

20<sup>th</sup>



INBAR  
INTERNATIONAL BAMBOO  
AND RATTAN ORGANISATION

ANNIVERSARY

1997-2017

In Celebration of INBAR's 20<sup>th</sup> Anniversary





*INBAR*

INTERNATIONAL BAMBOO  
AND RATTAN ORGANISATION

# contents

## Messages

H.E. Xi Jinping, <i>President of the People's Republic of China</i>	02
H.E. Mulatu Teshome, <i>President of the Federal Democratic Republic of Ethiopia</i>	03
H.E. Liu Zhenmin, <i>UN Under-Secretary-General for Economic and Social Affairs</i>	04
H.E. Zhang Jianlong, <i>Administrator of the State Forestry Administration of China</i>	05
Mr. José Graziano da Silva, <i>FAO Director-General</i>	06
Mr. Gilbert F. Hounbo, <i>President, International Fund for Agricultural Development</i>	07
Mr. Andrew Bennett, <i>Chair of the INBAR Board of Trustees</i>	08

## Section 1: Introduction

About INBAR	11
-------------	----

## Section 2: The potential of bamboo and rattan

Bamboo and rattan for social development	25
Bamboo and rattan for environmental protection	27
Bamboo and rattan for the green economy	28
Bamboo and rattan eco-culture	30

## Section 3: Main Achievements

Bamboo and rattan for social development	42
<i>South-South knowledge transfer strategies</i>	
<i>South-South and trilateral cooperation</i>	
<i>Response to earthquakes</i>	
<i>Capacity building and training</i>	
Bamboo and rattan for environmental protection	55
<i>Rio Conventions</i>	
<i>Land restoration</i>	
<i>Carbon methodology for bamboo development in China</i>	
<i>Land restoration in China</i>	
<i>Land restoration in India</i>	
<i>Land restoration in Ethiopia</i>	
<i>Bamboo cooperation between Ecuador and Peru</i>	
Bamboo and rattan for the green economy	59
<i>Engineered bahareque construction innovation</i>	
<i>Standardisation</i>	
<i>Rattan bone transplant</i>	
<i>Bamboo winding industry innovation</i>	
<i>Trade and customs</i>	
<i>Bamboo energy</i>	
Bamboo and rattan eco-culture	67
<i>Bamboo music and culture</i>	
<i>Bamboo weavings and sculptures</i>	
<i>Bamboo poems and paintings</i>	

Looking to the future	65
-----------------------	----

Conclusion	85
------------	----

Appendix: INBAR Timeline	86
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In Celebration of INBAR's 20<sup>th</sup> Anniversary

# MESSAGES

## H.E. Xi Jinping

*President of the People's Republic of China*

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On the occasion of the 20th anniversary of the International Network for Bamboo and Rattan (INBAR), I wish to extend, on behalf of the Chinese government and people and in my own name, warm congratulations to INBAR and its Member States.

INBAR is the first intergovernmental organisation established in China. Over the past 20 years since its founding, INBAR has played a positive role in accelerating the development of global bamboo and rattan resources, promoting poverty alleviation in producing areas, boosting trade in bamboo and rattan products and facilitating sustainable development.

The 19th National Congress of the Communists Party of China has underscored China's commitment to achieving harmony between man and nature, advancing socialist ecological conservation, pursuing green development and building a beautiful China. China will continue to support INBAR's endeavours and work with the international community to implement the 2030 Agenda for Sustainable Development and help bring about global ecological progress, a community of a shared future for mankind and a more beautiful world.

## H.E. Mulatu Teshome

*President of the Federal Democratic Republic of Ethiopia*

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I am honoured as the President of the Federal Democratic Republic of Ethiopia to wish INBAR a happy 20th anniversary.

With INBAR's assistance, my country has benefited and my fellow countrymen have learned how to better utilise their existing bamboo supply for achieving many of the social, economic, and environmental objectives of the UN Sustainable Development Goals.

With INBAR's advocacy, we have developed a climate-smart approach that adds value to forestry and agriculture strategies via mitigation and adaptation.

With INBAR's technical expertise, we have developed a bamboo charcoal industry and advanced sustainable bamboo value chains for rural income and livelihoods.

Together with INBAR, we have engaged in a landmark Sustainable Land Management Programme including bamboo for landscape restoration with impressive results to date.

We have proudly been a member of INBAR since 2002 and hosted INBAR's East Africa Regional Office in Addis Ababa since 2009.

Ethiopia has 1 million of Africa's approximately 3.7 million hectares of bamboo, making up about 30% of the total bamboo resources in Africa. As we look forward to the next 20 years, we are excited to see the cooperation opportunities with INBAR's Host State China on bamboo and rattan industry development including promoting the establishment of the China-Africa Bamboo Centre. The Centre will be a key tool for knowledge, skill, and technology transfer both with China and within Africa at large.

We commend INBAR on 20 years of successful South-South cooperation in the Global South and look forward to working with INBAR in continuing to develop Ethiopia's bamboo industry and promote sustainable development.

We also greatly look forward to a results-focused Global Bamboo and Rattan Congress in 2018 in Beijing, when I hope to be present to share Ethiopia's experiences firsthand with the world.

Once more, on behalf of the Government of Ethiopia, I congratulate INBAR on the momentous occasion of its 20th anniversary and wish that INBAR and Ethiopia's collaboration continues to be strengthened.

With my very best wishes to you all, and happy anniversary to INBAR.

## H.E. Liu Zhenmin

*UN Under-Secretary-General for Economic and Social Affairs*

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On the occasion of the 20th Anniversary of the establishment of INBAR, I am delighted to express my sincere congratulations to INBAR and its 43 Member States.

In 1997, when INBAR was founded in Beijing, I worked for the Ministry of Foreign Affairs of China. It would have been a great pleasure to have engaged in the relevant preparations for the birth and growth of INBAR. Without several factors: the passionate sense of mission from China, Canada and the other nine founding Member States; the host country China's all-round support; and proactive participation and cooperation of the Member States, in particular Asia, Africa and Latin America, it would have been impossible for INBAR to achieve such great successes in its membership growth, partnerships and international profile.

I am pleased to learn that INBAR has become an Observer to a number of United Nations bodies and conventions, including the Economic and Social Council, Forum on Forests, Framework Convention on Climate Change, Convention to Combat Desertification and Convention on Biological Diversity. INBAR has played an important role in the United Nations' efforts towards poverty reduction, environmental protection and the development of a green economy. Additionally, with the aim to promote South-South, South-North and South-South-North collaboration across the world, INBAR has provided a unique solution to ensure sustainable livelihoods and ecosystem management for millions of people from the Global South, including INBAR's Members.

With the guidance of the United Nations' 2030 Agenda for Sustainable Development, INBAR's prospects are bright. All Members' governments have conveyed high expectations for INBAR's growth. I believe that INBAR will play a critical role in improving the sustainable development of the bamboo and rattan sector, as well as contributing towards the achievement of the 2030 Agenda for Sustainable Development.

Let's work together to create a better future for all humankind!

## H.E. Zhang Jianlong

*Minister of the State Forestry Administration of China*

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Whenever bamboo and rattan are mentioned, people are always impressed with their enormous modesty, integrity and vitality. As the only multilateral organisation exclusively dedicated to the sustainable development of bamboo and rattan across the world, INBAR has fulfilled the aim of achieving inclusive and green development since its establishment on 6 November 1997. Like the shading green leaves and vines, INBAR's wide branching network has strived to realise the many benefits of bamboo and rattan for sustainable livelihoods and ecosystem conservation.

Over the past two decades, INBAR has carried out a number of projects in Member States from the Global South, which demonstrate how bamboo and rattan can be utilised and innovated, as well as raising awareness of these plants' benefits in order to inform policy-making. As a result, INBAR has played a crucial role in promoting economic, environmental and social development within bamboo and rattan areas. In particular, I was delighted to witness the official launch of the Global Assessment of Bamboo and Rattan (GABAR) at the World Forestry Congress in Durban, South Africa in 2015. GABAR, INBAR's flagship programme, has ultimately provided motivation for South-South Cooperation and the Belt and Road Initiative and has helped achieve the 2030 Agenda for Sustainable Development.

INBAR's proactive and dynamic endeavours on the international stage have made quite an impression on me. As well as this, as the international organisation headquartered in Beijing, China, INBAR has been maintaining friendly and fruitful cooperative partnership with the local governments, enterprises and research institutions of bamboo and rattan areas, which will contribute significantly to bringing China's bamboo and rattan industry to the world.

INBAR has spared no effort in making huge progress on developing bamboo and rattan. Looking to the future, I hope that INBAR will step forward persistently and courageously, just as Mr Zheng Banqiao, a well-known artist in ancient China, described in the poem On Bamboo: "Nodes already sprout, before breaking through rocky soil; when soaring sky high, seeming devoid of all drive." (Bamboo is distinct from most other plants in that it can survive even under extremely hard conditions. The word "devoid" here vaguely suggests that bamboo being hollow inside implies the virtue of *xuxin*, i.e. modesty.) I very much look forward to INBAR's bright future with new accomplishments for the next twenty years.

Finally, I sincerely wish that INBAR will develop steadily in the promotion of inclusive, green and sustainable development using bamboo and rattan; and furthermore that it will make a greater contribution to humanity in the field of eco-civilisation construction.

## Dr. José Graziano da Silva

*Director-General, The Food and Agricultural Organization*

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It is my great pleasure to congratulate INBAR for its 20<sup>th</sup> anniversary. As we all know, bamboo and rattan are important and highly versatile non-timber forest products. They are recognised for their multiple benefits to people and nature. That is why it is so important to have organisations like INBAR leading this effort.

The Food and Agricultural Organization (FAO), in collaboration with country partners and producing agencies, has been working with INBAR at both global and regional levels to develop a better understanding of the extent of these species, their uses and trade.

