

BRU

Bamboo & Rattan Update

Special Volume



国际竹藤组织成立25周年
INBAR 25th Anniversary



BARC 2022
Global Bamboo and Rattan Congress
世界竹藤大会

Sharing the latest news and activities from the bamboo and rattan sector



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Amazonian woman from Peru, developing her business with bamboo in Oxapamba.

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About INBAR

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BRU

EDITORIAL

Across Latin America and the Caribbean, bamboo has a recorded use by Indigenous communities dating back over 10,000 years. On Ecuador's Santa Elena Peninsula, vestiges of the plant have been found embedded in structural pillars dating back to the Archaic settlements of Las Vegas culture. Over the course of time, the plant spread across the continent, adopted by Peruvian Caral civilization, passing through the Magdalena River Valley in Colombia and the mountain range of Talamanca in Panama before being adopted by the Mexican emperors of Tenochtitlan.

In Peru, Machu Picchu was blanketed with a thick arboreal quilt of trees, local plants and bamboo, cloaking it from outsiders until the mountain city's discovery in the early 20th century. Archeological evidence suggests bamboo was well used by inhabitants at the time, with culms used to make tools, musical instruments and bamboo rafts. These discoveries indicate that even early human settlements in Latin America had identified the plant's versatile nature and integrated it into daily life.

From Mexico in the north to Chile in the south as well as several Caribbean islands in the east, the Latin America and the Caribbean region is home to over 560 varieties of bamboo, representing 33% of all global species. Bamboo species can be found across the varied topography, from forests at sea level to highland biomes at 3500 meters, growing in single or associated natural patches as well as in established plantations. The plant resource can be found cultivated alongside crops, flanking riverbanks and carpeting mountainsides, thriving among the flora and fauna of each ecological zone.

INBAR's Latin American and the Caribbean Office builds on this rich history. Established in 2001 in Ecuador, the Office has worked closely with Member States to promote bamboo as a sustainable nature-based solution to many of humankind and the region's most challenging problems. INBAR collaborates with the central government, local governments, communities, universities and the private sector for the promotion of bamboo species, for example *Guadua angustifolia*, as a high-quality construction material to help meet national and sub-national policy objectives, enhancing the livelihoods of inhabitants in the region.

In this special issue, Ministers from a number of INBAR's Member States share their own thoughts on bamboo and rattan's importance for sustainable development (page 4). Member States from Latin America and the Caribbean are some of INBAR's longest partners, and joint efforts have yielded fruitful results. Ministers stated that bamboo and rattan would play increasingly important roles in the future sustainable development and environmental conservation programs of their country in the years to come.

Despite hosting one of the world's most biodiverse ecological environments, bamboo remains underutilized in the Amazon. INBAR is seeking to change this with its "Bambuzonía" project,

which equips beneficiaries across Colombia, Ecuador and Peru with the skills and knowledge to plant and use bamboo to craft a wide variety of products (“Rediscovering Bamboo in the Amazon,” page 9). Financed by the International Fund for Agricultural Development (IFAD), the project highlights the multifunctional nature of the plant resource to rejuvenate poor soils, mitigate climate change and strengthen rural livelihoods.

Ecuador suffered a catastrophic earthquake in 2016, wreaking devastation across Manabí and Esmeraldas Provinces. In the aftermath, bamboo structures had weathered the seismic activity better than other structures. Acting on this, the Spanish Agency for International Development Cooperation (AECID) together with INBAR launched the program Promoting Bamboo as a Strategic Resource for Local Development Through a Sustainable Construction Chain with the aim of buttressing efforts to rebuild, mainstreaming bamboo construction in public and private infrastructure, and linking the agricultural and construction sectors (“Circular Development Model with Bamboo,” page 12).

A titan in the architectural world, the work of Simón Vélez has helped inspire a new generation of builders to focus more on sustainable materials in design and construction. In “Simón Vélez: Progenitor of Natural Architecture” (page 16), Vélez talked with INBAR’s Latin America and the Caribbean Office about his upbringing and design philosophy behind “natural architecture.” He expounded on the dichotomy between “carnivorous” and “vegetarian” modes of thinking, advocating for future architecture to include more sustainable materials that harken back to humankind’s fundamental relationship with nature. Particularly in developing countries, impressive structures that transcend traditional limits are achievable while stimulating the green development of new industries.



THE EDITORS

BAMBOO AND RATTAN IN LATIN AMERICA AND THE CARIBBEAN

- There are **43 genera** and **569 species** of woody and herbaceous bamboo distributed across Latin America and the Caribbean.
- INBAR estimates the presence of at least **15.1 million hectares of bamboo** throughout the region.
- INBAR has **11 Member States** in Latin America and the Caribbean: Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Jamaica, Panama, Peru, Suriname, and Venezuela; and 1 honorary Member State: Canada.
- INBAR’s Latin America and the Caribbean Office was **established in 2001** in Ecuador.
- Cuba has the only **rattan germplasm bank** in Latin America and the Caribbean.
- According to the latest UN Comtrade data from 2019, the region has exported **USD 3 million** of bamboo products; however, it is worth emphasizing that the highest consumption of bamboo is done internally in each of the countries.



REFLECTIONS ON 25 YEARS

INBAR turns 25 this year. To mark its anniversary, BRU has invited representatives from across its Member States to comment on their country's bamboo and rattan sectors. Here, eight Ministers from Latin America and the Caribbean share their thoughts on how these plants are being used to promote pro-poor, environmentally sustainable development in their countries, and share their visions for the future.

Minister of Science, Technology and Innovation, Federative Republic of Brazil

His Excellency Paulo César Rezende De Carvalho Alvim

Brazil has the greatest diversity and highest percentage of endemic woody bamboo in Latin America. Back in 2008, Brazil started supporting research and development projects in order to innovate and disseminate environmental knowledge and technologies for the use of bamboo in the civil construction, furniture and other products sectors.

Informally known as the “Bamboo Law,” the National Incentive Policy for Sustainable Management and Bamboo Cultivation was published in Brazil in 2011; in the same year, a bilateral agreement in science and technology for bamboo was signed by Brazil and China.

In 2013, Brazil invested around USD 3 million in a public call for research projects to promote the development of knowledge and technology for all regions of the country in order to attract highly qualified researchers in bamboo. The following year, a National Network for Research and Development in Bamboo was set up, supporting projects from Technological Vocational Centers in Bamboo.

A partnership with a Brazilian industrial research and innovation company (Embrapii) has

been established to support innovative projects in the bamboo production chain from 2018 to 2022. A bamboo bio-economy was also presented to the public during the National Science and Technology Week.

We are looking forward to continuing our cooperation with INBAR and to developing an integrated industry pilot project. We are also looking forward to working together with Member States to share knowledge and best practices.

Brazil wishes a happy and prosperous 25th anniversary to INBAR.

Minister of Agriculture, Republic of Chile

His Excellency Esteban Valenzuela van Treek

Forest development is one of the eight strategic guidelines of our Ministry of Agriculture through which we seek to strengthen institutions, public policies and sectoral legislation, focusing its objectives on the conservation, restoration and sustainable management of all types of existing forests in the country, with emphasis on the native forest.

In Chile, there are eight species of bamboo belonging to the genus *Chusquea* of the Poaceae family, all of which feature a solid structure, grow in temperate to cold climates and associate with the native forest, with a total area of 698,446 hectares. Several studies have been carried out in the country on the two most relevant Chilean species (*C. culeou* and *C. quila*, known as colihue and quila, respectively) due to their potential industrial uses. Between 2000 and 2010, important advances were made in research and development projects in areas such as quantification of the resource, technological studies, as well as efforts to introduce new material from China and Ecuador to evaluate the development of temperate climate bamboo species that could adapt to some of the climatic conditions of our country. These studies received financial and technical support from INBAR, an organization of which Chile has been a Member State since its beginning, with active

participation of the Forestry Institute (INFOR) of the Ministry of Agriculture of Chile.

