INBAR

IN

CHINA AND THE WORLD

国际竹藤组织在中国和世界的发展

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國際竹

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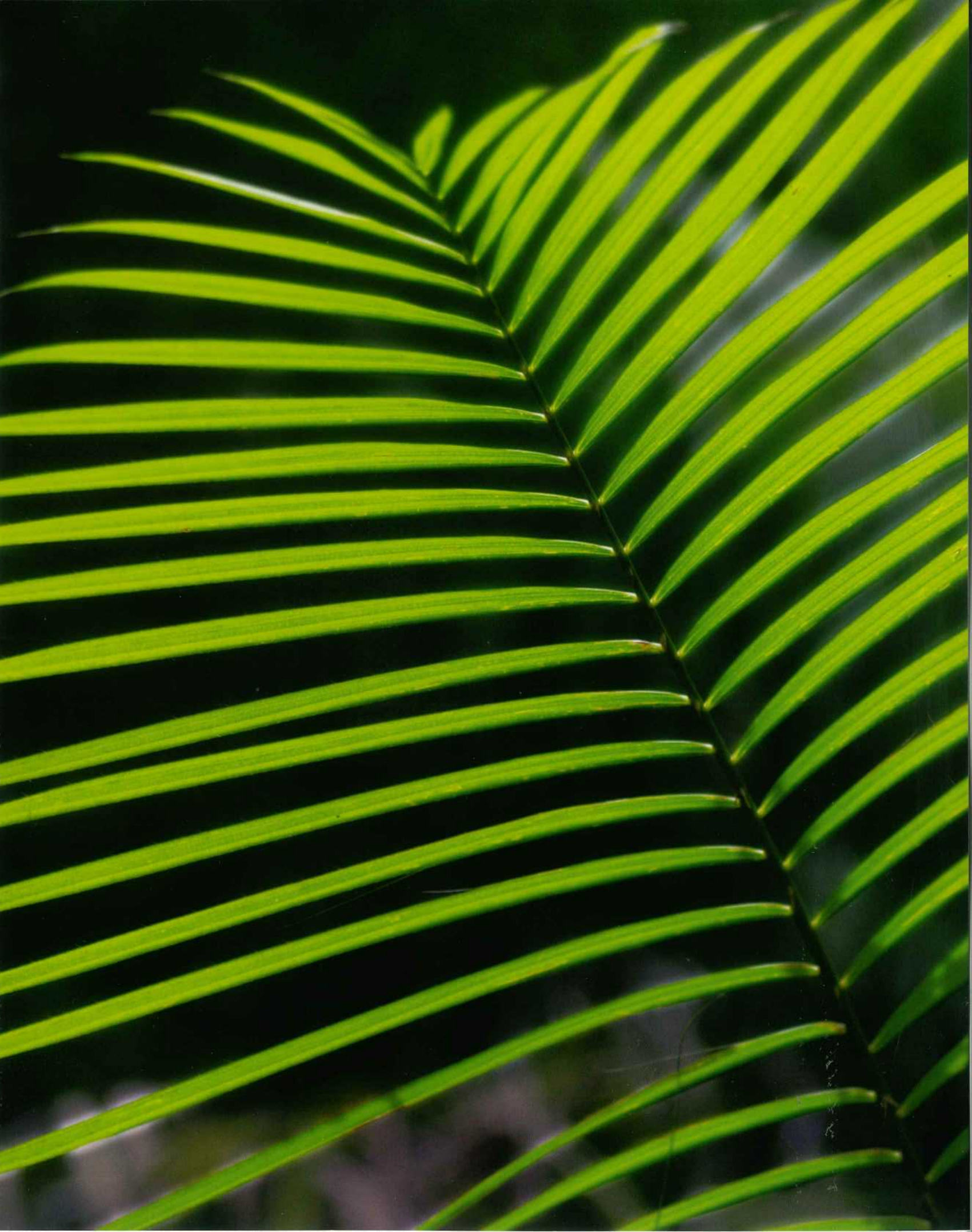


Preface

錢其琛

Bamboo and rattan are two of the most vigorous evergreen members in the plant kingdom. In China the idiom "spring bamboo shoots breaking through the ground surface after rain" are often used metaphorically to describe a successful career filled with potential and vitality. It also authentically depicts the development of the International Network for Bamboo and Rattan (INBAR) since its formal establishment in Beijing, China on November 6, 1997 by the joint efforts of the Government of China, the International Development and Research Centre of Canada (IDRC), and the International Fund for Agricultural Development of the United Nations (IFAD).

Over the last 6 years, INBAR has developed from the initial 9 founding members to the current 28 member countries and the observers increased from 6 to about 20 with regional offices and technology information centres established in India, the Philippines, Italy, Ecuador and Ghana and over 420 affiliates spreading over major bamboo producing and consuming countries across Asia, Africa, North America, Latin America, Europe and Oceania. In 2000, INBAR was accepted by the Common Fund for Commodities (CFC) as the International Commodity Body (ICB) for bamboo and rattan. The position and role of INBAR in the international community have been increasingly enhanced.

INBAR is the first independent, non-profit intergovernmental international organisation headquartered in China and also the only international agent engaged solely in bamboo and rattan research and development. Through its effective work, INBAR has made achievements in the promotion of scientific research and development, conservation and wise use of bamboo and rattan, as well as poverty alleviation in bamboo-growing developing countries. The international influence of INBAR has ever been increasing.

The Government of China has been giving great significance to the development of INBAR by conscientiously implementing the Headquarters Agreement. Besides continuous financial support, the Government of China also provides for INBAR the newly-built multifunctional Headquarters office building, the supporting key open laboratory and experimental bases, creating very favorable conditions for the successful operation of this organisation.

Bamboo and rattan are two valuable resources bestowed by nature. As one of the countries with richest bamboo resources and the longest history in bamboo and rattan processing and utilisation, China is endowed with personnel and resource advantages in research, conservation and wise use of bamboo and rattan. China has a great number of forestry research institutes, universities and colleges and thousands of bamboo and rattan enterprises, they are reliable working partners for the academic, educational, and business circles of bamboo and rattan producing and consuming countries to conduct academic, technical and economic exchanges as well as international trades.

We sincerely hope that INBAR will be as vigorous forever as the bamboo shoots just breaking through the ground after the spring rain and make new contribution towards the sustainable resource, environment and socio-economic development in the world.

CONTENTS

在植物王国里，竹子和藤类是最具生命力的常绿植物。中国人常用『雨后春笋』、『破土而出』比喻事业兴旺发达，充满生机与活力。由中国政府和加拿大国际发展研究中心（IDRC）、联合国国际农业发展基金（IFAD）共同发起的国际竹藤组织（INBAR），自1997年11月6日在中国北京宣告成立以来所走过的5年发展历程，正是这些成语最真实的写照。

国 际 竹 藤 组 织 概 况

INTRODUCTION TO INBAR

OBJECTIVES

Established on November 6, 1997 with the signature of the INBAR Establishment Agreement by 9 founding members, i.e.: Bangladesh, Canada, China, Indonesia, Myanmar, Nepal, Peru, the Philippines and Tanzania, INBAR is the first independent, non-profit intergovernmental international organisation headquartered in China and also the only international development agent engaged solely in conservation and development of bamboo and rattan, the two most important non-timber forest products (NTFPs). The essence of its Objectives is to protect environment, eradicate poverty and promote industry through enhancing the international cooperation in bamboo and rattan resource conservation and sustainable utilisation, therefore to contribute to the sustainable development of global environment and socio-economy.

Member Countries

INBAR has 28 member countries, among which:

10 countries are in Asia: Bangladesh, China, India, Indonesia, Malaysia, Myanmar, Nepal, the Philippines, Sri Lanka and Vietnam;

10 in Africa: Benin, Cameroon, Ethiopia, Ghana, Kenya, Nigeria, Sierra Leone, Tanzania, Togo and Uganda;

8 in America: Bolivia, Canada, Chile, Colombia, Cuba, Ecuador, Peru and Venezuela.

CHIEF LEADERS OF INBAR

Zhou Shengxian
Chairman, INBAR Council

Phil Calvert
Vice Chairman, INBAR Council

Keith Bezanson
Chairman, INBAR Board of Trustees

Jiang Zehui
Co-Chair, INBAR Board of Trustees

Ian Hunter
Director General, INBAR Secretariat

Present Board Members

Keith Bezanson
Canada

Jang Zehui
China

Rodney Cooke
U. K.

Ian Hunter
U. K.

Yoshiko Y. Nakano
Japan

Romualdo L. Sta.Ana
The Philippines

Josefina Takahashi Sato
Peru

Hubert G.Zandstra
Canada

Former Chairs of Council,Former Chairs and Members of Board

Wang Zhibao
Chairman, INBAR Council

Howard Balloch
Vice Chairman, INBAR Council

Gordon Houlden
Vice Chairman, INBAR Council

Gordon Smith
Chairman, INBAR Board

Jiang Zehui
Co-Chair, INBAR Board

Gordon Smith
Canada

Cherla B. Sastry
Canada

M. S. Swaminathan
India

Seewant Bhoojedhur
Mauritius

Salleh Mohd. Nor
Malaysia

Ana Cecilia Chaves
Costa Rica

David Hopper
Canada

Abdelmajid Slama
Tunis

Organisational Structure

The organisational structure of INBAR consists of the Council, the Board of Trustees and the Secretariat.

THE COUNCIL

The Council, the supreme governing body of INBAR, is composed of representatives of INBAR member countries. All major policies and decisions shall be approved by the Council. The incumbent Chairman of the INBAR Council is Zhou Shengxian, Administrator of China State Forestry Administration (SFA) and the Vice Chairman is Phil Calvert, Minister of Canadian Embassy in China.