FAO focuses on food and agriculture by supporting investments in rural livelihoods as well as the land, soil, and water resources which support sustainable agriculture. Against this backdrop, bamboo is well placed to play an important role for countries in their Sustainable Development Goal commitments, particularly those related to poverty, land management, and climate change. We look forward to growing our current partnership with INBAR, in bridging the knowledge gap and testing and developing value chains and technologies for enterprise development and land restoration solutions.

Congratulations again for INBAR's efforts and achievements during the last 20 years. We look forward to continuing our partnership to unlock the potential of bamboo and rattan in our development efforts. We also look forward to contributing to the upcoming Bamboo and Rattan Congress in Beijing in 2018.

Thank you, and best wishes for a successful conference.

## Mr. Gilbert F. Houngbo

*President, International Fund for Agricultural Development*

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The International Fund for Agricultural Development is a UN agency and international financial institution dedicated to rural poverty reduction. It invests in projects that raise the productivity and incomes of rural populations and improve the quality of their lives. IFAD and INBAR have had a strong relationship ever since the latter's founding, and I am pleased to introduce this book, which celebrates 20 years of INBAR's work for rural development around the world.

IFAD was a key financial supporter at INBAR's official launch in 1997. For twenty years, IFAD has worked with INBAR to develop bamboo as a strategic resource that has both economic and environmental benefits. Bamboo can generate new income streams and a better quality of life for rural people, through the creation of small businesses, social enterprises, and women's and community groups. As well as this, bamboo boasts an important range of environmental benefits, including land restoration and biodiversity protection.

As a result of IFAD financial support, INBAR has been able to work with dozens of communities in rural areas of Bolivia, Colombia, Ethiopia, Ghana, India, Madagascar, Mozambique, the Philippines and Tanzania. These 'action research' and development efforts have tested models for local livelihood improvement, and created some 40 to 50 rural collectives and enterprises and an estimated 250,000 jobs. This is a powerful contribution to rural development across the world.

As a network of 43 Member States, spreading knowledge and lessons learned is an important part of INBAR's work. Together with the European Union, IFAD is supporting an INBAR-led project on 'South-South Knowledge Transfer Strategies'. This initiative aims to scale up financing pro-poor bamboo livelihoods, income generation and employment creation, and environmental management in Africa. A new agreement for an intra-African South-South Cooperation project, and cooperation activities in Latin America and India, are planned.

IFAD is proud to have been a supporter of investments in bamboo development that have provided an invaluable example of innovative ways to bring new income sources to rural communities. These are approaches that can work for more than 50 countries across the world's tropical and sub-tropical belts where bamboo can be grown. Such approaches are in line with the Sustainable Development Goals' aim of improving rural livelihoods to further the eradication of poverty. On INBAR's 20th anniversary, we both look back at past achievements and ahead toward further contributions by bamboo development to improve the lives of rural people.

## Mr. Andrew Bennett

*Chair of the INBAR Board of Trustees*

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Twenty years ago, under the joint efforts of nine founding countries, INBAR was officially established with support from the leaders of the Chinese government. On 6 November this year, we held the flag-raising ceremony for Brazil's accession to INBAR at the headquarters – marking the fact that INBAR has grown into an international family, with 43 Members across Asia, Africa and Latin America.

Over the past two decades, INBAR has grown from a research and development project in bamboo and rattan, into an organisation implementing bamboo and rattan demonstration projects with the aims of poverty alleviation and environmental protection, as well as an important international partner and development platform to promote bamboo and rattan for South-South cooperation, South-North dialogue, and Belt and Road construction.

Over two decades, great efforts have been made by INBAR to promote the well-being of people in bamboo and rattan producing areas, as well as bamboo and rattan for green development in Africa, Asia and Latin America. Through activities carried out in China and across the world, INBAR has promoted the development of a global bamboo and rattan industry. INBAR plays a key role in connecting developing countries and developed countries to jointly promote prosperity, and bring together developing countries for information exchange, common progress, and green development.

I would like to take this opportunity to express my gratitude to INBAR Member States that have been actively involved in the development of the bamboo and rattan industry for more than 20 years; to the host country, the Chinese government and leaders for their cordial care; and to all partners and friends from China and abroad for your consistent support. At the same time, I would like to extend my appreciation to the Board of Trustees and the Secretariat of INBAR, both former and existing colleagues - without their efforts, INBAR would not be where it is today. I would also like to express my admiration for the immense efforts, personal dedication and contribution of my Co-Chair - Professor Madame Jiang Zehui, without whom INBAR would not be the international organisation it is today.

Bamboo and rattan are perhaps some of the most practical evergreen plants in the world. Current global issues about resource use, the environment and green sustainable development have created unprecedented opportunities and challenges for the global bamboo and rattan industry. In September 2015, the United Nations' Summit on Sustainable Development formally adopted the 2030 Agenda for Sustainable Development, and six out of the 17 Sustainable Development Goals are closely linked to bamboo and rattan. In April 2017, the United Nations Strategic Plan for Forests, the first global forest development strategy in the name of the United Nations, set the direction for world forestry development.

Keeping in view bamboo and rattan in the present context, the bamboo and rattan industry is fully consistent with the concept of green development: circular, low-carbon and sustainable. It provides a sustainable production and consumption pattern for human development. The ever-changing scientific and technological innovation in the field of bamboo and rattan has injected a strong impetus to the sustainable development of the bamboo and rattan industry, and will make a significant contribution to the achievement of UN Sustainable Development Goals and the sustainable development of global forests.

We have come a long way in twenty years, but there is still much to do. Our network of 43 Member States is getting stronger and we hope to attract more producing and consuming countries to join us. We are working more and more through South-South Cooperation and will continue to do so. We will engage with international partners from the UN community, other international organisations, donor agencies and the private sector.

I am delighted to congratulate INBAR for its 20 years of development and success. Let us work together to create a glorious future of INBAR and bamboo and rattan sector!



## Section 1: Introduction



Bamboo and rattan have been described as 'vegetal steel', 'green gold' and 'the wise man's timber'. For 20 years, The International Bamboo and Rattan Organisation (INBAR) has been spreading the word about bamboo and rattan as strategic resources to fight many pressing challenges.

Climate change, land degradation, rural poverty and unsustainable resource use are harming some of the most vulnerable people across the world. Bamboo and rattan can be truly 'local' solutions to these global challenges. They grow close to some of the poorest populations in the world, they are fast-growing, do not require replanting and have over 10,000 estimated uses. With 1642 identified species of bamboo and 631 species of rattan, each with very different properties, the potential uses for these plants are astonishing.

Sadly, this potential remains little realised. Since its birth as a 'network' of researchers back in the 1980s, INBAR has endeavoured to promote the development of bamboo and rattan in an environmentally sustainable way. This involves research, political advocacy, country support, and demonstrating innovative uses for these plants.

Our work has had a huge impact. Since its formal establishment in 1997, INBAR has grown from nine to 43 Member States, almost all of which are in the Global South. We have trained tens of thousands of people. We have also implemented projects in countries across the world in partnership with world leading organisations and governments. Finally, we have been involved in some of the most important research to date on bamboo and rattan's properties and possibilities. We look forward to continuing this work over the next 20 years.

This book aims to give a flavour for INBAR's work, and to inspire people with the beauty and possibilities of bamboo and rattan. The first section discusses INBAR's history. In the second section, we outline the potential of bamboo and rattan. The third section showcases INBAR's main achievements.

We hope you enjoy this book and continue to discover the potential of bamboo and rattan.

# About INBAR

INBAR is the multilateral development organisation of 43 Member States for the promotion of bamboo and rattan. INBAR supports its Members to include bamboo and rattan in their sustainable development action plans and green economy strategies. It promotes innovative ways of using bamboo and rattan to improve rural livelihoods, protect the environment, address climate change and issues of international bamboo and rattan trade and standards. INBAR connects a global network of partners from government, private and non-governmental sectors to promote a global agenda for sustainable development using bamboo and rattan.



INBAR's work has been international from the very beginning. In the 1980s, Canada's International Development Research Centre (IDRC) set up an informal network of bamboo and rattan researchers. Over the years, researchers from China, India, Canada and other countries met to swap ideas and develop international knowledge about bamboo innovations. From its early days, INBAR actively undertook information, training and technology transfer activities to promote the utilisation of its research results. INBAR initiated the production of a series of technical publications, and the network's newsletter was redesigned and expanded to disseminate information on INBAR activities and to provide network members a forum for the exchange of ideas.

By 1994, INBAR was becoming a leading voice among all interested sectors, articulating solutions to development and environmental obstacles using bamboo and rattan, but there were several impediments to the realisation of INBAR's full potential. Internal and independent evaluations of INBAR suggested that greater efficiency could be achieved through an expansion of the network: geographically, by extending the network's range of activities to Africa and Latin America, and topically, by deepening and broadening the network's commitment to strategic, development-led research on bamboo and rattan.



















As such, INBAR's Research Advisory Group endorsed the transformation of INBAR into an independent institution with a global mandate in 1994, and INBAR was 'born' in 1997. Its launch was supported by IDRC, the International Fund for Agricultural Development (IFAD), the Directorate General for International Cooperation (part of the Ministry of Foreign Affairs of the Netherlands) and the Government of the People's Republic of China. Representatives of the nine founding Members - Bangladesh, Canada, China, Indonesia, Myanmar, Nepal, the Philippines, Peru, and Tanzania - signed the treaty, and six countries, Italy, Japan, Korea, the Netherlands, Pakistan and Thailand, sent observers to the ceremony.

Beijing was an obvious choice for INBAR's Headquarters. China had been an important participant in network activities almost from the very beginning, and had housed the first Bamboo Information Centre. Chinese forestry scientists, particularly from the Chinese Academy of Forestry, had also played a major role in the network's exchange programmes. Towards the end of January 1997, the State Council, China's cabinet, presided over by the Prime Minister, formally approved the establishment of INBAR in China. It would be the first international organisation to have its headquarters in the country.

