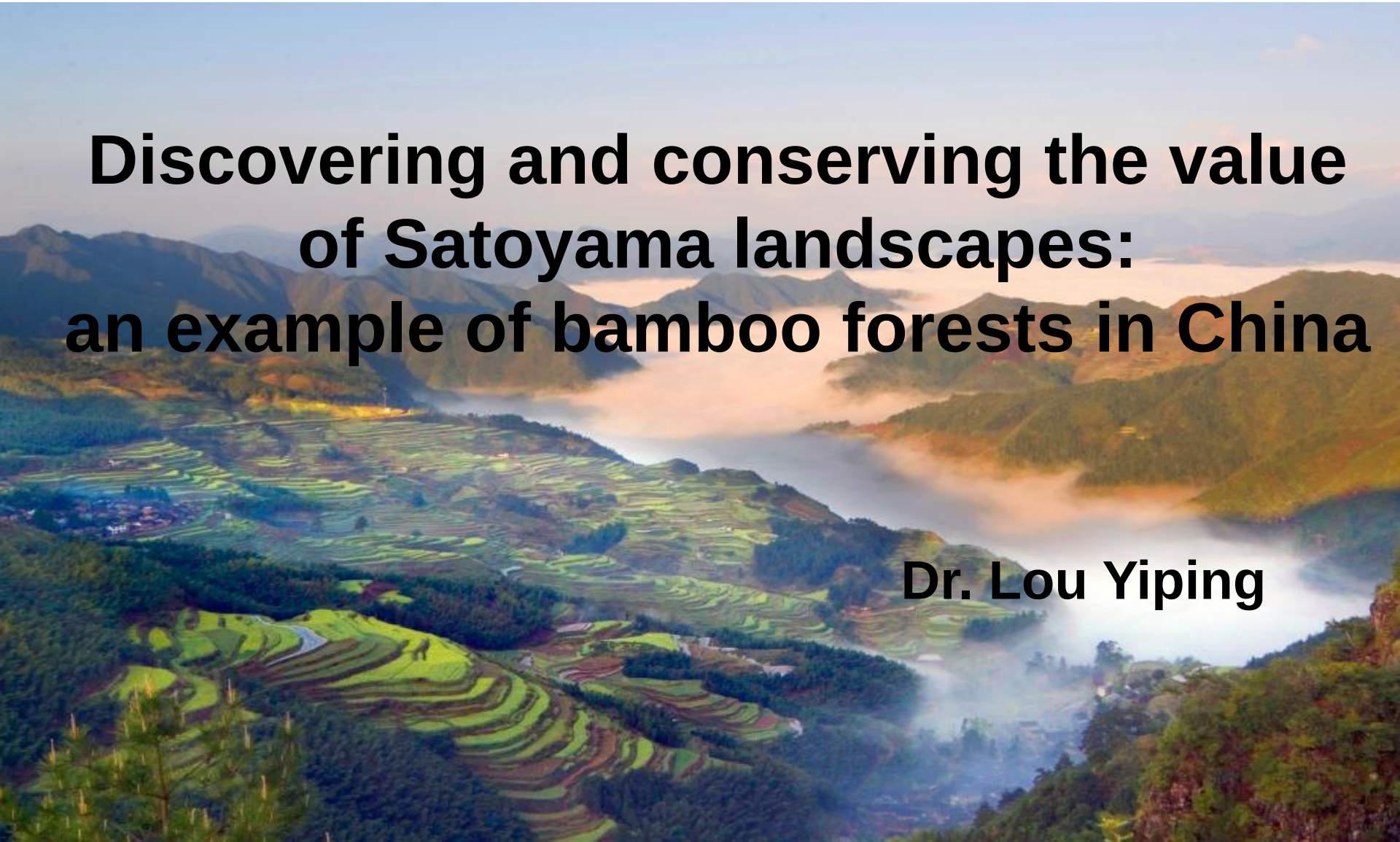
Presentation on IPSI Public Forum
Nagoya, 11 March 2011