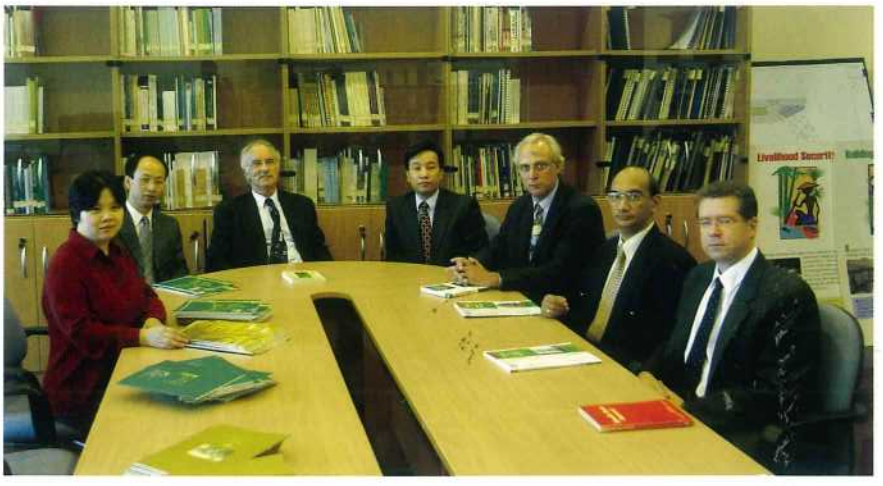
THE BOARD OF TRUSTEES

The Board of Trustees of INBAR is responsible for development and formulation of strategic plans and related policies, ensuring that the Director General is managing the organisation in an efficient manner and in accordance with the agreed objectives, programmes and budgets as well as with legal and regulatory documents. The Board is now made up of 9 Trustees with one Trustee appointed by the Government of the Host State; 7 Trustees at large, 3 of whom are from bamboo and rattan producing countries and 4 appointed on the basis of their scientific or administrative expertise; and the Director General. The incumbent Chairman of the Board is Dr. Keith Bezanson, previous Chairman of Canadian International Development Research Centre (IDRC) and previous Director of the Institute for Development Studies, Sussex, the United Kingdom and the Co-Chair is Prof. Jiang Zehui, Leading Member of China State Forestry Administration and President of the Chinese Academy of Forestry.

THE SECRETARIAT

The Secretariat is responsible for the daily administration and management of INBAR, with its headquarters based in Beijing, China, and regional offices in India, the Philippines, Italy, Ecuador and Ghana. The Director General, the head and the Chief Executive Officer of the Secretariat, is appointed to be responsible to the Board for the operation and management of the Organisation. The current Director General is Dr. Ian Hunter.

Dr. Ian Hunter, Director General of INBAR (third left) and Mr. Wu Zhimin, Deputy Director General (fourth left) are meeting with major staff of INBAR Secretariat.



Major tasks

The major tasks of INBAR includes:

a) Assisting member countries to meet the livelihood and basic needs of people living in bamboo and rattan producing areas, in particular those of women and disadvantaged people;

b) Bringing into full play the role of bamboo and rattan in the protection of the environment, and more particularly in mitigating deforestation, global warming, soil erosion, and land degradation;

c) Conserving and expanding the biodiversity of bamboo and rattan resources;

d) Enhancing production, processing and utilisation of bamboo and rattan on a sustainable basis; and

e) Developing and promoting policies and value-added technologies aimed at realising the full potential of bamboo and rattan as substitutes for timber.

Programme activities

INBAR's programmes and activities are mainly carried out in Asia, Africa and South America, focusing on the following 4 areas:

-Ecological Security, natural and plantation management, genetic resource conservation and use, combating deforestation, mitigating global warming, rehabilitation of degraded land and water and soil conservation.

- Livelihood Development, transfer of appropriate technology into means of livelihood and income generation for the rural poor, enhancement of social and economic benefits of bamboo and rattan and improvement of the income and living standard of the rural poor.

-Economic Development, promotion and development of industrial utilisation of bamboo and rattan, improvement of the political and economic environment of the bamboo and rattan sector, including bamboo and rattan databases development, standardisation, strategy and policy study and development.

-Outreach, network development and information sharing by offering comprehensive web-based and conventional information services, demonstration training and long-distance education, publication of technical reports, the journal of bamboo and rattan etc.

How to work with INBAR

There are four ways of working with INBAR:

-Becoming a member country of INBAR by acceding into INBAR Establishment Agreement at government level;

-Becoming INBAR project partners/collaborators;

-INBAR affiliate membership is open to individual people, organisations and companies;

-Working as a volunteer.

The signing ceremony of INBAR Establishment Agreement was held in The Great Hall of the People, Beijing on November 6, 1997. H. E. Mr. Li Peng, former Premier of China and H. E. Mr. Qian Qichen, former Vice Premier of China attended the ceremony.

The Origin of INBAR

INBAR was originally a regional forestry project in Asia funded by IDRC of Canada and IFAD. Considering the socio-economic importance of bamboo and rattan to the developing countries in Asia, Africa and Latin America, particularly to the socio-economic development of rural areas, the international community conceived that the regional research project should be developed into an international organisation, thereafter, a preparation group for the establishment of INBAR was established.

In September 1995, the preparation group held its first meeting to discuss the internationalisation and legal procedures for the establishment of INBAR, during which the proposal of locating the Headquarters of INBAR in China was initially approved. After the meeting, authorised by the Board of IDRC, Dr. Keith Bezanson, the then President of IDRC, wrote a letter to Mr. Song Jian, the Chinese State Councilor on November 14, 1995, who gave a reply on the 4th of December on behalf of the Government of China welcoming the establishment of INBAR Headquarters in China.

Significance of the Establishment of INBAR

Bamboo and rattan, as two most important non-timber forest products playing greater roles in international development especially in rural economic development of developing countries, has received increasingly greater attention and recognition among the international communities, the developing countries in particular.

Establishment of INBAR can further promote cultivation, conservation and utilisation of bamboo and rattan resources; assist developing countries in eradicating poverty, generating more employment opportunities and developing rural economy; strengthen coordination and cooperation among producing and consuming countries of bamboo and rattan and promote the sustainable resource, environment and socio-economic development worldwide.

Top: *Multilateral Negotiating Meeting on INBAR Agreement was held in Beijing, June 1997.*

Below: *The INBAR Interim Advisory Board Meeting was held in Beijing before the establishment of INBAR.*

Under the leadership of Prof. Jiang Zehui, head of the China-INBAR Preparation Group, all the legal procedures for the establishment of INBAR had been completed by November 1997 after efforts of 20 months. Prof. Jiang Zehui (front centre) and the staff of China-INBAR Preparation Group.

Speeding up the International Establishment Process of INBAR

After Song Jian, the State Councilor of China, replied the letter of the President of IDRC on December 4, 1995, the Government of China realised that for setting up the headquarters of an independent international organisation in China, support and coordination are required from many parts in the Government. Therefore, in March 1996, led by the China State Forestry Administration (SFA), China-INBAR Preparation Leading Group was established, headed by Prof. Jiang Zehui, Leading Member of the SFA and President of the Chinese Academy of Forestry with Hui Yongzheng, Vice Minister of State Commission of Science and Technology as the Deputy Head and composed of senior officials from SFA, State Commission of Science and Technology, Ministry of Finance, and Ministry of Foreign Affairs of China. This coordination group was established to push the international establishment process of INBAR, in which the Chinese government is responsible for coordinating activities among all related government agencies, communicating with concerned international organisations and INBAR signatories and holding bilateral and multilateral negotiations. This was indeed a pioneering initiative.

In the preparatory stage, in compliance with related legal procedure, China-INBAR Preparation Leading Group held negotiations with its international counterparts with regard to the location of the INBAR Headquarters, text of the Establishment Agreement and funding of this Organisation etc., based on which the INBAR Establishment Agreement was jointly drafted. Consensus was finally reached after the Draft was approved by the multilateral negotiations between INBAR Temporary Advisory Committee and representatives of the potential founding members with subsequent exchange, through diplomatic channel, of the legal document among the launching States after fulfilling their domestic legal procedures. In the meantime, the INBAR Headquarters Agreement, drafted by the Ministry of Foreign Affairs of China in accordance with the international practice and concurred by the international counterpart, was submitted to the State Council of China for approval. Through 20-month effort, all the legal procedures for the establishment of INBAR were finally completed by November 1997.

Great attention and support have been given by State leaders to the establishment of INBAR. On November 6, 1997, Li Peng, Premier, meeting the representatives of INBAR member States at the Signing Ceremony of INBAR Establishment.

Top: *On November 6, 1997, Qian Qichen, Vice Premier, shaking hands with the representatives of INBAR member States at the signing ceremony of INBAR establishment.*

Middle: *On November 6, 1997, Jiang Chunyun, Vice Premier, giving a speech at the INBAR Inauguration Ceremony.*

Bottom: *On November 6, 1997, Song Jian, Chinese State Councilor (centre), conversing with Dr. Gordon Smith, Chairman of INBAR Board of Trustees (left), Dr. Keith Bezanson, previous President of IDRC and member of INBAR Board of Trustees (right) at the INBAR inauguration banquet.*

China's President Jiang Zemin inscribed for INBAR. On November 7, 1997, Bu He, Vice Chairman of the Standing Committee of the National People's Congress and Wan Guoquan, Vice Chairman of the Chinese People's Political Consultative Conference unveiling the INBAR inscription during the INBAR Inauguration Ceremony.

Official Launching of the First Intergovernmental International Organisation Headquartered in China

On November 6, 1997, INBAR was officially launched with the signature of the INBAR Establishment Agreement in the Great Hall of the People in Beijing. China's President Jiang Zemin inscribed for INBAR and Premier Li Peng and Vice Premier Qian Qichen attended the signing ceremony. Representatives of the 9 founding members, namely: Bangladesh, Canada, China, Indonesia, Myanmar, Nepal, Peru, the Philippines and Tanzania signed the Treaty and 6 countries, namely: Italy, Japan, Korea, the Netherlands, Pakistan and Thailand sent observers to the ceremony.

Dr. Gordon Smith, the First Chairman of INBAR Board of Trustees (right) and Prof. Jiang Zehui, Co-chair of INBAR Board of Trutees (left).