A lot has changed over the past 20 years. From the initial nine founding Member States, INBAR has since grown into a body comprising 43 Member States. By November 2017, INBAR consisted of 18 Member States in Africa, 12 in Asia, 11 in the Americas and one in Oceania. Two countries are also 'Observers' of INBAR: Timor-Leste. INBAR's membership is open to all sovereign states under the UN system and to regional organisations of sovereign states. Prospective Member States or organisations must agree to the INBAR Treaty before initiating the membership process.



### Africa

- |  |  |  |  |  |   |
|--|--|--|--|--|---|
|  Benin      |  Burundi    |  Cameroon |  Ethiopia |  Ghana        |  Kenya   |
|  Madagascar |  Mozambique |  Nigeria  |  Rwanda   |  Sierra Leone |  Senegal |
|  Tanzania   |  Togo       |  Uganda   |  Liberia  |  Malawi       |  Eritrea |

### Asia

- |  |  |   |   |   |  |
|--|--|---|---|---|--|
|  Bangladesh |  Bhutan |  China       |  India     |  Indonesia |  Malaysia |
|  Myanmar    |  Nepal  |  Philippines |  Sri Lanka |  Vietnam   |  Thailand |



### America

- |   |  |   |  |   |   |
|---|--|---|--|---|---|
|  Argentina |  Canada |  Chile |  Colombia |  Cuba      |  Ecuador |
|  Jamaica   |  Panama |  Peru  |  Suriname |  Venezuela |  Brazil  |

### Oceania

- |   |
|---|
|  Tonga |
|---|

## **INBAR is built on principles of knowledge sharing and partnership, and its organisational structure reflects these ideals.**

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INBAR's Council is made up of representatives from all Member States, and meets once every 2 years to make policy and strategic decisions. The Board of Trustees, meanwhile, comprises representatives from bamboo and rattan producing countries, as well as people with particular scientific and administrative expertise. The Board meets every year and is responsible for overseeing the programme of work, the budget and key appointments.

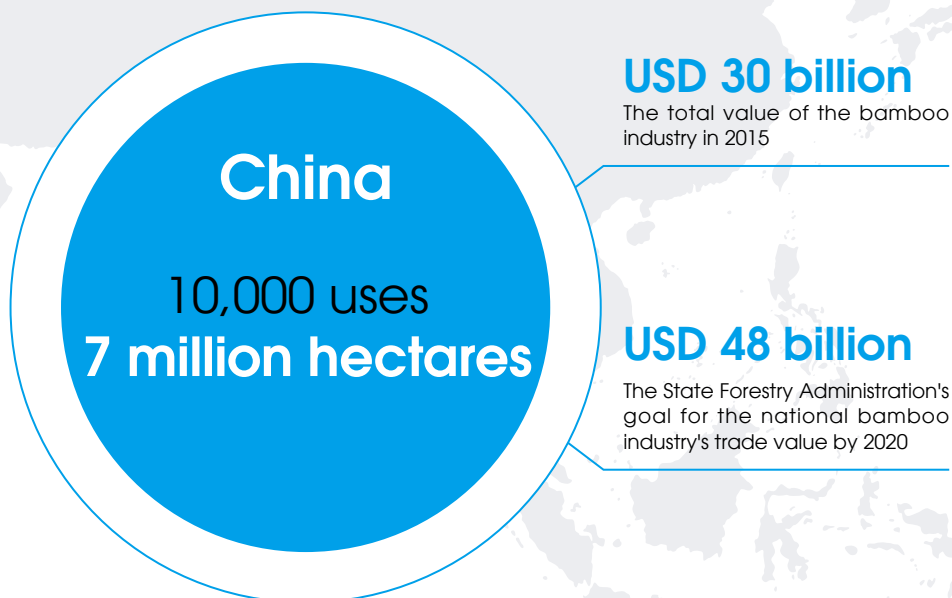
INBAR's work is supported by its Secretariat, based in Beijing, as well as its Regional Offices in South Asia (India), East Africa (Ethiopia), West Africa (Ghana), and Latin America (Ecuador). Their work is discussed in a little more detail in the following pages.





## China

China is the host country of INBAR. China has over **5000** years' history of using bamboo. The first writing in China was done on bamboo slips and bamboo has always formed part of life for many local communities. Local farmers sleep on bamboo beds in bamboo houses, eat bamboo shoots with bamboo chopsticks, work with bamboo tools and sell bamboo products.



At present, there are nearly **7** million hectares of bamboo forests in China where bamboo lends itself to the production of over **10,000** different products. Bamboo is also the home of the iconic Giant Panda, and it has been used extensively in the Grain for Green land restoration programme.

Bamboo is an important resource for economic prosperity. INBAR has identified multiple districts where the Chinese government has prioritised bamboo as a vehicle for local economic development. Ranking top across the world, China's import and export trade volume of bamboo and rattan is worth around USD 2 billion. Domestically, bamboo has provided an excellent opportunity for rural communities to participate in a growing global sector worth an annual market value of over USD 30 billion.

During the past 20 years, collaborating with the Chinese Ministry of Commerce, the Ministry of Science and Technology and the State Forestry Administration, INBAR and its sister organisation the International Centre for Bamboo and Rattan (ICBR) have successfully organised multilateral and bilateral training courses for Member States, which have trained government officials and technical personnel.

As the Host Country government, China has also donated tens of millions of US dollars as financial contributions for the operations of the organisation, provided the office space for INBAR Headquarters free of charge and granted INBAR diplomatic status in China. This has been invaluable in our relations with other Member States, as INBAR has established a network of focal points – Ministers who are responsible for in each Embassy of a Member State in Beijing - and these focal points meet three times per year in a Council Working Group.

# Regional Offices

One of INBAR's advantages as an international organisation is its ability to link partners across national and regional boundaries. Key to this are our Regional Offices – in Ecuador (Latin America and the Caribbean), Ethiopia (East Africa), Ghana (West Africa) and India (South Asia). Our Regional Offices coordinate and link with national and regional partners at all levels, and act as the first point of contact. Each region is different so our work is often tailored to address the specific conditions in each region.



*South Asia Regional Office*

## New Delhi, India

Before its establishment as a formal organisation, INBAR was an IDRC-sponsored project with a project office located in New Delhi, India. Since 1997, when the Headquarters were established in Beijing, this office has become the Regional Office for South Asia. In 2007, the government of India granted the South Asia Regional Office diplomatic status.

South Asia has plentiful bamboo and rattan resources with cultural significance in the region. INBAR's work focuses mainly on improving the existing resource base, helping develop and share the many new bamboo and rattan technologies and techniques invented in South Asia, and developing effective small and medium sized 'model' businesses. These endeavours have shown real improvements in the lives of those who work with them – especially women – and are ready for replication and adaptation throughout the region and potentially further afield. In early 2015, the South Asia Regional Office produced the South Asia Strategy for 2016-2020 based on regional experience and knowledge, which has been widely endorsed by INBAR's Member States in South Asia.



*Latin America and the Caribbean Regional Office*

## Quito, Ecuador

Supported by the European Commission, INBAR started its work in the Latin American and Caribbean region in 2001. With the support of Ecuador's government, this Regional Office was granted diplomatic status in the same year.

The cultures that grew up with indigenous *Guadua* bamboo are synonymous with Latin America and a vital starting point for INBAR's work there. Rattan does not grow naturally in the region, and the bamboo resource base is less well developed than in Asia, so much of INBAR's earlier work concerns improving bamboo management to supply quality poles to processors. Now, as well as running trial demonstration projects to show how bamboo can be used for poverty alleviation, post-disaster reconstruction and commercial purposes, we also work to develop new policies and regulations for including bamboo in national laws and strategies.

One of the office's greatest successes is the successful promotion of national bamboo building codes adopted in Ecuador, Peru and Colombia, and its efforts to keep Latin America's bamboo community connected.



*West Africa Regional Office*

## Kumasi, Ghana

The West Africa Regional Office of INBAR was formally established in November 2002. The office develops and manages projects in the region, and liaises with stakeholders ranging from member governments to students, business people and affiliates, as well as coordinating the provision of INBAR's services to the various segments of society.

The office works with communities to improve rural incomes, strengthen social unity and develop longterm solutions to poverty. INBAR also develops projects and partnerships that use bamboo and rattan to conserve biodiversity, protect and repair landscapes and fight climate change.

The West Africa Regional Office has played a significant role in shaping and developing the bamboo and rattan sectors in Ghana and other Member States in West Africa. Their initiatives include: facilitating the establishment of Ghana's Bamboo and Rattan Development Programme as well as a Rattan Common Facility Training Centre; helping to develop sector roadmaps in Liberia and Nigeria; supporting national policy development for bamboo and rattan; leading multiple bamboo projects in Cameroon; and introducing and piloting bamboo charcoal and briquette production, bamboo agroforestry and bamboo fodder initiatives. Finally, the office has collaborated with a number of international partners to increase national institutional capacity to collect and monitor rattan resources in Ghana, Nigeria, Cameroon, and Togo.



*East Africa Regional Office*

## Addis Ababa, Ethiopia

Following an increase in the number of African Member States during the 2000s, it became necessary to set up another Regional Office in Africa. On the back of a European Commission-supported bamboo charcoal project implemented in Ethiopia in 2009, the Government of Ethiopia welcomed INBAR's proposal to set up the Regional Office in Ethiopia, and a Memorandum of Understanding was signed in the same year.

As with West Africa, bamboo had not received much attention from development agencies or governments in East Africa. INBAR has worked with local partners to demonstrate the suitability of both indigenous and introduced bamboos to help people earn a living and escape poverty. The East Africa Bamboo Project, which the Office ran through INBAR's partner United Nations Industrial Development Organization (UNIDO) and with the financial support from the Common Fund for Commodities, contributed to a reduction of poverty in rural areas, whilst preventing further deforestation. Workshops held by INBAR in East Africa raised government agencies' awareness of the potential of bamboos, attracted great support from governments for bamboo and rattan projects and contributed to the formulation of policies favourable for the bamboo sector.

INBAR has implemented 15 bamboo projects in East Africa since 2005, funded by the Chinese government, European Union, World Bank, IFAD, Dutch government, IDRC and more. It has also hosted some important conferences, including the African Bamboo Workshop in Addis Ababa, 2013, and the Bamboo Summit, held in 2014 in Addis Ababa, which featured a speech from the Ethiopian President.





