

BRU

Bamboo & Rattan Update

Special Volume



国际竹藤组织成立25周年
INBAR 25th Anniversary



Global Bamboo and Rattan Congress
世界竹藤大会

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



AFRICA: REFLECTIONS ON 25 YEARS

SETTING STANDARDS

How the push to standardise African bamboo and rattan products may incentivise international trade.

10

THE CHINA-AFRICA BAMBOO CENTRE

The new hub will provide support for bamboo development across the continent.

13

SEEDING THE FUTURE

Kenya's first fully integrated bamboo business can offer lessons for other African entrepreneurs.

16

Bamboo and Rattan Update

Vol. 3 Issue 1

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Cover Image

The Haduwa Arts and Culture Institute in Ghana, with its canopy of curved bamboo arches, provides a sheltered space for performances and play. Credit: Julian Lanoo.

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About BRU

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About INBAR

INBAR is an intergovernmental organisation which promotes the use of bamboo and rattan for sustainable development.

www.inbar.int

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BRU

EDITORIAL

Welcome to the first issue of BRU 2022, part of a special volume commemorating INBAR's work over the last 25 years. In this issue, we focus on Africa: home to 20 INBAR Member States, and a critical region for bamboo and rattan.

Bamboo and rattan are a ubiquitous sight across many parts of Africa. From handicrafts to houses, charcoal briquettes to bicycles, these plants are an integral part of millions of Africans' lives, material cultures and built environment.

There are many opportunities for bamboo and rattan on the continent. In 2019, African countries imported more than twice as much bamboo and rattan as they exported, indicating a large potential market for domestic manufacturers. Bamboo housing could be an important solution for growing slum populations in cities. And bamboo is already being used as a tool for preventing landslides, binding soil and reversing desertification on riverbanks, steep slopes and degraded lands. In recent years, a number of governments have created specific strategies to boost their bamboo sectors, or to support bamboo and rattan cultivation.

Yet despite abundant resources, and a long history of using these plants, Africa has yet to tap the full potential of its bamboo and rattan sectors. The region contributes less than 1% to international exports, and much trade remains domestic and informal. This issue of *BRU* explores some of the obstacles to scaling up Africa's bamboo and rattan sectors, and talks to several people at the forefront of this change.

Standardisation is one important but often neglected area of bamboo sector development. In 'Setting Standards' (page 10) Professor **Abel Olorunnisola** discusses some of the most recent work to promote standard terms, tests and processes for bamboo and rattan products in Africa. As Olorunnisola shows, these standards will not only help more African countries export their products, but could lead to bamboo and rattan being included in initiatives such as the African Continental Free Trade Area.

One of the most exciting moments for Africa's bamboo sector in recent years was the announcement of the China-Africa Bamboo Centre, which will be based in Ethiopia. Dr. **Fu Jinhe** explains the vision behind this new multinational training hub, and INBAR's involvement in bringing the plan to fruition, in 'The China-Africa Bamboo Centre' (page 13). Once active, the Centre should be a critical area to help strengthen the bamboo sector across the continent.

Many bamboo and rattan products in Africa are still made by hand, using inexpensive technologies - but some companies are pushing boundaries. In 'Seeding the Future' (page 16), Ms. **Kuki Njeru** describes the growth of Kenya's first fully integrated bamboo

processing company. GreenPot is not only playing an active role in national land restoration projects, but also creating a valuable source of income for local bamboo farmers and product makers. Their experiences could pave the way for similar developments across East Africa.

This issue is part of a special volume of *BRU*. 2022 marks the 25th anniversary of INBAR's establishment, and the date of the second Global Bamboo and Rattan Congress. Throughout the year, *BRU* will be turning its lens on the regions which make up INBAR Member States: starting in Africa, then moving to the Asia-Pacific, followed by Latin America and the Caribbean.

There is no doubt that Africa's bamboo and rattan sectors are undergoing a huge transformation. INBAR is honoured to play a part in this change, and we are very pleased to have statements from the Ministers of 10 African Member States ('**Reflections on 25 Years**', page 4). As each letter makes clear, bamboo and rattan are already becoming an integral part of the region's work for sustainable socio-economic development, reforestation and climate change mitigation. We look forward to continuing work with these Member States in the coming years, to help create a greener, more prosperous Africa.

Finally, this issue includes a round-up of the latest international news—from a new species of bamboo spider to projects producing bamboo ethanol (**Internode**, page 19)—as well as INBAR's work over the last few months (**INBAR Spotlight**, page 22). We review a new publication on bamboo bioenergy in Africa (**In Review**, page 25), and summarise some key events in the sector (**Events**, page 27).

THE EDITORS



BAMBOO AND RATTAN IN AFRICA

- There are **115 known species of bamboo** in Africa, and **22 known species of rattan**.
- INBAR estimates there are at least **7.2 million hectares of bamboo** across Africa.
- In its 2010 census, Ethiopia reported that **4.8 million people lived in bamboo homes**.
- In 2019, Africa **exported USD 19.2 million of bamboo products, and USD 1.1 million of rattan products**.
- **INBAR includes 20 African Member States...**

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

- ... and has **three Regional Offices**, in Cameroon, Ethiopia and Ghana.
- **INBAR has conducted 100+ projects, workshops, study tours or research trips** across the continent.
- INBAR will host an **Africa Bamboo and Rattan Congress in Yaoundé, Cameroon** in April 2022.

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, 10 African policymakers 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 Forests and Wildlife, the Republic of Cameroon*

His Excellency Jules Doret Ndongo

**Cameroon is the host of INBAR's Central Africa Regional Office.*

Bamboo and rattan are classified in Cameroon as non-timber forest products. They are recognised as emblematic plants of sustainable development that can contribute effectively to the socio-economic development of rural areas and the preservation of the environment.

This justifies the visit to INBAR Headquarters by the President of the Republic, His Excellency Paul Biya, during his state visit to China in March 2018. His Excellency [was] the First Head of State to visit these Headquarters.

With the President's approval, Cameroon was made Chair of the INBAR Council on 29 November 2019. In this regard, several initiatives have been carried out [including]: the reception of the Director General of INBAR in Cameroon, and the facilitation of [his] visit to certain countries of Central Africa; the receipt and installation of technical equipment at the Common Production and Training Centre located in Yaoundé; the inauguration of INBAR's Central Africa Regional Office in Yaoundé; the finalisation of a national strategy for the bamboo sector; preparations for the Africa Bamboo and Rattan Congress (ABARC 2022); the accession to INBAR by the Democratic Republic of the Congo [as an Observer State], Pakistan [as a Member State] and Chad [as an

Observer State]; and the appointment of the very first Cameroonian to INBAR's Board of Trustees.

Moreover, Cameroon's position as INBAR Council Chair has reinforced the interest of the public and governments in bamboo and rattan, particularly in the Central African sub-region. We want to lay the groundwork for the future at a time when woody resources are running out, and we are resolutely committed to the preservation of the forests of the Congo Basin.

As Cameroon's time as Chair [of the INBAR Council] comes to an end, the Government would like to thank all INBAR Member States for their commitment to the initiatives launched by this organisation despite the difficult conditions linked to the COVID-19 pandemic. [The Government] wishes the active participation of Member States in ABARC 2022 in the coming days in Yaoundé, Cameroon.

We hope that each Member State will benefit from its membership in our organisation which now has a global reach.

This is a shortened version of the statement sent to INBAR. The complete statement can be read here: www.inbar.int/reflectionson25years/cameroon/

Minister of Agriculture, the Federal Democratic Republic of Ethiopia*

His Excellency Oumer Hussien Oba

**Ethiopia is the host of INBAR's East Africa Regional Office.*

Studies indicate Ethiopia has the most abundant bamboo resources in Africa. A 2017 inventory of this resource found that bamboo covers 1.47 million hectares.

An estimated 750,000 people in Ethiopia are already dependent on bamboo for their livelihoods and income, utilising this resource for job creation and poverty alleviation.

There is a huge domestic market for timber products, as a source of clean household energy, pulp and paper, furniture, and lifestyle [items], in addition to the export market. As well as economic



Bamboo is a historic material with a multitude of uses. This submission to the INBAR 2020 international photo competition captures the transportation of harvested bamboo poles in rural Ethiopia. Credit: African Bamboo (Anthony Wood).

advantages, Ethiopia is convinced that bamboo has huge environmental benefits including rehabilitating degraded lands, mitigating and creating resilience to climate change, and helping to promote a green economy.

The Government of Ethiopia has accorded a high priority to the bamboo sector. Recently, [the Government created a] national bamboo development strategy and action plan which aims to increase the bamboo resource base from 1.47 million hectares to 1.67 million hectares, improve sustainable management of 200,000 hectares [of bamboo], and create income and employment opportunities for more than 500,000 people.