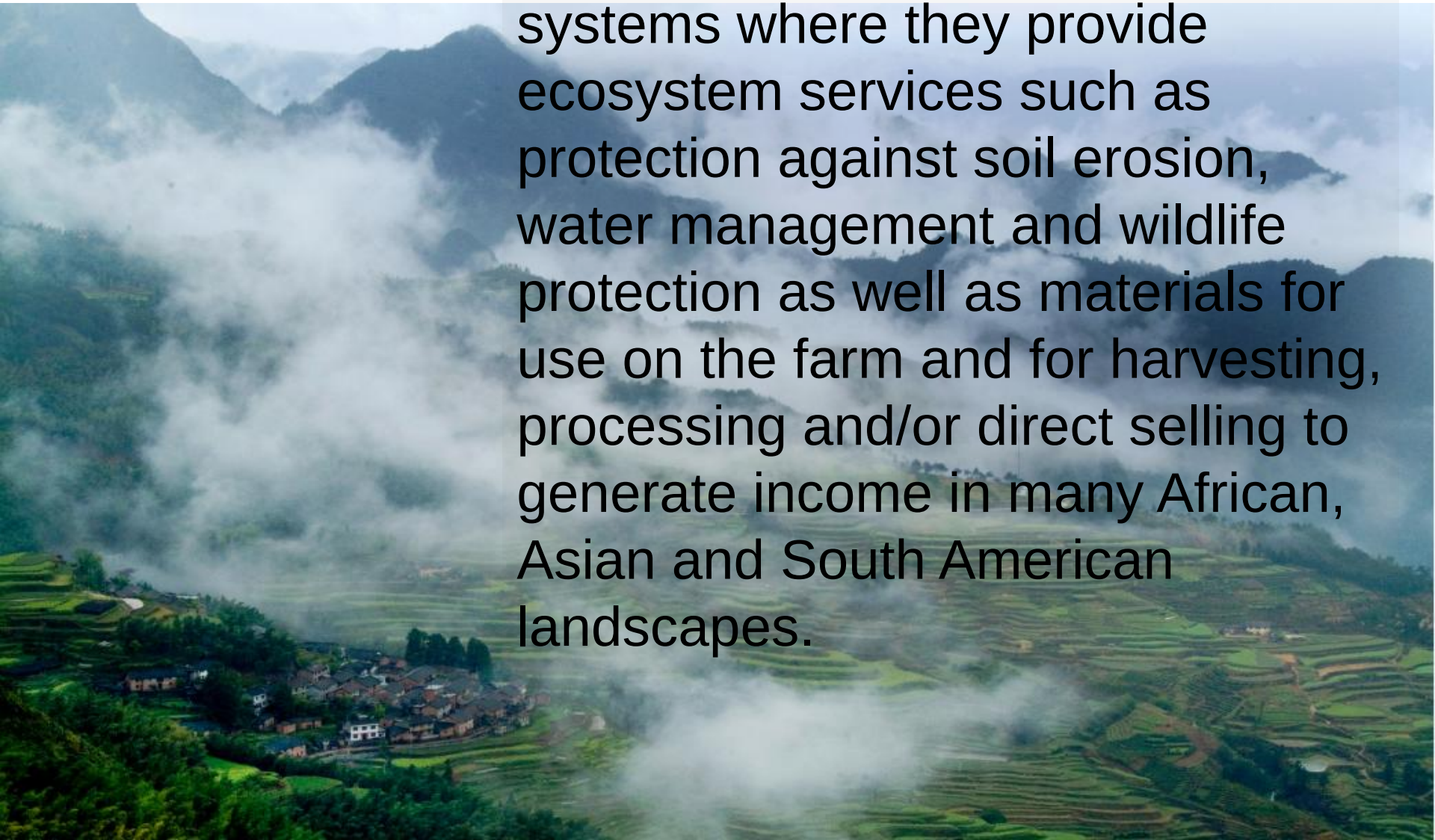
Discovering and conserving the value of Satoyama landscapes: an example of bamboo forests in China



Dr. Lou Yiping

INBAR

Bamboo forests



Bamboo groves are frequently part of complex but balanced farming systems where they provide ecosystem services such as protection against soil erosion, water management and wildlife protection as well as materials for use on the farm and for harvesting, processing and/or direct selling to generate income in many African, Asian and South American landscapes.

Bamboo forests provide:

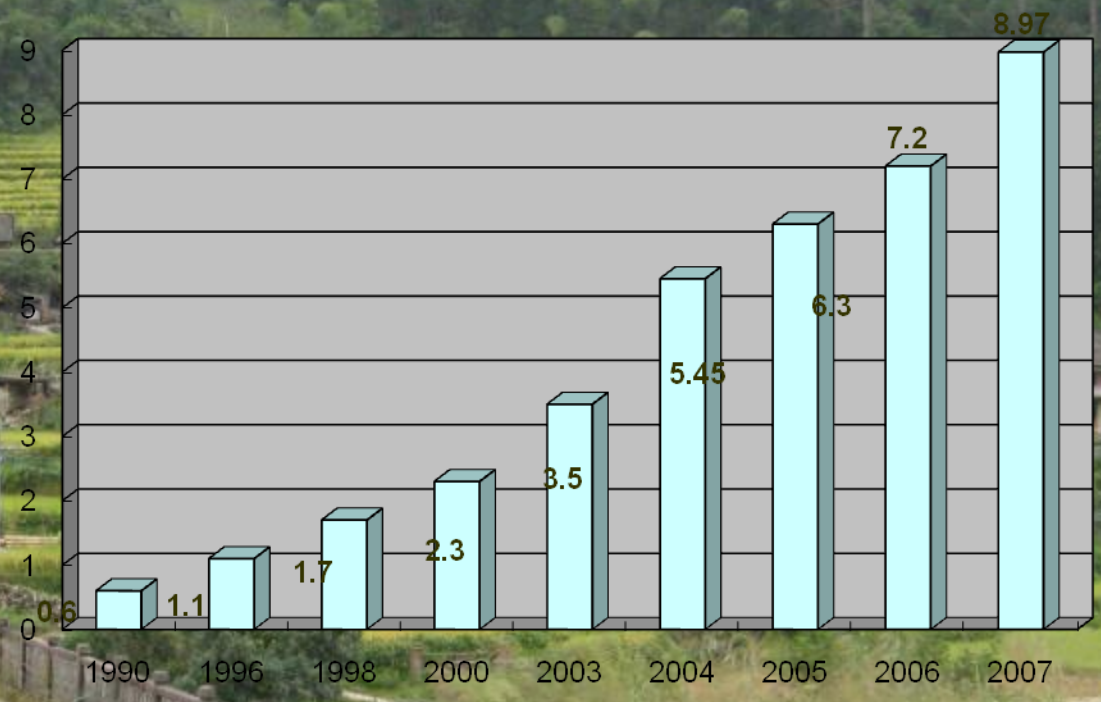
Livelihood security to community: provides shelters and livelihood for millions of people