# Partnerships

Over 20 years, INBAR has established in-depth and lasting relationships with many international organisations, national development agencies, country groups, multilateral development banks and business partners. These partnerships help support INBAR's development. In particular we have developed strong relationships with several UN agencies, especially the Food and Agriculture Organization, United Nations Environment Programme, United Nations Development Programme, United Nations Forum on Forests and United Nations Industrial Development Organization. INBAR was a founding member of the Association of the International Research and Development Centers for Agriculture, 'AIRCA', and we work closely with many CGIAR centres, especially The International Centre for Research in Agroforestry and the Center for International Forestry Research.

As well as this, INBAR enjoys strong partnerships with the Chinese Government and China's universities, research institutes, enterprises and local governments. These include: the State Forestry Administration; Ministry of Finance; Ministry of Science and Technology; Ministry of Commerce; Beijing's Municipal Government; Fujian Yong'an City; Chinese Academy of Sciences; and Zhejiang Agriculture and Forestry University.

To help INBAR fulfil its goal and mission, the Government of China established ICBR, which focuses on bamboo and rattan research and training. In 2005, INBAR and ICBR signed a memorandum of understanding for their long-term partnership.



Established in July 2000, the International Centre for Bamboo and Rattan (ICBR) is a non-profit research institution affiliated with the State Forestry Administration (SFA). Through building up an international platform for scientific research on bamboo and rattan, ICBR aims to provide direct services to INBAR. In particular, ICBR supports and cooperates with INBAR to better fulfil its mission and properly implement the INBAR Establishment Agreement, and promote the sustainable development of the bamboo and rattan sector across the globe.

**The main duties and tasks of ICBR are as follows:**

To establish a national key open laboratory on biotechnology, properties, processing and utilisation of bamboo and rattan as well as a global gene pool of bamboo and rattan;

To implement international cooperation and exchange programmes on science and technology in the field of conservation, cultivation, property classification, development and utilisation of bamboo and rattan;

To set up an open international scientific research system for bamboo and rattan;

To develop and help implement the scientific research strategies on bamboo and rattan and promote the comprehensive utilisation technology of these resources for INBAR Member States; and

To undertake international training courses, academic exchanges as well as communications and outreach on bamboo and rattan.

Over the past 20 years, INBAR and ICBR have enjoyed a long and fruitful partnership, especially in the implementation of a comprehensive programme of training and capacity building for representatives from INBAR Member States and other countries around the world.

# Knowledge sharing support

INBAR produces hundreds of proceedings, technical reports, working papers, policy briefs and other reports, originally housed in our Beijing-based bamboo library and now on our website. These are freely accessible across the world. INBAR is proud to include some core texts in its collection, including the recently published World Atlas of Bamboos and Rattans and World Checklist of Bamboos and Rattans, produced by the Royal Botanic Gardens at Kew, England, in 2016. These texts together provide the most comprehensive taxonomic study of bamboo and rattan species published in recent years, and make an important contribution towards our understanding of how to use these strategic plants across the world for a range of socio-economic and environmental challenges.

As well as the above resources, INBAR is active on social media in three languages: English, Chinese and Spanish. In 2015, INBAR also created a China-language communications unit to deal with the media and press in our Host country.





## Section 2 : The potential of bamboo and rattan



# Bamboo and rattan for social development

Due to their unique characteristics, bamboo and rattan can help poor rural and urban producers lift themselves out of poverty and thrive.

With an estimated annual trade value of USD 60 billion, bamboo and rattan have the potential to create many new jobs across the value chain. In China, the bamboo sector alone employs some 8 million people.

Bamboo and rattan's huge trade potential is due to these plants' unique properties. Together, bamboo and rattan have over 10,000 estimated uses. Bamboo's lightweight and linear-splitting nature means it is comparatively easier to process than timber, with bamboo poles being much lighter than their timber equivalent. This difference in weight means bamboo is more accessible to all persons engaging in initial processing and farming, particularly women. Bamboo can be a potential replacement for timber in a large number of products.

Rattan is also a very important livelihood source for rural communities, particularly in South-East Asia, where it comprises a significant proportion of many rural communities' incomes. Bamboo and rattan's multiple array of high-value end-uses - such as laminated plywood, mats and woven rattan products, flat-pack furniture and activated charcoal - make these plants very promising and viable potential income streams.

As shown in the 'Achievements' section of this book, INBAR's work in countries across the world has demonstrated how bamboo and rattan can generate new income streams and a better quality of life for rural people, through the creation of small businesses, social enterprises, and women's and community groups. Funding from IFAD alone has resulted in the creation of an estimated 50 enterprises and cooperatives, and generated around 250,000 jobs. While these are small amounts compared to what is needed to achieve the UN's Sustainable Development Goals, they do show the innovative ways that bamboo and rattan can generate new income in rural communities across the tropical and subtropical South.



An aerial photograph of a village nestled in a valley. The foreground and middle ground are dominated by dense, vibrant green bamboo and rattan forests. The village, with its white-walled buildings and red-tiled roofs, is situated in the center of the valley. In the background, rolling green hills and mountains stretch towards the horizon under a bright, slightly overcast sky. The overall scene is one of a lush, mountainous landscape.

# **Bamboo and rattan for environmental protection**



INBAR is a Permanent Observer to the three Rio conventions: the UN Convention to Combat Desertification (UNCCD), the UN Framework Convention for Climate Change (UNFCCC), and the UN Convention on Biological Diversity (UNCBD). The scope of these three Conventions shows the vast potential of bamboo and rattan as tools for biodiversity protection, land restoration, and climate change action.

Bamboo is an extremely strategic resource for countries to mitigate and adapt to the effects of climate change. Although bamboos are woody grasses and not trees, bamboo can store carbon at a very high rate, making it a very competitive option for carbon sequestration. Because bamboo can be transformed into a range of durable products, the carbon is locked up for many years to come, which is particularly important when calculating the size of the carbon sink.

Because of its fast-growing nature and the fact it does not require replanting, bamboo also serves as a renewable alternative to traditional forms of biomass used in cooking. Bamboo can be used directly as fuelwood, modified into charcoal for cooking and heating, or converted into gas for thermal and electrical energy generation. Recent developments in India even focus on distilling bamboo bioethanol and bamboo biodiesel.

As well as this, bamboo and rattan can help rural communities and individuals adapt to climate change in a number of ways. Bamboo is a key material in resilient, earthquake-proof housing, and bamboo and rattan can provide important sources of income diversification. Moreover, the shoots of bamboo and rattan provide a healthy food supplement, and should form a critical component of climate-smart agriculture in the Global South.

As well as climate change, bamboo plays an important role in land and water management. Bamboos thrive on problem soils and steep slopes that are unsuitable for other crops. They can form effective windbreaks, and the extensive root system helps to regulate water flows and binds soil to reduce erosion. Our 'Achievements' section includes several examples of INBAR's work with bamboo for land degradation.

Finally, bamboo and rattan play an important role in biodiversity conservation in the regions in which they grow, with many mammal, insect and fungal species dependent on bamboo and rattan for their survival. They are especially crucial for protecting some of the world's most iconic and endangered mammals, including: the Giant Panda in China and the Red Panda in the lower Himal Region; the Gorilla in Uganda, Rwanda and DRC; the Bale Monkey in Ethiopia; and the Golden Lemur in Madagascar. With over 1600 species of bamboo and 600 species of rattan, these plants are an essential part of biodiverse landscapes across the tropics and subtropics.

# Bamboo and rattan for the green economy



The concept of a 'green economy' is broad, but includes the idea of more circular, equitable and environmentally sustainable methods of production and consumption. Bamboo and rattan tick many of the green economy boxes, offering a renewable resource that can help to restore degraded landscapes, provide a sustainable source of energy, combat climate change, and create new income streams for rural and peri-urban economies.

Bamboo's high natural strength has earned it the name 'vegetal steel' among architects around the world. Many an engineer has used bamboo in place of steel for reinforcing concrete. As well as being strong, bamboos are flexible and light. This makes them an excellent construction material for earthquake resistant buildings. In recent years, exciting new technologies have developed. These mean that bamboo can be used to create everything from wind turbine blades to storm drainage pipes.

These properties are all important, because it means bamboo can act as a low-carbon, quickly replenishing replacement for traditional materials such as cement, plastic and hardwoods. Research undertaken by INBAR and the Delft University of Technology has shown that bamboo products can have a low or even negative carbon lifecycle, compared to traditional product materials. As such, they adhere to the commitment to sustainable production and consumption patterns as defined in the UN's Sustainable Development Goal number 12.

Bamboo's ability to replace materials is particularly important in the context of deforestation. As a replacement for timber products and as a source of biofuel, bamboo reduces pressure on scarce forest resources, which are often harvested unsustainably and illegally. By using bamboo, rural communities cannot only help prevent deforestation, but also earn a living from these bamboo products.



## Bamboo and rattan eco-culture

The culture of bamboo and rattan is of great importance to INBAR. Bamboo has had a significant impact on sustainable development. Additionally, there is a lot of potential for bamboo and rattan to make a unique contribution to sustainability in the future. Wherever bamboo and rattan are found, they are associated with people's culture and heritage. Bamboo and rattan are a part of many people's daily lives. Chinese bamboo slips and bamboo paper have recorded human history and culture for thousands of years. A variety of bamboo musical instruments from Indonesia, Ethiopia, Brazil and China are still played today. As the unique ecological and cultural values of bamboo and rattan have become better known, areas where bamboo is abundant have become eco-tourist destinations for leisure.

China, INBAR's Host Country, has a long history of bamboo culture. Over the past 20 years, INBAR has actively supported and participated in cultural activities related to bamboo in China. Since 2000, eight Chinese Bamboo Cultural Festivals have been co-organised with the State Forestry Administration (SFA) and the host provincial and municipal governments, which were held respectively in: Anji, Zhejiang; Yibin, Sichuan; Xian'ning, Hubei; Wuyishan, Fujian; Yichun, Jiangxi; Huangshan, Anhui; and Meishan, Sichuan. During these festivals, INBAR organised a number of International Bamboo and Rattan Seminars under different themes.