On November 7, 1997, hosted by the Government of China, a grand Inauguration Ceremony for INBAR was held in Beijing Friendship Hotel. Bu He, Vice Chairman of the Standing Committee of the National People's Congress and Wan Guoquan, Vice Chairman of the Chinese People's Political Consultative Conference unveiled the inscription by President Jiang Zemin. Song Jian, State Councilor gave a warm address on behalf of the Government of China. Sixty-six foreign guests and celebrities from INBAR signatories and observing countries, diplomats from foreign embassies in China, members of INBAR Board of Trustees and representatives of 11 UN agencies, international donor agencies and well-known overseas universities and international companies, together with 260 Chinese representatives gathered together, envisioning the promising prospects of the future development of bamboo and rattan. Over 40 Chinese news media including Xinhua News Agency, People's Daily, the Central People's Broadcasting Station and China Central Television Station and foreign media from France, Germany, the Netherlands, the USA attended the ceremony. More than 60 news and reports about this event were released. INBAR was reported in the Times and a special presentation was made about INBAR by IDRC and IFAD in the APEC meeting.

During the INBAR launching ceremonies, the Government of China organised altogether 11 important events: the signing ceremony, the inauguration ceremony, press conference, INBAR Achievement Exhibition and the Foundation-laying Ceremony for INBAR Headquarters Building etc. and received over 160 foreign guests. With senior officials from Government of China present in 4 key occasions, the entire event was organised so successfully that it received strong echoes from the international community especially in countries of Asia, Africa and South America. Many research institutes, international companies and enterprises from China and abroad extended their congratulations to INBAR and conveyed their best wishes to the future development of INBAR

***Left:** The first INBAR Council Session was held in November 1997 in Beijing, China, and formally announced the appointment of INBAR's first Board and Director General. **Right:** The first INBAR Board Meeting was held in November 1997 in Beijing, China, the meeting established basic procedures and standards for the new organisation, and reviewed the transitional programme of work and budget prepared by the Interim Secretariat.*

Len Good

Maureen Oneil

Jim Moody

Gordon Houlden

Ate Oostra

Dr. Len Good, President and Chief Executive Officer of the Global Environmental Facility, former President of Canadian International Development Agency (CIDA), Dr. Maureen Oneil, President of IDRC, Canada, Mr. Jim Moody, Vice President of IFAD, Mr. Gordon Houlden, previous Minister of Canadian Embassy in China, Mr. Ate Oostra, representative of the Netherlands. They all made great contributions to the establishment and development of INBAR.

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国际竹藤组织在中国和世界的发展

INBAR'S DEVELOPMENT IN CHINA AND THE WORLD

On June 3, 1998, INBAR Headquarters Agreement was signed between the Government of China and INBAR.

Contributions to INBAR from the Government of China

The Government of China has always supported strongly the development of INBAR. In order to promote the effective operation and sound development, the Government of China established, after INBAR was established, China INBAR Coordination Leading Group headed by Prof. Jiang Zehui, Leading Member of China State Forestry Administration (SFA), Co-Chair of the INBAR Board of Trustees and President of the Chinese Academy of Forestry. It is composed of government officials from the State Commission of Reform and Development, Ministry of Foreign Affairs, Ministry of Finance, Ministry of Science and Technology, Ministry of Commerce, the State Forestry Administration, the Chinese General Administration of Customs and Beijing Municipal Government.

After its establishment, INBAR was supported by the Government of China with a temporary office in Anhui Beili, Chaoyang District, Beijing, as well as furniture, vehicles, communication facilities and salaries of local staff, etc.

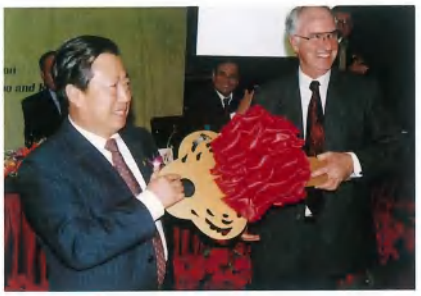
The new INBAR Headquarters Building provided by the Government of China has been put in use since August 2003. With a total area of 5000 square meters, the new INBAR building includes offices, meeting rooms, a VIP reception room, an exhibition hall and a reading room, which have greatly improved the working conditions of INBAR as an intergovernmental international organisation.

The Foundation-laying Ceremony of the INBAR Headquarters Building on November 7, 1997. From left: Mr. Hemayet Uddin, Minister of the Embassy of Bangladesh to China, Dr. I. V. Ramanuja Rao, INBAR Program Coordinator, Prof. Jiang Zehui, Co-Chair of INBAR Board of Trustees, Mr. Jim Moody, Vice President of IFAD, Dr. Gordon Smith, the First Chair of INBAR Board of Trustees, Mr. Jia Qinglin, Mayer of Beijing, Mr. Wang Zhibao, Administrator of the China State Forestry Administration, Ms. Zhu Lilan, Chinese Minister of Science and Technology, Mr. Wang Chunzheng, Executive Vice-Chairman of the Chinese State Planning Commission, Mr. Seewant Bhoojedhur, member of INBAR Board of Trutstees, Mr. Zhang Youcai, Chinese Vice Minister of Finance,etc..

On January 28, 2000, the formal commencement of the construction of International Centre for Bamboo and Rattan with the care and support of the Chinese Government. From left second: Prof. Jiang Zehui, Co-Chair of the INBAR Board of Trustees, Mr. Guo Aihua, Vice General Manager of the China State Construction Engrg. Corp., Mr. Wang Guangya, Chinese Vice Minister of Foreign Affairs, Mr. Wang Guangtao, Vice Mayer of Beijing, Mr. Hui Yongzheng, Chinese Vice Minister of Science and Technology, Mr. Wang Zhibao, Administrator of the China State Forestry Administration, Mr. Qian Qichen, Vice Premier of China, Mr. Liu Jiang, Minister of State Planning Commission, Mr. Zhang Youcai, Chinese Vice Minister of Finance, Dr. Gordon Smith, the First Chair of INBAR Board of Trustees, Dr. Ian Hunter, Director General of INBAR, Mr. Li Yucai, Vice Administrator of the China State Forestry Administration.

The International Bamboo and Rattan Tower (photoed: September 2004)

The Chinese government has been giving great attachment and support to the development of INBAR, conscientiously implementing the INBAR Headquarters Agreement and committing itself to providing INBAR with necessary financial support. On November 6, 2003, Mr. Hui Liangyu, Chinese Vice Premier, attending the International Conference on INBAR's Development in China and the World (left) and taking a group photo with the diplomats from embassies of INBAR member States attending the conference (right).



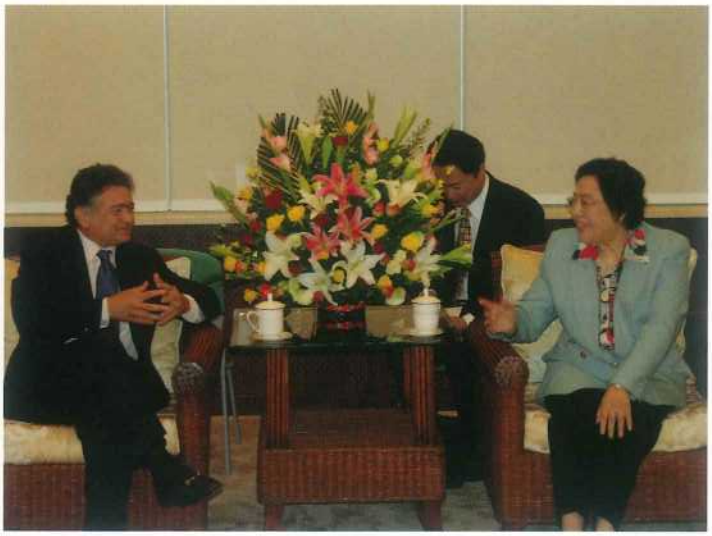
On November 6, 2003, Mr. Zhou Shengxian, Administrator of China State Forestry Administration, on behalf of the Government of China, handed the key of INBAR Headquarters building to Dr. Ian Hunter, Director General of INBAR.

After a five-year financial support programme since 1997, the Government of China continued its financial contribution to INBAR with an amount of US$ 400 000 in 2003 and 2004 respectively.

To assist INBAR in achieving its mission and objectives, the Government of China has established the International Centre for Bamboo and Rattan (ICBR), which is a research, management and training institution with priority on bamboo and rattan research and providing service for INBAR. Based in China and opening to the outside world, ICBR shoulders such specific responsibilities as setting up the national key open laboratory on bamboo and rattan; undertaking research on and international cooperation in bamboo and rattan; fostering senior professionals in the related fields; establishing a modern international bamboo and rattan technological information network to provide related services on technological consultation, information, appraisal and evaluation for domestic and foreign institutions; carrying out training, academic exchange and publicity activities at both international and national levels; providing logistic services for the INBAR Headquarters. At present, the ICBR undertakes a series of scientific research projects, national major basic research projects and high-tech research projects. In accordance with the principles of high standards, the ICBR is improving its research conditions and management capacities by equipping advanced instruments and equipments and introducing senior professionals with the aim to become an institution of international standards. Jointly with the Chinese Academy of Forestry, the ICBR is establishing the Bamboo Species Germplasm Conservation Base in Huangshan City of Anhui Province and the Tropical Forest Plant Germplasm Conservation Base in Sanya City of Hainan Province.

The recently completed International Bamboo and Rattan Tower composing of INBAR Headquarters building, the international Bamboo and Rattan Key Open Laboratory and the International Bamboo and Rattan Training Centre will provide greater support to INBAR in research and development, personnel training and holding international conferences.

On the occasion of the 6th Anniversary of INBAR on November 6, 2003, China State Forestry Administration and INBAR jointly sponsored the International Conference on INBAR's Development in China and the World in the new INBAR Headquarters building in Beijing. In his address to the conference, Mr. Hui Liangyu, Chinese Vice Premier, stressed that the Government of China, as the Host State and one of the founding members, will continue to support the development of INBAR.



Top left: Mr. Xu Guanhua, Chinese Minister of Science and Technology, accompanied by Prof. Jiang Zehui, is visiting the laboratories of ICBR.

Top right: Prof. Jiang Zehui meeting Dr. Manoel Sobral Filho, Exective Director of the International Tropical Timber Organisation (ITTO).

Left: Mr. Joseph J. Jen, Under Secretary of USDA, accompanied by Prof. Jiang Zehui, is visiting laboratories of ICBR.

Bottom left: Mr. Yang Jiechi, Chinese Ambassador to the United States of America, accompanied by Mr. Zhang Jianlong, Director General of ICBR, is visiting INBAR bamboo and rattan product exhibition.

