba.

Many local communities across the impacted countries were positively influenced by capacity building trainings. A five-day long training was held in Cuba on bamboo charcoal production. In total, 40 researchers, charcoal producers and university students attended the event. Another five-day training was held in Panama on biomass and carbon

estimation for 28 participants from the seven participating countries. A training for participants from the Dominican Republic and Panama was also held on bamboo planting material production, benefiting 43 stakeholders. A regional skill development training on bamboo products hosted 46 participants. Finally, in November, people from Cuba, Costa Rica, Panama and the Dominican Republic also attended a study tour on South-South exchange where they were exposed to best practices on sustainable management and the application of bamboo in Ecuador's sustainable construction industry.

Promoting bamboo construction in response to the pandemic

The project entitled Post-Pandemic Local Economic Revitalization of the Province of Manabí by Strengthening Sustainable Construction with Bamboo supported by AECID continued in 2023, seeing remarkable gains throughout the year.

On the training front, the project finished design and development of a mobile workshop to facilitate trainings in a lightweight bamboo structure. And, 90 participants of the second batch of the Bamboo Sustainable Construction Workshop School in the El Carmen Canton were formally enrolled in the school. At the same time, a survey was completed of previous graduates from the school, which found that 80% of students were now applying their acquired knowledge and earning a weekly income ranging from USD 100 to 150. The Municipality of Chone will enroll the next batch of students in the Workshop School after identifying the impact of the training program, strengthening participants' capabilities to enter and generate income from the construction sector, with an emphasis on bamboo structures.

Efforts were also made to communicate project impacts to a wider audience. Staff attended the 5th Meeting of the Network of Workshop Schools from Latin America held in Cajamarca, Peru, where they were able to disseminate lessons learned. Moreover, staff were able to participate in the MIDUVI-organized Regional Urban Forum of Finance and Housing, where the new National Urban Policy was presented by President Guillermo Lasso of Ecuador.

Strengthening Guadua bamboo in Napo Province

Partnering with Ecuador's Ministry of Environment and the Inter-American Development Bank, INBAR began implementing the project Strengthening the Production and Marketing of Guadua Bamboo with the Kichwa Women Association – AMUKINA and Producers from the Quijos Nationality in 2023. This project is aligned with the efforts of Ecuador's REDD+ Action Plan while also representing an opportunity to scale up the achievements of the Bambuzonía project through supporting two native communities in Napo Province on sustainable bamboo management, bamboo preservation as well as the establishment of a robust collection center.

In the project's initial phase, several notable achievements were made. Two complementary studies on the design of a bamboo preservation and treatment center were generated for the AMUKINA Association. Four bamboo nurseries were established to support two communities to produce 2000 bamboo plants. Also, 15 community leaders participated in a training of trainer's workshop to help spread best practices on bamboo into local communities. These leaders further trained 120 producers from six indigenous communities on sustainable

management through Bamboo Farmers Schools.

Safeguarding Peru's natural environments

At a cross-border region of Peru, the project entitled Productive and Technological Innovation with Bamboo at the Northeast Border of Peru was launched in 2023. Framed within the inter-institutional Framework Agreement between Peru's National Forest and Wildlife Service, the Peru-Ecuador Binational Plan for Border Development and INBAR, the project aims to safeguard over 1500 kilometers of lush natural environments from the Pacific coast to the Amazon rainforest, all of which acts as a home for a rich diversity of ecosystems and cultures.

Bamboo is a significant resource in the area, with many local families engaged in commercial bamboo plantations. The project has focused on holding trainings for these stakeholders, with meaningful achievements to date. A kick-off workshop was organized which was attended by 53 diverse stakeholders, and a training of trainers course on sustainable bamboo management was also conducted for 45 leading producers and technical professionals.

Furthermore, three workshops were organized for 50 participants to strengthen organizational management and analysis of the production chain in the Departments of Piura, Cajamarca and Amazonas. Finally, six beneficiaries and leaders of the project participated in National Bamboo Week 2023; a handicraft and furniture workshop; and bamboo round tables and trade fairs. In total, it is estimated that more than 300 rural farmers will benefit during the three-year project implementation across the

entire bamboo value chain in Peru, aiming to bolster conservation efforts.

Biocentric restoration in the Amazon

The project Biocentric Restoration in the Amazonian Region of Ecuador supported by FAO saw several achievements in 2023. A baseline and community needs assessment report was generated. Four bamboo nurseries were established leading to the production of nearly 21,000 plants. And over 44 hectares of land were restored with bamboo and other species.