In addition, INBAR hosted a very popular Pavilion at the Shanghai World Expo in 2010 and at the Xi'an and Qingdao International Horticultural Expo in 2011 and 2014, at which the INBAR Garden was established to highlight green and sustainable living through bamboo and rattan.

Finally, INBAR's publication of two books to celebrate its 15th Anniversary - *The Charm of Bamboo: 100 Selected Ancient Chinese Poems on Bamboo* and *Bamboo Musical Instruments World* - showcase some of the highlights of bamboo culture.

Chinese leadership has adopted eco-civilisation as a means to promote sustainable development. INBAR has participated in and spoken at recent annual meetings of the Eco Forum Global in Guiyang, Guizhou where we have explained the role that bamboo plays in sustainable development.

Outside of China, INBAR has participated in National and Regional bamboo conferences in Mexico, Colombia, India, the Philippines, Ethiopia and Cameroon. In all cases we have discovered how bamboo plays a critical role in the life and culture of local people, and all our work has focused on the sustainable livelihoods of these communities.

Overall, INBAR's activities demonstrate the role that colourful bamboo culture plays in enriching bamboo's cultural significance, and injects cultural dynamics into the sustainable development of bamboo industry.





## Section 3: Main Achievements





/ Aurora Photos



## Argentina

Bamboo bike in Buenos Aires.



/ KarimPhoto



## Bangladesh

A weaver working on a scarf on his bamboo loom, South Rupshi, Bangladesh.



/ Peeter Viisimaa



## Benin

A long culm of bamboo being transported.



/ INBAR



## Bhutan

A community house, jointly designed by INBAR and Dzongkhag engineers, was constructed by SFED in Tingtibi, Zhemgang District.



/ Guilherme Korto



## Brazil

Harvesting bamboo for fibres to use in the energy sector.



/ Hemis



## Burundi

Burundi children in front of a bamboo fence.



/ INBAR



## Cameroon

Trainees in Cameroon learn about bamboo construction.



/ All Canada Photos



**Canada**

Bamboo bee hive.



/ Elna



## Chile

Colourful flutes.

# Bamboo and rattan for social development

## South-South knowledge transfer strategies in India, Tanzania, Ethiopia, and Madagascar

The 'South-South Knowledge Transfer Strategies for Scaling up Pro-poor Bamboo Livelihoods, Income Generation and Employment Creation, and Environmental Management in Africa' project works across three countries in East and Southern Africa. Covering Ethiopia, Madagascar and Tanzania, with India acting as a South-South technical partner, the aim is to develop livelihood and income generation options that also reduce deforestation and soil erosion, and contribute to environmental sustainability.

The initiative is co-financed by the European Union and IFAD, and builds on the investments made and opportunities demonstrated through preceding IFAD grants. To date, the project has produced over 430,000 bamboo plants, planted almost 200 hectares of bamboo and trained several hundred people in sustainable bamboo management, value addition and bamboo charcoal production.

## South-South and trilateral cooperation

At present, East Africa's bamboo sector remains largely untapped, despite the region having sub-Saharan Africa's largest natural bamboo forests and accounting for around 3-4% of the world's total known bamboo coverage.

In response to this challenge, in October 2016 INBAR began work on the Dutch-Sino-East Africa Bamboo Development Programme. The programme aims to adopt lessons learned from the hugely successful transformation of Asia and Europe's bamboo market and apply them to East Africa. This should enable Ethiopia, Kenya and Uganda to fully participate in and benefit from the new bamboo economy of the twenty-first century. Specifically, the programme contributes towards developing pro-poor industrial value chains for reducing poverty and securing green economic growth, increasing international trade and investment, restoring degraded lands and contributing to climate change mitigation.

INBAR has developed this 3-year programme through national consultations with Ethiopia, Kenya and Uganda and planning with its Chinese and Dutch partners: a true example of 'triangular cooperation' in action.

## Response to earthquakes

On May 12, 2008, a devastating earthquake struck Sichuan Province in China, claiming tens of thousands of lives and destroying the livelihoods of more than 1.15 million villagers dependent on income from agriculture. Funded by the EU, the 'Sustainable Revival of Livelihoods in Post-disaster Sichuan' was established. Relying on local abundant bamboo resources and bamboo's natural qualities as a building material, the project aimed to facilitate the sustainable growth of the economy and environment. Over 4 years, the project built long-term bamboo production chains, which made significant contributions to the post-disaster reconstruction of eight

local disaster-affected countries, and helped with the long-term recovery of local livelihoods. In 2011, the project won the Innovation Award of the UN's New Ways of World Post-Disaster Reconstruction.

More recently, INBAR responded to the 2015 earthquake in Nepal by helping to build low-cost houses to replace damaged structures. The Ministry of Education has subsequently approved a bamboo design for learning centres and schools. In 2016, INBAR reacted after a massive earthquake hit Ecuador, by carrying out studies to improve local construction to withstand earthquakes. One of the direct results of our work was the inclusion of bamboo in the revised building code, so that people who want to rebuild their damaged property with bamboo can get permits and even subsidies to do so.

## Capacity building and training

INBAR's training activities have been carried out for 20 years in partnership with a wide range of donors. From 1999 to 2015, China's Ministry of Science and Technology (MOST) supported training; from 2005, the Ministry of Commerce (MOFCOM) has supported training. Many partners contributed to support MOST training, including the Food and Agriculture Organization, United Nations Industrial Development Organization, GIZ, USAid, Save the Children, SNV Netherlands Development Organisation, the International Centre for Integrated Mountain Development and more.

The content of MOST and MOFCOM training covers a wide range of topics: biodiversity conservation; sustainable forest management; bamboo engineered product development; bamboo for climate change; and more.

The impacts of these training programmes are widespread. Our training has extended beyond the Member Countries of INBAR in order to facilitate the development of potential members. Training sessions have also done a lot to raise global awareness of the significance of bamboo and rattan in dealing with major issues, from poverty alleviation and ecology environment rehabilitation to fair trade, climate change and the UN's Sustainable Development Goals. Both MOFCOM and MOST training have provided a platform for international exchanges and cooperation in bamboo and rattan development.



## Colombia

Cutting bamboo strips to weave a traditional Wayuu hat.

/ jrothe



/ Lucy Liu



## Cuba

A bamboo bungalow.



/ INBAR



## Ecuador

Bamboo houses such as this one are a common sight across much of Latin America.



## Eritrea

Eritrean woman carrying firewood with bamboo basket.

/ tiziano casalta



/ INBAR



## Ethiopia

Traditional bamboo houses such as this one are cheap and use local materials.



/ INBAR



## Ghana

These bamboo school desks are now being created in the Philippines, India and Madagascar.



/ Goutam roy



**India**

Bamboo scaffold.



/ I Nyoman Widianara



## Indonesia

Learning time for students in the Green School with bamboo.



/ Scott Griessel



**Jamaica**  
Bamboo rafting.



/ Martin Chapman



## Kenya

Two Sykes monkey *Cercopithecus albogularis* in the bamboo forest, Aberdare National Park.



## Liberia

A woman stands beside a recently harvested pile of bamboo.

/ yoh4nn

# Bamboo and rattan for environmental protection

## Rio Conventions

INBAR is a Permanent Observer to the United Nations Framework Convention on Climate Change (UNFCCC), UN Convention to Combat Desertification (UNCCD) and the UN Convention on Biological Diversity (UNCBD), and has taken part in numerous Conferences of the Parties (COPs) during the past 20 years. During COP21 in Paris, INBAR participated in a series of meetings and events to discuss how to introduce bamboo and rattan into plans for climate-smart development, including a successful side event on 'Bamboo for Climate Change Action'. At UNFCCC COP22 in Marrakech, INBAR met with various Ministers and international organisational representatives to discuss the importance of South-South and trilateral cooperation for meeting climate goals. In both COPs, INBAR's Director General also addressed the General Assembly at a plenary session.

INBAR also addressed recent UNCBD COPs and UNCCD COPs, working alongside a number of high-profile figures from a range of institutions as well as INBAR's wide network of Member States and partners. INBAR's continued involvement in these important events should raise the profile of bamboo and rattan as strategic resources, which can help INBAR Member States mitigate and adapt to the effects of climate change.

## Land restoration

In Bonn in September 2011, an international assembly of representatives from governments, indigenous peoples and conservation groups launched a target to restore 150 million hectares of degraded and deforested lands by 2020 and 350 million hectares by 2030. INBAR is currently working on a land restoration report for publication in 2018.

Because of its extensive root system and yearlong canopy, bamboo can bind soil and makes a significant contribution to landscape restoration. Bamboo has restored land effectively in INBAR Member States China, India, Nepal, the Philippines and Sri Lanka, and is an important part of land degradation neutrality policies in Rwanda and Ethiopia.

At the ninth council meeting in November 2014, INBAR's Member States agreed to work towards a plan to restore at least 5 million hectares of degraded land, transforming them into productive, healthy bamboo forests. Their commitment makes a powerful statement about the potential of bamboo for land restoration, and signifies its huge potential to help provide a solution to similar global challenges.

## Carbon methodology for bamboo development in China

INBAR has collaborated with the China Green Carbon Foundation and other Chinese research institutes to develop a national methodology for carbon accounting and monitoring in Moso bamboo.

The document identifies the technical requirements that need to be considered when developing bamboo afforestation carbon projects. This includes: how to make baseline assumptions to measure carbon emissions and

sequestration; how to design projects so they can be included in a carbon trading or offsetting scheme; and how to monitor progress.

The methodology was developed in 2011, and was officially accepted by the State Forestry Administration in 2012. It is now a recognised standard in China. Although so far officially accepted in China only, the methodology should be of interest to other countries looking to set up a carbon credit system using bamboo. INBAR has facilitated training sessions in Latin America, Africa and Europe to share information about the methodology.