“**... the support provided over the years by INBAR[...]has made it possible to make this resource visible in the country and generate the necessary knowledge to offer new development alternatives to communities...**”

Chile appreciates the support provided over the years by INBAR, which has made it possible to make this resource visible in the country and generate the necessary knowledge to offer new development alternatives to communities related to this resource and its area. Among the pending challenges is the study of the importance of all *Chusquea* species present in the country and their goods and environmental services at the ecosystem level, including the regulatory role of natural processes in the socio-ecological systems in which they develop.

On this 25th anniversary, we celebrate and recognize the support provided by INBAR over the years to our country, and we hope to continue building together on this important topic.

Many congratulations and best wishes for success in the years to come.

and establish new crops.

In recent years, progress has been made in applied research, credit lines have been made available for producers, resources have been managed to finance the establishment of 1500 hectares of *Guadua* and a campaign to promote the consumption of *Guadua* products is being carried out, among other activities.

Colombia has been a member of the International Bamboo and Rattan Organization (INBAR) since 2011, and since then the country has benefited from exchanging experiences and participating in trainings with China and other Member States; technical quality standards have been developed for bamboo products (ISO); and Colombia is part of the INBAR project “Bambuzonía,” with the objective to increase the resilience of rural farmers to climate change through the production of bamboo.

Thus, our country wishes to continue receiving support and cooperation from INBAR, which is of great importance to increase the technical and scientific knowledge of bamboo and achieve technology transfer for its agro-industrial development.

It is my great pleasure to address you on the occasion of commemorating the 25th anniversary of the founding of INBAR and to express my joy at the work carried out.

Minister of Agriculture and Rural Development, Republic of Colombia

His Excellency Rodolfo Zea Navarro

Colombia features some of the most diverse bamboo resources in Latin America, with extensive ecosystems of *Guadua* (*G. angustifolia* Kunth), which is characterized as a major protector of the environment, generating economic, social and environmental benefits for the rural communities of the country.

In 2022, Law 2206 encouraged the productive use of bamboo, in harmony with environmental sustainability and using its ecosystem services to mitigate the effects of climate change, allowing local communities to carry out sustainable management, market the newly obtained products

Minister of Agriculture, Republic of Cuba

His Excellency Ydael J. Pérez Brito

Cuba is the Caribbean island with the richest bamboo diversity within the Antilles, with 7 genera and 19 species of native bamboo, as well as 7 genera, 22 species and 4 varieties of exotic bamboo introduced from Asia. Our native bamboos are, in general, small in size and herbaceous in appearance, a condition that has led them to be considered of low economic value, although at present new actors in the Cuban economy are exploring their uses, which are fundamentally artisanal. However, exotic Asian species have visibly entered the local economy of the country, their uses being predominant in handicrafts and in the manufacturing of furniture.

Our country joined the International Bamboo and Rattan Organization (INBAR) in 1999, and from that moment began to promote the development and efficient use of bamboo, for which actions have been taken for the development of this important group of species.

Since the addition of Cuba as a Member State of INBAR, the emergence of a “culture” directly related to the cultivation and use of bamboo and rattan has been made visible, research on these promising species has increased and alliances between the scientific institutions of countries have been fostered. With a tradition rooted in the sustainable use of bamboo and rattan, this nexus has made possible the training of specialists, researchers and managers associated with the management, exploitation, conservation and sustainable management of forests. Currently, the National Bamboo Program for the Republic of Cuba is being revised for approval and implementation, the achievements of which are owed to the support received from INBAR and the numerous exchanges mentioned above.

“ **Since the addition of Cuba as a Member State of INBAR, the emergence of a “culture” directly related to the cultivation and use of bamboo and rattan has been made visible...** ”

Thanks to the cooperation and technical assistance of INBAR, Cuba has a rattan germplasm bank, the only one in Latin America and the Caribbean, which produces viable high-value commercial seeds and which is being studied to promote the National Reforestation Program while providing seeds and technical assistance to interested countries in our geographical area.

Strategic interest in bamboo has increased in recent years by identifying its potential as a biomass resource and its uses in rural construction, in addition to the already known and widely exploited ecosystem services provided by the species. Accordingly, the main introduced species, which are *Bambusa vulgaris*, *Guadua angustifolia*, *Dendrocalamus strictus* and *Bambusa polymorpha*, are now being cultivated in greater numbers as part of national planning.

The Government of Cuba has made a commitment to attain 33% forest cover by 2030, a goal that it is close to fulfilling: in 2021, 31.88% of forest cover in the territory has been achieved, and of the total number of reforested hectares, a steady increase in established bamboo plantations can be seen, which corroborates the growing importance given to this species.

We thank INBAR for the support and wish it a happy and successful 25th Anniversary.

Minister of Agriculture and Livestock, Republic of Ecuador

His Excellency Bernardo Manzano Díaz

In Ecuador, bamboo has more than 10,000 years of history. It was used by native cultures to make temples and houses, hunting and fishing tools as well as musical instruments and jewelry.

In 1999, recognizing the strategic importance of the sector, Ecuador joined the International Bamboo and Rattan Organization (INBAR), a multilateral development organization that promotes environmentally sustainable development using bamboo and rattan. Today, it is the headquarters of the Regional Office for Latin America and the Caribbean, coordinating actions with 11 countries in the region.

Since joining INBAR, Ecuador has played a leading role in the development of the sector in Latin America and the Caribbean. Ecuador has implemented knowledge exchanges between China and Ecuador on ecosystem services that open opportunities for local economies and environmental conservation, such as carbon sequestration, soil restoration, watershed conservation, wood generation, biological corridors and more.

In 2018 and 2019, our country had the honor of chairing the INBAR Council. In that capacity, it created awareness about the potential of the resources in the Latin American region.

Among the achievements was the creation of the National Bamboo Strategy: Towards a Green and Inclusive Development 2018-2022, which was led by the Ministry of Agriculture and Livestock with the support of 11 government bodies,



Bamboo conserves biodiversity and ecosystems. Credit: Luis Felipe Mosquera Cuaces.

local policymakers and producers, artisans and marketers.

The Government of Ecuador has generated public policies to strengthen the sector. Through our Ministry, the planting of 4000 hectares of bamboo was promoted; BanEcuador has a specific line of credit for the sector; and the Ministry of Urban Development and Housing incorporates the use of bamboo in its Creating Housing plan, with the purpose of boosting its commercialization in sustainable construction.

Thanks to the strengthening of the sector, there are several major initiatives in the Ecuadorian territory. This is the case of the “Bambuzonía” project in the Amazon rainforest, which aims to increase the resilience of rural farmers to climate change through diversified bamboo production systems.

The coastal region is home to the Sustainable Construction with Bamboo project. Through the technical support of INBAR, producers, technicians, artisans and builders are trained on the sustainable management of bamboo and its practical uses for the generation of resources for thousands of rural families.

Congratulations on these 25 years, and may we continue to build a world together that is more sustainable with bamboo.

Minister of Environment, Republic of Panama

His Excellency Milciades Concepción

In 2010, the Republic of Panama became a Member State of the International Bamboo and Rattan Organization (INBAR), and since then there have been various efforts to develop the cultivation of bamboo as a vegetative material for multiple uses in our country.

