Industrial and Global Market Potential of Northeast India Bamboo

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Often described as ‘Vegetal Steel’, ‘Green Gold’ or ‘the Wise Man’s Timber’, Bamboo is a very Strategic Non-Timber Forest Product
Presentation Structure

- Bamboo resource: current status and use in NE
- Potential Application for Environment, Industries, Value Chains
- Global Trade of Bamboo and Rattan
- Market Linkage and Standardisation
- INBAR programmes for bamboo sector development
- The Way Forward…
Bamboo resource: current status

- Over 1600 (1643) bamboo species in the world. India reportedly has about 120-150 species (about 15 commercial species)
  - as per the latest research (The World Checklist of Bamboos and Rattans – INBAR Technical Report of 2017)

- 31.5 million hectares of bamboo grow across the world

- India has 30% of the world’s bamboo resources - with the world’s largest growing area of 15.69 million hectares (FSI Report: 2017). Paints a picture of India’s bamboo economy…pointing to the vast potential for development

- But today India taps only one-tenth of its bamboo potential - contributing to a 4 percent share of the global market for bamboo products.
What’s so special about Bamboo & NER?

Bamboo in the North East

Integral part of ecosystems

<table>
<thead>
<tr>
<th>Altitude</th>
<th>Forest Communities</th>
<th>Bamboo Genera/Species</th>
<th>Climatic Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>4500 m</td>
<td>Fir</td>
<td>Yushania himalaica, Thamnochortus spp, Sinothamnus, Phyllostachys, Pleochroa spp</td>
<td>Alpine</td>
</tr>
<tr>
<td>3500 m</td>
<td>Oak-Fir</td>
<td>Anuradhania (racemosa, aristata, microphylla)</td>
<td>Sub-Alpine</td>
</tr>
<tr>
<td>2700 m</td>
<td>Oak</td>
<td>Anuradhania (pandlingii, griffithiana)</td>
<td>Temperate</td>
</tr>
<tr>
<td>1800 m</td>
<td>Oak</td>
<td>Dendrocalamus falcatum, Thamnochortus spp</td>
<td>Sub-Tropical</td>
</tr>
<tr>
<td>900 m</td>
<td>Oak</td>
<td>Dendrocalamus (hookeri, sikkimensis)</td>
<td>Tropical</td>
</tr>
<tr>
<td>700 m</td>
<td>Oak</td>
<td>Dendrocalamus (strictus, lindleyi, hamiltonii)</td>
<td></td>
</tr>
<tr>
<td>500 m</td>
<td>Oak</td>
<td>Bambusa (pallida, nutans, neapolitana)</td>
<td></td>
</tr>
<tr>
<td>300 m</td>
<td>Oak</td>
<td>Bambusa (calonera, vulgata, bambusa, tulda)</td>
<td></td>
</tr>
</tbody>
</table>

Keystone species

89 different bamboos

2/3 of growing stock in India
How is it used?

INDIA – International Trade 2014

<table>
<thead>
<tr>
<th>Item</th>
<th>Import (INR thousand)</th>
<th>Export (INR thousand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw bamboos</td>
<td>3,661</td>
<td>3,047</td>
</tr>
<tr>
<td>Bamboo shoots</td>
<td>131,128</td>
<td>8,947</td>
</tr>
<tr>
<td>Charcoal</td>
<td>341</td>
<td>7,978</td>
</tr>
<tr>
<td>Flooring/shaped products</td>
<td>18,969</td>
<td>34,367</td>
</tr>
<tr>
<td>Panels</td>
<td>1,412</td>
<td>31,451</td>
</tr>
<tr>
<td>Mats/matting/screens</td>
<td>32,587</td>
<td>110,527</td>
</tr>
<tr>
<td>Plaits/similar products</td>
<td>4,041</td>
<td>6,449</td>
</tr>
<tr>
<td>Basket works</td>
<td>18,693</td>
<td>27,250</td>
</tr>
<tr>
<td>Paper articles</td>
<td>2,448</td>
<td>7,011</td>
</tr>
<tr>
<td>Seats of bamboo/rattan</td>
<td>24,968</td>
<td>11,827</td>
</tr>
<tr>
<td>Furniture</td>
<td>11,827</td>
<td>40,005</td>
</tr>
<tr>
<td>Total</td>
<td>250,075</td>
<td>288,860</td>
</tr>
</tbody>
</table>