### Land restoration in China

Chishui, located along the Yangtze River, in the remote and mountainous northwest of Guizhou Province, is a key focus of China's national poverty alleviation program. It is also a target of the largest ecological conservation and land restoration programme (Yangtze River Shelter Forest Program) due to its ecological importance and high vulnerability to soil erosion.

Although the region is rich in bamboo resources, it still lacks optimal management and utilisation. In order to get the most out of a bamboo plantation, for supporting livelihoods and for climate change mitigation, optimal management practices and planting techniques must be followed.

INBAR has worked with the Ford Foundation and the Swiss Agency for Development and Cooperation to introduce practical climate-smart land management activities. This project led to an increase of the annual harvest of poles, an increase in the soil's carbon content and an improvement in the income generated from the plantations in Chishui.



### Land restoration in India

In 1996, in Allahabad, Northern India, bamboo was chosen as the pioneer crop to help restore severely degraded lands – with amazing results. Today, bamboo is an integrated crop in a multitude of cropping systems in Allahabad, providing about 10 per cent of farmers' total annual income and adding up to 8 inches of humus to the soil each year.

What started out as a one-off project has since become a self-sustaining activity. The scheme began in Allahabad but has since expanded to other parts of Northern India, and has regenerated over 85,000 hectares of land in many different districts. By 2014, INBAR estimated that 786,000 people participated in the scheme in almost one hundred villages. There are few better testaments to bamboo's usefulness for land restoration, or its appeal.



### Land restoration in Ethiopia

Land degradation is a pervasive problem across Ethiopia. This impacts the rural poor, who are reliant on a sustainable supply of fertile land and forest resources, and is a significant barrier to helping Ethiopia achieve its Climate Resilient Green Economy strategy. With an estimated 1 million hectares in Ethiopia, and the potential to grow far more, bamboo could be part of the solution, and the Government of Ethiopia has recognised this.

Bamboo is part of the Government of Ethiopia's Sustainable Land Management Programme and INBAR is leading the project, 'Bamboo for Sustainable Watershed Management and Livelihood Improvement', as part of a World Bank-funded programme implemented by the Ministry of Agriculture and Natural Resources of Ethiopia.

The main objectives of the initiative are to increase bamboo development, to mitigate the degradation of watersheds, and to transfer the knowledge, skills and technology needed for people to grow and manage bamboo. As of July 2017, the project has created seven bamboo nurseries, introduced 13 bamboo species, produced over 1 million bamboo seedlings and trained over a thousand people.



## **Bamboo cooperation between Ecuador and Peru**

Between 2011 and 2015, INBAR worked with over 5000 people in Ecuador and Peru to develop 15 project sites, which showcase community-based bamboo cultivation, management and processing, provide a platform for investment and innovation, and support farmers and growers with developing and implementing business and marketing plans. The project was funded by the Common Fund for Commodities, and overseen by the International Tropical Timber Organization.

This wide-ranging project included various activities, such as: microfinance initiatives in partnership with various banks to improve access to funds for bamboo micro-enterprises; production-to-consumption studies in Ecuador and Peru, which provide valuable information across the value chain for decision makers and investors; and increased work to enhance national government support.

By 2015, bamboo had been recognised as a strategic forest resource by the governments of Ecuador and Peru, and is used as parts of policies for land restoration and soil erosion management. Bamboo is also part of national initiatives that raise awareness of environmental sustainability, such as the Thematic Park Voices for Climate in Lima City.

In addition to the above, INBAR has undertaken a European Commission-funded project in Peru and Ecuador, to build lowcost bamboo housing for climate change adaptation in coastal regions. Between 2011 and 2015, INBAR and a range of national partners built resilient, lowcost bamboo houses and schools, and trained more than 7000 people in different topics related to forestry, construction, processing and management.

Because of this project and similar work by INBAR, Ecuador and Peru have now developed national bamboo construction codes. These provide a legal basis for the use of bamboo in construction.

Finally, the project generated several studies about the tolerance of bamboo housing on the coasts of Ecuador and Peru. INBAR presented these documents at UNFCCC's COP20 in Peru, and at UN Habitat in Ecuador, providing an important discussion about the role of bamboo to combat climate change.



/ INBAR



## Madagascar

A woman taking part in INBAR-led bamboo nursery training, as part of the South-South Knowledge Transfer Strategies project.



/ Martin Lopatka



## Malawi

Yellow bamboo in Malawi.



/ Abd. Halim Hadi



## Malaysia

Students in their bamboo classroom.



/ Afronie



## Mozambique

Men constructing a market stand from bamboo and tin sheets.



/ nattan726



## Myanmar

Burmese fisherman on bamboo boat catching fish.



/ Salajeon



## Nepal

Man carrying a bamboo trunk.



/ INBAR



## Nigeria

Nigerian bamboo stick processing facility, established with help from INBAR.



/ Hemis



## Panama

An *Embera* indigenous family in their home.



/ INBAR



## Peru

Bamboo growing along a river bank.



## Philippines

Filipino bamboo artisan.



## **Rwanda**

Bamboo is an important source of food for mountain gorillas.

# Bamboo and rattan for the green economy



## Engineered bahareque construction innovation

Engineered bahareque construction is an 'updated' form of a traditional building technique that takes the flexible, sturdy bahareque building design – common across much of Latin America – and updates it, using modern materials and construction skills.

INBAR has constructed engineered bahareque houses using bamboo in various countries around the world, including Costa Rica, Colombia, Nepal, Ecuador, El Salvador and the Philippines. When properly designed and built, these houses are affordable, hazard-resilient, safe and durable, with a 50-year design life and no toxic materials. In 2016, INBAR also produced a design guide for bahareque housing, which architects and engineers can use for both the concept and detailed design of housing.



## Standardisation

In partnership with the International Standardization Organization (ISO), INBAR has been working to develop and strengthen standards for bamboo and rattan. In 2004, INBAR created three ISO codes for bamboo as part of the Technical Committee on 'Timber Structures' (TC 165). In 2016, INBAR also worked effectively with China and other Member States to establish the world's first ISO Technical Committee dedicated to 'Bamboo and Rattan': TC 296. Over the coming years, both TC 165 and 296 will help provide standards and recommendations that can be adopted at national and international levels.

Our work has already had a measurable impact. India, Ecuador, Peru, Colombia, Jamaica, the Philippines, Vietnam and the Netherlands have developed chapters on bamboo in their national building codes that reference the new ISO standards. As well as this, INBAR currently leads two innovative Working Groups within the Technical Committees: one on 'Rattan' and one on 'Structural Uses of Bamboo'.



## Rattan bone transplant

Rattan is traditionally used for making furniture and handicrafts. Recently, scientists have started exploring a new high-impact use for rattan: as a material for bone replacement.

Through a pyrolysis process, researchers have shown that Calamus Rotang rattan is transformed into a carbon skeleton with a similar porous structure to bone. Unlike traditional bone grafts and ceramic and metal alloys, rattan is flexible enough to use for larger bone replacements. Preclinical trials have proven very successful, and final clinical trials are starting in 2016.

If approved, rattan bone replacement material will become part of a multibillion dollar bone replacement market – something that should benefit the many rural communities in South and South-East Asia who currently rely on rattan production for their livelihoods.

INBAR hopes to demonstrate the potential of rattan bone replacement as an innovative use for a very important plant at their upcoming Bamboo and Rattan Congress in 2018.

 **Bamboo winding industry innovation**

In late 2016, INBAR signed a Memorandum of Understanding with the China Engineering Research Center for Bamboo Winding Composites (ERCBWC), a Chinese not-for-profit that develops durable bamboo composite materials including drainage pipes. These bamboo pipes have numerous advantages over their plastic, cement and steel alternatives: they are cheaper and less energy-intensive to produce; they 'lock in' carbon for the duration of the pipe's use; and they use a fast-maturing, renewable resource which is available to many countries in the Global South.

Bamboo pipes have significant potential to become a key part of future infrastructure and public procurement projects, and stand to benefit many of INBAR's bamboo-producing Member States. The Memorandum of Understanding marks the start of INBAR and ERCBWC's closer collaboration in areas such as the exchange of bamboo applications and new technologies, capacity building and technical training for INBAR Member States.

 **Trade and customs**

As well as being an international development organisation, INBAR does important work on trade. We have worked with the World Customs Organisation to improve the identification of bamboo and rattan products since 2002, with great success. From 2017, 10 new Harmonised System (HS) codes for bamboo and rattan products have been introduced to the HS system. Overall, 26 types of bamboo and rattan products now have individual HS codes and nomenclature, and can now be classified and recorded by customs officials when they are traded between countries.

This is no small achievement. We hope these new HS codes will significantly enhance the quality of global trade data of bamboo and rattan, and more accurately reflect the overall status of bamboo and rattan trade. More importantly, these codes will enhance the recognition of bamboo and rattan products in the international market, which will allow developing countries to monitor, assess and stimulate their evolving trade and developing markets of bamboo and rattan.

As well as the above, INBAR is the International Commodity Body for bamboo and rattan under the Common Fund for Commodities, and publishes important data on the state of the bamboo and rattan industry around the world every few years.

 **Bamboo energy**

Bamboo has great potential to generate thermal energy, as well as electricity, through gasification. It is locally sourced, fast growing and compares well to other forms of biomass for gasification. Bamboo has a similar calorific value to certain types of wood or timber, and burns slower than other types of powdered biomass such as sawdust or peanut, coffee and rice husks.

INBAR is currently demonstrating the power of bamboo in Madagascar. A 25kWh bamboo gasifier is being built which aims to provide electricity to a training facility and around 250 local households. The gasifier is part of INBAR's project, 'South-South Knowledge Transfer Strategies', and draws on experience from a bamboo gasifier built in Rajasthan, India, by CIBART, through an IFAD-funded INBAR project.