Currently, one of the consequences of COVID-19 has been to remind us of the close link between global livelihoods and the reality of climate change and, consequently, the crucial role that bamboo plays in our environment to combat it. This is why we as a country and under our current administration, despite all the difficulties already mentioned, direct our focus to work in synergy with our communities and other key actors to continue promoting the use of bamboo in such a way that it provides a tool to help strengthen

capabilities and income generation in order to meet the challenges caused by global crises.

In order to harmonize short-term actions with the long-term vision, the Republic of Panama and INBAR have coordinated and conducted training for the production of bamboo handicrafts and utensils with local artisans, which will give us a baseline that can provide a framework based on our local resources. This helps organized communities in times of crisis, while facilitating the promotion of bamboo as an alternative in the fight against desertification and conservation of forest cover, making known the uses of bamboo.

We are pleased to be a part of the INBAR alliance as a partner for the promotion and development of bamboo in our country; therefore, we wish to congratulate INBAR on its 25th anniversary and long history of achievements, which have contributed so much to promoting the cause of sustainable development.

Minister of Agrarian Development and Irrigation, Republic of Peru

His Excellency Andrés Alencastre Calderón

In Peru, bamboo has been used for many years in the traditional construction system “quincha” to build homes located in coastal cities such as Lima, Callao, Trujillo, Piura and more in order to prevent damage caused by frequent seismic movements in buildings.

The great versatility, rapid growth and economic, social and environmental benefits that bamboo provides encourages Peru to prioritize the development of its production process, with a focus on value and sustainable management of our forest heritage, which will substantially contribute to improving our ecosystems and livelihoods of rural and urban populations from all regions.

In this sector, Peru maintains a close relationship with INBAR, and with its technical support, programs have been developed for the benefit of actors linked to bamboo in various regions, which strengthens forest management, helping to improve the technical capabilities of bamboo growers.

It is important to mention that Peru and

INBAR have a common vision to achieve the industrialization of bamboo with the involvement of public and private sectors, and for this purpose Peru has planned to implement the National Strategy for the Development of Bamboo from 2022 to 2025.

From Peru we wish INBAR much success and a happy 25th anniversary.

Minister of Popular Power for Ecosocialism, Bolivarian Republic of Venezuela

His Excellency Josué Alejandro Lorca Vega

The Bolivarian Republic of Venezuela is ranked third in Latin America for bamboo diversity, with 81 woody and herbaceous species, which are distributed from the coasts to the cloud forests and Andean mountain ranges. Aware of this potential and committed to both saving life on the planet and fostering sustainable development, Venezuela has carried out important actions such as the creation of bamboo forests for protective and commercial purposes, such as the rehabilitation and protection of river basins. At the same time, Venezuela has promoted Regional Bamboo Committees with the vision of achieving forestry development through the production, research and transformation of this resource, improving the quality of life of communities, and together with the country's academic sector also promoted the Practical Manual for the Cultivation and Management of *Guadua* in Venezuela.

Our country has been a Member State of the International Bamboo and Rattan Organization (INBAR) since 2002, and has observed the valuable contribution of INBAR to the fulfillment of the Sustainable Development Goals (SDGs) as well as to various commitments established in different environmental conventions. Today, on its 25th anniversary, we reaffirm our commitment to INBAR, and strengthening cooperative ties as well as promoting the possibility of deepening institutional partnerships in research, management and industrial production of bamboo.

From the land of Bolívar, Chávez and Maduro, we wish INBAR the greatest of successes and a happy anniversary!

FEATURED ARTICLE

REDISCOVERING BAMBOO IN THE AMAZON

In Colombia, Ecuador and Peru, INBAR and IFAD are helping local communities reconnect with and fully utilize an overlooked forest resource in the Amazon.

The Amazon, known as one of the most biodiverse ecological regions on the planet, hosts a wide range of native bamboo species. Both woody and herbaceous bamboo can be found within the region. Some bamboo sprout from the moist soil in large, natural patches in association with other forest species, while others cluster deep within the forest canopy.

The use of bamboo in Latin America dates back over 10,000 years. For inhabitants of the Amazon, the versatile forest resource offers a plethora of uses, from being used to make hunting and fishing tools, rafts and musical instruments to the construction of houses and temples. In some communities, bamboo shoots appear as regular occurrences in local diets.

However, despite their multifaceted traditional applications, the use, cultivation and positive transformation of these bamboo species remain limited due to a number of reasons. An abundance of precious woods, incomplete intergenerational knowledge transfer, the introduction of foreign agricultural systems, inefficient land use in livestock systems, unfamiliarity with new sustainable technologies and more are some of the reasons explaining why bamboo has been overlooked in sustainable development schemes.

We posit that the Amazon is rife with great potential for research into the diversity of native bamboo species and has been overlooked for far too long. Many scientific lines of inquiry regarding the status of bamboo in the Amazon still lack basic information, making the topic well suited for investigation. The generation and recovery of bamboo knowledge in the areas of genetics, morphology, distribution ranges, coverage

areas, ecology, reproductive biology, anatomical, physical-mechanical and phytochemical properties of bamboo, are essential for the sustainable management of the resource. Likewise, ancestral knowledge, myths and legends, cultural expressions, development and integration of clean technologies and more help determine its proper use in a bioeconomy.

To help address some of these, in 2019, Colombia, Ecuador and Peru launched the project Innovation and Promotion of Bamboo through Action-research for Resilient Agriculture in Colombia, Ecuador and Peru. Known as “Bambuzonía” by project workers, the nickname is a combination of the words “bamboo” and “Amazon” in Spanish. The Bambuzonía project is executed by the International Bamboo and Rattan Organization (INBAR) in close coordination with a number of local partners, and the project is financed by the International Fund for Agricultural Development (IFAD). This project aims to fully utilize bamboo as a multifunctional resource capable of restoring degraded lands, mitigating climate change and generating alternative revenue streams for rural producers. To date, the project has 4000 beneficiaries across the three countries.

Bambuzonía in Colombia

In Colombia, the project is focused on Meta and Caquetá Departments, with participation from the Embera Chami Puru and Inga Indigenous communities.

Two active departmental technical boards in Meta and Caquetá directly contribute to the development of the national management of bamboo and its use in agribusiness. One major achievement in the region last year was the drafting of the Bamboo Competitiveness Agreement, a major document of national relevance for the use and future development of bamboo. In addition, 12 native species have been registered in Colombia as part of the project, including seven herbaceous and five woody



Beneficiaries of the Field School present their tools and bamboo seedlings. Credit: INBAR.

species. Beneficiaries have also been trained in the sustainable management of bamboo and the production of handicrafts.

After participating in the training, Gladys Lozano, a resident of Caquetá, was exposed to new information about bamboo, such as the uses of bamboo sheaths, which she has wielded to generate a new source of income. After surviving armed conflict in the region, she has been able to use bamboo to reinvent herself. Lozano now runs a business where she transforms bamboo materials into beautiful handicrafts, such as lamps, pen holders and other artisanal products.

Lozano mentioned that her introduction to the project was no mere coincidence. Indeed, she believes it provided her with a new meaning of life, which she described as a way to bring hope and joy to other families. “Bambuzonía is excellent – it taught us the benefits of bamboo and contributes positively to our lives,” she said. “It has also allowed us to establish our company

and provide employment to other people.” Among residents of Colombia impacted by the project, her story is not uncommon.

Bambuzonia in Ecuador

In Ecuador, project activities are carried out in Napo, Pastaza and Morona Santiago Provinces, with participation from the Huaorani, Shuar and Kiwcha Indigenous communities.

In Pastaza, as part of implementing the project, the Launch of the Strategic Plan for the Development of Bamboo in the Amazon region was carried out. Objectives of the plan included maximizing bamboo-related activities via Field Schools as well as in the production, management and uses of bamboo, enhancing all nodes in the value chain. Moreover, in Ecuador, 10 native species have been registered as part of the project, including five herbaceous and five woody species.

