BRU
Bamboo & Rattan Update

INBAR

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

REHABILITATING LAND WITH BAMBOO

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Cover Image
Maintenance activities on land one year into its restoration. EcoPlanet Bamboo.

Editorial Team
Hao Ying
Wu Junqi
Austin Smith
Tefera Belay
Leticia Robles

Contributors
FAO
Fogoh John Muafor
Moudon A Mbamba Marie Jeanne Camille Rebelo

To Submit
www.inbar.int/bru-magazine/
bru-magazine@inbar.int

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About INBAR
INBAR is an intergovernmental organization which promotes the use of bamboo and rattan for sustainable development.
www.inbar.int

INBAR Headquarters: Beijing, China
Regional Offices: Central Africa, East Africa, West Africa, Latin America and the Caribbean, South Asia.

B R U

EDITORIAL

Welcome to the second issue of the Bamboo and Rattan Update for 2023, which places the contributions of bamboo to combating desertification at the center of the conversation.

Established in 1994, the United Nations Convention to Combat Desertification (UNCCD) was designed to "protect and restore our land and ensure a safer, just, and more sustainable future," serving as a multilateral treaty to mitigate the impact of land degradation around the world.

But before its ratification, the world had already began noting the problems of land degradation and desertification. In 1977, the first meeting of the UN Conference on Desertification convened in Nairobi, Kenya, which ended in the adoption of a Plan of Action to Combat Desertification. Despite this, by 1991, the issues of land degradation and desertification had intensified in regions around the world, leading to the ultimate passage of the UNCCD. As the driving force behind comprehensive global commitment to achieve land degradation neutrality, the UNCCD aims to restore the productivity of vast swaths of land as part of its 2018–2030 Strategic Framework by addressing land degradation and ensuring the sustainable cycling of land-based resources. The Convention does so by championing capacity building, experience sharing, technology transfer, provisioning scientific support, awareness raising, mobilizing resources and other forms of assistance to countries for policy implementation at all levels.

Part of the UNCCD, INBAR leverages its bamboo and rattan knowledge and expertise to help restore the degraded landscapes of its Member States. Bamboo in particular features an abundance of positive attributes that make it uniquely suited for implementation in land restoration schemes. With its thick gnarly rhizomes, it is excellent at binding topsoil to stop erosion. Its fast-growing nature lends itself well to quickly scaling up usage, while also being annually harvestable without requiring replanting. The plant can also be integrated into farmland as part of agroforestry schemes, diversifying smallholder products and boosting income while enriching less agriculturally competitive soils. Moreover, during dry seasons, bamboo drops its leaves, raising soil carbon levels in the ground, and rapidly re-greens with the onset of rainfall. This issue of the BRU highlights the unique advantages of bamboo for contributing to the goals of the UNCCD, and considers the untapped promise of the plant.

First and foremost, landscape restoration schemes rely upon accurate baseline data, so decision-makers can allocate resources in an optimal manner. However, in many areas of the Global South where desertification and land degradation are most rampant, there is a paucity of relevant information. Working to solve this stubborn problem, INBAR partnered with the Food and Agriculture

Organization (FAO) of the UN in 2020 to put bamboo on the map with new tools for monitoring forest coverage. Though current figures place total global bamboo forest coverage at approximately 35 million hectares, some estimates range as high as 50 million, as many countries lack the capacity and coordination for forest resource assessment. The first article examines new instruments for bamboo resource monitoring to help bamboo-rich countries achieve the full potential of this multifunctional plant and intelligently inform long-term sustainable policymaking.

The second article takes a look at The Restoration Initiative (TRI), which is a major initiative seeking to reverse degradation and restore landscapes around the world. INBAR is currently working to achieve these twin goals with partners on the ground in Cameroon including the International Union for the Conservation of Nature, UN Environment Programme, Cameroon's Ministry of Environment, Nature Protection and Sustainable Development, FAO, and other local government ministries and civil society organizations. Last year, one of the landmark achievements emerging from the project included Cameroon committing to restoring 12.6 million hectares of degraded land and officially announcing the Forest and Landscape Restoration Harmonized Action Plan for the next decade. Many bamboo and non-timber forest product plantations have emerged as a result of the TRI project, bringing vital reinforcements to the country, which the article elucidates with powerful detail.

Long-term case studies demonstrating the potential of bamboo for healing wounded landscapes remain few and far between. But as the world begins to realize the true potential of the plant for achieving environmental goals, new evidence is helping confirm for policymakers what foresters have long known: That the multifunctional capabilities of bamboo make it an ideal tool for combating desertification and land degradation. EcoPlanet Bamboo is helping provide this evidence, leading the way with transforming threatened lands into bamboo farms around the world. The third article showcases one of their recent public-private partnership projects which has now accumulated five years of data during its trial period. Using bamboo to protect one of Ghana's transitional zones from deforestation and endless cycles of fire, the project is bringing new life into what has been characterized as "deserted wasteland."

The UNCCD works in tandem with the UN Framework Convention on Climate Change as well as the UN Convention on Biological Diversity. The three sister conventions are collectively known as the "three Rio conventions," as they were ratified together at the "Rio Earth Summit" in 1992. Synergistic in nature, they provide the foundation for humankind to scale up efforts to tackle some of the planet's most urgent challenges. We hope you enjoy learning about the ways in which bamboo can lend a "branch" to combat land degradation and desertification.

THE EDITORS

JOINING FORCES TO PUT BAMBOO ON THE MAP

Bamboo harvesting, Myanmar. Credit: M. Piazza/FAO.

There are likely to be far more than 35 million hectares of bamboo around the world.

Bamboo is a ubiquitous sight across many parts of the tropics and subtropics — but until now, it has been difficult to assess exactly how much of it there is.

The fast-growing grass plant can be found in Africa, Asia-Pacific and the Americas. There are over 1600 known species, with thousands of uses. In 2019, USD 3.054 billion of bamboo products were exported. But while bamboo can be an important part of sustainable development in the Global South, particularly as a tool for combating desertification, mitigating climate change and alleviating poverty, its total spread remains elusive.

According to the latest figures, published in the Food and Agriculture Organization (FAO) of the UN's Global Forest Resources Assessment 2020 (FRA), bamboo covers about 35 million hectares of land across Africa, Asia and the Americas, particularly in regions that are threatened by increasing desertification. In fact, FRA 2020 reports a 50% increase in bamboo area between 1990 and 2020, largely because of new expansion in China and India.

These data are crucial for devising and implementing relevant sustainable policies to combat desertification around the world, as native bamboo coverage can play an integral role in reforestation efforts, binding earth and restoring soil health with its extensive root systems.

Gaps in knowledge

While 35 million hectares seems like an impressive figure, several reasons exist that suggest it is actually an underestimate.