INBAR has also worked to demonstrate to the world the potential of bamboo charcoal. INBAR has worked with the Indian Institute of Technology to develop an award-winning charcoal kiln from old oil drums, a project that was later replicated in Ethiopia, Tanzania and Madagascar through IFAD-funded projects. Drum kilns have been developed elsewhere too, such as in the Philippines, China and Vietnam.

In a project funded by the European Commission in Ghana and Ethiopia, more than 4000 individuals were trained in bamboo cultivation, plantation management and bamboo charcoal producing technologies. The project introduced 10 bamboo species, raised more than 200,000 seedlings, and established 148 micro and small enterprises.

Currently, India is experimenting with the distillation of bamboo for the production of biofuels. INBAR is monitoring the developments, which could have major implications for largescale bamboo plantations.



/ Antpun



## Senegal

Traditional hut in Dindéfelo.



/ Olivier Asselin



## Sierra Leone

A girl carrying coconuts passing by a bamboo fence.



/ loeskieboom



## Sri Lanka

Stupa of Ruwanwelisaya with bamboo ladder.



## Suriname

Giant waxy tree frog on bamboo.

/ David A. Northcott



/ INBAR



## Tanzania

School children planting bamboo.



/ somkku9kanokwan



## Thailand

Bamboo dams are built by locals across Thailand, providing a protective environment for mangroves to grow.



/ Ferdinand Reus



**Togo**

Fisherman at sunset.



## Tonga

Tonga traditional fish kraal made with bamboo.

/ Images of Africa  
Photobank



## Uganda

INBAR training in bamboo propagation in Kabale, South Western Uganda.



## Venezuela

Common squirrel monkey in bamboo forest.



/ swissmediavision



## Vietnam

Vietnamese man paddling in a bamboo basket boat.

# Bamboo and rattan eco-culture

## Bamboo music and culture

Bamboo musical instruments are among the oldest musical instruments in recorded history, dating back to 1600-1046BC, and are very important for the cultural history of humanity. These include the 'Waliha', the national musical instrument of Madagascar, the pan pipes of Peru, the Shakuhachi of Japan, the Lusheng of the Miao people in China and the Jinghu of Peking Opera.

Recognising the importance of music and other forms of 'bamboo culture' in China, INBAR works with the State Forestry Administration and a host province of China to hold the biennial China Bamboo Cultural Festival, a major international academic and commercial event. So far, eight festivals have been held. Activities during the festival usually include an international workshop, bamboo industry exhibition, construction of bamboo gardens and visits to bamboo forest cultivation sites and processing mills. The bamboo festival plays a key role in information exchange and promoting cooperation among both the bamboo provinces in China and INBAR Member States. It has become an important platform for economic cooperation and exchange in the bamboo industry.

## Bamboo weavings and sculptures

Bamboo weavings and sculpture are forms of bamboo working and craft with a very long history, and these methods are still used to make everything from furniture and tea sets to curtains and lanterns.

Bamboo weavings and sculptures play an important role in poverty alleviation in bamboo-growing regions across the world. The market for bamboo handicrafts is large and ever expanding. This is partly because bamboo handicrafts are very popular in many countries of the world, where their natural

appearance and environmentally friendly production methods are major selling points.

## Bamboo poems and paintings

Bamboo poems and bamboo paintings are some of the most impressive parts of China's bamboo culture, and are an integral part of China's self-identity. In 2012, INBAR published *The Charm of Bamboo: 100 Selected Ancient Chinese Poems on Bamboo*, to promote traditional Chinese bamboo culture, in which poets and painters from remote antiquity to modern times praised bamboo for its enormous vitality, integrity and manifold uses.

A famous poem about bamboo runs as follows:

With unswerving faith, never to lose,  
Striking root deep in clefts twixt rocks.  
Against a thousand odds, stand strong-  
Let winds blow, wherever they are from.

- In the same way, bamboo is a resilient and deep-rooted part of China's culture.

### *World Bamboo Congress and World Bamboo Day*

Every three or four years, the World Bamboo Congress is organised by the World Bamboo Organisation, a US-based NGO that represents individuals who are passionate about bamboo. INBAR has co-organised some of the Congresses in the past, and in recent years has attended Congress meetings. The World Bamboo Congress acts as both an event to present scientific papers on new bamboo developments and a network for bamboo enthusiasts.

During the 2004 Congress in India, the idea was proposed to create a World Bamboo Day on 17 September. This day is now celebrated by many communities around the world. The aim is for INBAR to make World Bamboo Day a UN-recognised event.

# Looking to the future

Over the last 20 years, INBAR has seen bamboo and rattan rise from relative obscurity to become a real part of the conversation in international policy, as well as a part of national plans for environmental and economic development. We have expanded our network, and with it the possibilities for sharing knowledge and technology across the world. We have also advanced the state of research about bamboo and rattan, their properties and distribution. However, there is still work to be done.

INBAR is an Observer to a number of UN Conventions, a partner to many UN agencies, and is recognised by the United Nations Economic and Social Council. We are also the formal International Commodity Body for Bamboo and Rattan under the Common Fund for Commodities.

INBAR also wants to further its work on South-South networking and knowledge sharing. Because 41 of the current 43 Member States are from the Global South, INBAR is a major player in South-South Cooperation. We have a close working relationship with the UN Office for South-South Cooperation (UNOSSC), we work with the UNDP South-South Cooperation team in Beijing, and we support the China Council for International Cooperation in Environment and Development (CCICED) with South-South cooperation. In 2017, INBAR will publish a joint report with the UNOSSC about lessons learned and best practices using bamboo for South-South cooperation. We hope to play an increasingly pivotal role in this field.

In policy terms in China, INBAR's current direction is to become a larger part of the Belt and Road Initiative: the ambitious policy launched by the Chinese Government in 2013. 'Belt and Road' aims to create infrastructure and trade routes which link countries across Asia, Africa and Europe, and INBAR has identified several ways in which bamboo and rattan could be key tools to help realise – and 'green' – this ambitious policy. Growing locally to many of the countries targeted by Belt and Road – countries that include a large number of INBAR Members – bamboo and rattan could play a strategic role for climate change action, green infrastructure and land restoration, livelihood development and poverty alleviation.

INBAR attended the official launch of the Belt and Road Initiative in 2016, and we organised a joint INBAR-UNEP event about 'Greening the Belt and Road'. We are in contact with China's Ministry of Environmental Protection and the National Development and Reform Council to agree on a formal role for INBAR in the Greening Belt and Road Coalition.

Finally, INBAR will continue to work on its new flagship programme, the Global Assessment of Bamboo and Rattan (GABAR). Conceived in 2015, GABAR aims to overcome the crippling lack of information about bamboo and rattan stocks, their properties and potential uses. Although there are over 1600 species of bamboo and 600 of rattan, all with very different properties and uses, this sort of reliable data is critically lacking. Existing information on these plants is becoming increasingly out of date and there are no ongoing worldwide assessments that cover these resources. As well as this, available information is not always verified with field research, meaning it may not reflect the actual ecological situation.

The ultimate aim of GABAR is to answer these problems, and to encourage INBAR Member States to make the best use of their resources for environmentally sustainable development. GABAR is the first practical policy-

oriented inventory and assessment of its kind. It aims to update decision-critical information about bamboo and rattan for climate change mitigation and adaptation, land restoration, biodiversity conservation and product creation. During the coming years, we will work with our members to develop clear paths for development, based on more robust information about cover, type and opportunities for bamboo and rattan.

It is also worthy of attention that in 2018, with the support of the Chinese Government and all INBAR Member States, INBAR and China's State Forestry Administration will host the first ever Global Bamboo and Rattan Congress. The Congress – 'BARC2018' – will be held in Beijing, China, from 25 to 27 June. This event will bring together Heads of States, Ministers, INBAR Member States, leading decision makers and bamboo and rattan experts to hold a global dialogue on how we can 'Enhance South-South Cooperation for Green Development through Bamboo and Rattan's Contribution to the UN SDGs'. We hope BARC2018 will provide a global platform to bring bamboo and rattan to the forefront as potential solutions to environmental and development issues.

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## Conclusion

INBAR was founded in 1997 with a simple mandate: to promote the development of bamboo and rattan in an environmentally sustainable way.

This mandate remains as critical now as it ever was. Across the world, poverty, climate change, unsustainable resource use and ecosystem degradation are serious threats to human wellbeing and our environment. INBAR is active in researching, demonstrating and advocating for the use of bamboo as one solution to these problems. Now in our twentieth year, we are proud to present this book commemorating several of our major milestones.

In a world where 800 million people live in poverty and over a billion have no access to electricity, bamboo and rattan can help to bring about development and growth in an environmentally sustainable way. These strategic plants grow throughout the Global South, where they have been used for millennia as a source of food, fuel and fibre. They are also an intrinsic part of the heritage and culture of many countries. More and more, they are recognised as tools to help us mitigate and adapt to climate change, being used to restore landscapes and to produce renewable energy. For these reasons, bamboo and rattan are key strategic resources that can help realise many of the UN's Sustainable Development Goals.

Despite its many important properties, more work needs to be done before the full potential of bamboo and rattan resources can be unlocked. As this book shows, INBAR has worked to research, innovate and demonstrate the potential of bamboo and rattan in many different areas during the past 20 years of its existence. Through its network of over 40 Member states, INBAR has also played an active role in increasing the flow of knowledge about bamboo around the developing world. It has done this through training tens of thousands of people, as well as raising the profile of bamboo and rattan on the international stage.

# Appendix:

## INBAR Timeline

### 1993

- ◆ As bamboo and rattan projects increase, a meeting is organised between researchers and potential funders. INBAR is formed as part of IDRC. Its aims are to improve the contribution bamboo and rattan make to rural livelihoods, and to investigate the role of bamboo and rattan in tropical forest conservation.

### 1995

- ◆ A group consisting of IFAD, IDRC, the MS Swaminathan Research Foundation (an Indian sustainable development organisation) and the Chinese Government meet to discuss establishing INBAR as an independent organisation. China offers to host INBAR headquarters and begins to push the process forward by coordinating with other governments and international organisations.

