



Bamboo: A sustainable construction material for the 21st century



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Global Bamboo Housing Programme





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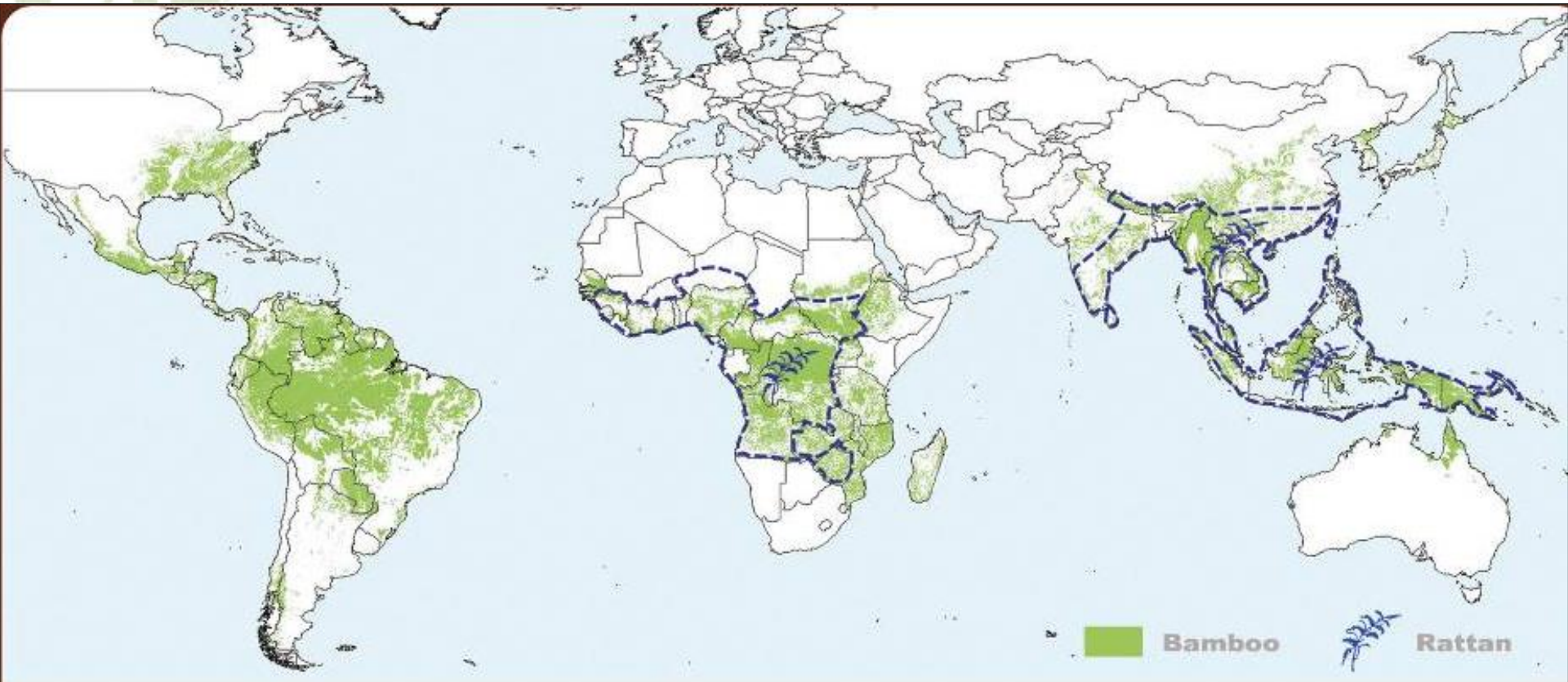
- Traditional uses of bamboo architecture
- Challenges to make them mainstream
- Some good practices

INBAR Mission

To Improve the well-being of the producers and users of bamboo and rattan within the context of a sustainable bamboo and rattan resource base