Of the 132 countries that reported on bamboo

for FRA 2020, only 23 countries, or 17%, reported any bamboo cover. This does not include a number of countries which have previously reported bamboo data, and over 10 million "missing" hectares of bamboo from countries in Asia and Latin America which were reported in FRA 2010. In fact, many countries which do host plentiful bamboo resources did not submit data at all for FRA 2020. INBAR estimates there may be more than 40 countries with significant bamboo resources missing from the report due to a lack of capacity to assess bamboo resources or a lack of coordination between different government departments. In addition, in a number of countries, bamboo statistics should be revised based on newer or more accurate data. To give an example: In the last few years, INBAR has helped seven countries conduct bamboo resource assessments. Of these, only one country used this data for FRA 2020; another two provided outdated information, and the rest did not provide data at all.

The lack of information on bamboo cover, species and uses limits the understanding of its potential. Without accurate data on bamboo's availability and applications, policymakers are unlikely to integrate the plant into their long-term sustainable strategies. Similarly, companies need clear information about bamboo supply before they can begin to integrate the plant into their business plans. It is this knowledge gap which FAO, in partnership with INBAR, is aiming to fill.

What's being done?

INBAR and FAO have a long history of collaboration and partnership aimed at strengthening the contributions of bamboo and rattan to sustainable development. Such partnership has been further strengthened by the comprehensive partnership agreement signed in December 2020. Bamboo resource assessment is one of the key thematic areas identified for collaboration.

Starting in 2021, FAO and INBAR began working to improve global reporting on bamboo. The objective is to develop a set of internationally recognized methodologies and technical tools to support bamboo cover, stock and carbon storage assessments. The overall aim is to improve knowledge about bamboo resources and build capacity for enhancing their climate change mitigation and livelihood development potential.

FAO and INBAR have identified a number of critical barriers for bamboo resource monitoring,

Mobile app training for resource assessment which was undertaken in Ethiopia.

Mobile phones can help on-the-ground practitioners take real-time inventory of their country's resources.

and produced a step-by-step plan for how to overcome them. First, as bamboo is often intermingled with other natural forest types, assessing its total coverage can be a challenge. High spatial resolution remote-sensing solutions do exist for measuring bamboo forest coverage, but their prohibitive costs can prevent them being more widely used. With INBAR's experience, FAO's extensive work on forest monitoring and the ever-increasing availability of high-resolution satellite data, FAO and INBAR are looking to identify more cost-effective solutions, which can more easily be integrated into countries' forest-monitoring work.

The same goes for carbon stocks: While some types of woody bamboo can be a powerful carbon sink, much depends on the plant's location, species and management. In addition, existing methodologies for assessing carbon stocks in trees cannot be used for bamboo. FAO and INBAR will encourage the uptake of standard methodologies for assessing bamboo carbon stocks.

New tools for improved bamboo data collection

Systematic inventory and analysis of bamboo resources is one of the strategic priorities of INBAR and supporting members to estimate their resource for sustainable development of the sector. Recently, INBAR has developed a Bamboo Global Survey and Monitoring System, consisting of a set of mobile and online applications to facilitate the generation of geo-referenced information regarding bamboo resource size, distribution, species diversity, ownership and management approaches in a given area. The application is user friendly, featuring data collected via mobile phone app for uploading to the INBAR database server. This database is accessible through INBAR's Bamboo Survey Manager, in which one can observe the registered bamboo information on a reference map, monitor the records, analyze the data and generate flexible reports. This application has already been used to conduct resource inventory and recording in East Africa, Latin America, and is currently being used in Pakistan. Surveyors

have acquired the necessary skills for using the application in a relatively short period of time and are producing high-quality data that is easily accessible, relevant and continuously updated.

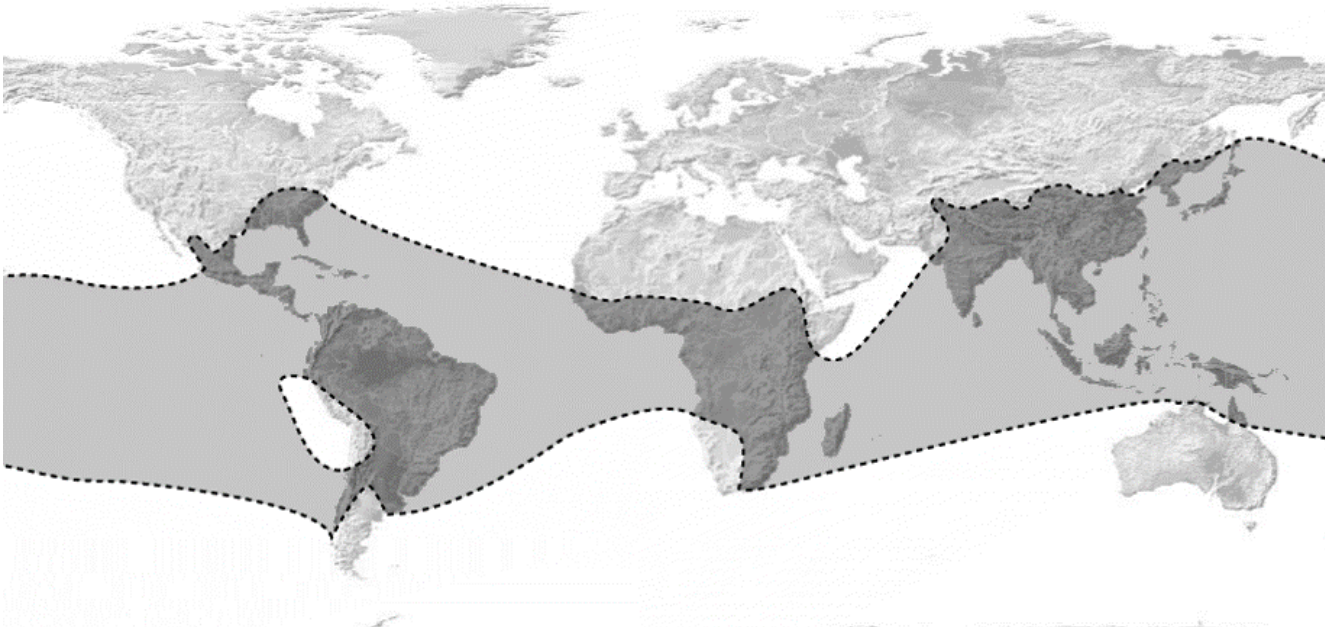
Parallel to this, FAO has also developed free and open-source solutions for earth observation and monitoring via the OpenForis initiative. One of these tools, the System for Earth Observations, Data Access, Processing & Analysis for Land Monitoring (SEPAL) has wide applications for assessing and classifying land resources, with the primary aim of supporting developing countries in measurement, reporting and verification. As a web-based cloud computing platform, it enables users to access satellite imagery, create image composites, process images, download files and perform change detection and land cover classifications on a browser. Countries can use free and publicly available data sources to generate land classification at both regional and country levels.

Future outlook

The tools mentioned above will overall facilitate bamboo data collection, analysis, and use in sustainable management and utilization. However, developing standard methodologies is only part of the solution. In the future, training is also needed to build capacity and technical knowledge in bamboo-rich countries as well as to ensure that the assessment of bamboo resources becomes a continued and sustained part of an integrated forest monitoring system. Workshops and guidelines should focus on how to conduct bamboo resource assessments, monitor and assess bamboo's carbon storage potential, and how to integrate bamboo into REDD+ projects, livelihood development programs and carbon offsetting initiatives. At the same time, more awareness should be raised regarding the potential for integrating the plant resource into policymaking, which will in turn highlight the urgent need for more comprehensive forest inventories.