Simultaneously, the people in Ecuador benefited from diverse capacity building tools and trainings. These ranged from four technical brochures which were disseminated among stakeholders, nine life workshops on topics like traditional knowledge regarding food systems, biodiversity and natural resources, and five cross-learning exchanges to protected areas in Kichwas communities with the participation of 114 beneficiaries. Lessons learned in Ecuador informed the implementation of three international training courses on biocentric restoration methodology and case studies in Costa Rica, Brazil and Colombia.

Mapping Brazil's bamboo sector development

Later in 2023, a comprehensive study was initiated in Brazil on bamboo resources as well as market and value chain analysis to propose a roadmap for the bamboo sector development of the country.

A preliminary estimation and analysis of bamboo resources and species distribution was completed, finding an estimated 5.26 million hectares of bamboo

coverage in Brazil — likely a conservative figure considering the limitations in detecting bamboo beneath dense canopies and across complex terrain. This suggests that the actual coverage of bamboo resources in Brazil could be considerably higher than estimated.

The study also revealed rich bamboo diversity, with a total of 316 bamboo species belonging to 52 genera identified. The Northeast region emerged as the most diverse area, showcasing 73.5% of the identified genera. The Atlantic Rainforest, Southeast, and Amazon regions are also home to significant bamboo diversity, with the Atlantic Forest standing out as the most diverse biome. A market study and bamboo value chain analysis are in progress, which will contribute to developing a roadmap for future bamboo development in Brazil.

Low-carbon development at World Heritage Sites

With funding from the UN Educational, Scientific, and Cultural Organization (UNESCO) and within the framework of the UNESCO-CYDF Mercedes Benz Star Fund FIT project Conservation and Management of World Heritage Sites in China Phase IV, the pilot project Bamboo for Carbon Neutrality in Rural Areas was smoothly implemented in 2023, continuing to deliver on its goal to strengthen culture-oriented, low-carbon and socio-economic development in China.

Throughout the year, the project organized a series of trainings to equip stakeholders with the skills for boosting sustainable livelihoods in Chishui. These included the robust participation of intangible cultural heritage inheritors at the Second Capacity Building Workshop on Living Heritage for Rural Revitalization in Suzhou; a training

course for 66 local forest officials and technicians on bamboo forest carbon sink management; and organizing an online seminar on sharing innovation and best practices in carbon reduction and low-carbon development at World Heritage Sites. Also, a booklet was prepared in both Chinese and English entitled *Bamboo for Carbon Neutrality in Rural Areas: Collection of Selected Studies*, highlighting 15 examples of site management with bamboo to raise awareness on carbon reduction and climate change.

Bamboo's role in global trade

The Global Challenges Research Fund's Trade, Development and the Environment Hub (Trade Hub) project continued to generate meaningful reports and promotional materials on a variety of important topics relating to bamboo trade, particularly focusing on plastic substitution.

In 2023, a report on the *Comparative Analysis of Global Trade in Bamboo Plastic Kitchenware and Tableware Products* for the 2017–2021 period was prepared. Another report on *Global Bamboo Forest Certification: The State of the Art* underwent revision for publication. A roadmap for the BASP Initiative was also drafted and published. The instructive document *Bamboo's Solution to Plastic Pollution* also emerged from the project, along with a web article co-written by INBAR and UNEP-WCMC titled "Moving Towards a Plastic-free World," which was published on World Environment Day.

Revealing the carbon sequestration capacity of bamboo forests in China

The project Utilization of Atmospheric Measurements to Establish the Carbon Sequestration Capacity of Bamboo



▲
*Conducting field
monitoring of bamboo
forest land in China.*

Forests aims to develop a methodology for the objective assessment of the carbon sequestration potential of bamboo forests and evaluation of said potential depending of the land management and environmental conditions. This framework also includes contributions to the Task Force on National Greenhouse Gas Inventories established by the Intergovernmental Panel on Climate Change, the UN body for assessing climate change science. The project proceeds under coordination from the World Meteorological Organization and is currently being implemented by INBAR, GNS Science, the National Institute of Water and Atmospheric Research, Chinese Meteorological Administration and Zhejiang University of Technology.