Bottom right: Mr. Rolf Jördens, Vice Secretary General of the International Union for the Protection of New Varieties of Plants (UPOV), accompanied by Mr. Yue Yongde, Executive Deputy Director General of the ICBR, is visiting laboratories of ICBR.

ICBR is constructing the Bamboo Species Germplasm Conservation and Training Base in Huangshan City of Anhui Province. The top picture shows the commencement of the construction of the Base, the picture on the right shows the international training building in the Base (construction is under way).

Bottom left: Study on the micro property parameters of bamboo and rattan with the X Ray Diffractometer.

Bottom right: Study on the microstructure of bamboo and rattan with Field Emission Environment Scanning Electron Microscope.

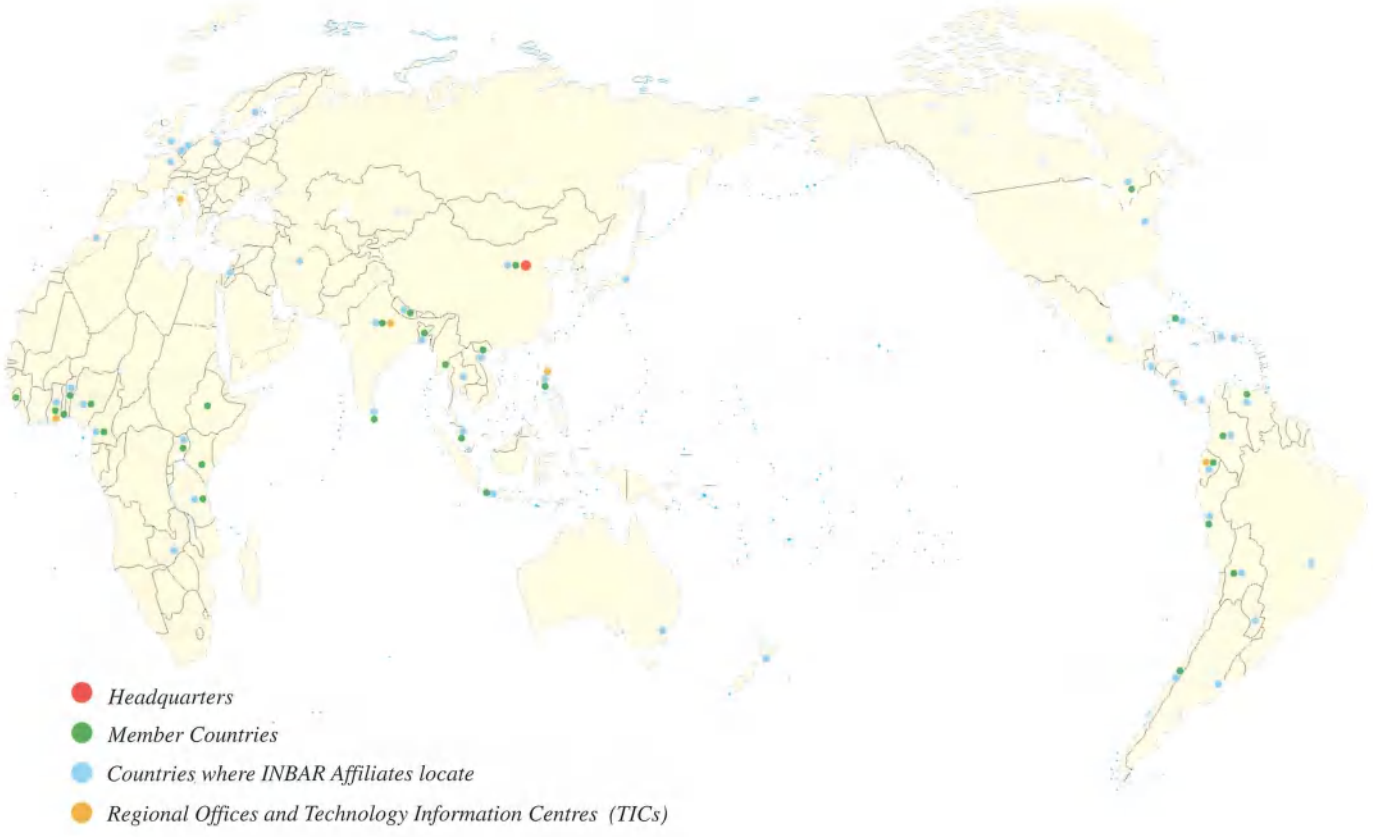
In June 2004, Mr. Joseph Carron, the Canadian Ambassador to China signed the CIDA/INBAR funding agreement with Dr. Ian Hunter, Director General of INBAR (top left). In September 2004, Mr. Qu Guilin, Director General of the International Cooperation Department of the China State Forestry Administration signed the MOU on Chinese Government contribution for year 2004 with Dr. Ian Hunter (top right). In February 2001, Mr. Iwwzi H. Al-Sultan, President of IFAD signed the IFAD project contract with Dr. Ian Hunter (bottom left). In July 2000, the Dutch Government signed a 4-year funding contract with INBAR (bottom right).

Contributions to INBAR from International Organisations and Donor Agencies

Since its establishment in November 1997, INBAR has enjoyed strong support from the Government of China, IDRC of Canada, DGIS of the Dutch Government and IFAD in financial contribution, capacity building and project development. The Canadian International Development Agency (CIDA) started to fund INBAR since April 2004, after IDRC funding programme ended.

In recent years, many international organisations have provided INBAR with funds and opportunities for cooperation, including but not limited to the European Union (EU), CFC, Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (GTZ), International Tropical Timber Organisation (ITTO), Food and Agriculture Organisation of the United Nations (FAO), United Nations Industrial Development Organisation (UNIDO), Asian Development Bank (ADB), the Ford Foundation, Worldwide Fund for Nature (WWF), The World Bank (WB), Department for International Development (DFID) of the United Kingdom, United States Agency for International Development (USAID), Australian Centre for International Agriculture Research (ACIAR), Royal Botanic Gardens of the United Kingdom (KEW) and Department for International Development Cooperation of Finland (FINNIDA), etc. Support has also been provided in project implementation by INBAR member countries.

October 2002, the INBAR Donors Meeting was held in Beijing. More than 10 international organisations, government aid agencies participated the meeting. Respresentatives of donor agencies has made exchanges on future cooperation in a wide range of fields concerning bamboo and rattan, at the same time, established closer collaborative relations.



- *Headquarters*
- *Member Countries*
- *Countries where INBAR Affiliates locate*
- *Regional Offices and Technology Information Centres (TICs)*

The Development and Strengthening of INBAR in the World

Over the last 6 years, INBAR has developed from the initial 9 founding members to the current 28 member countries and the number of observers increased from 6 to about 20 with regional offices established in India, the Philippines, Italy, Ecuador and Ghana and over 420 affiliates spreading over major bamboo producing and consuming countries across Asia, Africa, North America, South America, Europe and Oceania. In 2000, INBAR was accepted by the Common Fund for Commodities (CFC) as the International Commodity Body (ICB) for bamboo and rattan.

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保护环境 消除贫困 推动产业：国际竹藤组织在行动

PROTECTING THE ENVIRONMENT ERADICATING POVERTY AND PROMOTING INDUSTRY —INBAR IN ACTION

Bearing in mind the responsibility of poverty eradication, one of the Millennium Development Goals (MDGs) in the early period of the 21st century, INBAR is developing a new strategic plan to enhance its advantages in the application and development of science and technology and stress the importance of strategic investments in bamboo and rattan contributing to the sustainable livelihood of the rural poor, strengthen South-South cooperation in a bid to make the research, resource protection and utilisation of bamboo and rattan to become an integral part of the sustainable environmental and socio-economic development at the global level.

INBAR's International Cooperative Projects and Achievements

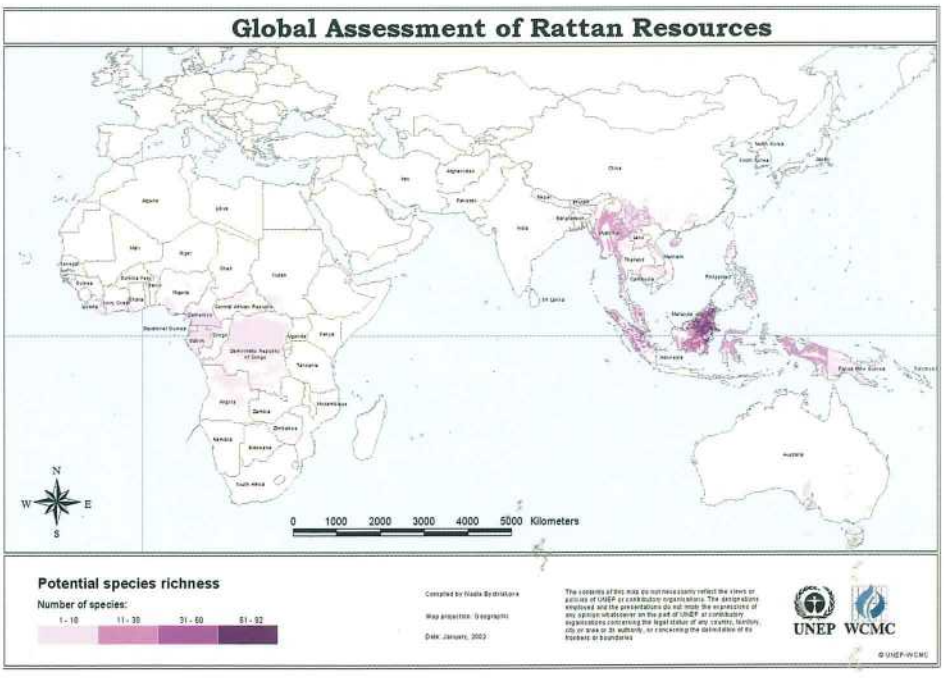
With the assistance of INBAR, many bamboo and rattan development organisations have been established in INBAR's member States, such as the BARNET of Ghana, the CIBART of India and the Bamboo Association of Ecuador. They are all involved in INBAR's project activities as the local partners.