In Ecuador, the project has overseen the establishment of 38 Field Schools. Through a wide range of educational activities, instructors at these schools have helped change the popular notion held by many producers that bamboo is a “bad weed.” Project beneficiaries now see it as a valuable plant with myriad benefits and uses. Indeed, after finishing the training curricula at Field Schools, a number of producers now report viewing bamboo as a “resource of the wise,” owing to its numerous contributions to the environment and capacity to invigorate local economies.

Carmelina Vargas, 32, is an Indigenous woman who lives in Pastaza Province. She spoke that her involvement in the project has inspired and elevated her bamboo craftsmanship. She explained that, after receiving training, she feels she is now equipped with the expertise for making beautiful handicrafts. “Bamboo is wonderful, and as artisans we can use it in the preparation of tableware and various products,” she added.

In Napo Province, bamboo is also empowering the women of a local Indigenous community. The Association Amukina of Kiwcha Women in the province helps promote the use of bamboo for entrepreneurial endeavors. Dary Aguinda, President of the Association, said that her vision for community development has always included bamboo. “A friend told me about the project, and I

decided to get involved in this activity,” she said. “With this one resource, one can create many different things. The multifunctional nature of bamboo is not lost on project participants, and many see this quality as its true advantage over other natural resources.

Bambuzonia in Peru

In Peru, the project operates in Junín, Pasco and San Martín Departments, with participation from the Ashaninka, Awajun, Nomatsigenga and Yanesha Indigenous groups.

In this region, the project has advocated for greater inclusion of bamboo construction with the aim of bolstering tourism in the area. One clear example of this is the construction of the rest stop found on Satipo lookout hill, which was carried out in collaboration with the Institute of Housing, Urbanism and Construction and the Municipality of the Central Town of Tzancuvatziri. Furthermore, in Peru, 15 native species have been registered as part of the project, including nine woody and six herbaceous species.

Hans Felipe Pérez lives in Junín Department. He is an enthusiastic participant of the project, who, after enrolling in a handicraft workshop, now makes bamboo products that captivate tourists visiting his local community. “It is important to promote bamboo because we are in a touristic place. We started from the planting of the resource, now we are creating handicrafts with the material,” he added. Bamboo-based businesses can offer not-insignificant boosts to income, especially in regions known for sightseeing.

Lessons that ripple

Undergirding the sustainable development of the bamboo sector in three countries, Bambuzonia is remarkable in scope. It allows project countries to harness the latent and strategic potential of bamboo, enabling the responsible growth of the sector and also helping fight climate change. The project’s extensive partnership network is already demonstrating successes in the management of nurseries, planting, management of bamboo in their land and more. Stakeholders have started meaningfully integrating the forest resource into daily livelihoods.

Local and national government representatives have marshalled the budget and personnel for essential tasks like community training, seedling production, the development of technical tables as well as communication strategies and awareness campaigns, all of which empower institutions to meet a diverse range of long-term community needs.

Bambuzonia establishes a valuable precedent for other projects in the region. Building upon its learned lessons, the project seeks to coordinate knowledge flow between countries facing similar challenges in sustainable development. Its unique holistic toolkit can be exported to other communities and interest groups seeking technical assistance for the responsible exploitation of bamboo.

The project also reinforces linkages and builds trust between local governments and community leaders, which results in better socio-economic outcomes across a suite of other government plans and programs. Joint efforts allow the project to serve a greater number of affected stakeholders, while elevating environmental, economic and social issues in the minds of policymakers and citizens.

Diversified bamboo production systems act as a bulwark against climate change. Small rural farmers are at the forefront of this change, and they are also the group most vulnerable to climate-related risks, like heat waves and floods. Driven by the guiding ethos that even small actions can have impactful results, Bambuzonia brings together people from Colombia, Ecuador and Peru to enrich lives and build resilience. These efforts generate ripples that extend beyond the borders of these countries and point the way forward for sustainable, collaborative development in regions across the globe.

This article was a collaborative piece written by **Maija Peltola**, IFAD Country Director for Colombia, the Dominican Republic and Guyana, as well as staff at INBAR’s Latin America and the Caribbean Office.

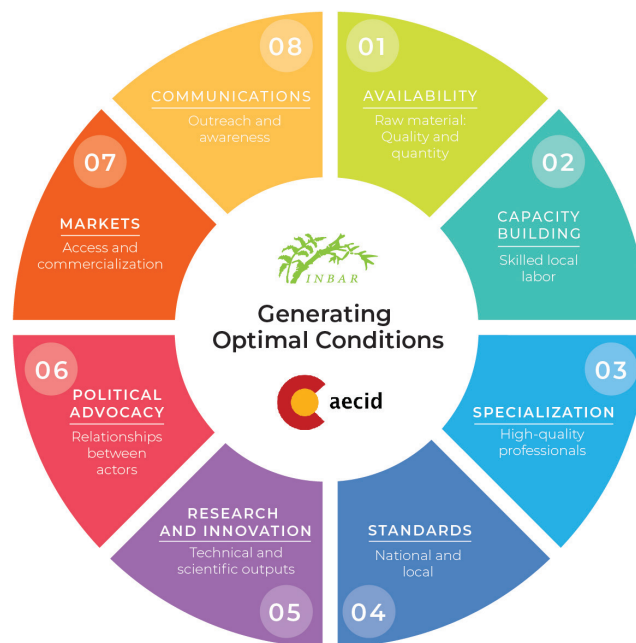
CIRCULAR DEVELOPMENT MODEL WITH BAMBOO

One community devastated by Ecuador’s 2016 earthquake is showing how to use bamboo to build back better.

The Ring of Fire in the Pacific Ocean is a region spanning 40,000 kilometers in which several oceanic plates slide under the Americas and Asia, generating seismic and volcanic activity that endangers hundreds of millions of nearby residents. Ecuador is part of this belt, where sliding between the Nazca and South American plates has historically triggered large-scale earthquakes, causing fatalities, infrastructure damage and enormous economic losses.

On 16 April 2016 at 6:58 p.m. (local time), the north coast of Ecuador was shaken by a catastrophic 7.8-magnitude earthquake at an approximate depth of 19 km. The town of Pedernales in Manabí Province was at the epicenter. After the dust settled, 671 were reported dead, thousands affected and many structures had collapsed. After this tragic event, observers of the destruction noted that bamboo structures seemed to withstand the brunt of the powerful seismic forces. The high resistance of the structures in relation to their weight as well as their ductility, which is the ability to absorb energy in connections and joints, were important factors that contributed to their solid performance.

For this reason, in 2017, as part of the recovery package to support Ecuador’s rebuilding, the Spanish Agency for International Development Cooperation (AECID) together with INBAR set up the program Promoting Bamboo as a Strategic Resource for Local Development Through a Sustainable Construction Chain. The program aims to create an enabling environment to promote the sustainable use of bamboo as an alternative material in public and private infrastructure and also as a tool in the fight against climate change due to its low-carbon footprint. Planners also sought to revitalize local economies by boosting



Eight lines of action financed by AECID. Credit: AECID / INBAR.

the agricultural and construction sectors. Bamboo was identified to function as a connector between central and local governments, civil society actors and academia, offering alternatives to young people and women in rural areas to improve and diversify livelihoods.

This program benefits from a financial contribution from AECID in excess of EUR 1 million, which through the implementation of six projects addresses the eight lines of action listed below, laying the foundation for the organization of the bamboo value chain in Ecuador.