In 2023, the INBAR research team continued with annual monitoring of land management practices and biomass extraction in selected bamboo forest land. At the same time, the above-ground and below-ground biomass were also continually measured across 30 monitored plots of land. These data will be used to measure the carbon flux mainly caused by carbon sequestration and biomass extraction from the bamboo forests of China.

Leveraging triple partnership for sustainable bamboo management in India

Known by the name “GIZ (Dalmia Cements Project for Developing Online and Electronic Training Content on Pre and Post-Bamboo Harvest)”, the project aims to develop audio-visual modules on bamboo propagation techniques, plantation methods, harvesting and post-harvesting techniques, and management. Based on a unique triple partnership between INBAR, GIZ and the private sector cement company Dalmia, one of the major accomplishments of the project is the sharing of knowledge and raising of awareness among farmers, farmer producer organizations, and other relevant stakeholders about biofuel and other livelihood options offered by bamboo.

INBAR is also helping GIZ and Dalmia Cement’s joint efforts to replace fossil fuel consumption with bamboo in Dalmia’s cement plants and similar manufacturing units in the country by supporting scientific bamboo plantation, management, utilization, and supply chain linkages. This will help the units achieve their carbon neutrality goals. This initiative is focusing primarily on



waste lands and reviving them through using bamboo plantations as an energy crop. This will not only transfer additional income to farmers and contribute to achieving green goals, but also provide various ecosystem services by restoring the degraded lands and address climate change issues.

Enriching Pakistan with bamboo knowledge and skills

In 2023, Pakistan also received support from INBAR for developing its bamboo industry and resources. This support came as part of the project entitled the Bamboo Sector Development of Pakistan, which has already yielded promising results.

Capacity building training was conducted for 36 experts on how to use a mobile application to survey bamboo resources. The same application was used to map 6000 hectares of on-farm bamboo coverage. Furthermore, a study into Pakistan's bamboo value chain was finalized, and guidance and input were provided for drafting the Policy Analysis and National Bamboo Strategy and Action Plan.

Exploring the carbon emissions of engineered bamboo products

In 2023, the project on Life Cycle Assessment Research on Carbon Emissions of Structural Glued Laminated Bamboo Products concluded after a year-long collaboration between multi-disciplinary partners, including INBAR, Tsinghua University, Shanghai Research Institute of Building Sciences, ETH Zurich, EcoInvent and Greenzu.

Three field investigations for collecting primary data on bamboo products were undertaken in China in the provinces of Jiangxi, Hunan and Fujian. One academic article was prepared as part of the outputs from these field investigations, which will be aimed at publication in an international SCI journal. Moreover, the life cycle inventory of structural glued laminated bamboo products and the datasets are set to be incorporated into the Ecoinvent LCI Database 2024. These investigations help lay the foundation for further research into the relationship between carbon emissions and engineered bamboo products.

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Training on INBAR's mobile app built capacity in Pakistan to document and utilize local bamboo resources.

KNOWLEDGE SHARING AND LEARNING

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



Taking e-learning to the next level

On 13 March, an online training was organized by INBAR with support from the UN Climate Change Global Innovation Hub on The Potential of Bamboo as a Material for Sustainable Construction in Iran. The webinar hosted speakers who spoke on the broad applicability of bamboo for greening the construction sector in the Middle East. Speakers also highlighted the long history of traditional bamboo applications in Iran, where it has long been used for roofs and rural housing while identifying obstacles hampering the sustainable development of bamboo. At the end, a series of actions were agreed upon for overcoming these barriers, including the utilization of successful models regarding policy, business, financing and capacity building; the involvement of key stakeholders from governments, the private sector, producers, and key linkage institutions; and the urgent need at the country level to identify gaps in the bamboo value chain to facilitate its entry into and connection with the construction sector.

On 15 December, another important online training was launched, the South-South Technology Leading for Bamboo Development: Approaches, Lessons, Actors and Enablers Webinar. For INBAR Member States across the Global South, realizing the complete potential of bamboo requires significant upgrades in production, processing technologies and knowledge access, key areas where INBAR's role as a global knowledge broker truly shines across a range of intervention arrangements. The main objective of the webinar was to highlight the significance of technology transfer approaches and success factors that are capable of supporting the tangible development of the bamboo sector. Ultimately, the webinar provided a forum for understanding technical approaches and

policy directions that equitably benefit both source and beneficiary countries and institutions. Going forward, INBAR's wealth of experience in the sector will allow it to play a leading role in the implementation of technology transfer initiatives.