Bamboo global distribution database INBAR and United Nations Environment Programme World Conservation Monitoring Centre (WCMC-UNDP) collaboratively launched a global distribution database of bamboo and rattan resources. A distribution map has been made, showing the distribution of about 1200 bamboo species and 610 rattan species in the world.

Bamboo species and site matching INBAR has developed a GIS-based process in the form of CD-ROM. With this process, the natural distribution and potential regions of species introduction for every bamboo species can be shown and all suitable bamboo species for a given site can be illustrated on the Map of the World.

Database of the utilisation of world bamboo species INBAR has collected and compiled the information on the growth, distribution, properties and fields of utilisation of more than 300 important commercial bamboo species in the world in a way convenient for inquiries and direct use.

International bamboo and rattan trade database In cooperation with FAO, European Forest Institute (EFI), ITTO and World Customs Organisation (WCO), INBAR has launched an online trade database, and adopted the new international customs codes for bamboo and rattan products, which will improve the current statistical situations for bamboo and rattan products in the world.



Left page: *the development of bamboo and rattan increases rural income. The picture shows farmers new house built in the valleys where there are rich bamboo resources.*

INBAR has been actively working with member States, research institutes and international organisations to conduct in-depth study for the solutions to practical problems in conservation and utilisation of bamboo and rattan. The top picture shows Mr. Wu Zhimin, Deputy Director General of INBAR discussing with INBAR Secretariat Officers; the bottom pictures shows the Global Assessment of Rattan Resources made in cooperation with WCMC-UNEP.

In Asia

In collaboration with a NGO called Utthan, INBAR made significant achievements in reclaiming degraded land through bamboo plantation in Allahabad, a city in northeast India. Abandoned brickfield was turned into fertile soil, and the bamboo nursery established has provided many employment opportunities.

INBAR participated in the development of the National Bamboo Resources Development Plan of the Philippines.

In cooperation with DFID and the Timber Research and Development Association (TRADA), INBAR has carried out bamboo housing development activities in Nepal and Sri Lanka.

In collaboration with Los Banos University of the Philippines, INBAR implemented the Philippines National Bamboo Resource Assessment, developed a framework for market and non-market bamboo product and service evaluation, and collected experiences and data on the economic values of bamboo species in different regions and rural areas of the country.

There has been a long history in the utilisation of bamboo in Asia, where bamboo enjoys a high reputation in many countries. In India, bamboo is well-known as "the poor man's timber"; while in China bamboo is considered as "a friend of the human being" and in Vietnam it is called "brothers" by the Vietnamese people. INBAR has carried out many projects in Asia; ***top left:*** *Nepal rattan nursery management;* ***Top right:*** *Assessment on bamboo resources in the Philippines;* ***Bottom left:*** *Bamboo Handicraft Training Workshop in the Northeast of India;* ***Bottom right:*** *bamboo cultivation research in the Philippines.*

Left page: *an Indian woman participating the bamboo weaving handicraft training run by INBAR.*

Top: *Semi-finished rattan furniture in a factory of Indonesia;* ***bottom left:*** *bamboo nursery established for the soil rehabilitation project in India;* ***bottom right:*** *rattan cane market in Nepal.*

Left page: *Dendrocalamus sinicus, widely distributed and utilised in Southeast Asia.*

In Africa

In July 2003, the Workshop on Bamboo Development in Four Countries in East Africa was held by INBAR in Uganda, and recommendations were made with regard to development of the bamboo industry in East Africa.

In July 2003, an INBAR expert team made a field visit on bamboo development in Ethiopia and jointly drafted with UNIDO a project proposal on market-oriented bamboo development in East Africa.

In 2001 and 2002, INBAR and the Ministry of Science and Technology of China (MOST) sponsored Chinese expert groups' visit to Africa for bamboo and rattan resource investigation, suggestion on national bamboo and rattan development strategies and guidance in cultivation, processing and utilisation of bamboo and rattan.

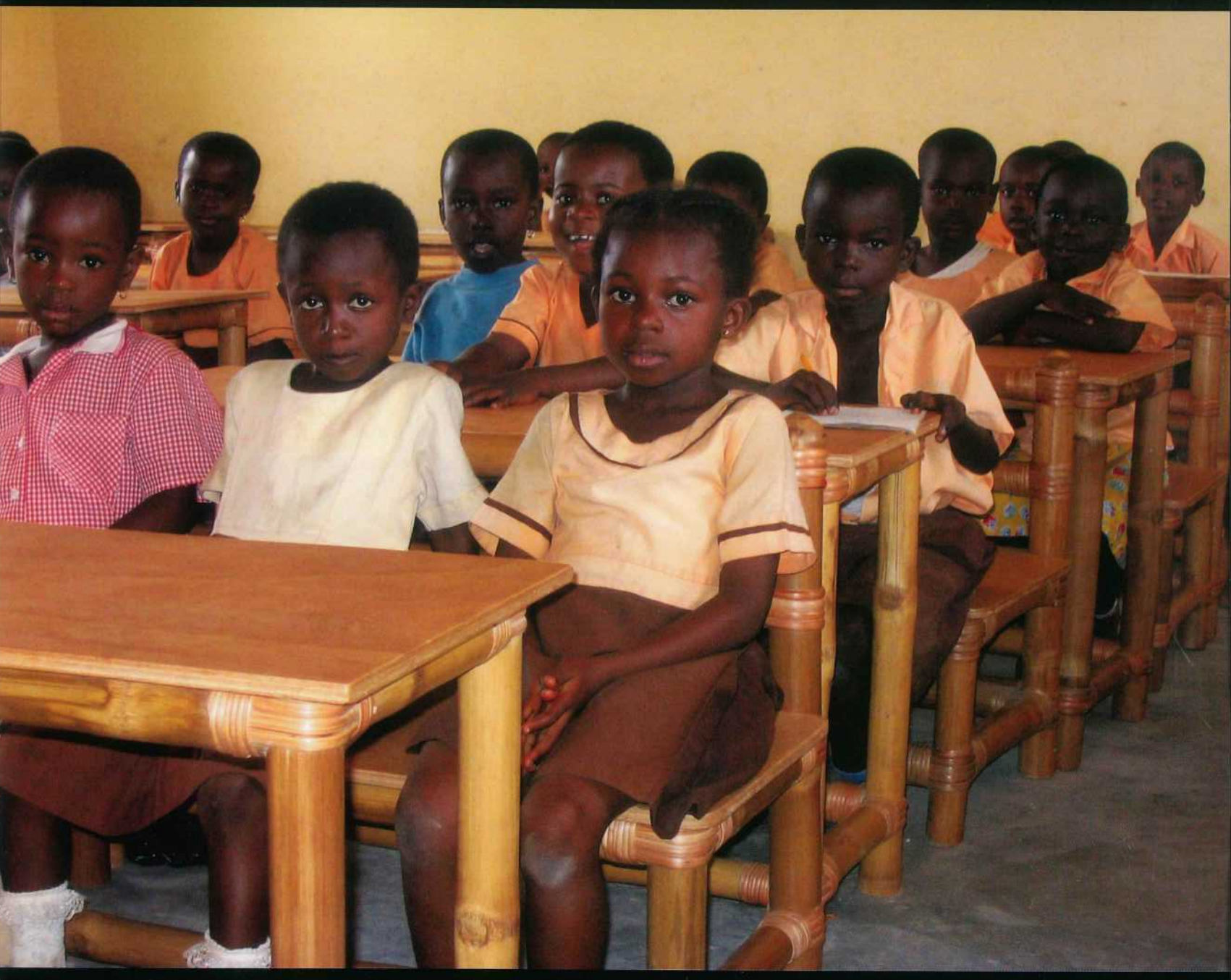
With the cooperation of the Government of Ghana and TRADA, INBAR held a bamboo housing workshop at the Wood Industries Training Centre (WITC) in Ghana in 2003, and a demonstration primary school building was built.

INBAR helped the United Nations High Commission for Refugees (UNHCR) in Ghana in designing refugee shelter with bamboo frame, which is not only cheap and durable, but also preferable from the viewpoint of mitigating deforestation. It has been considered to replace the temporary tents with bamboo frame tents.

Mrs. Lalao Ravalomanana, the First Lady of Madagascar (third left), accompanied by Mr. Sylvain Rabotoarison, the Minister of Environment, Forestry and Water Resources of Madagascar (second left) visited the bamboo and rattan product exhibition in INBAR Headquarters on May 14, 2004.

INBAR's activities in Africa are ever increasing. ***Top left:*** *INBAR/MOST training workshop organised with Prof. Zhu Zhaohua, the first Deputy Director General of INBAR (centre speaking), attracted many representatives from Africa.* ***Top right:*** *An expert team led by Prof. Chen Xuhe, former Deputy Director General of INBAR (centre), had a field study in Ethiopia in July 2003 discussing cooperation issues on the development of bamboo sector.* ***Bottom left:*** *bamboo furniture processing in Ethiopia.* ***Bottom right:*** *Technical advice on the operation of bamboo processing machines.*

Left page: *an African woman making bamboo weaving handicraft. Bamboo handicraft making helps women increase income and improve living conditions.*



In 2001 and 2002, INBAR and the Ministry of Science and Technology of China (MOST) sponsored Chinese expert groups' visit to African member countries for bamboo and rattan resource investigation, suggestion on national bamboo and rattan development strategies and guidance in cultivation, processing and utilisation of bamboo and rattan.

The top picture shows commonly seen bamboo house in Tanzania; the bottom left picture shows a demonstration bamboo building for primary school established in Ghana; the bottom right picture shows a bamboo construction training in Ghana.

Left page: *students sitting behind bamboo tables in the primary school, demonstration bamboo building of INBAR in Ghana.*

Top: *INBAR signing an MOU on technical cooperation with Peru on October 28, 2003 in Beijing, China (From the left to the right: Mr. Luis V. Chang, ambassador of Peru; Ms. Eliane Karp de Toledo, the first lady of Peru; Dr. Ian Hunter, Director General of INBAR).* ***Below:*** *The first working group meeting in Bolivia.*

In South America

INBAR has held workshops and training courses on "bamboo housing and livelihood development techniques" in Ecuador, Bolivia and Peru to extend bamboo housing techniques and improve bamboo cultivation and making of bamboo furniture and handicrafts. As a result, the income of the local people has been raised.