NER – Bamboo Market 2015

Estimate: 62.5 billion INR

Hardly any value added to about 1/3 of the Bamboo used
<table>
<thead>
<tr>
<th>Bamboo Species</th>
<th>Commodity Group</th>
<th>Size of Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>All bamboos</td>
<td>Fuel (Charcoal/Energy)</td>
<td>Micro</td>
</tr>
<tr>
<td>Bambusa balcooa, B. tulda, B. nepalensis, Dendrocalamus strictus, D. hamiltonii, Melocana baccifera</td>
<td>Food (Shoots)</td>
<td></td>
</tr>
<tr>
<td>Bambusa vulgaris, B. tulda, B. nutans, B. pallida, Dendrocalamus brandisii, D. strictus, D. sikkimensis, Melocana baccifera, Schizostachyum polymorphum, S. dulloa, Thamnodactylus spathifolius</td>
<td>Handicraft</td>
<td></td>
</tr>
<tr>
<td>Bambusa balcooa, B. vulgaris, B. tulda, B. nepalensis, B. nutans, B. pallida, Dendrocalamus strictus, D. hookerii, Arundinaria racemosa, Drepanostachyum khasiana, Melocana baccifera</td>
<td>Housing and Construction</td>
<td></td>
</tr>
<tr>
<td>Bambusa balcooa, B. pallida, Melocana baccifera</td>
<td>Sticks/Agarbatti</td>
<td></td>
</tr>
<tr>
<td>Bambusa bambos, B. balcooa, B. vulgaris, Dendrocalamus strictus, D. brandisii</td>
<td>Furniture</td>
<td></td>
</tr>
<tr>
<td>Bambusa bambos, B. tulda, B. balcooa, and various other</td>
<td>Boards and Flooring</td>
<td></td>
</tr>
<tr>
<td>Dendrocalamus strictus, D. hamiltonii, D. sikkimensis, Bambusa bacocoa, B. vulgaris, B. bambos, B. tulda, B. nutans, Melocana baccifera</td>
<td>Paper and Pulp</td>
<td></td>
</tr>
<tr>
<td>Various bamboos</td>
<td>Textiles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other *</td>
<td></td>
</tr>
</tbody>
</table>

* Medicines, Cosmetics, Beverages, Air and Water Purification, etc.
Industrial and Market Potential; Value Chains, Environment
Bamboo: potential applications

- **Environmental**
  - Ecological Restoration
  - Ecological landscaping
  - Reforestation
- **Socio-economic**
  - Employment
  - Income generation
  - Industry development
  - Food
  - Household energy requirements
- **Medicinal**
  - Bamboo vinegar used medicinally to treat eczema, and other skin diseases, and as an anti-inflammatory and anti-fungal
Bamboo: potential industrial applications

- Raw material
  - Wood Industry (small scale/rural industries eg. weaving, furniture, scaffoldings, household wares, laminated boards, panels for flooring)
- Food Industry: edible shoots, fodder, bamboo beer
- Paper Industry: pulp and paper, rayon
- Pharmaceutical Industry
- Activated bamboo charcoal
- Vinegar
- Water treatment
Bamboo Value Chain

End-to-end process including all stages of production

- Set of selection criteria be developed that would render the value chain selection as most appropriate.
  - There is a market opportunity
  - Can be done with the majority bamboo species available
  - Can be locally processed
  - Benefits large numbers of the target group
  - Is scalable and replicable including possible adaptation to other bamboo species

- **Bamboo Shoots: Supply chain** from Harvesting of Bamboo Shoots => Processing (Removing of sheaths, washing, sterilization) => Packaging => Preservation => Transporting => Market
Potential Industrial areas…

Bamboo Furniture with a focus on offices, homes, schools; Bamboo Biomass for power, charcoal, vinegar production; Bamboo Wastes (waste leaves from harvesting, culm sheaths from bamboo shoots, etc.)
High-end products...
Bamboo Winding Technology
Global Trade of Bamboo and Rattan

Estimated Annual Value: USD 60 Billion
Trade (countries): Major exporters and importers of bamboo and rattan products in 2016

Key exporters:
- China: 1,162
- EU: 151
- Indonesia: 136
- Viet Nam: 85
- Philippines: 27
- USA: 25
- Thailand: 19
- Singapore: 9
- Namibia: 7
- China, Hong Kong: 6
- United Arab Emirates: 4
- Canada: 4
- Malaysia: 4
- Japan: 3
- Myanmar: 3

Key importers:
- Russia: 13
- Switzerland: 14
- China, Hong Kong: 15
- Iran: 15
- Malaysia: 16
- China: 22
- Canada: 25
- Singapore: 26
- Viet Nam: 26
- Korea: 29
- Australia: 33
- India: 36
- Japan: 207
- USA: 336
- EU: 484