In Latin America, INBAR's presence in the online training space also made leaps and bounds. RIUCI-bambú, as mentioned earlier, is an initiative aimed at fostering scientific research and knowledge exchange to bolster the bamboo sector's development, with support from over 50 universities across Latin America and Caribbean. In February, RIUCI-bambú successfully launched its inaugural webinar series, drawing participation from 16 speakers, representing a diverse array of countries including Brazil, Colombia, Costa Rica, Ecuador, Mexico, Peru and Venezuela. Many topics were explored, ranging from bamboo construction systems in social housing projects to the production and utilization of bamboo charcoal in rural areas for green jobs. The webinar series featured interactive engagement between speakers and online participants. Viewers continually posed insightful questions in real time, fostering a dynamic exchange between the expert panelists. RIUCI-bambú is supported by the project Support for Research, Development, Innovation, and Higher Education in Sustainable Construction in Ecuador, funded by AECID and facilitated by INBAR. These webinars were broadcast online and reached nearly 3000 views.

Working with Chinese partners

In 2023, INBAR continued cooperating with Chinese training partners, including ICBR, NAFGA and also the China National Bamboo Research Center of NFGA in the recruitment of trainees while also



▲
China sponsored a bamboo weaving training course for participants from Guinea.

contacting eligible Member States to recommend trainees to participate in training programs sponsored by China's Ministry of Commerce. Overall, 173 trainees from national governments, research institutes and private sectors of 17 INBAR Member States as well as other countries participated in the training courses, including a ministerial workshop in China. These training courses elucidated a wide variety of knowledge and techniques for trainees related to the bamboo and rattan sectors, with a particular emphasis on sustainable development, technological innovation, weaving technology and bamboo's role in combating climate change.

Aside from this robust support at the governmental level, two bilateral training seminars were also organized for Jamaica and Guinea. In both trainings, participants expressed sincere appreciation for the opportunity to learn more about the bamboo and rattan sectors and their roles in promoting sustainable development.

Branching out bamboo development

The 2023 International Online Seminar — Bamboo: A Very Sustainable

Construction Material was held from 21 November to 12 December. Organized by INBAR's Bamboo Construction Task Force, the Seminar has been held annually since 2020, aiming to provide global audiences with an accessible and free channel to acquire the latest information on bamboo construction. Senior experts from Brazil, Colombia, Ecuador, Panama, Peru, Switzerland, Mexico and Guatemala were invited to deliver presentations across four sessions, sharing experiences from Latin America and contributions to bamboo construction with 1200 registered participants from 80 countries. The seminar dived into specific challenges and opportunities in Latin America across the pillars of education, innovation and research in bamboo construction. The seminar also brought together architects, engineers, entrepreneurs and policymakers from around the world to participate in a multi-faceted dialogue that spanned educational initiatives, cutting-edge innovations, groundbreaking research and social housing practices. Given the success of the event in 2023, the following year will be organized around a similar subject matter but with a focus on African experiences and knowledge.



From 18 to 19 December, the International Young Scientist Forum for Climate Change was held online. Co-organized by the University of British Columbia, Zhejiang A&F University and INBAR, the event showcased bamboo-based solutions to address climate change, bringing together young scientists from around the world and emphasizing the crucial role of the younger generation to drive innovation and advance research. Lu Wenming, INBAR Deputy Director General, attended the event, delivering the opening remarks at the forum. In his speech, he reiterated INBAR's commitment to developing and scaling up creative solutions, identifying and overcoming obstacles that hinder the widespread adoption of bamboo, and collaborating with governments, international agencies, stakeholders and young scientists to help bring about a more sustainable future. Jayaraman Durai, INBAR Director of Global Programme, also helped moderate the forum. In total, 30 presentations were arranged across two parallel sessions: Bamboo Forest Cultivation and Management as well as Bamboo Timber Processing and Utilization. At the end, awards were given for Best Presenters and Best Posters.