Availability of raw material: Quantity and quality

Work at the farm level is a prerequisite for obtaining raw material, generating income, improving the livelihoods of the rural population and capitalizing on the multiple environmental benefits that bamboo provides, such as carbon sequestration, water conservation, soil nourishment, biological corridors and more. Accordingly, the establishment of 15 Field Schools

for farmers in sustainable bamboo management has made it possible to have a group of bamboo technical promoters who are community leaders, local technicians and public officials, including young people and women. These technical promoters then run trainings for over 310 farmers in the implementation of climate-smart practices across the farms of Manabí Province.

Equally important is preserving bamboo culms after harvest. Proper handling ensures that the culms will avoid damage from insects or fungi. Five bamboo collection and preservation centers in Manabí have been upgraded, leading to higher quality materials with longer lifespans, allowing sellers to increase the price of bamboo by 90%.

Training skilled local labor

Sustainable construction with bamboo requires specialized knowledge. Practitioners must comply with existing regulations while also taking full advantage of the unique properties of the material. To date, 74 students, nearly one-quarter of whom are women, have graduated from the first cohort of the Manabí Workshop School in Bamboo Sustainable Construction, located in the rural parish of Calderón, with support of the Fundación Educativa Rada (FUNDER), the Municipality of Portoviejo, the Autonomous Decentralized Parish Governments and other partners.

In the course of their theoretical and practical training, students reviewed topics related to construction such as electricity, cabinetry, civil works and, of course, construction with bamboo. At the end of their training, they receive a diploma recognized by the Ministry of Labor. The students later can also opt for a certification for labor competence on Construction of Structures and Furniture in Bamboo, which was approved for the first time in Ecuador's national catalog of qualifications, providing them with more opportunities for career growth.

In addition, a group of 30 construction masters specializing in bamboo from the traditional community Las Tunas in the Puerto López de Manabí canton participated in the program. Las Tunas is renowned across Ecuador for being home to the greatest bamboo builders in the country. These masters were able to update and integrate their traditional knowledge and methods with



Students of the Manabí Workshop School practice bamboo construction techniques. Credit: INBAR.

modern practices. Moreover, a short five-day series of courses was developed for the implementation of light-weight bamboo structures in the localities.

Training specialized professionals

Another key piece of sustainable construction with bamboo is the training of construction professionals who know, promote and advocate for the widespread adoption of this material. For these professionals, it is paramount for them to disseminate relevant technical knowledge of bamboo and its role in designing durable structures.

Targeting these bamboo advocates, over 1000 professionals and specialists from the public and private sectors have been trained through short courses, webinars and symposiums on topics such as design and structural calculation of bamboo structures, national standards for bamboo construction, quality and resistance, and more. The IKIAM Amazon Regional University now offers a master's degree in Architecture with a specialization in Sustainable Construction, with a specific module for bamboo construction.

Development of regulations at the national and local level

Regulatory development has been crucial for creating a process of formalization for the bamboo sector. Thus, in 2017, with technical support from INBAR, the Ministry of Urban Development and Housing (MIDUVI) issued the Ecuadorian Construction Standard Regarding *Guadua* Structures, which was a key step for promoting this material and led to approval from the national authority of the first prototype bamboo house for bioclimatic social housing in 2018.

In the same year, the Ministry of Agriculture and Livestock elaborated on the National Bamboo Strategy, and with crucial input from the Bamboo Sector Board and INBAR along with over 30 public and private actors, jointly proposed a roadmap for the sector. Additionally, the inclusion of Article 31 in the Productive Development and Investment Attraction Law, which prioritizes construction technologies for social housing that favor the use of sustainable local materials, strengthened efforts within the Houses for All (2017 – 2020) Program.

Currently, the inclusion of bamboo as part of the national policy through the National Habitat and Housing Plan 2021-2025 reaffirms the importance of the resource, where it can be found across the Costa and the Amazon regions. In local governments, visionary ordinances in the municipalities of El Carmen, Portoviejo and Santa Ana are incentivizing builders to integrate bamboo materials, with a focus on sustainability and guaranteeing safety to its inhabitants by promoting earthquake-resistant structures.

Research, innovation and technical documentation

Universities and research centers play a fundamental role in solving emergent obstacles in bamboo construction and production chains. As a result, tools for accelerating progress in the field like targeted boot camps have been implemented, leading to innovations in bamboo construction and product ideas that can quickly enter markets or be available for public use.

Similarly, a series of investigations related to sustainable construction and the formation of

the new International Network of Universities and Research Centers related to bamboo (RIUCI-Bambú) are now being supported to facilitate the generation, exchange and dissemination of scientific knowledge on bamboo structures. More than 17 publications and technical documentation related to the management and sustainable use of bamboo have been circulated, and currently, a research repository that will facilitate access to the latest scientific work developed in the Latin American and Caribbean Region is under construction.

Political advocacy and relationships between actors



Students of the Manabí Workshop School. Credit: INBAR.

Critical government decision-makers are gaining awareness about the importance of bamboo. These decision-makers have been key for advancing the development of the sector. For example, the Bamboo Sector Roundtable, established in 2013 by INBAR, exists as a nexus for the exchange of ideas between public, private, cooperation and academic actors, strengthening disparate links in the chain.

In a joint effort between MIDUVI and the Bamboo Sector Roundtable, the first communal house was built with bamboo as part of a social housing project in Guayas Province. In Manabí, the Provincial Decentralized Autonomous Government is now considering including bamboo in the construction of several tourist buildings in

strategic places that promote local and national tourism. A portfolio of bamboo architectural designs for use in the project has already been drafted.

MIDUVI, in coordination with local governments and with the technical support of INBAR, is promoting the SDG Cities program, which seeks to foster inclusive, safe, resilient and sustainable communities, incorporating homes with bamboo and rejuvenating urban hubs.

The Manabí Workshop School has promoted the direct involvement of the parish governments in the Portoviejo Canton to co-finance the construction of light structures with bamboo as part of a training program for local students. One major output from these efforts was the construction of the El Guadual community structure, which was a joint endeavor by the master builders of Las Tunas and parish government actors. The building is now a unique recreational center enjoyed by the community. When different actors come together and share knowledge, the results oftentimes exceed expectations.

Development of new products, marketing and market access

Bamboo has traditionally been sold at low prices with non-selective harvests, causing the loss of production areas and creating the misconception that products lack durability. Because of these reasons, intermediaries are primarily responsible for commercialization of the sector, and these actors do not typically engage in sustainable management of the resource.

More robust regulatory frameworks are helping ensure stable revenue streams for bamboo producers and ensuring a higher-quality product. In order to expand and diversify markets for new products, local construction companies are reaching out to companies in Spain and the United States and building consensus regarding product characteristics and trade processes, laying a critical foundation for future exports. At the same time, new developments in public-private partnerships are drawing attention to alternative low-carbon construction projects that integrate bamboo as a green resource. There is also a growing demand for other complementary uses

such as in charcoal, furniture, basketry and more.

The program has carried out a detailed analysis of the bamboo construction chain in Manabí Province. One of the generated outputs is a model of a Participatory Local Guarantees System (SGLP). This model is an integrated system in which different stakeholders participate to ensure compliance with technical and quality standards to ensure the production of high-quality materials. Stakeholders include overseers, producers, owners of storage and collection centers, specialists from the Ministries of Agriculture and Environment and local government officials.

Awareness, promotion and dissemination

Reaching potential users is an essential piece of the sustainable bamboo construction chain. This requires significant attention and energy to promote related knowledge in the public square. Communications experts must be included in the bamboo construction chain to ensure its outcomes are properly disseminated to relevant stakeholders, also helping to repair fragmented chains.