US$ million
Main exporters of bamboo and rattan products to India
(USD ‘000)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Import</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Partner</td>
</tr>
<tr>
<td></td>
<td>Value</td>
</tr>
<tr>
<td>1</td>
<td>China</td>
</tr>
<tr>
<td>2</td>
<td>Vietnam</td>
</tr>
<tr>
<td>3</td>
<td>Indonesia</td>
</tr>
<tr>
<td>4</td>
<td>EU</td>
</tr>
<tr>
<td>5</td>
<td>Singapore</td>
</tr>
<tr>
<td>6</td>
<td>Malaysia</td>
</tr>
<tr>
<td>7</td>
<td>Myanmar</td>
</tr>
<tr>
<td>8</td>
<td>Sri Lanka</td>
</tr>
<tr>
<td>9</td>
<td>Philippines</td>
</tr>
<tr>
<td>10</td>
<td>Russia</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
</tbody>
</table>
Bamboo and Rattan Trade in 2016

USD 1.69 billion in 2016

Data source: UN ComTrade
The Value of Standardization for Market Linkages

- Domestic harvest India 14 Million metric tons
- Standing Stock 80 Million metric tons
- Import raw materials 29 Million metric tons

Domestic market for Bamboo in India: 400 Million US$
Domestic market for Bamboo in China: 30 Billion US$

International Markets for Bamboo products: 1,7 Billion US$
- Import India 35 Million US$ (Export India 22,5 Mio US$)
- Import Japan 207 Million US$
- Import US 340 Million US$
- Import EU 410 Million US$

High potential domestic markets for Bamboo raw materials and products

High potential international markets Bamboo products
Key Questions for Market Linkages:

- How to identify the linkage?
- How is the producer of Bamboo connected to the value chain?
- What are the specifications of the connection?
- How to implement the product specifications?
- The rule of non-production requirements? (Financial performance, quality and scale)

What creates value for a buyer?

- Quality of supply
- Reliable supply
- Competitive price
- Reliable quality
- Transparency of processes (Tax)
The Added Value of Product and Process Standardisation

- Standards set criteria and practice to **guarantee the specification** of products

- Standards **assure product reliability**

- Standards **generate quality** by the ongoing product reliability

- Standards make **production processes more efficient and decrease cost**

- Standards helps to **ensure the free movement of goods and encourages exports** (competitiveness in Trade).
INBAR Programmes and Initiatives: for Bamboo Sector Development
Established in 1997, INBAR is a Multilateral Inter-Governmental Organisation.

Improve the lives of the producers and users of bamboo and rattan through sustainable management, use and trade of the resources.

Headquarters in Beijing, China.

Regional Offices: India, Ghana, Ethiopia, Ecuador, Cameroon.

Governed by a Council of Members (member countries: presently 44; India is a member since 1998).

Oversight by INBAR Board of Trustees.
INBAR’s Flagship Prog.
To determine the resource base
and
To identify opportunities and challenges for sustainable development using bamboo and rattan
• What is the area covered by which species – new species?

• What is the economic value of bamboo services for ecosystems?

• Which are economic development priorities?

• Which enabling policies are needed?

• Which new innovations have been developed?
• Provide national policy and development advice

• Inform International Conventions

• Collaborate with International organizations

• Provide investment Enhanced South-South Collaboration
South-South Cooperation Initiatives

• South-South Knowledge Transfer Strategies
  ➢ Scale up pro-poor bamboo livelihoods
  ➢ Income generation and employment opportunities
  ➢ Environmental management

• INBAR’s South-South Initiatives in Africa
  ➢ Ethiopia; Tanzania; Madagascar; South-South linkages with INBAR ARS in India (ICAR-IISWC, Dehradun, India)
  ➢ Optimization and scaling up of benefits through specific value-chain driven sustainable management

• Can be successfully adopted for development of India’s bamboo sector and global collaboration
Way forward…

• Human and Institutional Capacity Building:
  ➢ Information; New methodologies, Technology transfer; Programs for Mass Production of Market-driven Products

• Policy framework development:
  ➢ Identify and develop need-based strategy, effective national plans and plan of action including guidelines for implementation

• Business Development:
  ➢ Market, trade information, Partnerships and Collaboration, Bamboo-based business upgraded

• Sustainable Land Management, Climate Change Strategies:
  ➢ Updated information on existing bamboo resources; Bamboo for Land Rehabilitation, Climate Change mitigation and adaptation; Integral part of Agro-forestry system
Thanks very much..!!

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