The San Rafael de Carvajal Municipality in Venezuela has recently embarked on a journey to nurture its bamboo sector, recognizing the potential of this eco-friendly resource to spur tourism and bolster sustainable development. In support of this endeavor, INBAR's Regional Office in Latin America and the Caribbean arranged two comprehensive training courses, which drew the participation of over 50 eager individuals keen on learning more about the intricacies of bamboo management and construction. The inaugural training session, held from 30 October to 3 November, focused on sustainable bamboo management practices. In total, 28 participants immersed themselves in a rich curriculum covering topics from bamboo propagation techniques to harvesting and preservation methods. The second course, held from 27 November to 1 December, explicated the fundamentals of sustainable bamboo construction. Adopting a hands-on learning approach, 24 participants honed their bamboo construction skills, mastering techniques such as cuts, joints and design considerations for ensuring structural integrity. Both training courses garnered significant interest and participation from a diverse array of stakeholders, including

▲
*Students of the
Manabí Workshop
School practice
bamboo construction
techniques.*



▲
*Graduation of the
 Second Promotion
 of the Bamboo
 Sustainable
 Construction Workshop
 School in El Carmen,
 Ecuador.*

delegates from local and national public institutions, alongside local producers, carpenters and artisans. Looking ahead, INBAR will continue to support and meaningfully engage with the municipality’s bamboo development initiatives as a key partner in the region.

Developing and strengthening curricula

In Kenya and Uganda, INBAR continued to work closely with partners in government and academia to develop relevant and impactful training curricula on bamboo topics. The Dutch-Sino East Africa Bamboo Development Programme supported two initiatives in this regard: 1) The Nyabyeya Forestry College, under the Ministry of Water and Environment of the Government of Uganda, has developed the Certificate and Diploma in Bamboo Resources and Technology; and 2) A diploma in Bamboo Technology has been developed through the Technical and Vocational Education and Training Curriculum Development, Assessment and Certification Council in Kenya. The overall aim of both curricula is to create a skilled and dynamic pool of graduate technicians capable of creating and

taking advantage of opportunities across the bamboo value chain. This will contribute to the overall growth and development of the global bamboo sector by filling in gaps in the value chain.

Curriculum work also continued in Latin America and the Caribbean. The second cycle of the Workshop School for Sustainable Bamboo Construction occurred in the El Carmen Canton of Ecuador, from which 76 students graduated. The curriculum of the training process is registered with the Qualifications Undersecretary of the Ministry of Labor, enabling participants to obtain a Certification for Job Competencies upon successful completion of an evaluation. At the same time, joint efforts by the Bambuzonía project in coordination with specialists belonging to RIUCI-bambú helped create a self-paced Virtual Introductory Course on Bamboo Sustainable Management. This course, with all its training materials on bamboo, has now been uploaded to the platform hosted by the National Institute for Agriculture and Livestock Research. Moreover, this course will be made available on the Peruvian National Forestry and Wildlife Service learning platform in 2024.



New standards paving the way

INBAR Task Forces also saw a high level of activity in 2023, affirming the significant value of these expert-led groups targeting key sectors of bamboo and rattan. For example, the Task Force on Construction saw three International Organization for Standardization (ISO) standards on engineered bamboo products, also hosting discussions for developing a roadmap of ISO/TC 165 WG 12 on the international standardization for structural uses of bamboo.

In addition, the Task Force on Rattan adopted two new working items while developing Voluntary Guideline Standards (VGS) on inventory techniques for rattan stocks and the mechanical grading of rattan canes.

Simultaneously, the Task Force on Bamboo for Renewable Energy approved two new working items, and it is currently developing VGS related to bamboo bio-char for the agricultural sector and types of bamboo charcoal and linkages to cooking stoves. This Task Force is also drafting policy briefs on bamboo charcoal kiln design and construction, bamboo charcoal commoditization, and

improving cooking stove design and construction methods for bamboo charcoal kilns.

Finally, the Task Force on Sustainable Bamboo Management initiated VGS on certification of bamboo quality planting material as well as management and production of bamboo quality planting material. This Task Force also developed policy briefs on VGS for the certification of bamboo forests and bamboo plantations as well as a step-by-step guide for utilizing bamboo to undertake forest landscape restoration.

On 12 December, a new international standard for engineered bamboo proposed by INBAR, known as ISO 5257:2023 Bamboo structures – Engineered bamboo products – Test methods for determination of mechanical properties using small size specimens, was officially released by ISO. This standard has persistently advanced amid the challenges of the pandemic, owing to the efforts of the ISO/TC 165 WG 12 on Structural Uses of Bamboo. Two additional international standards for engineered bamboo are now under development.