“**[Ethiopia’s bamboo strategy] aims to... create income and employment opportunities for more than 500,000 people.**”

Ethiopia has hosted INBAR’s East Africa Regional Office (EARO) since 2009, and has worked with INBAR on a number of projects to stimulate the country’s bamboo sector. Since 2005, INBAR has implemented more than 15 bamboo projects, which helped demonstrate various technologies

and enterprise models in Ethiopia for bamboo charcoal briquette making and improved cooking stoves. EARO has also been providing technical support and helping entrepreneurs and investors who would like to do business in the bamboo sector.

[Ethiopia is] part of key international standardisation initiatives regarding bamboo, and has published a number of national standards relating to bamboo design and preservation [through its] National Standard Agency.

Ethiopia is a hub for training and knowledge sharing about bamboo in East Africa. The country is currently coordinating the establishment of the China-Africa Bamboo Centre, [which was announced] in 2018, at the Beijing Summit of the Forum on China-Africa Cooperation, by Chinese President His Excellency Xi Jinping.

Let me take this opportunity to express Ethiopia’s renewed and unwavering commitment to bamboo development, while celebrating the 25th anniversary of INBAR and the Second Global Bamboo and Rattan Congress.

This is a shortened version of the statement sent to INBAR. The complete statement can be read here: www.inbar.int/reflectionson25years/ethiopia/

Deputy Minister of Lands and Natural Resources, the Republic of Ghana*

His Excellency Benito Owusu-Bio

**Ghana is the host of INBAR's West Africa Regional Office.*

Ghana is one of INBAR's first African Member States, and is an important role model for bamboo and rattan sector development in West Africa. Ghana has been the host country of INBAR's West Africa Regional Office for almost 20 years.

Ghana is also an important hub for bamboo innovations and product development. In 2022, the Bamboo and Rattan Development Programme (BARADEP) was established following the adoption of bamboo and rattan development as a national programme by the Government of Ghana. It aims at promoting the sustainable management and utilisation of bamboo and rattan resources for job creation and environment protection. BARADEP has done significant work in raising awareness about bamboo and rattan's socio-economic and environmental benefits, created job opportunities, facilitated training for artisans and supported the development of bamboo plantations worldwide.

As an innovator in a number of bamboo applications, Ghana is a leading exporter of knowledge and technologies regarding bamboo fodder, bamboo charcoal and bamboo agroforestry. Ghanaian bamboo companies such as Ghana Bamboo Bicycles, Global Bamboo Products Limited and Pioneer Bamboo Limited are also well known overseas.

 **Ghana plans to... plant 50,000 hectares of bamboo by 2040 as part of the Ghana Forest Plantation Strategy.** 

Currently, Ghana is part of an ongoing intra-Africa project to promote smallholder farmers' livelihoods and incomes from bamboo in four African countries. Almost 300 hectares of land have been restored by bamboo under the project and up to 5000 Ghanaians, including smallholder farmers, artisans and programme managers, have been trained in various specialisations including bamboo propagation, nursery establishment and agroforestry systems management, bamboo

product design and development, [and] bamboo enterprise and business development.

In Ghana, some 43,000 hectares of land are covered by wild bamboo. The government of Ghana plans to continue its ambitious expansion of the non-timber forest products sector, with an agenda to plant 50,000 hectares of bamboo plantations by 2040 as part of the Ghana Forest Plantation Strategy. Under the Green Ghana Initiative, which was instituted in 2021 by the Government of Ghana, approximately 250,000 bamboo seedlings were planted worldwide on 11 June 2021: Green Ghana Day. This year, over 500,000 seedlings of bamboo will be planted on the Green Ghana Day slated for 10 June 2022.

On the occasion of the 25th anniversary of INBAR, Ghana extends her warmest regards.

Managing Director, Forestry Development Authority, the Republic of Liberia

The Honourable C. Mike Doryen

Liberia is endowed with abundant bamboo and rattan resources and is working actively to develop the sector. Bamboo species occupy a significant portion of Liberia's landscape and are one of Liberia's dominant forest plant species. They are found in every ecological zone, from wetlands to savannahs and mountaintops.

However, the importance of bamboo to rural communities is very little and they regard it as a nuisance forest resource.

Despite all the odds, the Chinese Bamboo and Rattan Weaving Centre, sponsored by the Chinese government, has trained more than 600 Liberian youths in bamboo- and rattan-based furniture and other arts and crafts skills. Because of these efforts, the Liberian Government, through the Forestry Development Authority, was encouraged to join INBAR on 1 July 2015. Through the sponsorship of INBAR, Liberia has been able to: develop a bamboo and rattan sector roadmap in 2017; [create] Liberia's Bamboo and Rattan Resource Assessment; and [complete a] bamboo and rattan value chain study.

Apart from the home-based training provided, the Chinese government has provided some [Liberians with] advanced training in bamboo technologies in China.

We wish INBAR a very happy 2022 as we strive together to enhance the sustainable management of forests and forest resources.

This is a shortened version of the statement sent to INBAR. The complete statement can be read here: www.inbar.int/reflectionson25years/liberia/

Former Minister of the Environment and Sustainable Development, the Republic of Madagascar

Her Excellency Baomiavotse Vahinala Raharinirina

Bamboo holds an important place in the daily life of the population, especially in rural areas. This plant is used for building houses, river transport, making furniture and other tools, and for soil defence and restoration.

As a rapid and multiple-use species, the Malagasy state opts for planting bamboo to achieve the goal of re-greening Madagascar according to general state policy.

The bamboo sector development project began in 2010 in our country where INBAR remains the international potential partner. In 2018, thanks to its financial support, the policy and strategy for the development of the bamboo sector in Madagascar were drawn up and adopted. Moreover, through its co-financing, four Common Production and Training Centres have benefited from bamboo processing machinery and equipment in Madagascar.

We are very satisfied with the support provided by INBAR to our country and still hope for its close collaboration in order to continue the efforts deployed for the development of the bamboo sector. To this end, on behalf of the Ministry of the Environment and Sustainable Development of Madagascar, I address my sincere thanks to INBAR.

Minister of Land and Environment, the Republic of Mozambique

Her Excellency Ivete Joaquim Maibaze

Mozambique has been a Member State of INBAR since 2005.

Bamboo in Mozambique is limited to traditional and artisanal uses; however, considering the alarming levels of deforestation, forest fires,

tobacco cultivation, shifting agriculture and erosion, fast-growing plants such as bamboo are needed to address these challenges. It can be estimated that there are between two to three million hectares of bamboo in the country.

Actions on bamboo development by Mozambique in recent years include: training more than 35 technicians in the forestry sector in China on matters related to bamboo, such as management of nurseries, plantations, management and utilisation, among other [areas]; developing a National Bamboo Strategy, with INBAR's support; sending [people in Mozambique] on exchange visits with China and other INBAR Member States; the creation of Mozambu, which is a Mozambican civil society organisation that deals with issues related to bamboo; the completion of an [initiative] in bamboo charcoal production, and a nursery experiment where various techniques of bamboo propagation were applied.

It can be concluded that in Mozambique there is natural potential for the establishment of bamboo plantations in a sustainable way.

We wish INBAR a very happy 25th anniversary.

This is a shortened version of the statement sent to INBAR. The complete statement can be read here: www.inbar.int/reflectionson25years/mozambique/

Minister of State for Environment, the Federal Republic of Nigeria

Her Excellency Sharon Ikeazor

 Nigeria's efforts to develop the bamboo sector in recent times have continued to increase tremendously, having realised the potential benefits and role it could play in the sustainable management of our forests, environmental protection, enhancement of ecosystem resilience, attainment of low-carbon emissions, job creation and poverty reduction.

Nigeria has a long-standing relationship with INBAR which includes our engagements on opportunities to work together to further promote the bamboo sector in the region. We also look forward to possible collaboration to build capacity and ensure technology transfer for bamboo and rattan processing in our country.

We have the enabling policy and ongoing programmes for the development of our forest and non-forest resources, including bamboo and rattan. We are currently factoring bamboo into our National Forest Inventory, in addition to making it part of our national afforestation / reforestation programme nationwide.

Maximising this potential, the Forest Research Institute of Nigeria is in the process of developing improved varieties [of bamboo] that could cater to local needs and export demands. A conducive environment is being provided for private sector involvement with a view to bolstering investments in the value chain.

This is already yielding good results as private investments have continued to grow with the emergence of bamboo-based industries in some parts of the country.

Congratulations and happy 25th anniversary!

Minister of the Environment and Sustainable Development, the Republic of Senegal

His Excellency Abdou Karim Sall

Bamboo footprints mark the cultural and landscape richness of the Senegalese. From the *bassaris* and *bédicks* living in the foothills of the Fouta Djallon to the *diolas* populating the Casamance regions of Fogy and Kalunay, passing through the Fulani *peul* of Fouladou, the Senegalese communities live harmoniously with the bamboo forests.