Social media management, radio airtime, preparation of informative material, testimonials, experience and knowledge exchanges, learning tours, and disseminating audiovisual content are some of the approaches implemented thus far to share information regarding the socio-economic and environmental benefits of bamboo and its impact on local development. In total, the cumulative actions of this program have reached nearly half a million individuals who are now aware that bamboo is not only an ancient resource but also that its use and consumption promotes a circular development model, providing opportunities to newer generations and allowing life to flourish on our planet.

This article was a collaborative piece written by **Luis Miguel Gómez Ordeza**, General Coordinator of the Technical Cooperation Office in Ecuador of the Spanish Agency for International Development Cooperation (AECID) and staff at INBAR's Latin America and the Caribbean Office.

SIMÓN VÉLEZ: PROGENITOR OF NATURAL ARCHITECTURE

Simón Vélez is one of the foremost authorities on natural architecture, championing the use of sustainable materials like bamboo. In this profile, he discussed his personal design philosophy and spoke on the future of the field.

In architectural circles, Simón Vélez needs no introduction. Turning 73 this year, the Colombian is known across the world for his creations of natural architecture. Born in Manizales in 1949, his family was closely linked to the world of building: Both his father and grandfather were architects. After graduating from the University of the Andes in Bogotá, he blazed an illustrious career, always seeking new opportunities to incorporate natural materials in construction, such as *Guadua* bamboo. It is in no small part to his lifelong efforts that the bamboo now has a new moniker – “vegetable steel.”

Vélez has helped design over 200 buildings, promoting the use of not only bamboo but also other natural, sustainable materials. His work has taken him around the world to countries such as Brazil, China, Ecuador, France, Mexico, Germany, Panama and more. His long list of achievements resoundingly demonstrates the potential of structural bamboo in construction. Moreover, he believes that proper handling practices and construction techniques can significantly add to the resilience of the resource. “In Cali, I am making a tower with bamboo for a botanical garden,” he said in an interview with INBAR’s Latin America and the Caribbean Office. “It is a structure teeming with *Guadua* and reforested wood. The building showcases the effectiveness of using biodiverse materials in construction projects.”

One of his major influences was the hippie movement that emerged in the United States in the 1960s. He counts it as largely responsible for his obsession with using natural materials in his



Simón Vélez spoke with the INBAR LAC team about his career and the future of architecture. Credit: Simón Vélez.

work. The “free love” mantra of the countercultural movement resonated with him, and he took the message and connected it to his work, infusing love of nature into his design process. A wry smile appearing, he reflected:

“I am an old hippie, but I stayed away from the pitfalls of the movement. My fascination was always its strong emphasis on naturalness. That’s why I began to include materials such as bamboo. I have always tried to think more like an engineer than an architect. In countries with biodiversity, a builder has to reflect that naturalness.”

Vélez views architecture through a dichotomous lens: “vegetarian” and “carnivorous.” “Vegetarian architecture,” he argues, should be more widely used in the construction industry, especially in developing nations, because large structures can be built with the incorporation of more natural materials, creating impressive structures that transcend traditional limits. Ultimately, vegetarian architecture respects nature and harkens back to our ancestors dwelling in the treetops. On the other hand, “carnivorous architecture” features an over-reliance on cement and steel to build cage-like structures that restrict our lives. It reflects

an unbalanced relationship to the natural world. Vélez spoke that it was an early client of his who first awakened in him this dichotomy:

“One of my early clients requested I help make a barn for horses out of bamboo. Thanks to his request, I first started exploring the uses of bamboo. I also use cement, steel and other materials, but bamboo is the protagonist of the story: the rest is simply backdrop.”

Across his decades of work, Simón Vélez has helped design and make a wide range of buildings, from pavilions to churches in a variety of different international landscapes. Among his works is the temporary Our Lady of Poverty Cathedral in Pereira, Colombia. In this building, the Colombian architect used a *Guadua* bamboo structure as a provisional church while the building, devastated by an earthquake in 1999, was rebuilt.

In Mexico, Vélez designed the largest structure ever created from bamboo, the Nomadic Museum, which occupies 5130 square meters and features two galleries and three theaters. This was the first time that the Nomadic Museum incorporated the forest resource to represent the unique history of the country.

Among his other constructions is the Crosswaters Ecolodge, an ecotourism lodge in the mountains of Nankun, China. For this project, Vélez received the 2006 Analysis and Planning Honor Award from the American Society of Landscape Architects and the ZERI Pavilion for Expo 2000 in Hannover, Germany, where Vélez captivated those present with the unleashed potential of bamboo

structures.

In addition to building great buildings, Vélez has also built great friendships. One of them was with Jorge Morán Uvidia, the Ecuadorian architect considered a global pioneer in the use of bamboo. “I was a very close friend of Jorge and deeply saddened to hear about his death. I truly admire what he did. He was an apostle as a teacher and a pioneer as an architect,” he added.

For Vélez, bamboo is a material for all human beings, whether rich or poor, because it is an essential element of construction just like any other. Given the fervor with which we are beginning to reconceptualize the stewardship of our planet’s ecology, he argues that this giant grass is perfect for this moment in human history, capable of serving the zeitgeist of the current moment.

“The architecture done nowadays is ephemeral. You must strive to do permanent things.” He paused. “I would like to be remembered because I make buildings that are long lasting.”

Vélez ended with an instructive message for the next generation of architects. “Experience can only be acquired through doing the work and is perfected over time, but starting young gives you a big head start,” he said. This is why he recommends that young architects cultivate an early interest in high-quality natural materials like bamboo. These components are inherently complex – to fully understand and appreciate them “takes a lifetime.”



The Nomadic Museum in Mexico City. Credit: Simón Vélez.

LEAVING ‘BAMBOO FOOTPRINTS’

In addition to leaving thousands of beneficiaries equipped for a better future, INBAR projects also leave “bamboo footprints” across the region. Participants in different training processes put their skills into practice while creating beautiful and functional structures for the enjoyment of the community. Here are some selected photos.



Tzancuvatziari hill lookout, Satipo Province, Peru



Gazebo, Pastaza Province, Ecuador



Gate, Pastaza Province, Ecuador



*The Grove of the Bamboo Practicioners,
Manabí Province, Ecuador*



Watchtower, Manabí Province, Ecuador



*Bus stop, Napo Province,
Ecuador*



Bus stop, Pastaza Province, Ecuador



*Scenic lookout, Manabí Province,
Ecuador*

Collating the latest international news and activities around bamboo and rattan sector development.



The “mama mama bambu” or bamboo moms of the island of Flores in Indonesia create bamboo seedlings that will be used to restore degraded land. Credit: Ulet Ifansasti/EBF.

Son of ‘Queen of Bamboo’ speaks on the promise of bamboo for Indonesia

In Indonesia, sustainable development is getting a jumpstart. Arief Rabik, son of the widely known “Queen of Bamboo” who was known for her sustainable and ecological designs used in the employment of stars like Mick Jagger, Richard Branson and David Bowie, has redoubled efforts to promote bamboo. In this, he advances the legacy of his late renowned mother while blazing a new path forward.

Speaking at the Kuala Lumpur Architecture Festival’s Datum: KL conference in July, he championed the rural poor as those most vulnerable to climate risks, offering bamboo as a sustainable pathway out of poverty. He pointed to the Bamboo Village Initiative of his non-profit, Environmental Bamboo Foundation, as a roadmap for green development. Directly targeting “12 of the 17 UN SGDs,” the initiative seeks to rejuvenate

8% of Indonesia’s degraded land, absorb 16% of Indonesia’s CO2 emissions per year, generate USD six to seven billion in annual income and create over one million jobs.