By supporting improved reporting on global bamboo resources, FAO and INBAR will help bamboo-rich countries in the Global South realize the true potential of this "bank in their backyard" and fully bring the resource to bear in combating desertification, climate change and alleviating poverty.

This is an updated version of the article that originally appeared on FAO's website in August 2021 and has been republished with permission.



Global distribution of bamboo across tropical, sub-tropical and temperate climates.

REINFORCEMENTS FOR RESTORATION IN CAMEROON

Restoration opportunities are being seized upon in Cameroon's degraded lands. Credit: TRI.

The TRI project is transforming lives through bamboo and non-timber forest products.

Most people in Cameroon live below the poverty line of less than XAF 931 (USD ~1.54) per day, according to the National Institute of Statistics. Restricted livelihood options appear to be exacerbating pressure on land and natural resources, whether for subsistence needs, firewood, grazing or logging. This has led to direct consequences such as deforestation, desertification, drought, bush fires and invasion of animal pests. The persistent degradation of landscapes in the country now represents a serious obstacle to the eradication of poverty, hunger and the maintenance of biodiversity, and also makes it difficult for farmers and local populations to adapt to the effects of climate change. Faced with this reality, the aggressive restoration of forest landscapes has been adopted as one of the approaches for solving the problem of land degradation in Cameroon. Accordingly, Cameroon's government has committed under the Bonn Challenge and Africa Initiative to restore 12.6 million hectares of degraded land by 2030. Under this framework, The Restoration Initiative (TRI), financed by the Global Environment Facility and implemented by the International Union for Conservation of Nature and INBAR, was launched in Cameroon in 2019 in collaboration with the government to bolster restoration efforts across degraded landscapes in the country. This collaboration resulted in the establishment of bamboo and other non-timber forest product (NTFP) plantations, particularly in the northern areas of the country.

Who's involved?

The TRI project has injected a new dynamic into

Cameroon's landscape restoration endeavors. Since its inception, the project has worked to improve the policy and operationalization of Forest Landscape Restoration (FLR) actions. At the policy level, the project has supported the government in the development of multiple critical documents for the regulation of FLR, including the Strategic Framework for Forest Landscape Restoration at the Ministry of Environment, Nature Protection and Sustainable Development; Harmonized Plan (2020–2030) for the Restoration of Degraded Forest Lands and Landscapes in Cameroon; Decision on the Exploitation and Transportation of NTFPs from Plantations with the Ministry of Forestry and Wildlife; the Agroforestry Program; and a Manual of Good Practices on the Restoration of Forest Landscapes in Cameroon.

To encourage cross-sectoral collaboration and support for partnership in restoration, the TRI project is piloting several activities with support from implementing partners such as the Rural Development Fund, National School of Water and Forests (ENEF), Lac Ossa, Cameroon Wildlife Conservation Society, and the Integrated Participatory Local Development Support Unit (CADEPI). These are being undertaken across the landscapes of Mbalmayo, Douala-Edéa and Waza. INBAR works with partners in their production areas to produce as many plants as possible to restore degraded areas and also distribute these plants to farmers. More than ten species of plants are promoted within the framework of the project, including bamboo along with a wide range of NTFPs such as safou, bitter kola, ndjanssan, ndo'o (wild mangos), soursop, lemons, oranges, avocados, neem, cashews, moringa, mangrove and more. These efforts have resulted in the production of almost 300,000 seedlings, the emergence of 509 hectares of bamboo and NTFP plantations, and the restoration of over 4000 hectares of degraded land.

Restoration and livelihood improvements

In response to the looming desertification threat to both landscapes and livelihoods, the project champions restoration as a holistic concept that integrates trees into agricultural fields, allowing farmers to live off their produce year-round. This lends itself well to agroforestry schemes. In a growing number of Cameroonian plantations, one can find bamboo, mangroves and other NTFPs associated with plantain, cocoyam, cocoa, pepper and more. These resilient agroforestry systems help farmers generate additional income by diversifying their products for sale at markets.

Currently prized by local communities, the ndo'o is a plant that is both edible and becoming more favorable in markets. As Etienne Nama, one beneficiary of the TRI project, commented, "Ndo'o has gradually become one of the most commercialized fruits after cocoa." The price of a five-liter bucket of ndo'o varies on the market between XAF 8000 to 10,000 (USD 13.22 to 16.52) depending on the season. While ndo'o may go for XAF 1600 (USD 2.64) per kilogram, cocoa costs approximately XAF 900 (USD 1.49) per kilogram. Neem oil also represents an important source of income, particularly for households in the Waza landscape. A liter of neem oil varies between XAF 3000 to 5000 (USD 4.96 to 8.26) depending on the season, representing 30% of household income. In the Douala-Edéa landscape, communities largely subsist on fishing. This makes mangroves critical in the region because they can foster habitats for diverse fish species which are typically smoked and sold at rural markets by rural women. Mangroves effectively contribute to the empowerment of women in this locality, as in the case of Estella Dela, a fish smoker in the village of Youmé II, who said "I cut the mangrove to smoke the fish and resell it to the women sellers." However, the cutting of mangroves constitutes a major threat to the survival of this ecosystem, the sustainable management of which is one of the priorities of the project.

Despite the fact that these forces of commercialization are relatively new in Cameroon, the project has significantly contributed to raising awareness of the socio-economic and environmental potential of bamboo. This has allowed populations living around the project sites to acquire knowledge about the benefits of bamboo to the point where bamboo cultivation, a non-traditional agricultural activity in the area, has now become a unifying activity for different communities. Several bamboo plantations have been established with the aim of using bamboo as a building material in larger cities such as Douala and Yaoundé. As a fast-growing plant, several bamboo plantations established under this project

have already nearly matured and will be ready for exploitation by 2024. According to Zacharie Fouda, another beneficiary of the project, "Cocoa is much more affected by climate change and does not bring much profit anymore. I am now devoted to the bamboo you see in my field, and I am convinced that I will not regret it." The exploitation of this bamboo could be an important source of income during the dead period of cocoa, which represents the main source of income in the area.

Scaling up participatory conservation

In order to promote participatory biodiversity conservation, the project is also involved in the restoration of degraded areas in protected zones, reserves and fragile ecosystems. As a result, the project has supported conservation actions in the Mbalmayo Forest Reserve and the Lac Ossa Wildlife Reserve in Dizangué.

Representing a real turning point in the implementation of restoration project work in Cameroon, local communities are now becoming more involved in the creation of private bamboo and NTFP plantations. To date, more than 2000 communities have participated in the conservation process. Alphonse Atickoa, former student at ENEF commented on this, saying "Today I am involved in the TRI project, which gave me free seedlings of different species of fruit trees that can grow in association with the plantain in my field." Barnabé Elouma Atanga, another farmer in Nkolguete, added that "The TRI project supports us a lot. The material plant support has allowed us to bolster our plantation lands, while before we did not know what to do with this space. We sensitize and encourage other farmers to plant as much as we do in order to fully benefit from a diverse multi-fruit harvest." Nowadays, the first fruits to emerge from collaboration with the project are now visible and ready for sale.