Protecting environmental: biodiversity, e.g., endangered species such as giant pandas

Cultural value: in writing, poem, painting and many other ways

Livelihood security to community: provides shelters and livelihood for millions of people

The yearly output of China's bamboo industry increases rapidly, from 0.6 billion USD in 1990 to $8.97 billion in 2007, estimated to be $10.76 billion in 2009. Four million people are employed.



Bamboo forest for environment

1. Soil conservation and degraded land rehabilitation
2. Bamboo forest for water filtration
3. Biodiversity conservation in bamboo forests
4. Climate change, carbon sequestration and adaptation
5. **Bamboo as an environmental friendly construction materials in 2010 Shanghai World Expo**

1. Soil conservation and degraded land rehabilitation

Land devastated by brick mining

Rehabilitated by bamboo plantations

1. Role in the rehabilitation of degraded land

Bamboo could make a significant contribution to rehabilitate waste and degraded lands.

Studies in an INBAR project with 106 ha. rehabilitated brick-mining land in India show:

1. The ground water level that had fallen to 40 meters deep rose to 33.7 meters within 4 years.

2. The land became arable and productive.

3. Micro-climate is much improved.

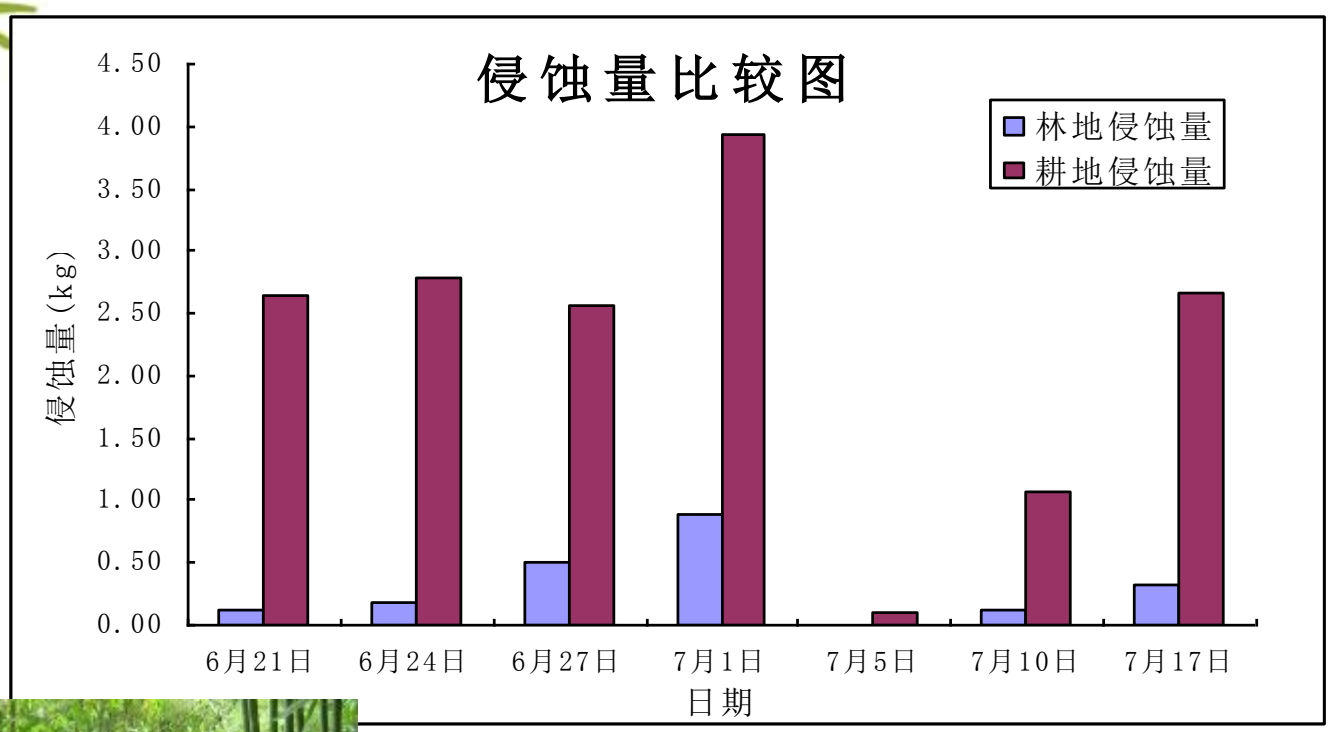
Soil Erosion Monitoring

River bank stabilization

2. Role in soil erosion control

Bamboo is an ideal plant to help prevent erosion as it grows and spreads quickly and forms a network of rhizomes and roots to control or stop damage from flowing water.

According to study on a new bamboo plantation in its 5^{th} year after planting, the annual soil erosion has significantly decreased from 4,235 tons/km^2 to 436 tons/km^2.



Compared to sweet potato farming lands, the soil erosion is reduced by 78%

2. Bamboo for water filtration

- Living plants and plantation
- Bamboo charcoal for sewage

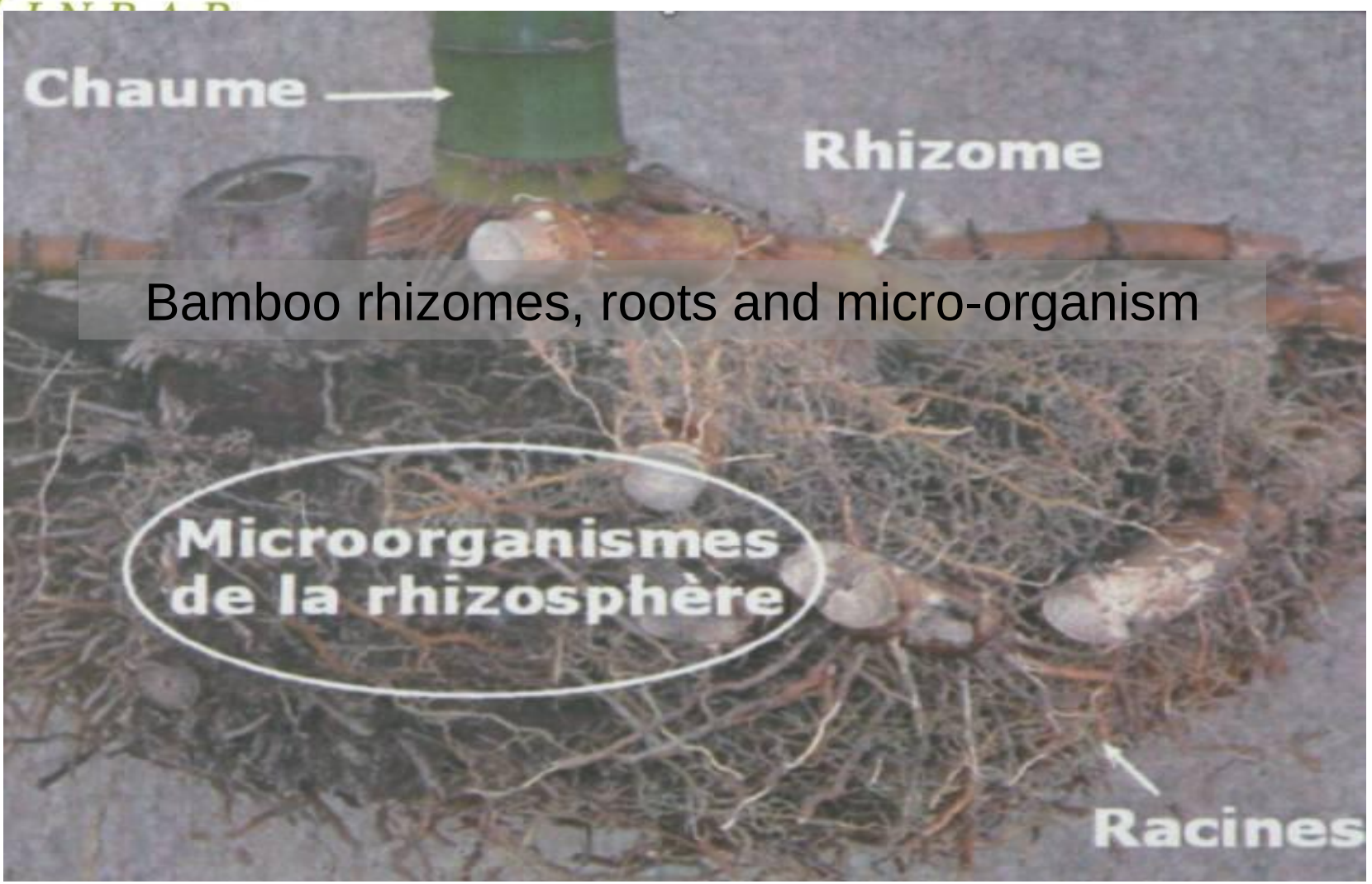
There are quite a few projects on bamboo for polluted water filtration in Australia, China, France and other countries.