Since becoming a Member State of INBAR in 2011 and benefiting from executive training in China, Senegal has strengthened this position by diversifying its bamboo-based products. The international fame of the Cultural Centre, built with rammed earth and bamboo in the village of Sinthian in 2017 (pictured), shows how centuries-old bamboo construction in Senegal could have a bright future. From this perspective, sustainable country homes and schools made of bamboo will make precarious, inconvenient and unsafe temporary shelters disappear.

Through celebrating the 25th anniversary of INBAR, we have in sight the option of making bamboo a basic material to restore our degraded lands, conserve biodiversity and create sustainable jobs. We are therefore resolutely committed to

[creating] a clear strategy for the development of the sector as well as national standards which will support and boost this development.

Minister of the Environment, the Republic of Sierra Leone

His Excellency Foday Moriba Jaward

In Sierra Leone, bamboo and rattan can be found in every corner of the country. As a country with over 50% of its population living in rural areas, [in Sierra Leone] bamboo and rattan are considered one of the main sources of income generation.

Recently, Sierra Leone hosted a two-member delegation from INBAR's West Africa Regional Office in Ghana to assess the state of the sector. The visit afforded the country [the opportunity] to study the state of bamboo and rattan resources, utilisation and development, explore the possibility of South-South cooperation with China and find out the present needs and future development approach for the sector.

 ***The Forestry Division of Sierra Leone is in the process of drafting a roadmap and clear path for developing the sector.*** 

We are keen to promote bamboo and rattan as a sustainable alternative source of income for our forest edge communities in Sierra Leone. To achieve this, the Forestry Division is in the process of drafting a roadmap [and] clear path for developing the sector, particularly to make industrial products with high added value, and to integrate bamboo and rattan into other sectors, such as tourism, energy, etc.

The country will continue to engage INBAR and other donor partners to promote bamboo and rattan's sustainable cultivation and use across Sierra Leone.

I wish INBAR and all its Member States a very happy 25th anniversary.

This is a shortened version of the statement sent to INBAR. The complete statement can be read here: www.inbar.int/reflectionson25years/sierra-leone/



The award-winning cultural centre 'Thread' in Sinthian village, Senegal, designed by Japanese architect Toshiko Mori, was constructed using local materials including bamboo. The centre provides a unique environment for activities, including an agricultural programme run by non-profit organisation Le Korsa. Credit: Iwan Baan / Le Korsa.

Minister of State for Environment, the Republic of Uganda

Her Excellency Beatrice A. Anywar

In Uganda, there are 55,000 hectares of naturally occurring bamboo resources in protected areas.

With support from INBAR, the country has developed a National Bamboo Strategy and Action Plan 2019-2029 which is aimed at inspiring the development of the bamboo industry in Uganda.

The existing bamboo value chains have been improved, including nurseries, bamboo poles, bamboo for construction, bamboo shoots, bamboo furniture, bamboo handicrafts and ornaments, and industrial products such as toothpicks.

The country has prioritised bamboo as one of the key species for restoring degraded landscapes and plans to restore 375,000 hectares of degraded land with bamboo in the next eight years.

Uganda is hosting about 1.6 million refugees. The United Nations High Commissioner for Refugees (UNHCR) has prioritised bamboo for environmental management and livelihood development for refugees and host communities. This is because bamboo is a fast-growing crop and matures within four to five years.

Research and development of new bamboo market-oriented products, the development of four international standards on bamboo, and training of trainers for the Technical Vocational Education and Training (TVET) curriculum have been undertaken to build a critical mass of knowledge and understanding of the bamboo industry and value chain development.

We wish INBAR a very happy 25th anniversary.

This is a shortened version of the statement sent to INBAR. The complete statement can be read here: www.inbar.int/reflectionson25years/uganda/

SETTING STANDARDS

A lack of standards is hindering the development of the continent's bamboo and rattan sectors—but work is underway to change that.

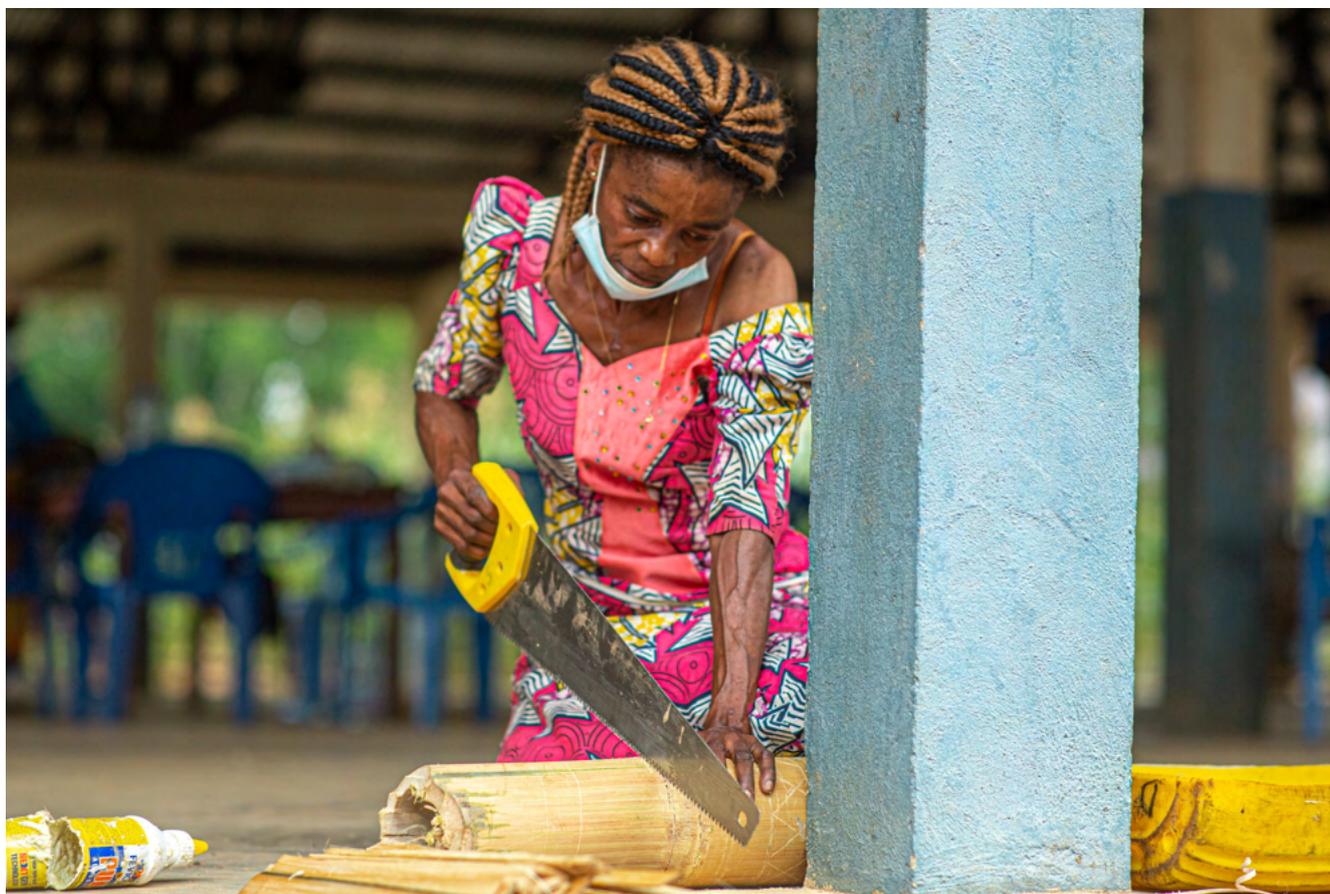
Standardisation—meaning the use of standard terminologies, test methods and designs for products and materials across countries and regions—is an important tool for ensuring the high quality, reliability and international competitiveness of bamboo and rattan products. Standards create a demand for improved technologies that otherwise would not be commercially unsuccessful.

Standardisation is arguably of particular importance in Africa, where cottage-level enterprises based on the harvesting, collection, processing and sale of raw, semi-processed and

finished bamboo and rattan handicrafts and furniture products continue to play an important role in poverty alleviation and employment generation, constituting a major source of income for millions of the rural populace.

Across Africa, however, there are few internationally recognised standards on bamboo and rattan processing and product manufacture. What is more common are company standards and informal, demand-driven codes of practice. While African countries have a vibrant culture and history of bamboo and rattan use, this lack of standardisation of bamboo and rattan products is a barrier to trading in international markets.

The challenge is more notable for rattan than bamboo even in terms of nomenclature. For example, rattan names in anglophone West Africa (Gambia, Ghana, Nigeria, Tanzania, Zambia) are



Training on bamboo product creation in Yangambi, the Democratic Republic of the Congo. Standardisation can support bamboo and rattan artisans to create high-quality products for the international market. Credit: Fiston Wasanga/CIFOR.

often different from those used in francophone and Central Africa (Angola, Cameroon, Senegal). Common rattan species are often assigned distinct names associated with different uses for various stages of growth, particularly when local trade names are not used in conjunction with botanical names.