### 1997

- ◆ The International Network for Bamboo and Rattan is officially established in Beijing as an intergovernmental international organisation.
- ◆ The Chinese government, IFAD, IDRC and the MS Swaminathan Research Foundation and others set up an Interim Advisory board for INBAR.
- ◆ INBAR's signing ceremony is held on 6 November and is attended by the nine founding members: Bangladesh, Canada, China, Indonesia, Myanmar, Nepal, Peru, the Philippines and Tanzania. Observers from Italy, Japan, Korea, the Netherlands, Pakistan and Thailand attend.
- ◆ INBAR begins its new role with four funding partners: the governments of China, Canada, the Netherlands and IFAD.

### 1998-1999

### 1994

- ◆ INBAR becomes a broad network covering an increasingly diverse range of activities including processing technologies, construction, and information provision. Rattan and bamboo specialists realise INBAR's efforts to build partnerships are hampered because it remains a time-limited IDRC project.

- ◆ INBAR commences systematic studies on the role of bamboo and rattan in the economic and social activities of people in seven African nations.
- ◆ Regional consultations are held with experts in Africa, Asia and Latin America to help define INBAR's development agenda.
- ◆ The first of INBAR's ongoing annual training and awareness-raising workshops is held in 1999 in China.
- ◆ Work begins to develop standards for safer use of bamboo as scaffolding.
- ◆ In 1998 and 1999, Malaysia, India, Ecuador, Cuba, Chile, Vietnam, Ghana, Benin and Colombia join INBAR.

## 2000

- ◆ INBAR restructures to focus on the environment, livelihoods, trade and outreach.
- ◆ The Common Fund for Commodities works with INBAR to launch a new International Commodity Body for Bamboo and Rattan, with INBAR in the lead role. By 2012, ten projects supported by the fund were or had been running in Bangladesh, China, Nepal, Bhutan, Sri Lanka, Ghana, Ethiopia, Kenya, Uganda, Peru and Ecuador.
- ◆ Togo and Sri Lanka join INBAR – making INBAR a network of 20 Member States.



## 2003-2005

- ◆ INBAR's Secretariat moves to permanent headquarters in Beijing provided by the Government of China.
- ◆ A West African Regional Office opens in Kumasi, Ghana.
- ◆ INBAR persuades the World Customs Organisation to release new customs codes, which specifically deal with bamboo and rattan products.
- ◆ The conservation status and needs of bamboos in Asia and Africa are highlighted in a report by INBAR and UNEP-WCMC.
- ◆ Member States pay membership fees to INBAR for the first time.
- ◆ In 2004, INBAR's work with ISO Technical Committee 165 on timber structures results in the publication of three international standards (ISO 22156, 22157-1 and 22157-2). These standards have subsequently been used to help INBAR Member States develop their own national building codes for bamboo.
- ◆ Nigeria, Madagascar and Mozambique become Members of INBAR.

## 2001-2002

- ◆ INBAR opens a Latin America Regional Office in Ecuador, which has led network and project development in Latin American Member States ever since.
- ◆ INBAR's new Action Research Projects funded by IFAD commence in Ecuador, Ghana, India and Tanzania.
- ◆ INBAR develops an information strategy, new databases and publications, including the International Journal of Bamboo and Rattan.
- ◆ Kenya becomes a Member of INBAR.
- ◆ The Ford Foundation funds INBAR's first development project in western China, in Chishui, Guizhou province.
- ◆ Venezuela, Ethiopia, Uganda, Cameroon and Sierra Leone become Members of INBAR.W



## 2006

- ◆ INBAR develops and publishes its 'In Partnership for a Better World - INBAR Strategy to the Year 2015', to guide its work and development. Its work areas are adjusted to meet targets for environmental sustainability, livelihood and economic development and trade development.
- ◆ The Non-Timber Forest Products Global Partnership Programme launches with INBAR as the lead umbrella organisation. It starts its first project on charcoal in sub-Saharan Africa.
- ◆ The Bamboo Housing Partnership Programme launched, and starts its first project in China and Sri Lanka with funds from the Blue Moon Fund.
- ◆ In 2006, Tonga, Argentina and Rwanda become Members of INBAR. INBAR now boasts 32 Member States.



## 2007

- ◆ INBAR's 10th anniversary events are held in November. These include a conference, an international trade fair, a cultural night and a photographic competition.
- ◆ INBAR's first collaboration with the EU begins, on a project for China biodiversity.
- ◆ Suriname becomes a Member of INBAR.



## 2008-2009

- ◆ INBAR runs its first dedicated rattan project in Ghana.
- ◆ The first training programme specifically for Member State focal points brings officials to INBAR and others from 30 current and potential Member States to learn more about INBAR, bamboo and rattan.
- ◆ INBAR attends UNFCCC COP 15 in Copenhagen in 2009, raising the profile of bamboo amongst an audience of world decision-makers. At subsequent COP meetings, INBAR presents its climate change work, and builds new partnerships for low carbon development.
- ◆ In the wake of the devastating 2008 Sichuan earthquake, INBAR starts a project to provide environmentally friendly and long-term employment to local communities using bamboo. This project will go on to win the UN's New Ways of World Post-Disaster Reconstruction 'Innovation Award'.
- ◆ In 2009, Bhutan becomes a Member of INBAR.



## 2010

- ◆ INBAR's pavilion at the World Expo in Shanghai receives over half a million visitors during its 6-month duration. INBAR's attendance at the Expo includes a high-level ministerial workshop and a conference on bamboo and rattan.
- ◆ EU President Herman van Rompuy visits INBAR's rehabilitation project in earthquake-hit Sichuan province, China.
- ◆ At the Xi'an International Horticultural Exposition, INBAR's International Bamboo and Rattan Garden shows the public the diversity of the world's bamboo resources and application of high-grade bamboo and rattan innovative products in daily life.
- ◆ At UNFCCC COP16 and COP17, INBAR releases its first studies on bamboo and climate change and demonstrates the potential of bamboo charcoal as a bamboo alternative to wood fuel.
- ◆ INBAR and partners develop the first carbon accounting methodology for bamboo. This carbon accounting methodology is later approved for use by the Chinese government.
- ◆ Construction standards for bamboo houses are adopted by the governments of Ecuador and Peru.
- ◆ The International Bamboo and Rattan Trade Database is revamped and is now firmly based on the United Nations Commodity Trade Database.
- ◆ In 2010, Burundi and Panama become Members of INBAR.



## 2011-2012

- ◆ At the first APEC Ministerial Meeting on Forestry, the Co-Chair of INBAR Board of Trustees Jiang Zehui calls for the joint efforts of Asia-Pacific countries to promote the inclusive and sustainable growth of the bamboo and rattan industry.
- ◆ INBAR launches its Roadmap to 2015 that highlights the importance of building partnerships across national and continental boundaries to share knowledge and experience.
- ◆ With support from the host country China, a vice-ministerial level symposium on green economic development policy of global bamboo and rattan resources with participants mainly from Member States is held on the occasion of the 15th anniversary of INBAR.
- ◆ In 2011 and 2012, Senegal and Jamaica become Members of INBAR.



## 2013-2015

- ◆ In 2014, at the 9th INBAR Council Meeting in Addis Ababa, INBAR Members collectively pledge to restore 5 million hectares of using bamboo by 2020 as part of a commitment to the Bonn Challenge.
  - ◆ INBAR launches the 'Global Assessment for Bamboo and Rattan' in 2015.
  - ◆ In 2013, INBAR joins nine other organisations as a founding member of the Association of International Research and Development Centers for Agriculture.
  - ◆ In 2015, INBAR begins its new strategy, 'From Research to Development'. This shifts the organisation's role from a research network on bamboo and rattan to an organisation focused on supporting countries to achieve sustainable development objectives.
  - ◆ INBAR launches the first trilateral partnership between China, The Netherlands and INBAR which transfers know-how on bamboo development to three African countries: Ethiopia, Kenya and Uganda.
- During the 2014 UNFCCC COP20 in Peru, INBAR speaks for the first time in plenary to all attendees about bamboo for South-South climate-smart development.
- In 2015, INBAR is invited for the first time as VIP to the Eco Forum Global and speaks about bamboo and rattan to promote eco-civilisation.
- ◆ Eritrea, Malawi and Liberia become Members of INBAR.



## 2016

- ◆ INBAR speaks at the 3rd Mexico National Bamboo Congress about bamboo innovation and industry expansion.
- ◆ In 2016, INBAR works with China and other Member States to establish the world's first ISO Technical Committee dedicated to Bamboo and Rattan – 'TC 296'.
- ◆ At the UN HABITAT III Conference in Ecuador, INBAR organises a side event on bamboo construction and builds a bamboo house as part of HABITAT III's 'Village'. The house is one of only a small number to be visited by the United Nations' General Assembly President Peter Thomson.
- ◆ INBAR speaks during the UN Global South South Development Expo, outlining the key elements required in a programme for sustained development of bamboo and rattan resources in the Global South.
- ◆ At the UNCBD COP13, INBAR speaks in sessions regarding biodiversity conservation in the context of global agreements and initiatives, and biodiversity in cities.
- ◆ INBAR is invited for the first time to attend the Annual General Meeting of the China Council for International Cooperation on Environment and Development.
- ◆ Thailand becomes a Member of INBAR.



## 2017

- ◆ INBAR is present as a VIP at the Belt and Road Forum for International Cooperation, Beijing, and launches its 'Bamboo and Rattan for Belt and Road' Vision document. Separately, INBAR also launches a Vision for INBAR's work with ASEAN.
- ◆ INBAR takes part in UNCCD COP13 and UNFCCC COP23.
- ◆ 25 June 2017 marks the one-year kick off to BARC 2018.
- ◆ INBAR celebrates its 20th Anniversary.
- ◆ Brazil becomes INBAR's 43rd Member.
- ◆ INBAR is officially recognised as Observer to UN General Assembly.



TBR 国际竹藤大厦  
INTERNATIONAL BAMBOO AND RATTAN

GAP 高耐刀 慎选...  
DEAR...  
P 停车场



TOWER