The initiative is uniquely ambitious in scope, planning to create 1000 bamboo villages across the country by 2029 while helping formulate a national strategy in conjunction with the Ministry of Environment and Forestry. Ultimately, bamboo can not only help address Indonesia’s degraded land, but also heal the two billion hectares of poor soils found around the world, making it an ideal forest resource for combining both restoration and economic growth.

Source: *The Star Online*

New fossil remains point to crucial missing link in panda evolution

An archeological discovery has helped researcher

gain a better understanding of panda's "false thumb," which is a sixth digit attached to their wrists that helps them grip and crush bamboo stems.

The fossils, unearthed in Yunnan Province's Zhaotong City, are approximately six to seven million years old, making them the oldest known evidence for the presence of a sixth digit. Scientists were surprised to note the size of the false thumbs exceeds those of pandas today. This evidence helps clarify the evolutionary development of pandas from their carnivorous ancestors to modern-day vegetarians.

Pandas are well known for their voracious appetite, capable of consuming nearly 40 kilograms of bamboo a day as adults. Some of their feeding periods can even last as long as 14 hours. Without a hooked sixth digit, their feeding strategy would likely be very different.

Source: The Guardian

Plastic ban drives demand for wood and bamboo in India

Since 1 July, India has banned the manufacture, sale and use of single-use plastic items. This has led to massive growth in the bamboo and wood sectors as manufacturers seek out eco-friendly alternatives.

According to Just Dial, an IT company in India which also functions as a local search engine, demand for wood and bamboo dealers increased 35% from March to May 2022. They provided other useful metrics, such as increased demand for wooden cutlery like spoons, knives, forms, bamboo sticks and other kitchenware.

This government policy seems to truly have spurred a new developmental trajectory. Sustainability is playing a more prominent role in all business decisions as the sector aligns its processes to comply with government regulations.

Source: Knowledge & News Network

Housing project reinforced with new bamboo technology

On 11 July, in San Carlos City, the Philippines, international and local volunteers came together

to undertake an innovative project. Using Cement Bamboo Frame technology, volunteers worked to build disaster-resistant homes in the city.

Part of the Negros Occidental Impact 2025 Project, the event aimed at encouraging builders to consider ecological and resilient construction materials to foster a new housing ecosystem. Habitat for Humanity partnered with local government actors to make the event possible.

Speakers at the event praised the approach, noting that bamboo is a critical resource in the city's efforts to achieve zero homelessness. It was also an important event for members of the community to come together after the pandemic and celebrate shared values held within the community.

Source: The Visayan Daily Star

Kenyan standards seek to harmonize and accelerate industries

The Kenyan Bureau of Standards has established six new standards for use in different sectors to accelerate the growth of respective industries. Announced at the Emerging Standards Forum, a quarterly platform for disseminating newly launched standards and their impacts to media outlets and other stakeholders, these standards intend to ensure quality across products and stabilize the growth of various industries.

The bamboo and rattan sectors were pointed out for their immense possibility for growth in the years to come. In addition, the new standard provides guidelines on mitigating the splitting of bamboo culms as well as how to ensure the durability of structures.

In total, standards are in the following areas were published: Biogas systems (farm- and industrial-scale biogas systems); textiles (reusable sanitary towels); ceramic tiles; education and learning services (requirements for distance learning); to facilitate sustainable bamboo development; and new guidelines and requirements for greenhouse gas emissions management. All of these will play a crucial role in the overall economic development of Kenya.

Source: Business Today

INBAR commissions research, conducts project work and raises awareness about bamboo and rattan across its 48 Member States.



H.E. Mr. Guillermo Lasso, President of the Republic of Ecuador, placed the first bamboo post where houses will be built with this forest resource. Credit: INBAR

Ecuador to finance sustainable bamboo housing

On 27 July 2022, the President of the Republic of Ecuador H.E. Mr. Guillermo Lasso, the Minister of Urban Development and Housing H.E. Ms. Gabriela Aguilera, INBAR's Regional Director for Latin America and the Caribbean Mr. Pablo Jácome Estrella, local authorities and students from the Manabí Workshop School in Sustainable Bamboo Housing Construction participated in a launching ceremony for sustainable bamboo housing in Manabí Province.

In his speech at the event, Lasso highlighted the importance of bamboo and noted the remarkable resilience of bamboo structures to the catastrophic earthquake in 2016, while many homes made from common building materials like concrete, steel and zinc collapsed. "These materials are not always the most suitable," he said.

Lasso also recognized the achievements of graduates from the Manabí Workshop School in Sustainable Bamboo Housing Construction

as part of a joint project financed by the Spanish Agency for International Development Cooperation (AECID) and executed by INBAR with support from the European Investment Bank and other strategic partners.

The bamboo houses will be 56 m² and approximately USD 18,700 per unit, which the Government of Ecuador has pledged to entirely finance. This impressive effort helps achieve the UN Sustainable Development Goal 11 to make cities and human settlements "inclusive, safe, resilient and sustainable."

International Day of Indigenous Peoples

On August 9, INBAR participated in the virtual event organized by FAO on The Role of Indigenous Women in the Preservation and Transmission of Traditional Knowledge in celebration of the International Day of the World's Indigenous Peoples. The goal of 2022 aimed at elevating the key role Indigenous peoples play in the preservation and transmission of traditional knowledge.

At the event, Shakira Andy, a woman of the

Kichwa ethnicity, talked about her environmental activities and knowledge of her local community. Shakira is a tourism engineer and works closely with Napo Kichwa's Women Association "Amukina" to help promote the construction of bamboo nurseries within the FAO-INBAR Biocentric Restoration project in Ecuador, which is strengthening rural communities in the Amazon.

Training on sustainable bamboo development in Guyana

From 15 to 29 August, the Training Workshop on Bamboo Sustainable Development was held in Georgetown, Guyana, co-sponsored and organized by the Embassy of China in the Cooperative Republic of Guyana, INBAR and the Ministry of Local Government and Regional Development of Guyana. The training aimed to bring awareness to stakeholders on the role of bamboo in ecology conservation, social and economic development, especially for rural revitalization and landscape restoration.

A total of 60 participants were trained online by Chinese bamboo teachers, of which 30 were also trained in person by Ecuadorian bamboo teachers. Officials from government departments related to agriculture, forestry, environmental conservation and rural development as well as researchers, technicians, leaders in the private sector involved in the development of natural resources and rural development, communities that use bamboo in their livelihoods and bamboo artisans all actively participated in the training activities.

SIBGUADUA 2022: "We resist and reinvent ourselves. We are bamboos!"

INBAR participated as co-organizer in the 7th International Bamboo and *Guadua* Symposium (SIBGUADUA), which took place from 15 to 17 September in Lima, Peru at the National Agrarian University – La Molina and the University of San Martin de Porres.

This important event for the global bamboo sector brought together international speakers with extensive experience in areas related to bamboo. The symposium addressed the following four thematic areas: cultivation, cooperation, construction and business.

Walter Barreto, President of SIBGUADUA,

indicated that these events help to strengthen the promotion of bamboo in the region. "Bamboo is a versatile resource that we must think of as something not only ancient but also with big implications for the future owing to its potential in the industry and in the socio-economic development of countries," he added.

New ISO standards for bamboo and rattan

The International Organization for Standardization has recently published two standards on bamboo and rattan.

The standard ISO 23478:2022, "Bamboo structures – Engineered bamboo products – Test methods for determination of physical and mechanical properties," specifies test methods suitable for determining the mechanical properties of engineered bamboo products.

The standard ISO 23067:2022, "Grading system for rattan: Requirements and classification," provides guidelines and requirements to sort and classify rattan cane materials based on physical properties, quality and market values.

The standards have been developed with the support of INBAR's Bamboo Construction Task Force and Rattan Task force.