Without international standards, African countries cannot become major exporters of value-added products: in 2019, African countries exported only 1% of globally traded bamboo products (USD 19 million) and even less rattan (USD 1 million, or 0.4% of total exports). Standardisation is also critical if bamboo and rattan products are to be included in the African Continental Free Trade Area, the African Union's flagship project to create a single market for goods and services across the continent.

Work is underway to standardise Africa's bamboo and rattan sectors. In particular, the International Organization for Standardization (ISO), the African Organisation for Standardisation (ARSO)—Africa's intergovernmental standards body formed in 1977—and INBAR are currently engaged in a number of initiatives to promote the development and uptake of standards for bamboo and rattan.

Working with the ISO

Over recent years, the ISO, a voluntary standard-setting body composed of representatives from various national standards organisations, has developed a number of standards for bamboo and rattan products. These include guidelines for testing, designing and building bamboo structures, standard vocabulary to accurately describe bamboo and rattan plants and products, and a number of standards related to bamboo charcoal.

INBAR is currently part of two major Technical Committees (TC) to develop bamboo and rattan standards. ISO/TC 296 was established in 2016 and is the ISO's first TC dedicated to "the standardisation of bamboo, rattan, and derived materials." It aims to address the lack of standards for bamboo and rattan, which often have very different properties and testing requirements to timber products. Bamboo is also included in a TC on timber structures (ISO/TC 165), and specific standards are being developed for grading



Handmade bamboo products on display in a market in Ghana. Most products in Africa currently adhere to company standards and informal, demand-driven codes of practice. Credit: INBAR.

bamboo culms and designing bamboo structures.

A number of African countries, including Côte d'Ivoire, Egypt, Ethiopia, Ghana, Kenya, Nigeria, South Africa, Tanzania and Uganda, are participating members of ISO/TC 165 and ISO/TC 296, and some of these countries have established in-country mirror committees dedicated to bamboo and rattan. Although these members represent a minority of bamboo-producing countries on the continent, their number is growing.

Alternative standards

Despite their status and importance, the fact that ISO standards are produced for sale to interested corporate bodies and individuals puts them out of reach for many target bamboo and rattan users in Africa. To bridge this gap, international expert groups are also helping to commission user-friendly Voluntary Guideline Standards (VGS) for bamboo and rattan users, which are made available at no cost for use, duplication and distribution.

INBAR is producing a number of VGS through its 'Task Forces' of international experts. Its Task Force on Rattan has already published a book on standard rattan terminologies (INBAR Technical Report No. 39) and guidelines on the establishment of rattan plantations (INBAR Technical Report No. 42). Meanwhile, the Task Force on Bamboo for Renewable Energy, established in 2017, is currently developing two



Rattan furniture products on display in Cameroon. Credit: Abel Olorunnisola.

VGS, on the construction of bamboo charcoal kilns and stoves respectively. These guidelines will be of particular importance for many African countries, where millions of people still rely on woody biomass as fuel for cooking and heating. The Task Force on Sustainable Bamboo Management, established in 2020, will produce similar VGS for improving bamboo supply: a critical concern for African businesses.

The Task Forces do more than just develop standards; they also help raise awareness about the importance of standardisation, and build capacity on how to use them. In November 2021, the annual meeting of the Task Force on Sustainable Bamboo Management in Accra, Ghana coincided with a capacity-building workshop, co-hosted by INBAR and ARSO and supported by the Ghana Standards Authority. At the workshop, representatives from national standards authorities and bamboo companies across Cameroon, Côte d'Ivoire, Ethiopia, Ghana, India, Kenya, Nigeria, Sierra Leone, Tanzania, Uganda and Zambia were trained in how to develop, adapt and monitor compliance to bamboo standards, and were introduced to the standard requirements for bamboo products in international markets.

ARSO, which currently has 36 member countries, is an important partner in this work. ARSO uses its regional standardisation platforms to harmonise existing standards on bamboo and rattan; it also works with INBAR to support capacity-building initiatives across African

countries to develop and adopt bamboo and rattan standards; and it promotes countries' participation in relevant ISO TCs.

'Made in Africa'

In terms of making Africa a big player in bamboo and rattan trade, standardisation is only one part of the puzzle. To reap the full benefits of international trade, African bamboo and rattan processors must be empowered for efficient and innovative processing; supply shortages must be addressed through cultivation and sustainable management of bamboo and rattan resources; and studies on the properties and products of African bamboo and rattan species must become part of university curricula and national research agenda across the continent.

Robust, internationally recognised standards can underpin these efforts, but they will need strong commitment, and adequate funding. With appropriate support, standardisation activities have a significant role to play in addressing the issues with Africa's bamboo and rattan sectors, and ensuring the export of more products 'Made In Africa'.

ABEL OLORUNNISOLA

Abel Olorunnisola is a Professor of Wood Products Engineering at the University of Ibadan, Nigeria, and the current Vice-Chancellor of Dominion University, Ibadan, Nigeria.

FEATURED ARTICLE

THE CHINA-AFRICA BAMBOO CENTRE

A new training hub will offer critical opportunities for transferring knowledge and technologies between Africa and China.

At the opening ceremony of the Beijing Summit of the Forum on China-Africa Cooperation (FOCAC) in September 2018, His Excellency Xi Jinping, President of the People's Republic of China, made reference to "A China-Africa Bamboo Centre", which "will be established to help Africa make bamboo and rattan products". The Centre was announced as one of 50 new projects for green development and ecological and environmental protection in Africa.

This is not the first time that President Xi has talked about bamboo's importance. In 2017, on the occasion of INBAR's 20th anniversary, President Xi praised bamboo's role in "promoting poverty alleviation in producing areas... facilitating

sustainable development" and bringing about "global ecological progress."

A long time in the making

But while 2018 marked the formal announcement of the China-Africa Bamboo Centre, the concept has been in development for many years, as the result of continuous efforts from the governments of China and Ethiopia, and with support from INBAR.

As far back as the 2006 FOCAC Summit, INBAR lobbied for an African Bamboo Centre to be one of the newly announced "10 distinctive agricultural technology demonstration centres in Africa". In 2006, INBAR was implementing a bamboo training project in Ethiopia with funding from the Chinese Ministry of Commerce, and suggested that Ethiopia might be a good home for this Centre. At that time, the proposal did not go through.



Sino-African bamboo training has a long history. In this picture from 1980, Chinese bamboo artisans pose with the participants of an Ethiopian training workshop. Credit: Fu Jinhe.

The issue was raised again in March 2013, when INBAR and the Ethiopian Ministry of Agriculture hosted an African Bamboo Conference in Addis Ababa. Over the course of the conference, delegates from 12 African Member States discussed a common strategy for African bamboo development, and unanimously agreed on the need to establish an 'African Bamboo Centre' in Ethiopia's capital, Addis Ababa. This marked the start of more serious discussions between Ethiopia and China on the subject.

A proposal was drafted in July 2014 by INBAR's sister organisation in Beijing, the International Centre for Bamboo and Rattan (ICBR), based on suggestions from China's Ministry of Commerce and the Ethiopian government. In the same year, ICBR, INBAR and the Ethiopian Ministry of Agriculture also signed a 'Memorandum of Understanding on the Establishment and Operation of the African Bamboo Centre'.

Powerhouse for development

A China-Africa Bamboo Centre offers a promising solution to boost the development of African countries' bamboo sectors. The Centre will cover an area of five hectares, and will include laboratory buildings, office buildings, a hotel for training, modern bamboo nurseries, bamboo demonstration forests, and bamboo processing workshops. Its functions will include training, conducting



Participants on a 2013 INBAR bamboo training workshop in Addis Ababa. Credit: Fu Jinhe.

research and demonstrating techniques and technologies for making bamboo products.

As the name suggests, the Centre will focus on support and expertise from China. For many years, China has supported countries in Africa on a multilateral or bilateral basis to improve their supply of bamboo resources and engage in lucrative new value chains. Despite Africa's natural abundance of bamboo—more than 30 countries on the continent are known to have bamboo, of which 11 are expected to possess more than 7 million hectares, according to INBAR estimates—bamboo remains a relatively poorly managed and underutilised resource. China's experience offers a critical lesson for many countries: its total bamboo industry output in 2020 was as high as CNY 320 billion [USD 50 billion], according to the China Bamboo Industry Association, and Chinese companies are making some of the most innovative and high-value products on the market, including bamboo flooring, construction materials and furniture.

A hub in Addis Ababa

There are a number of reasons why Ethiopia was decided as the Centre's location. Ethiopia has the most bamboo in Africa, with 1.47 million hectares of bamboo forest. It also has one of the continent's most developed bamboo sectors, boasting three medium-scale bamboo processing enterprises and hundreds of small and micro-sized bamboo enterprises.