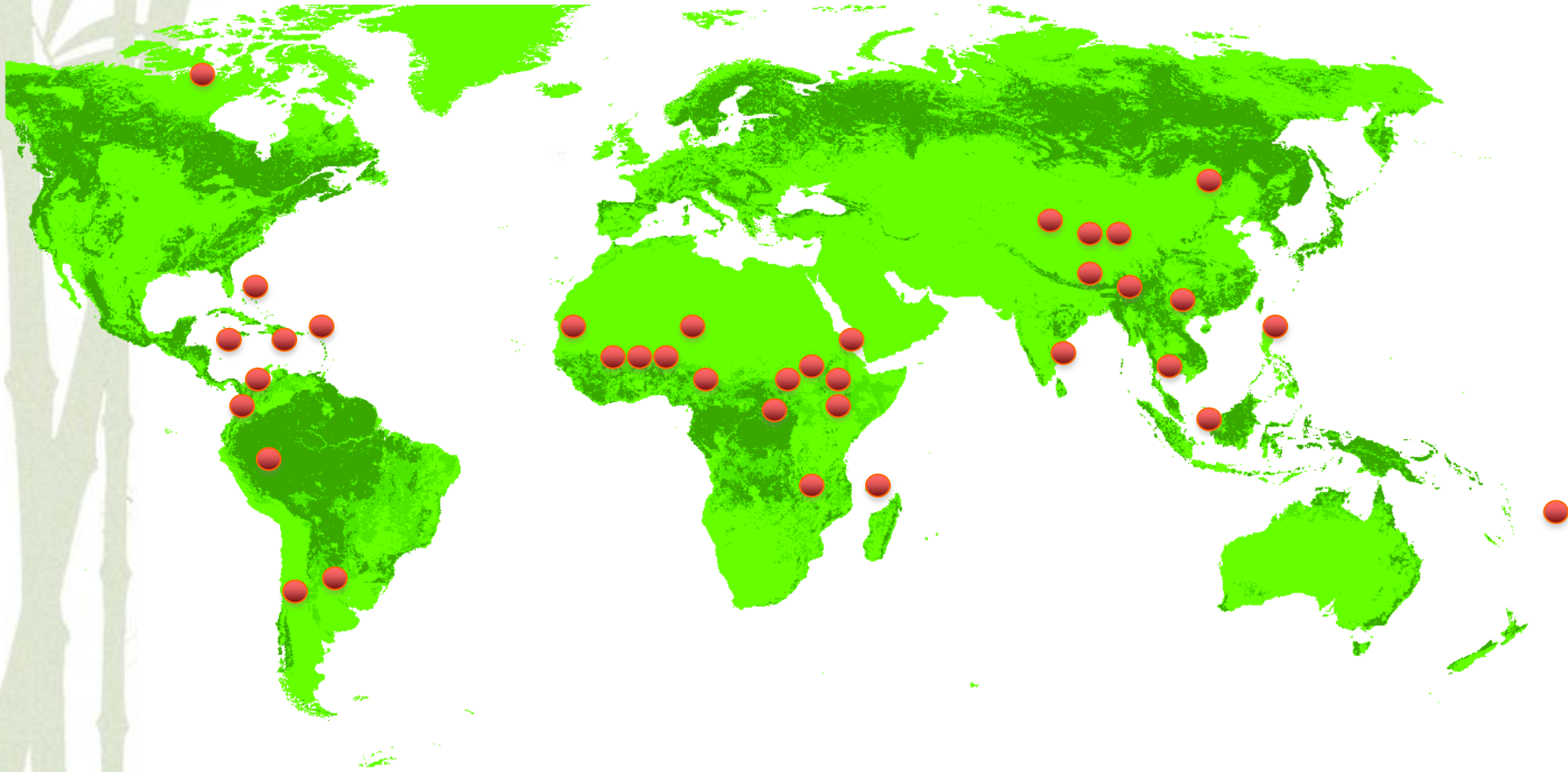


Bamboo and Rattan Resources

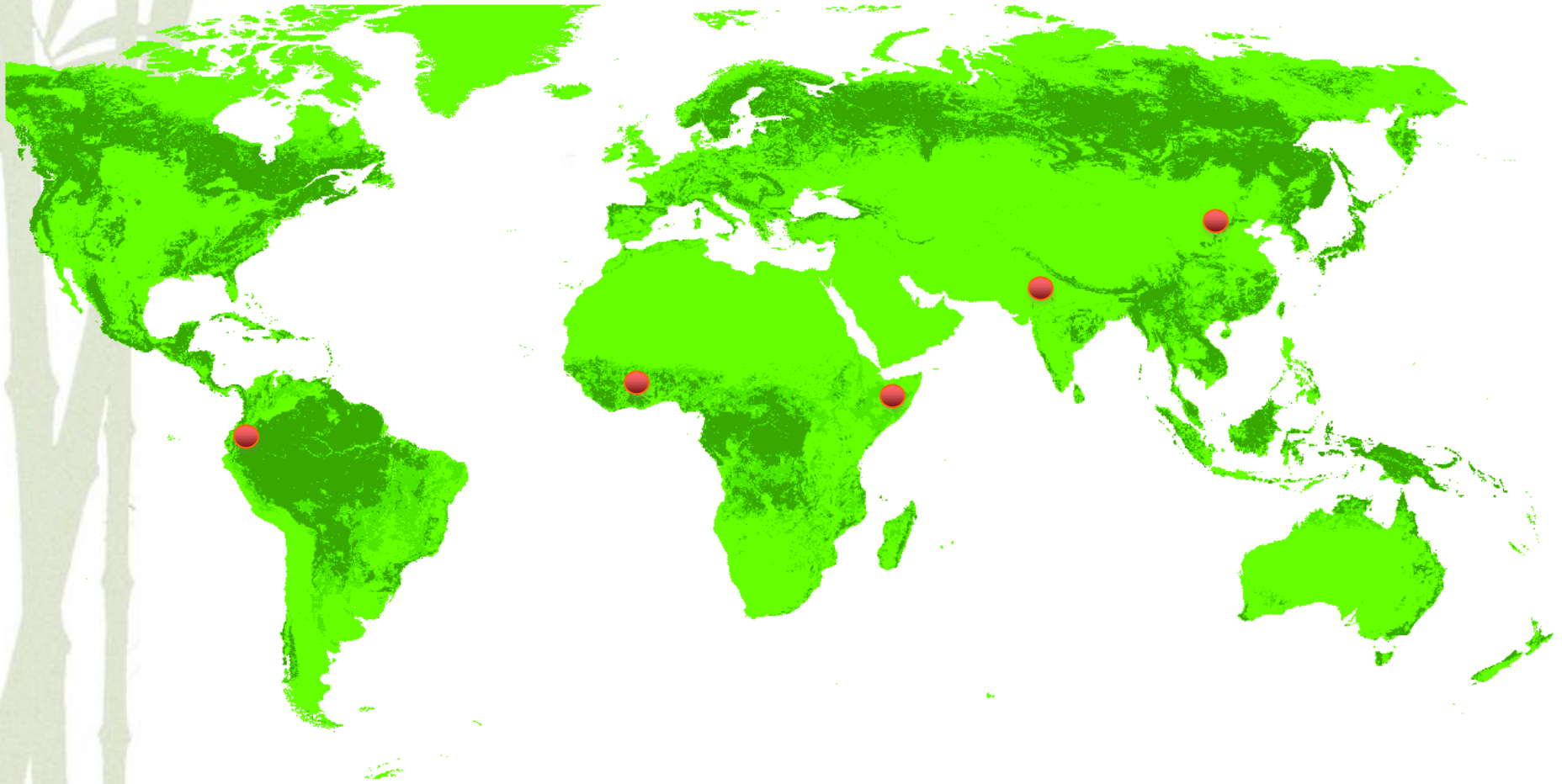


Source: Bamboo and Rattan in the World (Jiang 2007)

INBAR Member Countries



INBAR Regional Offices





Global Bamboo Housing Programme

- Consolidate, coordinate and support strategic and adaptive research and development
- Disseminate knowledge on how bamboo-based construction can be applied to poverty reduction and more resilient homes and communities
- Support the development of markets for bamboo-based construction



Why Bamboo?



Bamboo matures in 3-6 years.

It takes 60 days for bamboo to grow 60 feet.

Earthquake resistant properties e.g. Costa Rica (7.6 Richter Scale)

High insulating property.

Economical



Some Modern Examples



A big question



- So what does it take for bamboo to become a mainstream material?



Challenges to supply chain



Challenges to making bamboo mainstream



- Supply Chain
- Proper Harvesting regime
- Appropriate Treatment
- Appropriate Joinery & Craftsmanship
- Supportive Policy

Appropriate Treatment



Untreated bamboo

***Cheap, fast, effective:
buy it today, use it today. Biodegrades:
lasts for 1-3 years depending on
exposure.***

Treated bamboo

***Has a 20-30yrs life expectancy if
correctly harvested, handled and
treated, and sheltered from weather in
use. Hence offers a greatly increased
contribution to community resources.***



Source: Humanitarian Bamboo , 2009

Appropriate Treatment



Appropriate Treatment



Source: abari.org



Appropriate Joinery & Craftsmanship



- Joints often weakest part of bamboo structure
- Joints require specialized skill
- Very labour intensive process
- Few tools dedicated to bamboo

Appropriate Joineries:



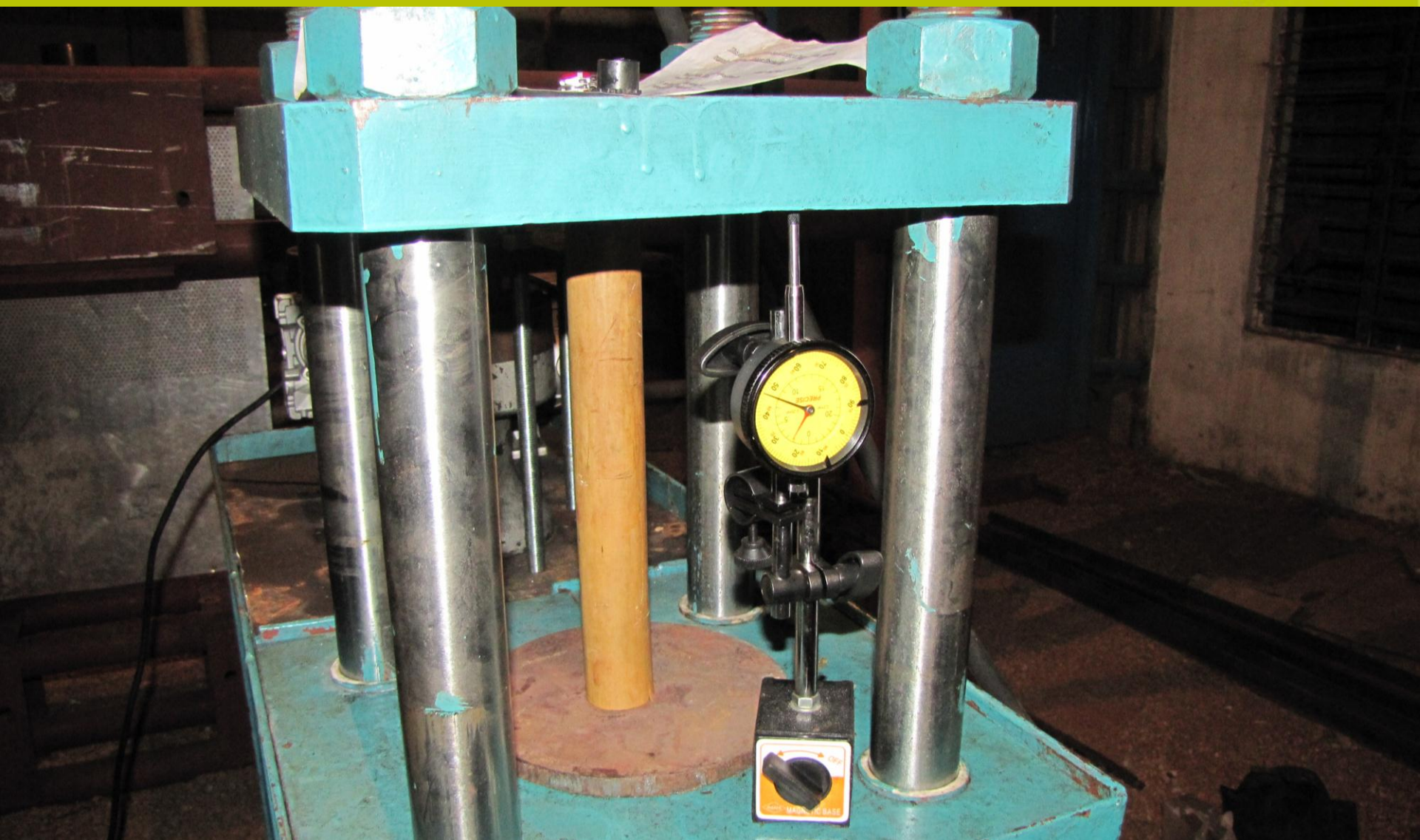


Source: Jorge Moran adaptation Simon Velez

Appropriate Policies:



Key Policy Issues	Examples of Good Practice
Standards and Building Codes	2 ISO standards; National building codes approved in Peru & Columbia;
Resource Management	India recently declared it as grass. Bamboo placed on commercial species list in Ecuador
Finance for bamboo smallholders	Indira Awas Scheme, India
	Anji County, China



Case Study 1: Janakpur, Nepal



Life School Center, Janakpur, Nepal

Adobe and Bamboo Research Institute

Project Objective:



- Demonstrate use of local materials for construction of public structures like school, community kitchen, training hall and office spaces.
- Impart livelihood skills to locals during the construction process.

Fundamentals:



Simple Tools/training



Public participation/ treatment



Fundamentals:



Case Study: Janakpur, Nepal



- Large scale structures are up to 30 percent cheaper.
- Almost all the resources locally acquired.
- Can be built by local carpenters
- Gives self confidence and pride to villagers for using local resources.
- Changes local perception of the material.