The project promotes the domestication of economically valuable plants by distributing seedlings to beneficiaries who establish plantations in plots surrounding protected areas. This allows beneficiaries to diversify their crops and income in order to reduce the pressure they exert on the nearby reserves. In the Lac Ossa Reserve in particular, bamboo has been planted around the boundary of the reserve in an area

Fouda's field in the Mbalmayo landscape. Credit: TRI.

currently experiencing anthropogenic pressure, establishing a barrier that will mitigate the further degradation of this ecosystem.

The project has also been an important instrument in managing conflicts around protected areas. Whether at Lac Ossa or at ENEF under the supervision of conservation services, the project has contributed to the reconciliation of conflicts that have existed between conservation services and local riparian communities, given that the planted trees around reserves are subject to collaborative participatory management. These communities are now using domesticated crops to ensure stable yield of new products on their plantations, helping to appease the diverse stakeholders.

Given the encouraging results in the last three years, it is clear that the TRI project has functioned as a key linkage for not only for the restoration of degraded ecosystems but also for the sustainable management of forest ecosystems, strengthening rural livelihoods and combating desertification.

FOGOH JOHN MUAFOR & MOUDON A MBAMBA MARIE JEANNE

Mr. Fogoh is Project Manager at INBAR, where he coordinates the TRI project in Cameroon. Ms. Moudon is Communications Officer based in INBAR's Central Africa Regional Office in Yaoundé with a specialty in communications and advocacy.

FEATURED ARTICLE

NEW LIFE FOR GHANA'S 'DEGRADED WASTELANDS'

One million bamboo seedlings are at different stages of production for the 2023 planting season. Credit: EcoPlanet Bamboo.

A long-term bamboo restoration project is finally paying off in one of Ghana's transitional zones suffering from desertification.

The Ashanti Region of Ghana was once home to a vast belt of tropical rainforests. Representing approximately 10% of Ghana's land area, the attractive climate resulted in the region forming the core of the country's burgeoning cocoa industry.

Driven by this growing agricultural economy, in the 1940s the Government of Ghana created a network of forest reserves scattered across the country. These reserves were designed to be protective ecosystems with the primary aim of creating microclimates for the country's growing agricultural economy, with a particular focus on the growing demand for cocoa and a secondary purpose of providing a sustainable source of wood and timber while conserving forest biodiversity across all agro-ecological zones.

Yet these forest reserves have also been affected by an unsustainable charcoal trade and other drivers of deforestation, leaving them increasingly damaged.

The Ghana Forestry Commission holds in perpetuity the right to the management and oversight of these Forest Reserves. This national body also manages the Bandai Forest Reserves, a large area totaling over 20,000 hectares that is divided into two distinct areas — the Bandai Hills Forest Reserve and the North Bandai Forest Reserve.

These areas were once lush forest land, but deforestation and endless cycles of fire have moved the boundary of Ghana's transitional zone — the agro-ecological zone found to the north which

Aerial view in 2016 of the landscape during the dry season before project work commenced. Credit: EcoPlanet Bamboo.

functions as the transition between savanna and forest, with long dry seasons and lower rainfall — further south. And despite still receiving a tropical climate of >1200mm annual rainfall within a distinct rainy season, these areas have become characterized as "deserted wasteland," where invasive grass and fire season rule.

Since 2010, the Ghana Forestry Commission has been undertaking large-scale public-private partnerships (PPPs) in its forestry sector. This PPP structure has encouraged wide-scale investment into traditional monoculture timber plantations, with a focus on fast-growing species including teak, eucalyptus and pine. International forestry companies, often backed by European development banks, have made significant investments into the country, including in areas less than 50 kilometers from the Bandai Reserves. Yet with the high risk associated with approaching desertification and the dramatic seasonal changes in this approaching transitional zone, the Bandai Reserves have received no interest from the traditional forestry sector.

From 2014 to 2016, Kenya-headquartered EcoPlanet Bamboo made the decision to launch a large-scale bamboo restoration project as a PPP with the Ghana Forestry Commission. With a total land area of 11,145 hectares split over the North Bandai and Bandai Hills Forest Reserves, EcoPlanet's carbon-financed Ghana reforestation projects are aimed at utilizing bamboo to reconnect the remaining forest patches within these areas, protect remaining scattered trees, increase canopy cover and combat climate change at ecosystem scale, all the while aiming at stimulating the longer-term development of the bioeconomy for this marginalized area.

With now five years of trials and related scaling underway, the data are clear. Bamboo represents an extremely valuable tool in the restoration and protection of this transitional zone as well as in the fight against approaching desertification due to a number of key attributes.

Ability to withstand the Harmattan

The Harmattan trade winds are in effect in Ghana between the middle of November and the end of March. These trade winds, which blow from the Sahara, brings desert-like weather conditions, lowering humidity, dissipating cloud cover, preventing the formation of rainfall and increasing the occurrence of dust and sand storms. The strong winds and desert-like conditions during this 3–4-month period have the potential to cause

The same landscape in 2022 after four years of restoration with bamboo. Credit: EcoPlanet Bamboo.

direct physical damage to crops while increasing fire risk.

Ability to withstand extended dry seasons

The dry season in this part of Ghana lasts for 4–5 months, beginning in December and lasting until the start of the rains, which typically come at the end of April. Combined with the above Harmattan, the ground becomes rock hard and dry in this period. Moreover, this extended dry season is just beyond the length that most commercially grown tree species can withstand. Just 10 kilometers north of the project site, where the rains typically start 2–3 weeks earlier and continue 1–2 weeks later, normal land use for such forest reserves tends to feature expansive plantations of teak or eucalyptus. This seemingly nominal difference in geography in fact has a significant impact on what species can successfully restore and thrive in this transitional zone.

If planted correctly, ensuring that newly planted clumps are well established prior to the onset of the dry period, the right species of bamboo can in fact tolerate this extended dry season. The clumps drop their leaves and appear dead during their first dry season post-planting, but rejuvenate within days of the first rainfall. Once fully established, bamboo clumps can maintain moisture throughout the dry season, while reducing fire risk and maintaining a canopy cover, creating a positive micro-climate.

Fire resistance

Fire represents the most significant threat in this area of Ghana, as in many locations across sub-Saharan Africa. Charcoal-driven deforestation has opened up what was once dense forest, converting it into open woodlands. Once opened, nomadic Fulani herdsmen that originate from northern countries such as Mali and Bukina Faso drive cattle through the area, predominantly towards Lake Volta, in search of water. With the approaching dry season, they set fires in order to regenerate fresh grass for their herds. This allows competitive but invasive grasses to gradually dominate the area. Over a number of years, this cycle has transitioned the forest lands to open grasslands, with little chance for natural regeneration as most tree species are unable to survive the endless fires.