INBAR and ICBR join hands to fight plastic pollution and climate change

On 28 July 2022, INBAR co-organized a launch meeting for a project entitled R&D and Applications of Innovative Bamboo Products as Substitutes for Plastics in Beijing in collaboration with China's International Centre for Bamboo and Rattan (ICBR). This represents an important move to bring into action the Bamboo as a Substitute for Plastics Initiative, one of the deliverables that emerged from the High-level Dialogue on Global Development hosted by China in June.

Following China's announcement that it will jointly launch the Bamboo as a Substitute for Plastic Initiative with INBAR to reduce plastic pollution and address climate change, ICBR and INBAR joined hands to commence the project, focusing on the research and development of key technologies for making bamboo straws, bamboo winding composite pipes and molded bamboo pulp boxes, as well as on assessing the performance of these new bamboo products.



MANUAL FOR THE MAINTENANCE OF BAMBOO CONSTRUCTIONS

Bamboo is an ideal material for construction due to its physical and mechanical properties. Moreover, given the high amount of embodied carbon found in common construction materials, bamboo can play an important role in lowering humankind's carbon footprint while healing ecosystems and revitalizing rural economies.

Although bamboo construction is not a new field, the sector has undergone rapid growth in recent years. Ensuring the compliance of bamboo structures with national and international regulations has become increasingly important to match the industry's expansion, since the improper use of bamboo in construction or lack of maintenance can affect its durability and structural strength, potentially harming its reputation. This is why the Manual for the Maintenance of Bamboo Constructions was written – to promote the proper use of bamboo in construction through the dissemination of recommendations for its maintenance.

The manual is organized into four parts. The first part introduces bamboo and its application in construction and describes the technical requirements regarding the quality of the raw material, design and construction. Meeting these basic criteria can allow a structure to last over 50 years without the need for major maintenance. Properly implementing these construction

guidelines in bamboo projects can help ensure the durability of structures.

In the second part, authors explain how to conduct technical evaluations of construction processes, such as the identification and description of pathologies that can occur in bamboo structures. They recommend inspecting bamboo structures in six-month intervals, proposing a periodic evaluation sheet for bamboo structures that enables the early identification of pathologies and suggests corrective actions.

The third part compiles recommendations from professionals and construction workers with experience in the bamboo sector for the maintenance of structures. These recommendations center on the correction of isolated flaws that do not compromise structural aspects, such as loss of color and minor cracks.

The fourth and final part discusses how to properly repair bamboo structures that feature a high degree of deterioration due to non-compliance with technical standards or due to lack of maintenance, compromising structural integrity.

The manual follows the guidelines of the Ecuadorian Structural Safety Construction Standard for *Guadua* (NEC-SE-GUADÚA). It also incorporates recommendations from the Technical Talk on Maintenance for Bamboo Structures held in 2021 in Ecuador, and has greatly benefited from consultations with experts and stakeholders from the bamboo construction sector.

The document has been prepared as part of the project Support for Sustainable Construction Through the Manabí Workshop School and The Strengthening of the Production Chain of Bamboo Construction, which is generously funded by AECID. Its primary application is to assist in the training of skilled labor for bamboo construction.

Bermeo, R., Cadena D., van Druenen, N., Gallegos, L., Hidalgo Zambrano R., Jácome F., López, R., Mondello, R., Moreno F., Olvera A., Torres Haro, E., Vega, R. (2021). *Manual de mantenimiento para construcciones de bambú*. Quito, Ecuador: MSB, SOMOS, FUNHABIT, INBAR

IN NUMBERS

20 NATIVE BAMBOO SPECIES AND 9 EXOTIC BAMBOO SPECIES...

... have been described in technical guides detailing the diversity of bamboo in certain provinces or departments of Colombia, Ecuador and Peru.

In these guides, prepared by the well-known Colombian taxonomist Ximena Londoño, technical sheets of the identified species are presented, detailing the scientific name of the species, common name, category, distribution and general climatic conditions, description of the habitat and culm, local and/or ancestral uses, phenology, ecology, habitat and the ecosystem services it provides. The guides also contain a distribution map of the native species and descriptions of morphological structures, accompanied by photos, and conclude with guidelines for the development of bamboo in the study areas.

These guides are important because they provide a greater degree of knowledge about the diversity and use of bamboo species in these localities, which facilitates the holistic training of producers, technicians, public officials and professionals about the importance of bamboo and motivates stakeholders to promote the use of local species.

In Colombia, bamboo species present in

Caquetá and Meta Departments have been identified, with a total of 12 native species (7 herbaceous and 5 woody) and 3 exotic species.

In Ecuador, bamboo species present in the provinces of Napo, Pastaza and Morona Santiago have been identified, with a total of 10 native species (5 herbaceous and 5 woody) and 14 exotic species.

In Peru, bamboo species present in the departments of Junín, Pasco and San Martín have been identified, with a total of 15 native species (8 herbaceous and 7 woody) and 6 exotic species.

In total, across the 3 countries, 20 unique native bamboo and 9 unique exotic bamboo have been identified.

The document ultimately explains that the identified bamboo species can play an important role for the sustainable development of these areas and promote a circular development model for diversifying agricultural and livestock production activities. These bamboo species can also help in the fight against deforestation in the Amazon, provide alternatives to illicit crops, contribute to poverty alleviation efforts and mitigate the effects of climate change.



EVENTS

2 August

Training bamboo entrepreneurs on Business Development Services
Kenia

8–14 August

Knowledge transfer tour in construction processes with *Guadua angustifolia* Kunth
Colombia

9 August

International Day of the World's Indigenous Peoples
International Day

15–24 August

Training Workshop on Sustainable Bamboo Development in Guyana
Guyana

1–5 September

China International Service Trade Fair (CIFTIS)
Beijing, China

14 September

Bamboo Business Roundtable in Peru
Lima, Peru

15–17 September

7th International Bamboo and *Guadua* Symposium (SIBGUADUA)
Lima, Peru

18 September

World Bamboo Day
World day

June–October

2022 Lancang-Mekong Cooperation Design Award
Countries in Lancang-Mekong Area

10-14 October

International Agroforestry Convention 2022
Habana, Cuba

7–8 November

The Second Global Bamboo and Rattan Congress (BARC 2022)
Beijing, China

7-19 December 2022

15th meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 15)
Montreal, Canada

Find out more at www.inbar.int/events



Lima / Peru 2022

International Symposium on Bamboo and Guadua

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Bamboo and Rattan - Nature-based Solutions for Sustainable Development

THE SECOND GLOBAL BAMBOO AND RATTAN CONGRESS

www.barc2022.inbar.int

7-8 November 2022 Beijing, China

Open for registration

THE SECOND GLOBAL BAMBOO AND RATTAN CONGRESS

In order to promote the green economic development using bamboo and rattan and contribute to achieving the United Nations Sustainable Development Goals, the Second Global Bamboo and Rattan Congress (BARC 2022) will be held at the Beijing International Convention Centre on 7-8 November 2022. Co-hosted by the International Bamboo and Rattan Organization (INBAR) and the National Forestry and Grassland Administration of China (NFGA), BARC 2022 will bring together representatives from governments, research institutes, international and non-governmental organizations, the private sector and the media to discuss the development of bamboo and rattan.



Credit: Yann Barnet

This picture was taken during a bamboo training workshop in Wawaim, an Awajún village in northern Peru. In the five-day training, men, women and children learned how to use bamboo materials in construction and for making furniture and other handicrafts. The structure was first assembled on the ground for convenience, safety and efficiency. At this particular moment, participants worked together to flip the structure upright. The image demonstrates the lightweight nature of bamboo and collective power of communal engagement in local projects to achieve great accomplishments without relying on modern construction equipment.



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