Bamboo is important to Ethiopia's environmental protection and economic development: with the help of INBAR, Ethiopia has formulated a 2019-2030 Bamboo Development Strategy and Action Plan, which aims to expand its total bamboo coverage to 1.67 million hectares, and create employment opportunities for 500,000 people. Its relatively mature bamboo sector makes it a natural hub for wider awareness raising and technology transfer among African countries.

There are other considerations behind making Ethiopia the host country for the new Centre. Ethiopia's capital, Addis Ababa, is already the seat of Africa Union's headquarters, and the country has a strong relationship with China, through programmes such as the Belt and Road Initiative. In recent years, Chinese enterprises have signed



Ghanaian artisans learn from Chinese experts on a 2018 INBAR training course. The new China-Africa Bamboo Centre will be a hub for knowledge sharing and technology transfer across the continent. Credit: Jamila Akweley Okertchiri/IPS.

a memorandum of investment cooperation with the Ethiopian government, and plan to invest in a large-scale bamboo pulp factory and build a bamboo industrial park.

Slow but steady: building the Centre

The 2020 epidemic has affected the progress of the Centre, but not dented its prospects: there remains considerable political willpower, and the building is expected to be constructed in 2022 or 2023.

In November 2021, the FOCAC conference in Dakar, Senegal, adopted the ‘Dakar Action Plan (2022-2024)’. The Plan makes specific reference to the China-Africa Bamboo Centre, and makes clear that “The two sides [China and Africa] will continue to advance the building of the China-Africa Bamboo Centre and actively support Africa’s capacity building in the sustainable management of bamboo and rattan resources, the innovative development of bamboo and rattan industries, the development of their products and poverty alleviation, and relevant industrial policy and standardisation.”

INBAR will play an important role in bilateral efforts to establish and run the Centre. Since Ethiopia became an INBAR Member State in 2002, INBAR had implemented more than 15 bamboo projects in the country. INBAR’s East Africa Regional Office was established in Addis Ababa in 2009 and now has about 20 bamboo experts working in the region. In the future, INBAR could work together with China-Africa Bamboo Centre for bamboo training, research and demonstration.

The establishment of the Centre should directly benefit INBAR’s 20 Member States and other countries. The Centre can cultivate more bamboo industry talents for African countries, and can conduct research and demonstration on African bamboos, so as to better promote the development of the African bamboo industry.

FU JINHE

Dr. Fu Jinhe is the former Director of INBAR’s East Africa Regional Office, and has spent more than 30 years advising on international bamboo sector development. He is an expert on bamboo cultivation, management, industrial utilisation and international cooperation.

SEEDING THE FUTURE

Kenya's first fully integrated bamboo company could pave the way for future entrepreneurs.

GreenPot Enterprises is set to become the first fully integrated bamboo company in Kenya and East Africa. The company has established bamboo seedling nurseries and plantations, and is in the process of completing its first bamboo manufacturing factory, which will create a range of wood and stick products using home-grown bamboo stock.

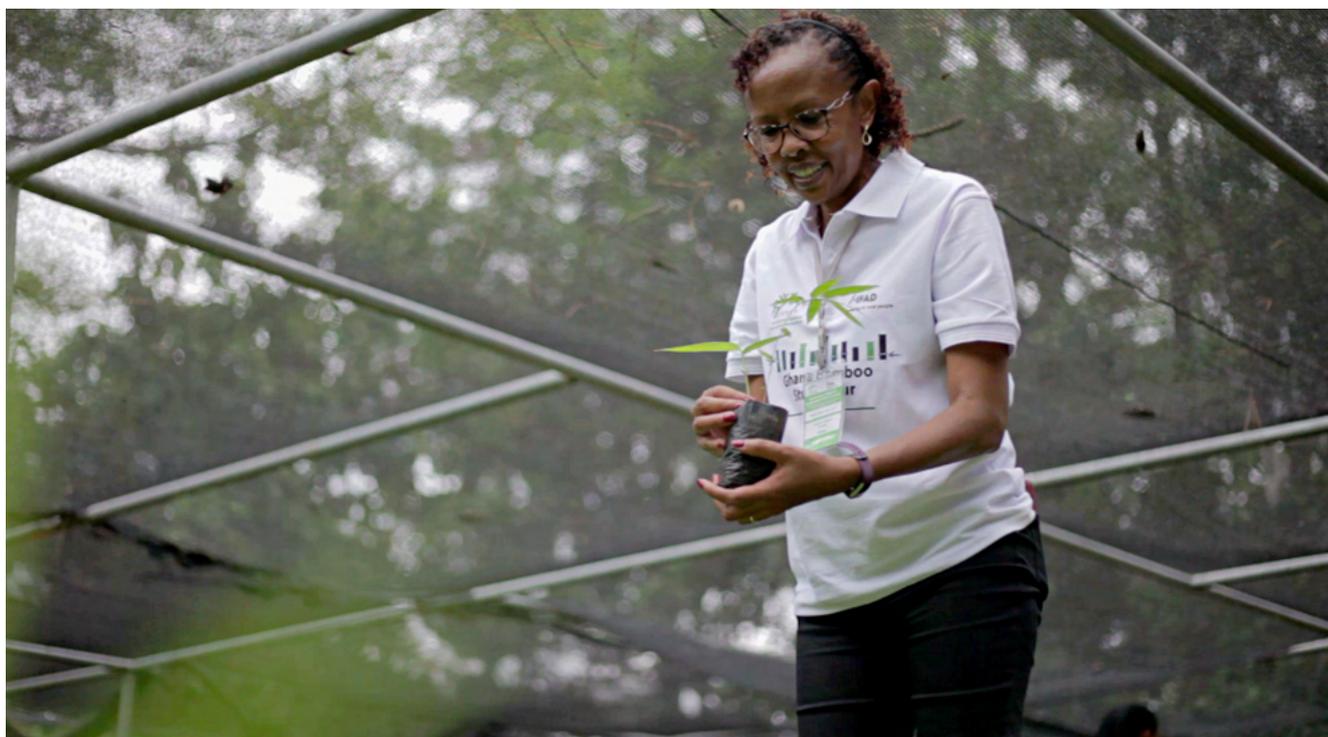
The founders of GreenPot were not always bamboo enthusiasts. When one of the directors, Mr. Mundia Muchiri, first decided to expand into commercial forestry, the tree of choice was blue gum. This was with the aim of supplying an electricity company with utility poles. However, as GreenPot's CEO, Carol Kariuki, remembers it: "When we were introduced to bamboo we knew we had found our stay: the God-sent grass that most know nothing about. Just like that we

became 'the bamboo people'!"

GreenPot now offers a number of services. Firstly, it manages bamboo nurseries, selling seedlings to companies or individuals who need them. Since GreenPot established its first nurseries in 2014, it has sold and planted over one million seedlings. The company's nurseries are among the largest in the country, producing hundreds of thousands of seedlings.

GreenPot also engages local communities in bamboo planting through a vigorous out-grower programme. It encourages farmers to plant bamboo, and gives them a buy-back guarantee for what they harvest.

Finally, GreenPot works with the private sector, government agencies and non-governmental organisations who are involved in landscape restoration, reforestation and water tower rehabilitation efforts. As well as helping plant bamboo for these initiatives, GreenPot's main nursery, at Eor-Ekule near Narok town, has an additional awareness-raising function: it is a



Carol Kariuki, founder of GreenPot Enterprises, demonstrating bamboo planting on a recent INBAR-led training workshop in Kenya. Credit: INBAR.

regular venue for visits by government officials and private individuals seeking to learn more about bamboo's potential for land restoration and forest protection.

Supporting land restoration

In recent years, restoring land and increasing forest cover have become big business in Kenya. The Government has committed to restore 5 million hectares of land as part of the African Forest Landscape Restoration Initiative, a continental effort to bring 100 million hectares of land in Africa under restoration by 2030. The work is much needed: according to a 2016 assessment by the Ministry of Environment and Natural Resources, almost all counties in Kenya are at risk from some form of land degradation, with more than a quarter of total land experiencing "high" degradation.

Bamboo can be a critical tool for helping Kenya achieve its land restoration targets. It grows fast, maturing into a versatile, woody plant that can be harvested within seven years; it also grows back quickly after harvesting, without the need to replant; and its extensive web of root systems stabilise sandy or degraded soils. Importantly, bamboo can also be 'selectively' harvested, meaning that plantation areas never experience destructive clearcutting. With 133,000 hectares of bamboo and a large variety of bamboo species, Kenya is well-placed to use bamboo for land restoration and reforestation.

The GreenPot founders were quick to realise the importance of bamboo for restoring land in Kenya, and now take part in restoration projects across the country. As Kariuki remembers it, the very first project in Narok "opened our eyes to the option of landscape restoration. Due to uncontrolled pastoralism, deforestation and unsustainable farming practices, thousands of acres in Narok land were degraded over the years. Restoring these lands became our calling."