Over a five-year period, EcoPlanet Bamboo undertook trials into the short- and long-term effects of such fires on planted bamboo. Fires in these conditions have the tendency to burn at

low temperatures and move quickly through the invasive grass and remaining vegetation cover. Despite having dropped its leaves, bamboo culms retain significant moisture, even in the heart of the dry season. As a result, the fires tend to burn quickly and remain at low level.

The result is an aboveground biomass that suffers some detrimental effects during the dry season, but rapidly recovers and re-greens with the onset of the first rain. Subsequently, if the bamboo is managed properly, it will recover come the next rainy season, and new aboveground biomass will appear, suggesting that the effects of the fire are relatively transitory. However, if the bamboo is not well managed, the invasive grasses that dominate the area quickly become established and out-compete the bamboo before it has chance to recover, resulting in clump mortality.

Soil restoration

Endless fires have resulted in soils that are not only extremely low in organic matter but also structurally poor. Bamboo is a water-conserving plant that drops its leaves during any period of low water availability. As a result, during the extended dry season the clumps drop large volumes of leaf litter, increasing organic soil carbon and litter levels, and regenerating further growth.

However, despite the above attributes, bamboo is not a miracle plant. While it has the ability to overcome many challenges and be a successful tool in the restoration and protection of such transitional lands, success is dependent upon a number of critical factors:

(1) Logistics: The rainy season in this part of Ghana begins in early May and continues through August, with sporadic rainfall then occurring again in October. However, unlike many places, the planting season does not extend for the length of these rains, as planted bamboo seedlings require a sufficient period to become established and robust enough to survive the Harmattan and first dry period. Therefore, the planting season is short at just 10–12 weeks, and logistics are critical for the successful use of bamboo as a restoration tool in this particular climatic context;

(2) Land preparation: Land preparation in this climate is challenging. By March each year the ground is rock hard and impenetrable. Yet once the rains come, seedlings need to be in the ground ready to take advantage of the growing season. Successful restoration is therefore dependent upon having large numbers of workers trained and ready to operate as soon as conditions allow;

(3) Healthy and robust seedlings: Timing is everything for seedlings to survive the onset of the dry season. Nurseries are developed an hour north of project land, where water is available year-round. Seedlings must be strong overall; they cannot be too tall and lack adequately robust rhizome systems; and they require sufficient time to overcome stress associated with the transportation to restoration sites and recover prior to planting;

(4) Vegetation management: Management of the invasive grasses is a full-time job and a continued requirement until bamboo achieves canopy cover. If such grass is left unchecked, not only is fire an unsurmountable risk, but these grasses out-compete young bamboo clumps. Such an activity requires training and coordination of teams on carefully managed cycles; and

(5) Timing: Bamboo is often incorrectly touted as achieving maturity within a 3-year period. In actuality, a 5–7-year period of active management is necessary before most sympodial bamboo species approach maturity and stability. This may be a short period when compared to traditional tree species, but it is still extensive and continues to require on-going and active management.

If these challenges can be overcome and projects are designed with a long-term vision in mind, bamboo has incredible potential as a tool for forest restoration in areas where desertification threatens to negatively transition an ecosystem.

CAMILLE REBELO

Ms. Rebelo is Chief Operating Officer of EcoPlanet Bamboo, which she co-founded as a mechanism to restore forested landscapes, while providing key industries with a deforestation-free alternative fiber. She is an expert in nature-based solutions and forest certification and holds a Masters from Yale University School of Forestry & Environmental Studies.

INTERNODE

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

Ya Ya surrounded by bamboo leaves and shoots at the Beijing Zoo on 29 May 2023. Credit: CNSPHOTO.

Uganda turns to bamboo farming to combat deforestation

In an area north of the Ugandan capital of Kampala, bamboo farming is now helping reverse environmental damage. Local farmer Andrew Ndawula Kalema has been growing his bamboo in the area for nearly 15 years, with much to show.

In 2010, Uganda had nearly 7 million hectares of tree cover which covered nearly 30% of its land area. But by 2021, it had lost almost 50,000 hectares, equivalent to 23.5 million tonnes of carbon dioxide emissions. Population pressure and illegal logging have been primarily responsible for this.

Bamboo can help restore these degraded lands, and, as Kalema says, it can be key to "mitigating the effects of climate change" given its "fast-growing" nature and ability to "adapt to different weather conditions." He further went on to mention that it's like a "magic bullet" given its ability to re-grow quickly after being harvested, and its leaves add nutrients to the soils, reducing the need for manure or fertilizers.

Awareness of the benefits of bamboo farming is spreading around the country. Kalema has now opened his farm to locals to learn more about the versatile functions of the plant, students whom he hopes will act as bamboo ambassadors around the country and champion high-quality bamboo products to encourage more people to grow the plant.

Source: Africanews, 9 April

USD 100 million facility to jump-start the Philippines' bamboo sector

In the Philippines, the engineered-bamboo manufacturing facility Rizome has received USD 100 million in investment from a building materials company based in the United States.

Former Philippines Agricultural Secretary Luis P. Lorenzo, one of the investors in the project, said he wants to "bring the best technology here," further noting the importance of bamboo to the sector as employing "thousands." He also said that bamboo structures fit well within the government's recent push for more housing. Moreover, given that the Philippines is the fifth-largest bamboo exporter in the world, the bamboo industry is poised for massive upscaling given the infusion of capital into the developing country.

The company Rizome also grows bamboo in Florida as well as the Philippines, promoting

the crop's sustainability and potential for carbon sequestration. Its product line-up includes panels, boards and veneers. Engineered bamboo has untapped potential and is a proven technology that is "strong as steel, tough as concrete, fire resistant, water resistant, pest-free, and as beautiful as hardwood," the company released in a statement. Companies like Rizome are at the vanguard of global sustainable development, accelerating the transition to the green transition at all points across the value chain.

Source: BusinessWorld, 30 May

Beijing zoo welcomes the return of giant panda Ya Ya

Born in the Beijing Zoo on 3 August 2000, the panda Ya Ya spent much of her life abroad in the Memphis Zoo in Tennessee, the United States, where she was adored by American visitors. Her long stay abroad finally came to an end on 27 April, when the duration of her loan to the zoo expired. She first flew back to Shanghai, where she remained in quarantine for one month, before completing the last leg of her journey home to the Beijing Zoo at the end of May.

Chinese fans rejoiced at the panda's long-awaited journey home, with fans in Beijing waiting at the gates of the zoo in the early morning to welcome her. According to China's National Forestry and Grassland Administration, custom medical and dietary care will be given to Ya Ya. Given the panda's advanced age, she will not be made available for public viewing to allow her sufficient time to rest from the travel and acclimate to the new environment.

Panda diets generally consist almost entirely of the leaves, stems and shoots of different species of bamboo. This makes bamboo a key natural resource for their conservation. In addition to panda, some of the world's most beloved animals also feast on bamboo, including mountain gorillas, monkeys, elephants and giraffes. Many of these species are also endangered or vulnerable and require conservation efforts to maintain habitats, particularly in the face of climate change which is warming global temperatures and increasing the frequency and intensity of natural disasters.