PHYTOREM®

ET LE

BAMBOU-ASSAINISSEMENT®

Living bamboo plantation for water filtration



Bamboo rhizomes, roots and micro-organism

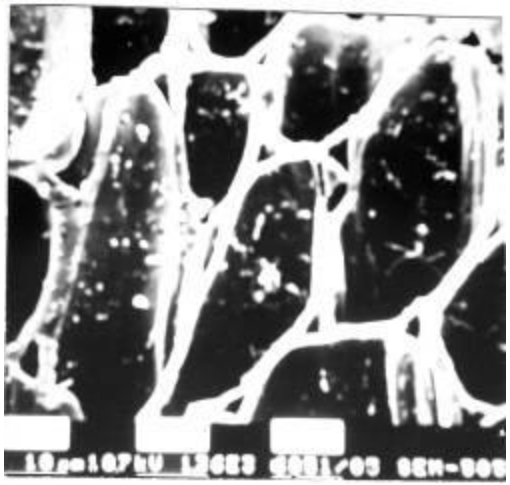
INBAR

Ecological Solution- Complete dispersal of all waste, with no remaining wastewater remaining on the water surface

Guaranteed results- The system has been tested and validated by ANVAR. Removal of all visual, bacterial and smell pollution is guaranteed.

Perennial solution- the bamboo takes in pollution and heavy metals all year round.

Bamboo charcoal for waste water treatment



Bamboo charcoal for sewage

Case: Fushun County of China: Bamboo bio-organism charcoal sewage water treatment

1. Sewage water
2. 1000tons/per day
3. CODcr：250～350mg/L before treatment
4. CODcr：30～40mg/L after treatment
5. Cost of the treatment plant : USD 200,000
6. Status: in operation

3. Biodiversity conservation and habitat connectivity in bamboo forest

Role in nature conservation and biodiversity

Bamboos are main components of tropical and subtropical forest ecosystems.

Bamboo forests provides habitats and food for animals such as giant panda.

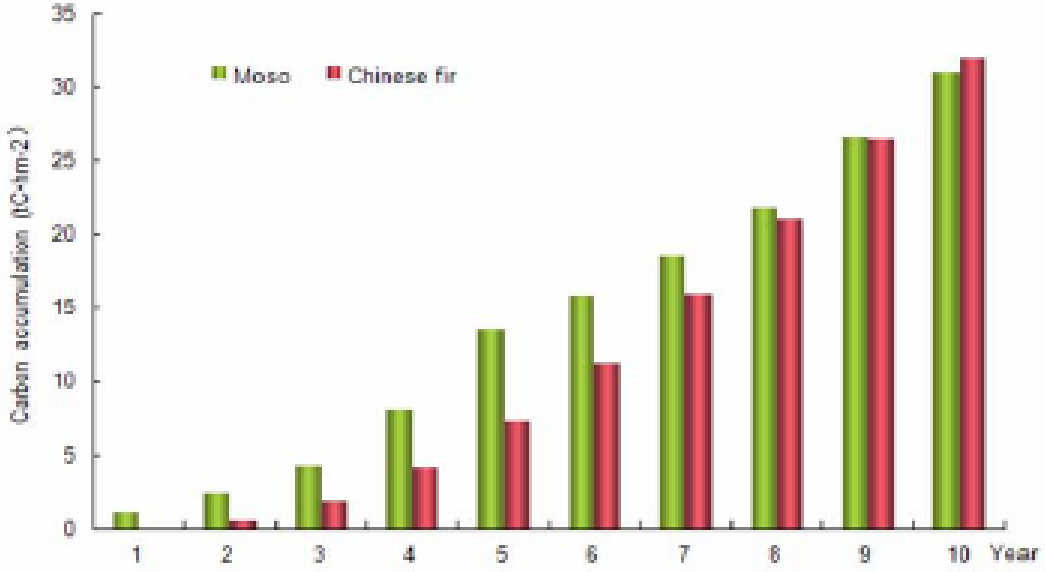
In China, for instance, 2.8% bamboo forests provide 7.5 % of total commercial timber in volume. Bamboo forests and plantations greatly help reduce the destruction of natural forests and its biodiversity by providing substitutes for timber and by generating income for the rural poor in the conservation areas.

Beautiful natural bamboo forests with rich biodiversity

4. Bamboo for sequestrating carbon dioxide from the air

Both young and mature bamboo plantations capture more carbon than equivalent tree plantations

INBAR's modeling indicates that the carbon content of newly-planted Moso bamboo stands increases more rapidly per unit area than Chinese Fir (*Cunninghamia lanceolata)* stands growing in similar conditions for about the first six or seven years.



INB

Managed subtropical Moso plantations are predicted to sequester over 20% more carbon than Chinese Fir forest after 60 years, (i.e. two rotations of Fir cut after 30 years).