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Engineered bamboo presents a myriad of potential applications.
Credit: Solar Decathlon China Y-Project

Publications

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

Annual Highlights

INBAR Annual Highlights 2022 (Chinese, English, French, Spanish)

Bamboo and Rattan Update

Volume 4 Issue 1 (March) *Combating Climate Change With Bamboo* (English, French, Spanish, Chinese)

Volume 4 Issue 2 (June) *Rehabilitating Land With Bamboo* (English, French, Spanish, Chinese)

Volume 4 Issue 3 (September) *Conserving Biodiversity With Bamboo* (English, French, Spanish, Chinese)

Volume 4 Issue 4 (December) *Fighting Plastic Pollution With Bamboo* (English, French, Spanish, Chinese)

Bamboo as a Substitute for Plastic

Global Action Plan for Bamboo as a Substitute for Plastic (2023-2030) (English, Chinese)

Bamboo's Solution to Plastic Pollution: Bamboo as a Plastic Substitute to Address Plastic Pollution and Climate Change

Bamboo and Plastic Pollution: Fact Sheet (English, Chinese)

General Information

Guidelines for Green and Low-Carbon Consumption at World Heritage Sites (English, Chinese)

China's Bamboo-Related Intangible Cultural Heritage and Innovation in Bamboo Weaving (English, Chinese)

Bamboo for Carbon Neutrality in Rural Areas: Collection of Selected Case Studies (English, Chinese)

Manual de Construcción en Bambú: Estructuras Agropecuarias en la Ruralidad (Spanish only)

Cartilla de Riesgos del Trabajo y Señalética (Spanish only)

Technical Reports

INBAR Technical Report #45: Global Priority Species of Economically Important Rattan

Trade Reports

Trade Overview 2021: Bamboo and Rattan Commodities in the International Market (English, Chinese)

Trade Overview 2022: Bamboo and Rattan Commodities in China (English, Chinese)

Working Papers

Exotic Bamboo Species in Uganda: Identification and Assessment

Exotic Bamboo Species in Kenya: Identification and Assessment

Ethno-Taxonomical Classification and Potential Applications of Oldeania alpina (Highland Bamboo) Landraces in Ethiopia

Academic articles published by INBAR staff

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Meetings

United Nations Forum on Forests Expert Group Meeting, 11 January, Bangkok, Thailand

2023 Partnership Forum of the United Nations Economic and Social Council, 31 January, New York and online

INBAR hosted a side event on Innovative Partnerships and the Global Plastic Crisis.

5th United Nations Conference on the Least Developed Countries, 5 to 9 March, Doha, Qatar

INBAR hosted a side event titled Upscaling Investments for Pro-Poor Bamboo Industry and Enterprise Development for Enhancing Livelihoods and Environments in the LDCs.

Consultative Forum of the Group of Latin America and Caribbean Countries, 16 March, Beijing, China

In total, 16 ambassadors and diplomats discussed the potential of bamboo and rattan for sustainable development in Latin America and the Caribbean.

12th Council Session of INBAR and Flag-Raising Ceremony for the Republic of Chad and the Democratic Republic of the Congo, 28 March, Beijing, China

The flags of the Republic of Chad and the Democratic Republic of the Congo were raised outside INBAR's Headquarters. Nepal assumed the position of INBAR Council Chair of the 13th Session while Panama assumed the position of INBAR Council Vice-Chair.

International Symposium 2023 "Intersectoral Cooperation for Resilient Landscapes," 29 to 30 March, Dehradun, India

3rd Mountain Futures Conference: Mountain Communities in the Kunming-Montreal Global Biodiversity Framework, 16 to 18 April, Kunming, China

Programme Development Officer Tefera Belay gave a presentation on the role of bamboo for restoring ecologies and generating ecosystem services and also delivered closing remarks.

18th Session of the United Nations Forum on Forests, 8 to 12 May, New York, USA

INBAR hosted a side event on Bamboo for Triple Bottom Line Benefits, where Deputy Director General Lu Wenming highlighted the potential of bamboo to confront the growing plastic pollution crisis in his speech.

2nd Session of the Intergovernmental Negotiating Committee on Plastic Pollution, 29 May to 2 June, Paris, France

INBAR hosted one side event and one bamboo exhibit.