Source: CGTN, 29 May

Legal instrument on plastic pollution gathers steam

Global leaders met from 29 May to 2 June for a major summit to negotiate a treaty against plastic pollution, with the main goal to end the use of single-use plastics by 2040. Representatives from 175 countries gathered in Paris seeking to generate consensus on how to best go about limiting plastic waste. Inger Andersen, Executive Director of the UN Environment Programme, spoke on the ubiquitous but troublesome nature of the problem: "We abuse plastic because it's so cheap, but it impacts the environment, oceans, flora and fauna."

Indeed, over 400 million tonnes of plastic waste is generated annually. Only a tiny percentage of this is recycled, estimated at 8%. These polymers are found throughout terrestrial and marine ecosystems, even in inhospitable areas like the Mariana Trench or on the summit of the Pic du Midi. Bioplastics made from alternative green materials like bamboo are promising, but they currently comprise less than 1% of all manufactured plastic products. One of the lowest-hanging fruit in solving this complex problem is the reduction of single-use plastics, which represent 40% of all plastic production.

Despite this, significant challenges remain for arriving at a common understanding between different countries' governments. While there is widespread agreement for the ratification of an international treaty, there is less enthusiasm for a binding agreement with clear targets by 2040, and some nations that are major producers of hydrocarbons from which the vast majority of plastics are produced are not in favor of limiting production. The treaty is expected to be finalized and signed in the spring of 2025.

Source: Time News, 26 May

INBAR SPOTLIGHT

INBAR commissions research, conducts project work and raises awareness about bamboo and rattan across its 50 Member States.

Two of INBAR's latest Member States, Chad and DRC, benefited from a study tour across Kenya and Ethiopia.

Bamboo jewelry brings 'abundance and prosperity' to Amazonian women

In Peru, the Tajimat Women's Association is pioneering a new approach to business based on environmental conservation and community wellbeing. Found in the Río Soritor community in an area of the country home to lush forests and stunning landscapes, their brand is now becoming associated with elegant handmade jewelry. This is also emphasized by their name: "Tajimat" means "abundance and prosperity" in the local language spoken by the Amazonian women who belong to the association.

One of the enterprises of the association is Yanua Biojoyería Awajún. This company employs 14 women from the area under the Bambuzonía project, one of INBAR's flagship projects funded by the International Fund for Agricultural Development, which targets the people of the Amazon across Colombia, Ecuador and Peru for capacity building to tackle problems such as land degradation, deforestation and climate change. The business model seeks to integrate sustainable materials, particularly bamboo which can be widely found in the area, into jewelry products infused with unique local identities, helping raise awareness of climate change and ecosystem conservation among consumers while contributing to the circular economy.

Getting hands-on in new INBAR Member State

The first workshop to launch in Chad since the country became INBAR's 49th Member State delivered skills and knowledge on bamboo harvesting and furniture making. From 22 March to 10 April 2023, a workshop was organized for 28 artisans from 14 villages in the Division of Aboudéia, Salamat Province. Convened in the small village of Liwi, the main objective of the workshop was to contribute to the sustainable management of bamboo forests through the transfer of technical capacities, helping to boost the income of users in the region.

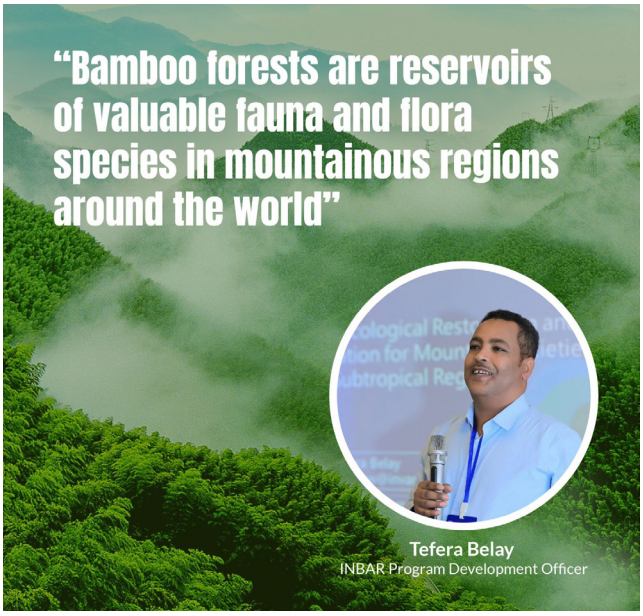
This training was organized within the framework of the project, "Support for the development and implementation of a concerted and integrated model for the conservation of the Great Functional Ecosystem of the Zakouma National Park (APEF-GEFZ)," implemented by The International Union for the Conservation of Nature in partnership with other agencies and associations in Chad. INBAR was solicited to facilitate the technical know-how of the workshop.

As a global knowledge broker, INBAR will integrate project work in Chad under the framework of South-South cooperation, facilitating the flow of innovative technology and solutions into the new Member State. Ultimately, the main goal is to boost livelihoods in local communities while revealing the promise of bamboo as a vital tool for effecting positive change in many different ways, from raising household incomes, delivering sustainable land management schemes and contributing to carbon sequestration. INBAR will work in partnership with the Government of Chad to ensure the sustainable development of the country's bamboo and rattan value chain through South-South cooperation as well as technology and solutions transfer.

Towering bamboo, towering mountains: The Third Mountain Futures Conference

INBAR participated in the Third Mountain Futures Conference: Mountain Communities in the Kunming-Montreal Global Biodiversity Framework from 16 to 18 April 2023 in Kunming, Yunnan Province, China. Launched to support the 15th Conference of the Parties to the Convention on Biological Diversity, the conference revolved around four main themes: Scientific Exploration; Ecological Restoration; Indigenous Wisdom; and Future Living.

Tefera Belay, INBAR Program Development Officer, gave a presentation on the Role of Bamboo for Ecological Restoration and Ecosystem Service Generation for Mountain Societies of Tropical and Subtropical Regions within the Future Living theme. His talk expounded upon the numerous ecosystem services delivered by bamboo forests, which act like giant sponges that sequester carbon, and play a positive role in improving hydrological cycles. He also used case studies from



India, China, and Ghana to highlight the beneficial characteristics of bamboo, such as its long-fibrous root system, soil-binding properties, dense litter layer for retaining moisture, ability to grow on degraded soils and steep slopes, as well as its extremely fast growth rate and canopy formation.

At the end of the conference, Belay delivered the closing ceremony remarks on behalf of INBAR Deputy Director General Lu Wenming, mentioning the scope and mandate of INBAR as well as the main contributions of bamboo and rattan to mountainous areas. Following the ending of the official conference, a field trip to the countryside was organized for participants to learn more about mountain agroforestry systems. Traveling to Honghe County, visitors were first brought to the Mountain Futures Demonstration Centre and introduced to the agroforestry demonstration plots on the hillsides where giant milkweed, yellow pea bush, sorghum and a variety of other crops could be found growing together. Finally, they visited nearby Longpu Village and learned about the village's bamboo-weaving industry before the trip ended.