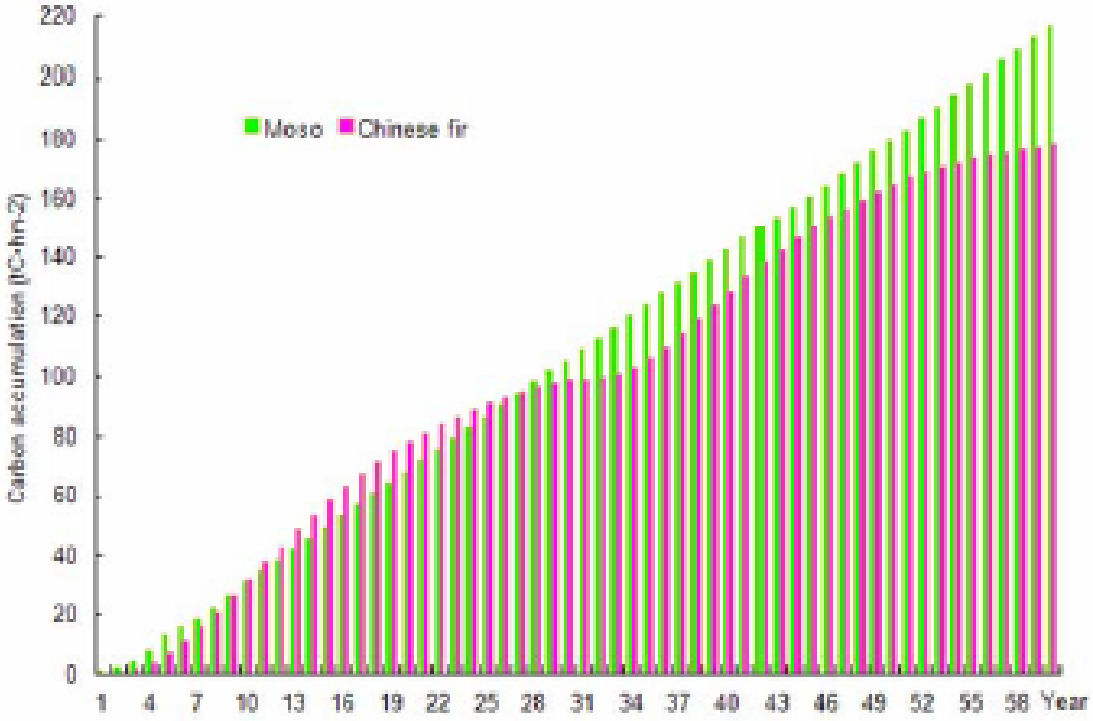


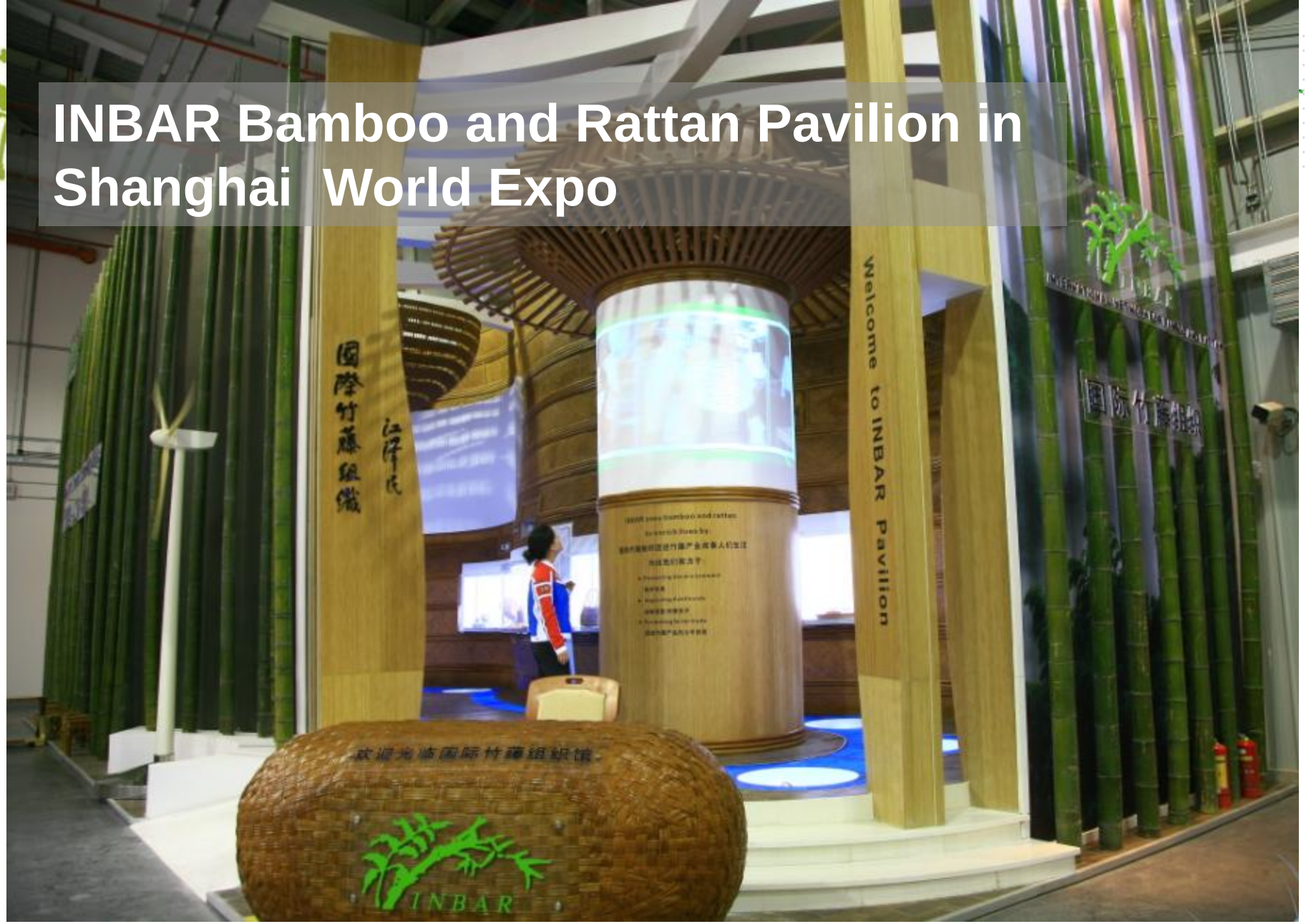
Figure 2 above: Predicted accumulation of carbon stock over a 60 year time period with regular harvesting practices (t C/ha)