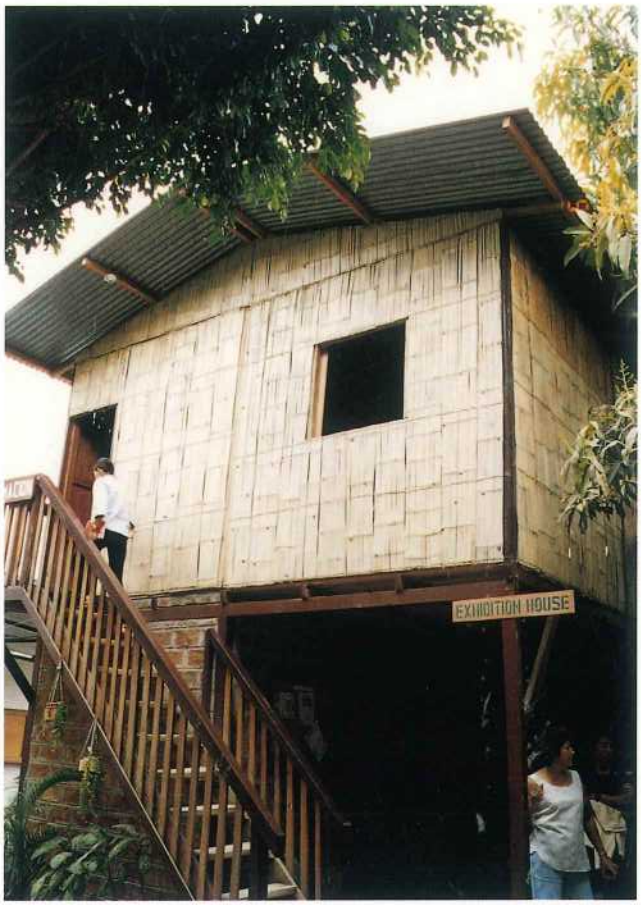
With the fund of European Community, INBAR is carrying out the project of Participatory Development of a Replicable Model for Bamboo-based Development in the Andean Countries. In collaboration with the project partners CEDERENA, ECUABAMBU, Hogar de Cristo, and the University of Guayaquil, INBAR has carried out diagnostic studies identifying social units as target groups, and has established strategic alliances with important stakeholders in the bamboo sector at national as well as regional levels in the Andean Countries. In order to enhance capacity and ability of local and regional bamboo development, the project purchased tools and machines from China for the development of traditional as well as innovative bamboo products and sent several staff to China for training.

In 2000 and 2002, INBAR cooperated with MOST, sent two INBAR/China expert groups to member countries in South America to investigate the bamboo resource and utilisation status of these countries, find out needs for south-south cooperation, and suggest on bamboo development strategies.

Upper left: *INBAR/China expert group investigate bamboo resources and development in South America;* ***upper right:*** *Guadua bamboo nursery;* ***bottom:*** *the exuberant bamboo product market in South America.*

Left page: *the low cost bamboo house for the poor in Ecuador, an INBAR/ Hogar de Christo project.*

INBAR extends advanced bamboo construction technologies in Colombia to other South American Countries. ***Top left:*** *Top grade bamboo residence of South America;* ***top right:*** *a bamboo structure in Church Simon Velez of Colombia.*



INBAR assists in the development of bamboo-based earthquake-resistant house in South American countries; Cooperating with Hogar De Cristo in developing low-cost bamboo housing for rural poor (right); Raw Gudua Bamboo material (upper left); Pre-fabricated bamboo structure (centre left); finished pre-fabricated bamboo housing (lower left) .

Left page: *a Guadua bamboo stand.*


Fu

INBAR's Main Project Activities in China

The Production and Utilisation of Bamboo and Rattan in the Province of Hainan With the cooperation of GTZ and the Hainan Forestry Bureau, the project has established new rattan plantation 6000 ha, new bamboo plantation 800 ha; raised 4 million rattan seedlings and 1.2 million bamboo seedlings. Through awareness raising, strategy consultation on Hainan Bamboo and Rattan Development, as well as technical training for local government officials, farmers (ethnic group) and technicians, the project increased the local capacity in bamboo and rattan development and utilisation; the project also implemented the user-right policy for rattan cultivation under secondary forest lands by poverty farmers in the Middle Mountainous Region. The project will play an essential role in the natural forest protection and rural income generation in the Middle Mountainous Region of Hainan.

INBAR/WWF project Demonstration of the sustainable energy-efficient housing. In partnership with WWF, and with reference to the highly effective and energy-efficient construction experiences of the Netherlands, this project used bamboo timber and bamboo panel board as part of the building materials to reduce the consumption of wood and red bricks. The structural designs of 4 types of buildings for Yunnan Province, including Dai Residence, Mengzi Town House, Jinghong Tourist Hotel and Pingbian Primary School, have been completed. Bamboo board beams were used to construct the roofing of the Pingbian Primary School building and bamboo composite boards were used to form the walls. The Japanese Embassy contributed RMB 620 000 to build the Pingbian Primary School, which was completed in September 2004.

Upper: *Pingbian School Building of INBAR/WWF Joint Project: Energy-Efficient Housing Demonstration in Honghe, Yunnan of China.* ***Bottom left:*** *rattan plantation of the Project of Production and Utilisation of Bamboo and Rattan in the Hainan Province.* ***Bottom right:*** *bamboo nursery established by the Hainan project.*

Left page: *China's bamboo and rattan weaving industry absorbed large number of laid labours, and contributes to the national export value. The picture shows a woman working on rattan weaving machine.*

The sympodial bamboo mat corrugated board project (implemented by the Chinese Academy of Forestry) The project made new industrial products from sympodial bamboos, including bamboo timber beams, bamboo mat corrugated roofing boards and bamboo particleboard. These products will have bright prospects in construction. The roofing and wall of the above mentioned Pingbian Primary School are the products developed by the Wood Industry Research Institute of the Chinese Academy of Forestry.

The bamboo species germplasm collection and conservation project (implemented by the Chinese Academy of Forestry) This project has established a base in Huangshan City of Anhui Province with more than 50 bamboo species introduced.

INBAR/Ford Foundation project on poverty alleviation and the environmental protection with development of the bamboo industry in Chishui, Guizhou Province A bamboo mat board factory has been established with participatory approaches to promote economic development and increase the income of the rural poor. Meanwhile, bamboo bio-gas generators are being promoted for the local residents to reduce firewood consumption and logging of forests.

Bamboo scaffolds for building construction In cooperation with the Research Centre for Advance Technology in Structural Engineering (RCATISE) of the Hong Kong Polytechnic University, INBAR implemented the research project on bamboo scaffolds for building construction, an international seminar was held in 2002, a proceeding and two technical reports were published by INBAR on this specific topic.

Demonstration of pack-flat bamboo furniture project The traditional bamboo culm furniture is ponderous with a high storage and transportation cost. A workshop on "Bamboo Glue-laminated Pack-flat Furniture" was held in April 2002 in Lin'an, Zhejiang Province, during which the new successfully trial-manufactured glue-laminated pack-flat furniture was demonstrated. The new furniture with a low storage and transportation cost is convenient for long distance transportation and export, thus has promising prospects for future development.

Top left: *an International Workshop on Bamboo Scaffolding in Hong Kong in May, 2002.* ***Top right:*** *participatory villager's meeting identifying project orientations in Chishui.* ***Bottom left:*** *extending bamboo reinforced bio-gas generator to reduce wood and fire wood consumption, improve people's livelihood, raise awareness of bamboo resource and promote the economic development for the community.* ***Bottom right:*** *laminated bamboo beam for the Pingbian School was developed with the cooperation of the Chinese Academy of Forestry.*

Left page: *China's bamboo weaving has reached certain industrialisation levels, and has played an leading role in economic development of bamboo producing regions. The pictures shows the bamboo curtain processing.*

Bamboo paper With a low proportion of wood pulp in the paper-making (only 12.2%) industry, China has to spend US$ 5 billion annually to import paper and pulp to meet the demand in the domestic market. China has rich bamboo resources, one of the major raw materials for paper-making with a long and slim fibre. Bamboo paper has been used in the INBAR office for several years and is expected to have a potential market in the near future. The bamboo pulp mill project with an annual capacity of 200,000 tons in Chishui, Guizhou has started. INBAR chaired an expert evaluation on this project and helped the project in 2003 with planning for the bamboo raw material base.

Bamboo is a kind of important raw material for making paper. To utilise bamboo to make paper can not only save timber resource, but also drive the industrial development. The pictures in the right shows a bamboo pulp and paper mill in Guangning, Guangdong Province of China.

Left page: *Bambusa textilis, an important specie for bamboo pulp making.*

Bamboo shoots, as one of the traditional bamboo products, are very popular among domestic and international consumers. With the improvement of the processing and preservation technology, more and more bamboo food products have been developed, such as dried bamboo chips, canned bamboo shoots, preserved bamboo shoots, bamboo juice and bamboo fungi juice, etc. ***Right:*** *fresh bamboo shoots market.* ***Uppper left:*** *fresh bamboo processing workshop.* ***Lower left:*** *bamboo shoot crisps.*

Left page: *shoot of Dendrocalamus latiflorus, an important specie for bamboo shoot production.*

Development of new bamboo shoot products The annual export value of bamboo shoots from China amounts to US$150 million. INBAR cooperated with Beijing Food Research Institute in developing a series of bamboo snacks, using bamboo shoot powder and maize flour to make bamboo shoot crisps which has a promising market perspective.

Prof. Jiang Zehui, Co-Chair of the INBAR Board of Trustees, giving a speech at the opening ceremony of the 2001 Yibin Bamboo Cultural Festival (left); Dr. Ian Hunter, Director General of INBAR, planting a ceremonial bamboo during the 2003 Xianning Bamboo Cultural Festival (right).