58th Session of the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of the United Nations Framework Convention on Climate Change, 5 to 15 June, Bonn, Germany**51st Session of the Industrial Development Board of the United Nations Industrial Development Organization**, 3 to 6 July, Vienna, Austria**High-level Political Forum on Sustainable Development of the United Nations Economic and Social Council**, 10 to 19 July, New York, USA**International (Anji) “Bamboo as a Substitute for Plastic” Innovation Conference**, 16 August, Anji, China**8th Asia Pacific Adaptation Forum**, 28 August to 1 September, Incheon, Korea**2023 SDG Summit — the High-level Political Forum on Sustainable Development**, 18 to 19 September, New York, USA**30th Session of the Asia-Pacific Forestry Commission**, 2 to 6 October, Sydney, Australia**United Nations Conference on Trade and Development’s 14th Session of the Multi-year Expert Meeting on Commodities and Development**, 9 to 11 October, Geneva, Switzerland

Director of Host Country Affairs Li Lan presented on industrial manufactured bamboo products and their wide applications.

Global Landscapes Forum Nairobi 2023: Can bamboo save African livelihoods? 11 to 12 October, Nairobi, Kenya

Deputy Director General Lu Wenming and Director of Global Programme Jayaraman Durai spoke on the importance of prioritizing bamboo in green economic development planning.

IUFRO Latin America Conference: Sustainable Landscape Management — the Role of Forests, Forestry, Agroforestry, and Agriculture, 17-19 October, Curitiba, Brazil

19th International Conference on Non-Conventional Materials and Technologies, 6 to 8 November, João Pessoa, Brazil

1st International Symposium on Bamboo as a Substitute for Plastic, 7 to 8 November, Beijing, China

The *Global Action Plan for Bamboo as a Substitute for Plastic (2023-2030)* was released during the opening ceremony.

59th Session of the International Tropical Timber Council, 13 to 18 November, Pattaya, Thailand

3rd Session of the Intergovernmental Negotiating Committee on Plastic Pollution, 13 to 19 November, Nairobi, Kenya

INBAR hosted an exhibition of bamboo products capable of replacing plastics.

6th World Congress on Disaster Management: Bamboo for Climate Resilience and Disaster Management, 29 November, Dehradun, India

28th Conference of the Parties to the United Nations Framework Convention on Climate Change, 30 November to 12 December, Dubai, United Arab Emirates

INBAR organized an exhibition and hosted three side events on 1) Bamboo Based Innovation for Upscaling Landscape Restoration and Green Growth in Developing Countries; 2) Bio-Economy Value Chain Development for Climate Change Mitigation and Resilience: Bamboo & Amazon Products; and 3) Mitigating Plastic Pollution and Climate Change with Bamboo.

2023 International Online Seminar on Bamboo: A Very Sustainable Construction Material — Lessons from Latin America's Education, Innovation and Research in Bamboo, 21 November to 12 December, online

Senior bamboo experts from around the world shared challenges and opportunities in Latin America for the bamboo construction sector.

International Conference on Bamboo Development in Southern Countries, 5 to 6 December, São Paulo, Brazil

First Council Working Group Meeting of the 13th INBAR Council Session, 15 December, Beijing, China

International Young Scientist Forum for Climate Change — Bamboo-based Solutions, 19 to 20 December, online

Deputy Director General Lu Wenming and Director of Global Programme Jayaraman Durai spoke on the important role of the younger generation in driving innovation and advancing bamboo research.

Trainings

Potential of Bamboo as a Material for Sustainable Construction in Iran, 13 March, online

Speakers promoted the broad applicability of bamboo for greening the construction sector in the Middle East.

Regional Training on Biodiversity Conservation and Sustainable Development in Tropical Asia, 14 to 20 June, Xishuangbanna, China and online

Webinar | South-South Technology Learning for Bamboo Development: Approaches, Lessons, Actors and Enablers, 15 December, online

The online training sought to highlight the significance of technology transfer approaches and the success factors that can help the development of the bamboo sector in the Global South.

Activities

INBAR International Photo Competition 2023, 6 March to 30 September

The fourth consecutive year of INBAR's annual photo competition showcased the uses of bamboo and rattan for sustainable development, with an emphasis on applications in plastic substitution.

Bamboo as a Substitute for Plastic Forum (Consumer Fair), 10 to 15 April, Haikou, China

European Bamboo Expo, 2 to 3 June, Dortmund, Germany

2023 China International Fair for Trade In Services, 2 to 6 September, Beijing, China

INBAR's third consecutive year of participation at the global fair featured a 190-square-meter exhibition themed on the "Bamboo as a Substitute for Plastic Initiative."

World Bamboo Day, 18 September