5. Bamboo as an environmental friendly construction materials

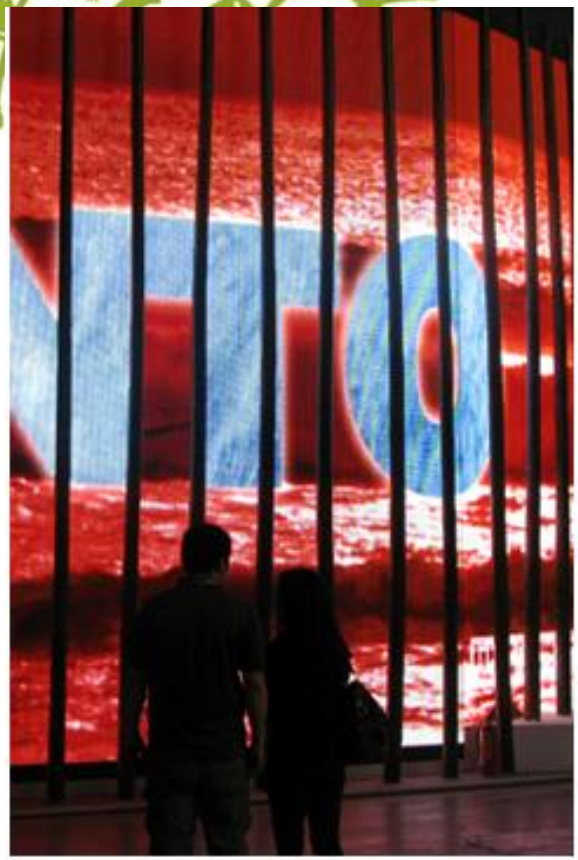
in 2010 Shanghai World Expo

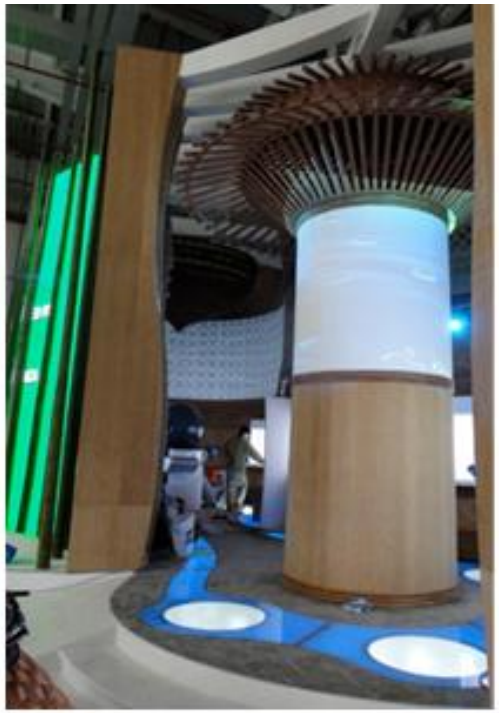
Except INBAR pavilion, Indonesia, Vietnam, India, Germany pavilions that are all very bamboo rich. Spanish pavilion, the rattan outside is impressive enough by itself.