One of GreenPot's first restoration ventures was along the Mara river in 2016. The river basin is a shared ecosystem between Kenya and Tanzania, with the 395-km Mara river as its lifeline, originating from the Mau complex before eventually draining into Lake Victoria. This project opened up a great opportunity to work



Bamboo can be an important tool for restoring degraded land in Kenya. One of GreenPot's bamboo plantations. Credit: GreenPot.

in partnership with farmers in the restoration of landscapes. Targeted at more than 2000 hectares, the project is likely to impact 25,000 farmers, most of whom are tea growers. For each acre of bamboo planted, the farmers will be able to get at least USD 2000 annually. The project also has the potential to employ a minimum of 5000 people across the bamboo value chain.

In 2017, GreenPot started another initiative through a partnership with TATA Magadi, Africa's largest soda ash manufacturer and one of Kenya's leading exporters. The project planted 80 hectares of bamboo beside the springs in Loita hills, which are the source of water for rivers that flow to the Magadi area.

A fully integrated business

GreenPot has set its eye on an ambitious new area: setting up factories to process bamboo products. The first factory is projected to begin manufacturing in mid-2022, and further factories are under development.

The new factory is currently equipped to produce smaller stick-based products, such as toothpicks, stirrers and skewers. In the future, they plan to produce a wider range of items, including bamboo energy products, textiles, and construction materials such as flooring, block boards, veneers and timber.

Although profitability is always in the mind of

any organisation, GreenPot is also using its work to create impact. Aside from providing local farmers with a guaranteed market to plant bamboo, GreenPot currently employs 20 permanent and 35 non-permanent staff, half of whom are women. It also hopes to support cottage bamboo industries to produce handmade products for sale, such as furniture and household products.

Growing pains

GreenPot's growth has not been without hurdles. During its run, GreenPot has experienced a number of setbacks, ranging from storms and droughts, to multiple elections, and the COVID-19 pandemic. These experiences provide Ms. Kariuki with her most important lesson for other bamboo business owners: "Never give up. You will make mistakes. You will have delays. What is most important is to finish the race."

Despite their setbacks, GreenPot has benefited from an increasingly supportive policy environment. While the Government of Kenya has not given direct support to GreenPot's business, it is creating an increasingly beneficial environment for bamboo investment. In the 'Vision 2030'—

Kenya's development roadmap, published in 2008—bamboo commercialisation was highlighted as one of the flagship projects that would help build the economy. This later led to bamboo officially being designated a 'cash crop' in Kenya in 2019. Bamboo planting and use has greatly increased as a result of Kenya's target to achieve 10% forest cover by 2022, and a National Bamboo Strategy is in its final stages of approval.

Their business acumen has also kept GreenPot successful. From the beginning, the company has carefully planned its bamboo venture for maximum commercial success. Through market studies, the founders were able to identify regional challenges that bamboo could address, as well as high-demand products that could be replaced with bamboo, including wood, energy and textiles. Ms. Kariuki encourages fellow African bamboo businesses to "Be investor ready. Get professional help to do this so that you grow your business in a professional manner. This makes it easier."

KUKI KATHOMI NJERU

Ms. Kuki Njeru is Director of Marketing and Outreach at GreenPot.



A smallholder farmer working on planting seedlings as part of a GreenPot workshop. Credit: INBAR.

INTERNODE

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



China's latest five-year forestry sector strategy includes bamboo as a key area for development. Credit: INBAR.

New five-year plan to boost China's bamboo industry

China's National Forestry and Grassland Administration (NFGA) has unveiled new plans to boost the annual output of the country's bamboo sector, as part of its new five-year plan for forestry.

The plan, which was released in English this year, covers the years 2021 to 2025. In the document, NFGA identifies bamboo as one of several key subsectors for development across China's forestry sector. NFGA aims to further support bamboo processing industries, and "cultivate new industries" such as bamboo construction materials.

By 2025, NFGA hopes "the annual output value of the bamboo industry will exceed RMB 500 billion." The Administration will also include bamboo in its work to reduce carbon emissions, by "promot[ing] wood and bamboo as alternative materials" to more emissions-intensive products.

The plan also references bamboo's important role in Sino-African cooperation, saying: "Through the Forum on China-Africa Cooperation, [NFGA] will strengthen exchange and dialogue on ecological development policy and joint research on ecological issues, mainly focusing on the

cultivation and utilisation of bamboo and rattan resources" among other areas.

Source: NFGA.

New research into bamboo ethanol

A team of researchers at Worcester Polytechnic Institute (WPI), the United States of America, has co-developed a process to convert bamboo into an ethanol fuel for powering cars and trucks.

The research, which was published in the journal *Advanced Sustainable Systems*, shows that grinding bamboo in a ball mill, and then treating the pulp with enzymes, is an effective way to create ethanol. Ball milling increases sugar yields, and does not generate any new chemical wastes, unlike other methods used to make biofuels.

The researchers believe bamboo ethanol could be an important part of strategies to lower greenhouse gas emissions by transitioning away from petroleum-based fuels, and could meet as much as 80% of Nigeria's domestic gasoline requirements.

Similar research is underway in Assam state, India, where oil company Numaligarh Refinery Ltd. (NRL) has collaborated with a Finnish company to

manufacture ethanol out of bamboo. Speaking at an online event for the Confederation of Indian Industry, Managing Director of NRL Jyoti Phukan, said: “Bamboo will be procured from the farmers and the plant can be a back-up supplier of oil marketing companies in the northeast for blending motor spirit with ethanol.”

Phukan added that the company aims to use bamboo bioethanol for its own power generation, as a low-carbon and available source of energy.

Source: WPI, 7 February; The New India Express, 22 February.

Creating biochar from fallen bamboo in Puerto Rico

Puerto Rican company Bio-Restorative Ideas is looking to transform waste bamboo into biochar.

According to a profile in *Greenbiz*, broken and fallen bamboo is a considerable hazard following tropical storms and hurricanes in Puerto Rico. Bio-Restorative Ideas aims to collect broken and fallen bamboo and convert it into biochar, a carbon-rich material which can be used to improve soil and could be exported. The company plans to create about 3000 tons of biochar annually, using 7000 tons of waste bamboo.

Source: *Greenbiz*, 15 February.

New encouragement for bamboo farmers in India

India's central government has approved the formation of 40 'farmer producer organisations' (FPOs) in the bamboo sector to encourage smallholder farmers in the states of Assam, Maharashtra, Madhya Pradesh, and Odisha to engage in bamboo cultivation and connect them to the market value chain.

The FPOs were announced by Union Minister for Agriculture and Farmers Welfare, His Excellency Narendra Singh Tomar, in February. The majority of FPOs will be managed by the National Agricultural Cooperative Marketing Federation of India.

The Minister added that in recent years, more work was being done to promote bamboo across India. He confirmed that State Bamboo Missions hold regular exhibitions and awareness campaigns

to promote bamboo products, such as bamboo-based construction materials and structures, and said that the Central Government has requested States and Union Territories to increase the use of bamboo-based construction materials.

Source: *The Hindu Business Online*, 12 February.

New species of bamboo tarantula discovered

A new species of spider, which lives exclusively in bamboo culms, was discovered in Thailand by an environmental vlogger.

'Wilderness Youtuber' JoCho Sippawat was walking through the woods near his home in northwestern Thailand when he saw the tarantula living inside a hollowed-out bamboo stalk. He took photographs and sent them to an arachnologist at Khon Kaen University, who confirmed that the tarantula belongs to a new genus and species.

The tarantula has been named *Taksinus bambus*, in honour of the Thai king Taksin the Great. According to arachnologist Narin Chomphuphuang, who first named the spider: “This species is unique because it is associated with bamboo... Bamboo is important to this tarantula, not only in terms of lifestyle but also because it can only be found in high hill forests in the northern part of Thailand, at an elevation of about 1000 metres. It is not an exaggeration to say that they are now Thailand's rarest tarantulas.”

Source: *The Week*, 26 January.

International bamboo pavilion design competition

The organisers of the International Bamboo Pavilion Design Competition are currently accepting submissions for an innovative pavilion design using bamboo.

The winning design will be made by a team led by bamboo construction expert Jorg Stamm during the 4th World Bamboo Workshop in Thanh Hoa province, Viet Nam, which runs from 16 to 20 September this year. The pavilion will become a permanent structure within the Thanh Tam EcoPark in the province. The winner will also receive a cash prize of USD 1500.

According to *ArchDaily*, the specifications for the pavilion are very general: a pavilion “can be

part structure, part art installation, part communal experience, and part practical solution to the weather.” More information about the competition, and how to register, can be found on World Bamboo Workshop’s website.

Source: World Bamboo Workshop.

New bamboo information centre for entrepreneurs to be built in Malaysia

Malaysia’s Plantation Industries and Commodities Ministry plans to establish a “one-stop information and reference centre for the country’s bamboo industry entrepreneurs”, according to a report in *Sun Daily*.

The centre will cost MYR 2 million [USD 477,000], and be built in Tadam Hill, a bamboo-inspired ecotourism resort. It will function as a local information centre, and provide support for bamboo industry-related promotion, research and development.