Bamboo take roots at UN forestry conference

The 18th session of the UNFF kicked off in New York this year, lasting from 8 to 12 May. INBAR hosted a side event at the conference on Bamboo for Triple Bottom Line Benefits on the final day of the event, bringing together a diverse range of stakeholders to showcase the potential of bamboo for forest and landscape restoration coupled with economic,

social and environmental benefits.

At the opening of the side event, Professor Lu Wenming, Deputy Director General of INBAR, delivered a keynote speech on the Bamboo as a Substitute for Plastic Initiative: Addressing Plastic Pollution and Mitigating Climate Change. The presentation detailed the potential of bamboo for helping contribute to solving the global plastic crisis and highlighted the urgent need for joint efforts and actions to fully harness bamboo's potential as a plastic alternative. The Bamboo as a Substitute for Plastic Initiative echoes the ongoing negotiations to develop a legally binding instrument to confront plastic pollution, and proposes bamboo as a promising green alternative to the fossil fuel-based material. INBAR welcomes all partners, stakeholders, Member and non-Member States, and international organizations to join the initiative to work together to fully utilize bamboo to solve the world's plastic problem.

Li Yanxia, Senior Programme Officer of INBAR, gave closing remarks at the side event. In her talk, she mentioned some of the main recommendations mentioned by participants, such as the urgent need for conducting more baseline research, technological innovation and transfer, and capacity building. In addition, social acceptance, feasible policy and financial instruments, and more agile institutional deployments were also noted as being critical components for mainstreaming bamboo.

Delegates from Chad and DRC tour Kenya and Ethiopia's bamboo sectors

Organized by INBAR and with support from the Governments of Ethiopia and Kenya, delegates from Chad and the Democratic Republic of Congo (DRC), two of INBAR's newest Member States, embarked on a study tour to Ethiopia and Kenya from 14 to 22 May 2023. The goal of the study tour was to share experiences from Kenya and Ethiopia with the delegates from Chad and DRC to promote the transition towards a vibrant bamboo economy in Africa by demonstrating innovations, best practices and experiences. These could then inspire investments to transform bamboo resources into high-quality competitive market products. It also aimed to facilitate exchanges on bamboo value addition, industrialization and enabling environments, ultimately supporting the sustainable development of the bamboo sectors in both new Member States.

Delegates visited many sites across Kenya and Ethiopia, from processing and training centers, bamboo nurseries and farms, market sites, INBAR's Regional Office in East Africa, various bamboo-related enterprises, research centers, protected zones and more. Overall, the study tour across the two countries provided an excellent opportunity to forge partnerships with interconnected actors, including manufacturers, investors, designers and exporting companies. INBAR hopes that practices, experiences and innovations shared by experts and practitioners in Ethiopia and Kenya can help Chad and the DRC facilitate the sustainable development of their own bamboo sectors, strengthening livelihoods in local communities and bringing much-needed ammo to the fight for environmental conservation.

Empowering young scientists for conservation and green development

The hybrid classroom/field Regional Training on Biodiversity Conservation and Sustainable Development in Tropical Asia was successfully held in Xishuangbanna Tropical Botanical Garden, Yunnan, China from June 14 to 20. INBAR was a co-organizer of the event. Over the seven-day agenda, the training featured both indoor lectures and outdoor field visits, imparting a diverse range of skills and knowledge to the young scientists participating in the event, while also promoting exchange and network-building with other experts and colleagues in related fields.

The training included technical reports, theoretical lectures, field practices, discussions, case studies and more. Topics encompassed biodiversity research and conservation, biodiversity investigation technologies, ecological system services, community-based protection and sustainable development projects. Dr. Jayaraman Durai, Director of INBAR's Global Programme attended the opening ceremony where he delivered remarks. Later, he gave a presentation on "Inventory of Bamboo Resources with Remote Sensing Technology, and Mobile-Based Measures for Identification of Bamboo Species," which made the case for bamboo as critical to issues

of biodiversity conservation and more across the threatened landscapes of tropical Asia.

INBAR granted Observer status to UN body on trade and development

The 70th Session of the Trade and Development Board of the UN Conference on Trade and Development (UNCTAD) convened in Geneva from 19 to 28 June 2023. 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. Observer organizations are invited to attend public sessions of UNCTAD's intergovernmental meetings and conferences, including UNCTAD ministerial conferences, meetings of the Trade and Development Board and its commissions as well as presenting oral statements.

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 Trade and Commodities as a critical document for elucidating the 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 international partners like UNCTAD to boost the integration of bamboo and rattan into international trading systems, which can help connect rural farmers to trading systems they would otherwise be unable to access.

Bamboo 'wonderful and breathing' on World Environment Day

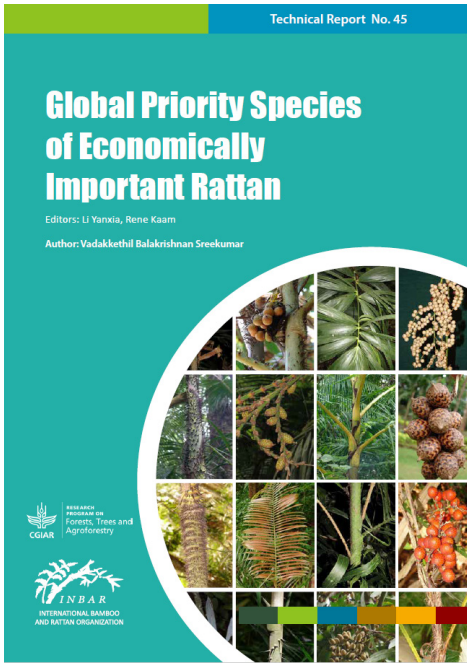
This year, on 5 June 2023, World Environment Day convened in Abidjan, Côte d'Ivoire under the theme "Solutions to plastic pollution," tackling the global problem of plastic waste head on. Part of the official proceedings, INBAR joined millions around the world in helping generate consensus on and raise awareness for the scourge of plastic pollution, with humankind to play a unique role as steward and caretaker of the planet's environment. Specifically, INBAR's West Africa Regional Office (WARO) had several major contributions to the day's event.

INBAR hosted a booth at which numerous bamboo products were on display. Visitors included high-profile individuals such as H.E. Jean-Luc Assi, Côte d'Ivoire's Minister for Environment and Sustainable Development, and Inger Anderson, Executive Director of the UN Environment Programme. Many of them remarked upon the crucial need for more public education to help people become aware of the wide range of bamboo goods that can replace plastic products.

A trip was also arranged to Dahliafleur Nature Reserve in the heart of Abidjan. Home to nearly four hectares of bamboo forest, the Reserve functions as a literal breath of fresh air in the urban landscape. Anderson also remarked upon this during the trip, commenting that the bamboo forest was a "wonderful and breathing place inside the big city of Abidjan," before calling on UNEP to strengthen collaboration with INBAR.

