Wood as Low-Carbon Material for housing needs

FAO Workshop on Wood Products in the Sustainable Bioeconomy
10-11 December 2019
Presentation outline

- Background on GGGI
- The need for low-carbon materials
- Objective of Technical Report
- Selection framework & materials
- Supply chain considerations
GGGI at a Glance

Headquartered in Seoul, GGGI has 32 Members with operations in 33 countries.

GGGI’s mission

To help developing country governments transition towards a model of economic growth that is environmentally sustainable and socially inclusive.
2017: Developed the **GREEN BUILDING MATERIAL DATABASE REPORT**, providing design data and material selection criteria to building developers for maximizing resource-efficiency in buildings.


2019: Conducted the **Green Building Readiness Assessment** in Senegal, engaging with government, academia, professional associations, material suppliers and contractors.
300 million houses needed by 2030
Concentrated in the cities of Least Developed Countries (LDCs), where over 1 billion people are already living in inadequate housing.

Material depletion & global warming
Need to reduce carbon emissions from buildings and diversify in building materials from concrete and steel.

Technical, financial and human resource gaps
Governments are challenged by funding and capacity gaps, as well as competing demands, in meeting the need for affordable housing.
To explore material options that

- **Meet housing needs** of low-income city dwellers with lower environmental (energy) requirements.

- Promote innovative and scalable practices for **replicable housing solutions** with reduced financial and environmental costs.

- **Support the local economy** through job creation, skills upgrading and support to micro, small and medium enterprises (SMEs).
Some possible low-carbon materials discussed in the report.
Opportunities for using wood for housing

What people want

Resources available
Life cycle environmental impacts

Sustainable source
Local raw material source
Low production energy
Low waste & pollution
Recyclable, biodegradable
Life cycle environmental impacts

Sustainable source
Local raw material source

- Sustainable forest management.
- Regulatory oversight, monitoring, enforcement.
- Accurate accounting & reporting.

Low production energy
Low waste & pollution

- Only half a log is turned into lumber. Waste wood is burnt or used for other products.
- Chemicals for wood treatment – chromium, arsenic – can be harmful to humans and environment.

Recyclable, biodegradable

- Treated timber cannot be burnt as cooking fuel.
- Disposal in landfill is costly.
- Maximize opportunities for reuse/recycling.
Benefits to local economy

- Local production, economic opportunities.
- Ease of construction (creates local low-skilled jobs)
- Regulatory compliance
- No toxic substances (health of manufacturers & occupants)
Benefits to local economy

Local production, economic opportunities
- Local supply vs global demand.
- Balancing profits with meeting local needs.
- Supportive regulatory environment.

Ease of construction (local jobs)
- High-tech processing and precise design requirements not suitable.
- Opportunity to enhance design and production capacities.
- Develop skills for deconstruction, recycling.

Regulatory compliance
- New skills and new jobs in monitoring and compliance.
- Enhance investor confidence in product quality through a well-regulated market.
Continuous reliable SUPPLY
Manufacturing facilities
Skilled WORK FORCE
Standards & Certification
Market Integration

Supply chain considerations to be considered when developing new building products.

Key stakeholders and flow of goods/services in construction supply chain:

- Raw material suppliers – farmers & miners
- Parts Manufacturers
- Material producers
- Architect & Consultants
- Tradesmen & Builders
- Developer
- Owner
- Financier
**Wood** as low carbon building material

<table>
<thead>
<tr>
<th>Advocates</th>
<th>Government</th>
<th>Developers, owners</th>
<th>Architects, engineers, producers, plantation owners</th>
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</thead>
<tbody>
<tr>
<td>Change attitudes</td>
<td>Promote potential of local wood for meeting local housing needs.</td>
<td>Promote the attractiveness of wood as a modern and safe building material.</td>
<td>Promote appreciation of wood as a low-cost material for high quality housing.</td>
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<tr>
<td>Enhance capacities</td>
<td>• To regulate and monitor forest/plantation management practices. • To regulate, enforce and incentivize the meeting of local housing demands prior to exporting.</td>
<td>• For ensuring wood is sustainably and legally harvested. • For verifying wood products used have been through sufficient quality processing and checks.</td>
<td>• To account for real life cycle impacts of wood as a raw material, including forest emissions. • To design, produce and construct attractive, comfortable, resilient and low-cost housing with local labor.</td>
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Thank You