According to Plantation Industries and Commodities Minister Datuk Zuraida Kamaruddin, the Centre is part of a wider push to develop the bamboo sector. In an interview with journalists, she said: “At the ministry level, we have allocated MYR 1.2 million [USD 287,000] to encourage more [people] to set up businesses in the bamboo industry, including providing MYR 10,000 [USD 2400] in aid for every hectare of bamboo cultivation, and giving away seeds and seedlings.”

Source: The Sun Daily, 19 February.

Ethiopian Investment Commission: bamboo is a good investment opportunity

The Ethiopian Investment Commission (EIC) recently registered bamboo as one of the priority sectors for investment in the country. Bamboo was included in the EIC’s latest investment guide, which aims to provide information to domestic and foreign investors on the key national financing opportunities.

According to the guide, “Potential investors and entrepreneurs have an array of opportunities to become pioneers of bamboo business in this country.” It listed a number of areas for investing in bamboo, including: bamboo timber substitute industries such as flooring, lumber and panels,

furniture, stick-based products such as mats and incense sticks, pulp and paper, bio-plastics products and bio-energy.

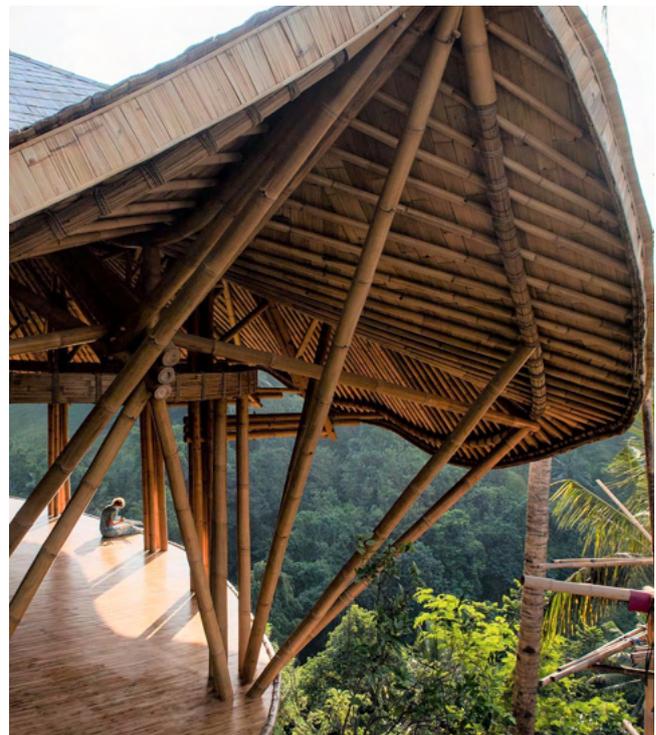
In February, INBAR organised a workshop related to this new guide, to raise investor awareness about bamboo. The workshop brought together investment experts and supervisors from EIC, as well as representatives from the Ethiopian Environment, Forest and Climate Change Commission, the private sector, and small- and medium-sized enterprises, to discuss opportunities and challenges related to investing in the bamboo sector.

Source: EIC.

New bamboo ‘tea house’ opened in Bali

Design and research studio Pablo Luna has designed a secluded tea house made of bamboo in Bali, Indonesia. The tea house (below) has an area of 125 square metres, and its structural components are made entirely of bamboo: the 12-metre-high roof is supported on bamboo pillars; the floor is made from bamboo beams, and the roof is constructed from bamboo shingles.

Source: DesignBoom.



The new open-plan tea house in Bali is designed entirely from bamboo. Credit: Valentina Gebrie.

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



Participants of the International Women's Day workshop in Ecuador visited bamboo garden Finca Pigual. Credit: INBAR.

Promoting bamboo in the Mekong Basin

In January, INBAR completed its five-day workshop on sustainable bamboo sector development in the Mekong region. The workshop aimed to support bamboo product-making activities in the Mekong area, and promote new partnerships for the sector's development.

Bamboo flourishes across the countries of the Mekong region, and has great potential not only as a sustainable source of income, but as a powerful tool for restoring degraded land, protecting river banks and conserving biodiversity. There is already substantial high-level support for bamboo sector development, as shown by the fact that senior policymakers, including Ministers and diplomats, as well as Myanmar-based bamboo organisations, attended the opening ceremony.

In the training programme, top experts from China introduced participants, all of whom are stakeholders in the regional bamboo sector, to a number of processing technologies for bamboo products, including bamboo weaving, laminated board and scrimber, and briquette charcoal. The workshop also facilitated exchange between

trainees from different countries, and building a platform for future cooperation work.

At the end of the workshop, delegates resolved to work together to establish a 'Mekong-Lancang Bamboo and Rattan Regional-level Association', to promote regional cooperation for the development of these sectors.

Bamboo leadership for women in Ecuador

To mark International Women's Day on 8 March, INBAR's Latin America and the Caribbean Office hosted a training workshop on bamboo and leadership for more than 30 indigenous women from across Amazonian Ecuador.

The workshop trainees (pictured), who came from Napo, Pastaza and Morona Santiago provinces, were taught about the uses and benefits of bamboo, and introduced to leadership and empowerment training which can help with decision-making in local governance spaces.

As part of the event's activities, the participants, together with the INBAR team, visited a bamboo garden, where they were introduced to different

species of bamboo and shared experiences about the ancestral uses that bamboo has in their communities. At the end of the two-day workshop, the participants received their attendance certificates from the event organisers.

The workshop was hosted as part of the ongoing Bambuzonía project, which is led by INBAR and financed by the International Fund for Agricultural Development. Bambuzonía aims to raise awareness and promote the use of bamboo as a low-carbon, pro-poor natural resource across rural communities in Colombia, Ecuador and Peru.

New bamboo association in Ethiopia

Established in 2022, the Bamboo Sectoral Association of Ethiopia is the first of its kind in the country, and aims to bring together bamboo businesses to discuss problems, share knowledge and coordinate development.

In March, representatives from bamboo enterprises of various sizes, as well as government agencies and INBAR staff, gathered for the launching ceremony and first meeting of the Association. Mr. Tadesse Tesfaye, the chairman of the Association, thanked everyone for their support, and said that the Bamboo Sectoral Association would help the private sector to keep abreast of the latest knowledge and practices, and give a greater voice to national bamboo businesses.

Attendees at the meeting raised several important points of action, including the need to expand the new Association's membership and visibility, and cement the Association's role in sharing and implementing best practices across the sector.

INBAR supported the Bamboo Sectoral Association of Ethiopia's establishment, providing website development services and furniture for its new office. The Association will work alongside the INBAR-led Dutch-Sino East Africa Bamboo Development Programme, which is supporting the development of the bamboo sectors in Ethiopia, Kenya, and Uganda.

Multi-stakeholder workshops in East Africa

In February, INBAR coorganised workshops in

Ethiopia and Kenya to promote cross-sector cooperation for bamboo development, and discuss issues related to the sector. At the workshops, representatives from small- to medium-sized enterprises and relevant government agencies talked about the challenges facing bamboo sector development, and how to overcome them. Topics included how to collaborate on implementing sectoral strategies and action plans on the ground; how to build financial and technological capacity; and opportunities for supportive policies and cooperation.

Both workshops focused on the specific national context, but ended with similar reflections. In Ethiopia, participants agreed on the need to form a national bamboo platform, where people would regularly meet and discuss issues across the sector. In Kenya, discussions included how to integrate bamboo into the UN programme on reducing emissions from deforestation, REDD+. And in both Ethiopia and Kenya, people stressed the importance of establishing strong public-private partnerships as a way to develop infrastructure and boost the sector.

Both workshops were conducted as part of the ongoing Dutch-Sino-East Africa Bamboo Development Programme, which aims to bolster bamboo for livelihood development, food security, and environmental management across East Africa.

Bamboo value addition, fodder and business training in Ghana

Ghanaians have taken part in a number of workshops organised by the INBAR-led Inter-Africa Bamboo Smallholder Farmers Livelihood Development Programme.

In early 2022, 25 trainees from the rural community of Kpando-Abgenoxoe, Ghana, completed a two-week intensive training course in bamboo weaving, product design and business training. The workshop, which ran from 24 January to 8 February, aimed to equip young people with skills in bamboo value addition and business management.

Over the course of the fortnight, trainees learned hands-on activities including bamboo product design, bamboo strips preservation, weaving techniques and product finishing. Trainees



Bamboo can be a nutritious, year-round source of fodder for livestock. Bamboo fodder is one of the focus areas of the INBAR-led Inter-Africa Smallholder Farmers Livelihood Programme. Credit: INBAR.

also formed a cooperative association. At the end of the course, the new association was gifted with basic start-up tools and seed capital, to facilitate their future business activities.