Finally, on the sidelines of the day's main event, INBAR WARO Director Michael Kwaku was interviewed by Radio Generation. In the conversation, he made the case for bamboo as an excellent alternative material to plastics while also expounding upon key points related to Africa's sustainable development. Technology transfer will form the bedrock of bamboo production in Africa, he said, and public-private partnerships also have an important role to play in raising awareness and innovating new products. He further mentioned the relevance of devising and implementing tailored policies, actions and roadmaps for bamboo product development and popularization for fully harnessing bamboo in Africa's local contexts.

IN REVIEW



Global Priority Species of Economically Important Rattan (2022)

A new publication seeks to revise the list of priority species of rattan.

Rattan species are spiny climbing palms belonging to the subfamily Calamoideae (Arecaceae). They are considered one of the most important NTFPs used in the furniture and handicraft industry due to their economic value and unique properties, including strength, lightness, durability, appearance and flexibility. Rattan genera are distributed globally across Africa, Asia and Australasia.

In addition, rattan makes a crucial contribution to local livelihoods. In fact, it is estimated that more than 700 million people trade or use rattan worldwide. Moreover, rattan and its products contribute over USD 6.5 billion in trade per year, demonstrating its economic importance. Trade statistics of bamboo and rattan products show that China is the world's largest producer, with an industry valued at USD 39 billion. Most of the economically important species of rattan are widely traded and, apart from the wild resources, some species are cultivated alongside other timber trees and crops.

The majority of the rattan resource base is exploited from natural forests, where management has been largely absent or ineffective. As rattan makes a substantial contribution to the livelihood and economic status of local communities in many countries worldwide, it is vital to establish rattan plantations in order to ensure sustainable availability and sufficient economic returns.

Although approximately 483 species of rattans have been identified globally, only a small proportion are used for commercial purposes. Despite this, several underutilized rattan species have the potential for development as plantation crops. In terms of the manufacture of furniture and handicraft items, the choice of species varies based on diameter classes, strength and flexibility as well as country-specific contexts. In light of this, the identification of priority species suitable to each country for research priority as well as for raising large-scale plantations were essential to writing the Global Priority Species of Economically Important Rattan (2022).

In 1994, INBAR and the International Board for Plant Genetic Resources begun an exercise to select the priority bamboo and rattan species for further research, which was updated in 1998 to include traditionally used species from many countries. The most recent version from 2022 adopted the following five criteria for species selection: Utilization potential; agro-ecological potential; economic potential; cultivation potential; and germplasm and genetic resources.

Resolving the taxonomic and nomenclatural problems related to rattan is quite difficult given the high morphological variation and widespread taxa across different countries that are often treated as separate species or varieties. As rattans are not cultivated in large-scale plantations by farmers in the same way as bamboos, a proper understanding of the correct species identification, silviculture techniques, agro-ecological suitability for cultivation, diseases, pests and properties of the cane are critical in relation to popularizing cultivation and, therefore, improving the resource base. This publication is an important step for clarifying global priority species of rattan.

Li Yanxia and Rene Kaam (eds.). (2022) *Global Priority Species of Economically Important Rattan.* Technical Report No. 45. Beijing, China. INBAR.

RUSTLING IN THE WIND: DU MU'S 'PLANTING BAMBOO'

China has seen many illustrious poets over its five thousand years of history. One of its most celebrated poets is Du Mu, whose evocative language and subtle mastery of tone have captivated readers for over a thousand years. And, it turns out, he also wrote about bamboo. In this issue of the BRU, we share his poem entitled "Planting Bamboo" to remind us that bamboo can not only help the world achieve its sustainable development goals, but also inspire great art and invigorate the human spirit.

Du Mu was born in 803 during the late Tang Dynasty in Chang'an (modern day Xi'an) to a powerful family. He first began his career as a bureaucrat in the Tang court, acting as an editor at the Institute for the Advancement of Literature. He would go on to be appointed to various court positions throughout the years but never attained a high rank. Some scholars believe he began to fully mature as a poet and essayist in 833, when he served in the entourage of Shen Chuanshi.

Du Mu illustrated by Shangguan Zhou, circa 1665.

In 842, he began feeling dissatisfied with his lackluster career, and a bitter undercurrent seeped into his writings before he passed away in 852.

His influence is undeniable, with his contemporaries and predecessors praising his work for its artistic merit. Renowned poet Li Shangyin even claimed his ability to write about grief and parting was unsurpassed. Nowadays, many of his poems are taught in schools, such as "Autumn Evening" and "Mountain Traveling." Roger Waters from Pink Floyd even borrows the line "Lotuses lean on each other in yearning" from Du Mu in one of his songs.

This type of vivid imagery was typical to his work, and he brings the same intensity to the poem below. A tribute to the nobility of bamboo, the poem's speaker describes the planted bamboo "upright" like "royal guards," the limbs of the firm culms also "show[ing] grace" among the tendrils of fog and sparkling dew. Despite the bitter chill of evening rainfall, the bamboo continues to sing its song, rustling in the wind and enduring hardship. The speaker, yearning to return home, must also endure hardship. Here, the example of bamboo fortifies his spirit to remain unyielding and resolute until "duty done," when he can finally return home and rest under the branches.

"Planting Bamboo"

In the first place I planted bamboo for shade,
Now they seem to have shifted to a stream.
Upright rows, like royal guards,
Sparse boughs show grace, mist veiled, dewy sheen.
Through the chill of rainy nights they sough on and on.
In evening winds they rustle against each other.
I ask myself: when shall I return home?
Duty done, my cap I'll hang on a bamboo branch.

-Du Mu

EVENTS

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

16–18 April
The Third Mountain Futures Conference: Mountain Communities in the Kunming-Montreal Global Biodiversity Framework
Kunming, China

21–23 April
Guizhou Bamboo Industry Development
Chishui, China

8–12 May
Bamboo for Triple Bottom Line Benefits: INBAR Side Event at UNFF 18
New York, USA

22 May
International Day for Biological Diversity

29 May–2 June
Second session of the Intergovernmental Negotiating Committee (INC)
Paris, France

5 June
World Environment Day

8 June
World Oceans Day

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

17 June
World Day to Combat Desertification and Drought

For more information, please see INBAR's event page: https://www.inbar.int/events/.

Open for submissions

INBAR INTERNATIONAL PHOTO COMPETITION 2023

This year, the INBAR International Photo Competition is looking for photographs that reflect bamboo and rattan's uses for sustainable development. Submissions should fall into at least one of the three categories: Bamboo and Rattan as Plastic Alternatives; Biodiversity and Wildlife Conservation; and Land Restoration.

Winning entries will be issued a cash prize and a digital certificate. First prize will be awarded USD 500, Second Prize will be awarded USD 300, and Third Prize will be awarded USD 200. The deadline for submissions is 15 August 2023 at 23:59 GMT+8.

For more information, please visit: www.inbar.int/event/photocompetition2023.

In April, women played in active role in the first workshop to be held in Chad since the country became INBAR's 49th Member State. The training delivered knowledge and skills on bamboo furniture making. Credit: Kfutwah Belmond.

INBAR

INTERNATIONAL BAMBOO
AND RATTAN ORGANIZATION

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