INBAR/China Training Programmes and INBAR's Participation in the China Bamboo Cultural Festival

Since 1999, INBAR has held annual training in China with the cooperation of the Chinese Ministry of Science and Technology (MOST) and the Chinese Academy of Forestry on bamboo and rattan cultivation, processing and utilisation. In the past 6 years, 210 participants from 38 countries were trained in the workshops. The training brought great impacts to the bamboo and rattan awareness raising in developing countries in Asia, Africa and South America, at the same time, enhanced the transfer of advanced cultivation, processing technologies from China to these countries. It also plays the role of a technical transfer platform among member nations of INBAR.

INBAR, together with China State Forestry Administration (SFA), Governments of Hunan, Sichuan and Hubei, has been one of the sponsors three times for China Bamboo Cultural Festival. During each festival, INBAR held an international workshop on cultivation, processing and utilisation of bamboo forests which were attended in total by over 800 scholars and diplomats from China and abroad.

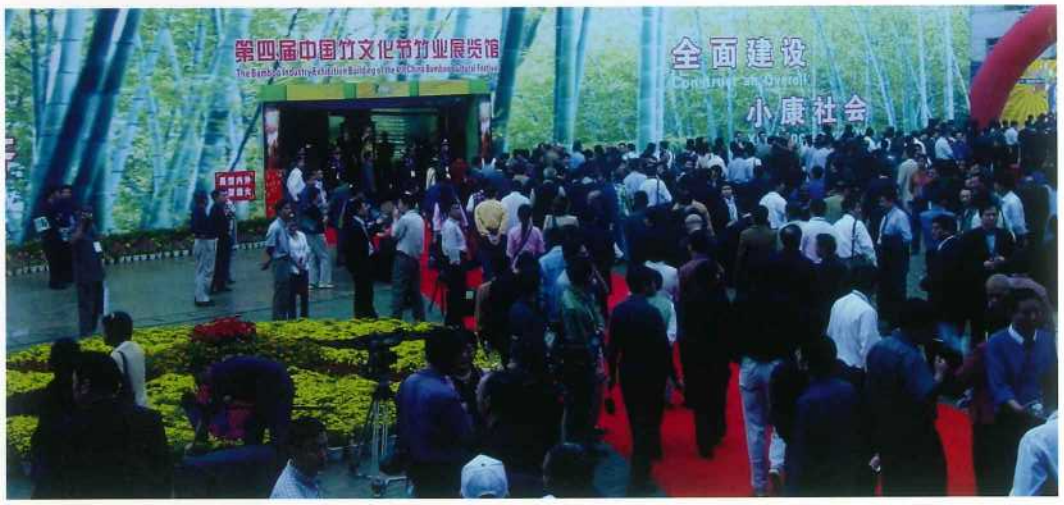
As the summit in China's bamboo sector and a major international academic and commercial event related to bamboo, China Bamboo Cultural Festival is held once every two years by SFA, INBAR and the host province. Up to now, four bamboo cultural festivals have been held respectively in Anji of Zhejiang (1997), Yiyang of Hunan (1999), Yibin of Sichuan (2001) and Xianning of Hubei (2003). A series of activities were also organised during the festival, including the international workshop, business negotiation, bamboo industry exhibition, construction of bamboo gardens and visit 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 the INBAR member countries and has already been an important platform for economic cooperation and exchange in the bamboo industry.

Known as the "Kingdom of bamboo", China has abundant bamboo resources. Bamboo is frequently used in construction, paper-making, food, furniture, packaging, transportation, medicine and tourism industries and bamboo products are exported to over 30 countries and regions with great market potential.

INBAR will continue to cooperate with Government of China to facilitate its international cooperation on bamboo and rattan research, industrial development and provide favourable conditions for Chinese bamboo and rattan technologies and products to enter the world market.

A famous British scholar once said that "the civilisation of East Asia is the civilisation of bamboo". As early as in the Neolithic Age 7000 years ago, bamboo was used by the human being. "Literature on Bamboo Slips" was the most primary book in China. Bamboo musical instruments were made 3000 years ago, brush pen with bamboo penholder was invented 2200 years ago, and bamboo pulp for papermaking was originated in the 9th century AD in China. Invention and utilisation of bamboo slips, paper and brush pen syncretised the history of Chinese civilisation with bamboo, constituting a colorful Chinese bamboo culture and bringing about far-reaching significance to the progress of civilisation.

Top left: *Participants are practising carefully in the INBAR/MOST annual training workshop.* ***Top right:*** *Presentation in the International Workshop on Bamboo Industrial Utilisation during the 2003 Xianning Bambo Cultural Festival in Hubei, China. Middle: The Bamboo Products Fair during the 2004 Xianning Bamboo Cultural Festival attracted a great number of domestic and international visitors.*



Bamboo gardens were constructed during each Festival to conserve, research and develop bamboo gene resources. The bottom picture shows the scenery in Anji Bamboo Garden, Zhejiang Province.

Left page: *Phyllostachys vivax, one of the bamboo species of high ornamental value.*

在植物王国里，竹子和藤类是最具生命力的常绿植物。中国人常用『雨后春笋』、『破土而出』比喻事业兴旺发达、充满生机与活力。由中国政府和加拿大国际发展研究中心（IDRC）、联合国国际农业发展基金（IFAD）共同发起的国际竹藤组织（INBAR），自1997年11月6日在中国北京宣告成立以来所走过的8年发展历程，正是这些成语最真实的写照。

竹藤资源的利用与科学研究

UTILISATION OF BAMBOO AND RATTAN RESOURCES

Bamboo and rattan are important forest products next to timber and have long been utilised by the human being. Bamboo and rattan have been closely linked to people's life. People plant bamboo and rattan and take good care of them, creating resplendent bamboo and rattan culture.

There are 1200 bamboo species in the world falling under 70 genera with a wide distribution ranging from tropical to temperate and arid zones, mostly in the tropical and temperate zones, Asia in particular. Currently the total area of bamboo in the world exceeds 22 million hectares or 1% of the world's forest area, and the bamboo growing area has been progressively increasing by 3~4 times each year. The annual production of bamboo timber is between 55~65 million tons accounting for 5% of the world's timber production. China has 500 bamboo species falling under 40 genera covering an area of 5.5 million hectares or over 25% of the world's total, ranking the first in the world. In recent years, the area of bamboo in China has been increasing by 7%~8%.

There are various bamboo species distributed around the world. Dendrocalamus asper (top left), Arundinaria alpina (top right), Chimonocalamus delicatus (middle first), Phyllostachys aurea (middle second), Bambusa vulgaris cv. Vittata (middle third), Dendrocalamus sikkimensis (middle fourth), Phyllostachys nigra (bottom first), Chimonobambusa yunnanensis (bottom second), Phyllostachys sulphurea (bottom third), Qiongzhuea tumidinoda (bottom fourth), they are of potential economical value or important genetic value.

Left page: *Dendrocalamus giganteus, widely distributed in Southeast Asia.*

Currently the liana we are dealing with mainly refers to rattan. Rattan, spiny climbing palm, being taxonomically subordinate to the families of Palmae, Calamoiedeae, and calameae. It is estimated that there are over 600 rattan species in 13 genera around the world mainly in tropical Asia. Of which, 10 genera originated in Southeast Asia and adjacent areas, 4 genera distribute in tropical West Africa (3 of them are endemic to this area). China is vast in expanse. there are 40 species and 21 varieties in 3 rattan genera or 23.1% of the world's total, distributed naturally from the southeast coast to the southwest mountainous area in the tropical and subtropical zones to the south of latitude 24° N on the north rim of the central distribution zone of rattan. The total area for natural rattan distribution is about 35 million hectare, among which 29 million hectares are in the Asian Pacific region with an annual rattan production of 320 thousand tons.

The main economically important rattan species in the world: ***Upper:*** *Calamus simplicifolius;* ***bottom left:*** *Daemonorops margaritae;* ***bottom middle:*** *Calamus austroguangxiensis;* ***bottom right:*** *Calamus nambariensis.*

The Value of Utilisation of Bamboo and Rattan Resources

Bamboo and rattan are two most important non-timber forestry products, they are both renewable with short rotation, easy in processing and versatile, and they have very important ecological, economic and social benefits.

Ecological benefits

The fast growing and evergreen bamboo forests, with their well developed root and rhizome system, multiple harvesting property and vigorous propagation and regeneration capacity, are ideal for protecting water sources, conserving water and soil, regulating climate and purifying the air. Bamboo forests are also extremely important to the survival of other species. There are many endangered wild animals, such as giant panda, are dependent on bamboo forest for food and shelter.

Bamboo, with high ornamental value, is an important integral component of urban greening and gardening and tourist attractions. Many bamboo forests, such as the Hongshan "bamboo sea" in Taojiang County of Hunan Province, Anjin Bamboo Botanic Garden of Zhejiang Province, "bamboo sea" of Chishui National Park of Guizhou Province, and the Shunan "Bamboo Sea" of Sichuan province, have become new tourist attractions.

Rattan also has important ecological roles. Unlike bamboo, rattan is an integral part of the tropical forest ecosystem owing to its climbing habit. The innumerable pinnate leaves, which extend up to 2 m in length with their mosaic arrangement, play a major role in intercepting the splash effect of rain and improve the water-holding capacity of the soil. The species also play a vital role in enriching the soil by their leaf litter, which adds to the organic content of the soil.

Bamboo is of great ecological importance. The rare Giant Panda lives on bamboo; bamboo plays an important role in soil and slope stabilisation and farmland protection, water conservation and soil control.

Left page: *bamboo forest is not only the habitat but also food resouce of Giant Panda, the most precious animal in the world.*

Bamboo is of highly ornamental value, it can be used to improve the living environment and beautify the city landscape. ***Top:*** *prototyped bamboo fence;* ***bottom:*** *bamboo garden landscaping in public greenland of Shanghai.*

Left page: *living environment in bamboo regions.*

Bamboo weaving handicraft has reached certain industrialisation level. The left pictures shows bamboo weaving product quality control, the right picture shows the bamboo curtain processing in factory.

Left page: *Bamboo has unique advantages in high grade construction. The picture shows the bamboo based ceiling of the Royal Madrid Airport, the construction of the ceiling is conducted by a Chinese company.*

Economic Benefit

Bamboo has been widely used in such fields as construction, transportation, furniture making, pulp and paper making and handicraft weaving. The bamboo industry has become a new industry that plays an important role in helping local people to get rid of poverty and increasing income. Anji County and Lin'an of Zhejiang Province and Jian'ou City of Fujian Province are regarded as the " County of Bamboo" in China. Their bamboo industry plays a significant role in accelerating local economic development and increasing farmer's income with production values of more than RMB 3 billion, RMB 1.3 billion and RMB 1 billion respectively every year.