A number of agriculture extension officers in the Ashanti region also took part in a ‘training of trainers’ workshop on 18 March, about bamboo fodder. The workshop showed 51 officers, all of whom work with communities producing livestock, how to prepare bamboo leaves to be a source of fodder for goats and cows. The trainers are expected to go on and train other farmers in these techniques. Bamboo provides a nutritious, year-round source of fodder (pictured), which can be particularly useful for livestock farmers during dry seasons.

The Inter-Africa Programme, which is financed by the International Fund for Agricultural Development, aims to promote bamboo as a lucrative and sustainable source of livelihood for farming communities in Cameroon, Ethiopia, Ghana and Madagascar.

INBAR to host SIBGUADUA 2022

INBAR will co-host one of the largest regional events on bamboo in Latin America this September.

The International Bamboo and Guadua

Symposium (SIBGUADUA) will take place from 15 to 17 September in Lima, Peru. The symposium, which usually takes place every year, has been suspended since 2020 due to the COVID-19 pandemic. INBAR is organising the event alongside a number of partners, including universities from Colombia and Peru, and Peru’s National Forest and Wild Fauna Service.

The theme of SIGUADUA 2022 is: “We resist and reinvent ourselves! We are bamboos!” The event will invite speakers to share insights on a range of topics: bamboo cultivation; its integration into regional policies; promoting bamboo construction; and the ways in which bamboo can support industrial development.

According to SIBGUADUA’s President, Walter Barreto, the event hopes to attract “students and teachers from different universities in the region, [as well as] businessmen and entrepreneurs related to the bamboo sector.”



Want more nature-based solutions in your inbox?
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www.inbar.int/newsletter



IN REVIEW



Credit: Divine Bamboo.

Synthesis Review of Bamboo Bioenergy Production in Africa

A new Working Paper published by INBAR reviews the potential of bamboo as a source of biomass energy in Africa.

Synthesis Review of Bamboo Bioenergy Production in Africa, which was commissioned by INBAR and supported by the CGIAR Research Program on Forests, Trees and Agroforestry (FTA), provides a comprehensive overview of the different technologies which can be used to generate bioenergy from bamboo in Africa, and how these can be supported and scaled up.

Bamboo is already used as fuel for cooking, heating and electricity generation across several parts of Africa. In particular, it can provide a fast-growing and legally harvestable alternative to timber for the millions of people who still rely on woody biomass for fuel. As the report shows, there are already a number of successful projects and companies responding to this demand, including bamboo charcoal facilities in Ethiopia, Ghana and Uganda (the above picture is from Divine Bamboo, an award-winning bamboo charcoal producer), and a facility for off-grid electricity generation in Madagascar.

Despite these success stories, and a clear market, bamboo bioenergy has yet to become a large industry. The report identifies a number of ways that policymakers can scale up bamboo development. Supporting the growth of the bamboo sector, for example, automatically boosts bamboo bioenergy production, as waste from bamboo products can be repurposed as a source of

fuel for boilers or generators. Exporting bioenergy to areas with ambitious renewable energy targets, such as the European Union, could stimulate the market for biomass energy and biochar. The report also recommends that countries make more use of schemes such as the United Nations' 'REDD+' initiative, which can offer money for planting and managing bamboo.

All of these changes will require significant support. The provision of duty-free incentives for sustainable bioenergy equipment will incentivise sector development, as will the creation of business associations for alternative fuels. Other recommendations, such as the need to coordinate with high-emitting companies to support bamboo bioenergy, will take more time, but will also help create an enabling environment for the sector's growth.

The report ends by calculating how bamboo bioenergy projects could help reduce greenhouse gas emissions. It looks at a number of scenarios—using African bamboo for bioenergy projects, or as a source of durable products, or a combination of the two—on a country-by-country basis, taking into account the different size of countries' bamboo sectors and prospective growth. Some countries could use bamboo to reduce greenhouse gas emissions significantly by 2040, but at a price: the report estimates that the cumulative costs required to develop bamboo bioenergy facilities range between USD 10 and 815 million, to achieve greenhouse gas emission reductions range between 1 million and 60 million tons of CO₂. (More information on these figures is given in 'In Numbers', on page 26.)

Ultimately, the report provides the background and statistics to arm investors and policymakers who are thinking of diversifying into bamboo bioenergy. In particular, the report offers exciting avenues for African countries to capitalise on carbon financing schemes, and to resolve endemic deforestation issues, by using their native bamboo resources.

Ahmad Wafiq, Ahmed Hamed, Esraa Elmaddah, Dina El-Sady, Ashraf Elawwad, Safwa Abuelazayem, AlShimaa Shafey, Omar Sayed. (2021) *Synthesis Review of Bamboo Bioenergy Production in Africa*. INBAR: Beijing.

120 MILLION TONS OF CO₂

...The potential cumulative reduction in CO₂ emissions by 2040, if all the planted bamboo area in Africa is used to make durable bamboo products.

The new INBAR report, *Synthesis Review of Bamboo Bioenergy Production in Africa*, evaluates 20 African countries with existing bamboo resources, and projects a number of different scenarios about how using this bamboo could impact greenhouse gas emissions.

Bamboo products store carbon over the duration of their lifespan. In particular, durable bamboo products such as flooring or furniture can last for several decades, making them an important carbon store or 'sink', which contributes to reducing CO₂ in the atmosphere. This scenario considers the estimated reduction in CO₂ emissions if (i) all these countries' bamboo resources are used to make durable bamboo products, and (ii) all the 'waste' bamboo is repurposed as charcoal. Waste and offcuts are an inevitable part of making bamboo products: in this

scenario, it was assumed that 50% of input raw bamboo is wasted in factories. By burning bamboo residues, for example to heat boilers, companies can replace fossil fuels in the production process.

This scenario is the 'maximum potential' for bamboo in Africa. In reality, it is unlikely that all bamboo in a given country will be used to make industrial products. However, the projection offers a glimpse into the promising potential of bamboo as a source of low-carbon products and biomass energy in Africa.

It also points to an exciting new source of bamboo revenue. If bamboo forestry projects can show they have led to carbon being stored or emissions avoided, they can be certified as contributing to a reduction in greenhouse gas emissions and may be included in carbon markets, making them a potentially lucrative source of income. This is without considering the large, and growing, global market for durable bamboo products.

Read the full report here: www.tinyurl.com/AfricaBambooBioEnergyReview



Bamboo can be used as a source of biomass energy, or to create durable products which 'lock in' carbon for the extent of their lifespan. Credit: INBAR.

EVENTS AND MEETINGS

3 March

Webinar: Bamboo Sectoral Development for a Green Circular Economy in West Africa

INBAR event

21 March-31 August

INBAR International Photo Competition 2022

INBAR event

13 April

Training: Sustainable Management of Bamboo Resources in Latin America and the Caribbean

INBAR event [Spanish only]

18 April

Training: Biodiversity Conservation and Sustainable Development in Tropical Asia

INBAR event

20-22 April

Africa Bamboo and Rattan Congress (ABARC 2022)

Yaoundé, Cameroon

9 May

The 30th European Biomass Conference and Exhibition (EUBCE 2022)

Virtual event

9-20 May

United Nations Convention to Combat Desertification's Conference of the Parties 15

Abidjan, Côte d'Ivoire

2-6 May

XV World Forestry Congress

Seoul, South Korea

7 June

International Conference on Non-conventional Materials and Technologies

Virtual event

Find out about relevant upcoming events at www.inbar.int/event/

YAOUNDÉ, CAMEROON

AFRICA BAMBOO AND RATTAN CONGRESS (ABARC 2022)

www.inbar.int/event/abarc2022

The Africa Bamboo and Rattan Congress (ABARC 2022) is the latest in INBAR's Bamboo and Rattan Congress series. The purpose of ABARC 2022 is to bring together bamboo and rattan stakeholders—including private sector investors, bamboo and rattan entrepreneurs, bamboo carbon forestry experts, resource development and restoration project managers, technicians, specialists and government officials—to share experiences and lessons, and to help make bamboo and rattan the engine of a resilient and sustainable green economy in Africa.

The three-day conference will include focus on:

- The potential of bamboo and rattan to support sustainable socio-economic development across Africa;
- Policies and strategies to support bamboo and rattan sector development;
- Information about bamboo products, value addition and processing technologies;
- Climate change mitigation with bamboo;
- Bamboo bioenergy;
- The importance of standards and certification for bamboo and rattan products and forests;
- How to promote investment in bamboo and rattan.

The conference will be held from 22 to 22 April.





Credit: Don Sniegowski.

Bamboo may not be integral to giraffe nutrition, but it does form part of their varied diet. Aside from acacia leaves and shoots, giraffes in the wild eat a large variety of woody plants and vines, including bamboo. They are not the only ones. Many African animal species, from the bamboo lemurs of Madagascar to the Kenyan mountain bongo and the mountain gorilla, rely on bamboo to various extents as a source of food and habitat. Bamboo can also support animals out of the wild: current INBAR research is finding out more about bamboo's use as a source of nutritious, year-round fodder to support livestock farmers.



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