INBAR Bamboo and Rattan Pavilion in Shanghai World Expo




INBAR uses bamboo and rattan
to enrich lives by:
国际竹藤组织促进竹藤产业改善人们生活
为此我们致力于:
Protecting the environment
保护环境
trade
平贸易





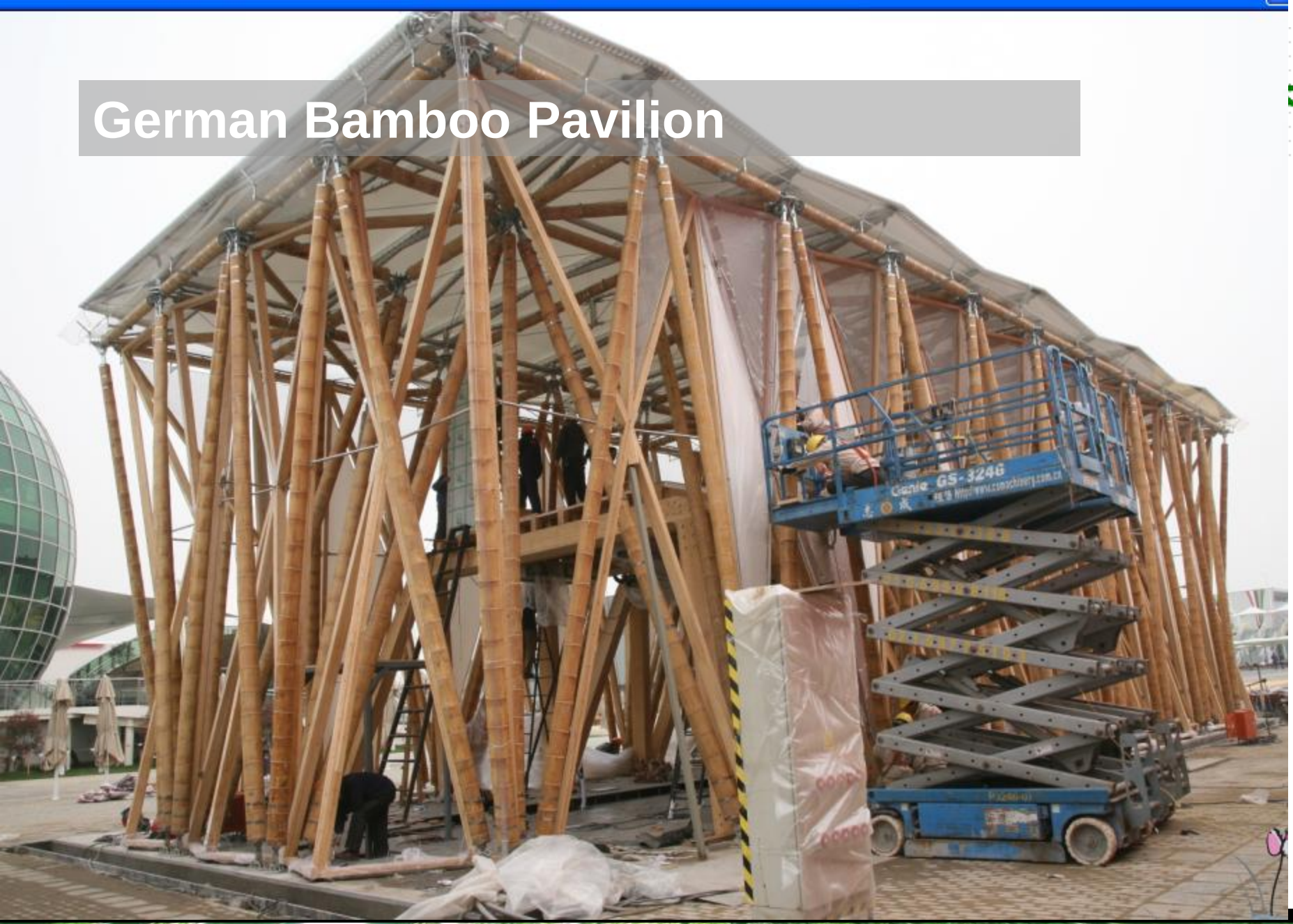
We are Ready

18, April

Indonesia Bamboo rich Pavilion

Indonesia Bamboo rich Pavilion

German Bamboo Pavilion



German Bamboo Pavilion in construction

Madrid Bamboo rich Pavilion

Spain Rattan rich Pavilion

Using the 2010 Shanghai World Expo site itself as a showcase for the use of bamboo in the 21th century, is a unique opportunity for Bamboo as an environmental friendly materials

Bamboo and culture

However, although the importance of these bamboo woodlands is still being recognized (agroforesters, indigenous people), at the same time many of them are under threat, either from being not used anymore and/or neglected, for example because of urbanization, or from being over-harvested and over-used, for example because of the need for construction material or fuel wood.

Further actions are needed to discover and conserve value and roles of bamboo woodlands and coppices in socio-ecological production landscapes, and through pilot projects and policy development protect and enhance their contribution to the multi-functionality that ‘Satoyama’ have to offer to biodiversity conservation, environmental sustainability and development.

INBAR

INBAR

Thank you