Bamboo product Bamboo timber is tenacious and has multiple functions. It is an ideal material for construction and papermaking, a raw material for weaving and sculptures, a favourable product for delicious food and health care and one of the environment-friendly greening species. Bamboo shoots are regarded as fresh and delicious forest vegetable with high protein and nutrient content, low fat content and abundant edible fiber. Bamboo timber can produce various products and is mainly used as papermaking materials and in construction; they are also used in making handicrafts. There are diversified modern bamboo-based boards including bamboo-wood or plastic composite board, decorative overlay board, plywood, laminated board, and flooring, particle and fibre board; the newly invented bamboo fibre clothes are well received by consumers since they came into market.

Bamboo handicraft Bamboo handicraft is the treasure of oriental bamboo culture, and bamboo-weaving technique can be regarded as a unique attraction of traditional Chinese handicraft. The traditional weaving products of China are exported to more than 80 countries and regions.

Bamboo industry and bamboo trade Among the total annual production of bamboo timber, 30%-40% is used for construction, 15% for making bamboo products, 20%-25% for papermaking, and 15%-30% for other purposes. The annual global trade value on bamboo products is over US$ 7 billion. EU, the United Sates and Japan are the main consumers of bamboo products with their imports accounting for more than 60% of the global annual trade value on bamboo products.

In 2002, the output value of China's bamboo industry was RMB 37 billion, and the foreign exchange earning through bamboo product export reached US$ 600 million; bamboo shoot products are extraordinarily welcome in the international market, the annual export value of bamboo shoots for China is about US$ 150 million.

In many Asian countries, rattan has the economic importance only next to timber; rattan furniture is the most popular product. The global trade value of rattan and its products has reached US$ 7 billion and more than 700 million people are related to the trade and use of rattan.

Rattan crafts and products As an important forest resource, rattan has close relationship with people's daily life. People collect rattan cane from forests, or directly use rattan, or make rattan into rattan flacks, and then weave them into different kinds of utensils, such as rattan basket, rattan mat, rattan furniture, rattan crutch, rattan fishing pole, animal trap, and rattan birdcage. In people's daily life and production, rattan is the primary choice for utensils when hardness, flexibility, and tenacity are all required; rattan cane are used as rope to tie livestock, and to fix houses and carriages and ship; rattan cane can also be used in making cordage for anchor, bridge and the partition between ships, ropes made of rattan can be used to band houses, fences, bridges and even ships; mature rattan leafs are flexible, durable and waterproof, they are ideal material for the roof of cottage. Young leaves of rattan can be used as the wrapper of cigarette, young tip and bud of rattan are very nutritious and edible, rattan fruit is edible and can be used in oriental medicine.

With the booming of economy, the development of human society, the advancement of technology and the innovation in craft design, delicate and unique rattan craftworks, furniture and newly invented rattan medicines and food are gradually diversifying both by varieties and specifications, they are more natural, modern, ethical and endemic than before, and they are getting into both people's daily life and elegant art circle with their brand new gestures.

Rattan industry and trade on rattan The global trade value of rattan and its products has reached US$ 7 billion and rattan furniture is one of the most welcomed products. As a major rattan producing country, Indonesia's rattan trade value counts for 70% of the world's total. China's annual import and export trade value of rattan products is around US$ 200 million and is increasing by 10% every year. China's rattan industry has experienced a history of development of 150 years, during which the technical level has been improving continually. The initiator and cradle of world's rattan industry date back to China Nanhai Rattan Factory, most of the rattan factories in Southeast Asia were originated from it. Currently, large-scale rattan companies have achieved industrialisation, and semi-mechanised and small-scale rattan factories and home factories are still using small machines and homemade cleaving tools. The biggest producing base of rattan handicrafts and the distributing centre of rattan products of China have come into being in areas with Nanhai City of Guangdong Province and Anxi County of Fujian Province as the centres. In China, people who are directly employed by rattan industry have exceeded 150 thousands; the rattan industry plays a significant role in promoting regional economic development.

The right picture shows the diversified rattan weaving products.

Left page: *harvesting of rattan.*









Rattan furniture and rattan weaving products are well received in the international markets. Rattan-weaving is a traditional industry in South China and some countries in South Asia. The above three pictures shows the high grade rattan furniture.

Left page: *the various traditional bamboo handicrafts of China are of high aesthetic value, and are welcomed by people all over the world.*


FUSTAR BAMBOO & LUMBER
FUSTAR

With the improvement of the bamboo management and processing technologies, bamboo utilisation has transcended the traditional utilisation scope and ways of agricultural and handicraft products into a new phase of industrialised production and utilisation. There are hundreds of diversified bamboo products, such as bamboo biological products (top left), bamboo food series (lower left), bamboo panel products (top right), and bamboo charcoal products (bottom). The economic benefits of bamboo are increasingly evident.

Left page: *high grade bamboo fibre products have now entered the common life of people. The picture shows the recently developed bamboo fibre samples and clothes.*

Social Benefits

As labour-intensive industries, the bamboo and rattan industries play favourable role in substituting wood timber, eliminating deforestation, promoting local economy and enlarging employment. In Longyou County of Zhejiang Province, 10 thousand employment opportunities were provided for laid labours in poor rural mountainous regions in bamboo enterprises and bamboo plantations. The bamboo industry in Anji County of Zhejiang Province has increased employment opportunities by 17 thousands. The rattan industry in Asia has provided millions of employment opportunities.

The bamboo and rattan sectors are labour intensified and can create large amount of employment opportunities. The upper picture shows rattan processing in factory, the bottom picture shows the mechanical processing of rattan products.

Bamboo and Rattan Research

Various kinds of bamboo and rattan research and development activities are conducted by INBAR worldwide: the picture shows field studies on bamboo in China and the Philippines.

Left page: *The improvement of bamboo and rattan research is important for the development of bamboo and rattan industry. The picture shows a field study of bamboo and rattan scientists. The small pictures shows the tissue culture laboratory and the micro-property study with environment scanning electron microscope.*

China has a long history of cultivating and processing bamboo resources, and China is taking a leading role in the world in such fields as intensive management, breeding of new species and development of new products. Since the 1990s, Government of China has implemented the sustainable development strategy. Bamboo resource conservation and utilisation have been speeded up, the utilisation of biological technology in genetic improvement and rapid propagation has been initiated, the importance of the research on efficient oriented breeding technology started to be recognised, the industrial use of bamboo and rattan developed in a rapid way. Great improvements have been made in the fields of bamboo-based panel, papermaking with bamboo pulp, the development and utilisation of bamboo fibre, bamboo and rattan furniture, food made of bamboo and rattan shoots and the research and utilisation of bamboo charcoal and bamboo vinegar, they are important to the substitution of wood timber and forest resource protection.

Many other bamboo and rattan producing countries in the world have also studied, to varying extents, the biological properties, cultivation, processing and utilisation of bamboo and rattan resources. In recent years, many developed countries in Europe and America have been constantly enhancing the collaboration in the utilisation of bamboo and rattan resources. EU has been continuously sponsoring Germany and France in "European Bamboo Research", "Bamboo Thematic Network" and many other cooperative programmes in Southeast Asia and South America. In 1993, INBAR engaged in the genetic conservation and improvement of bamboo and rattan resources via IPGRI, and 25 research projects have been carried out with the support of 10 countries, including China, India and Malaysia since 1995, the achievements of the research activities laid a solid foundation for the sustainable use of bamboo and rattan resources.

INBAR has become the world centre of bamboo and rattan information and technologies. The picture in the right shows the INBAR webpage, some of the books and CDs published by INBAR.

Global Priorities in the Research and Development of Bamboo and Rattan

Priorities of research and development in bamboo and rattan resources in the near future mainly contain:

Resources

—Studies on the role of bamboo and rattan in environmental protection, especially in mitigation of deforestation and water and soil erosion, wastewater treatment and mitigation of greenhouse effects, particularly through bamboo carbon sink and carbon trade;

— Studies on the biodiversity of bamboo and rattan resources, maintenance of germplasm and endangered species;

— Studies on the inventory and assessment methodologies and techniques of bamboo and rattan resources;

—Studies on the management of natural bamboo stands and plantations, enhancing productivity and demonstration of intensive management;

— Studies on the criteria and indicators for sustainable management of natural bamboo and rattan stands and plantations.

Processing and utilisation

— Studies on and extension of the technologies for efficient industrial use of bamboo and rattan resources, including the research on the value added processing and utilisation of bamboo and rattan as a substitute for wood timber;

— Formulation and improvement of the standards and codes for bamboo and rattan products;

—Studies on the properties of commercial and lesser-known bamboo and rattan species and related utilisation;

— Development of and studies on techniques for applying bamboo and bamboo-based boards in construction and related standard and codes;

— Studies on bamboo biomass as a renewable energy;

— Studies on the chemical processing and utilisation of bamboo, including research on bamboo charcoal and bamboo vinegar further processing and the utilisation of bamboo extracts;

— Studies on and development of bamboo fibre and bamboo fabrics.

Policy

—Studies on awareness raising for policy makers on the importance of bamboo and rattan, improvement of the policy and economic environment for the development of bamboo and rattan industries, policies governing the sustainable development of bamboo and rattan industries including sustainable resource management policies, land use policies, policies for promoting trade on bamboo and rattan products, as well as researches on realisation of the goal of poverty eradication under the Millennium Development Goals through development of bamboo and rattan industries and meeting the basic needs of the people in the bamboo and rattan regions, especially women and other disadvantaged groups;

— To build and update the database for the world's bamboo and rattan resources and product trade;

Bamboo and rattan product certification

Developing and improving international standards for bamboo and rattan products, and undertaking research on market-driven bamboo product certification, trials and extension.

Capability building

Promoting south-south cooperation, carrying out different kinds of bamboo and rattan training and technology transfer, developing network and information sharing systems and long-distance learning.

International Bamboo and Rattan Tower (photoed: September 2004)

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