Case Study 2: Post-Disaster Recovery Sichuan, China



BENCHAM
BENELUX
CHAMBER OF
COMMERCE



EUPIC



switchasia
PROGRAMME

Citi Foundation



Background



2008 Sichuan Province Earthquake

- 5.5 million people left homeless and displaced
- 370,000 unemployed & 1.15 million deprived of agricultural production
- €21 billion in damages - **huge demand for re-building materials**

Project Rationale

*Shortage of
construction
materials*

**Reconstruct
housing &
infrastructure**

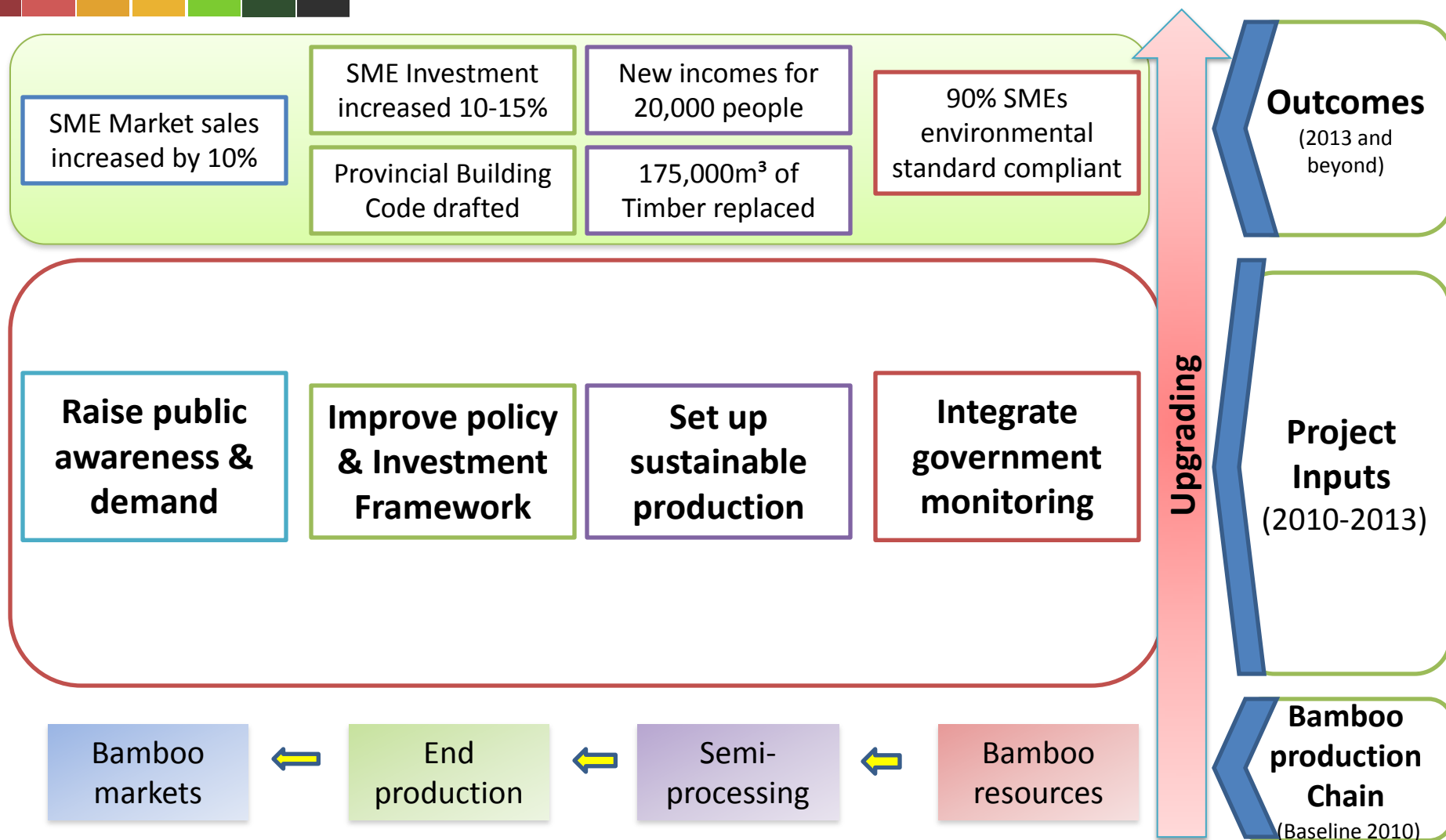
**Industry
revival &
secure income**

**Devastated
local
livelihoods**

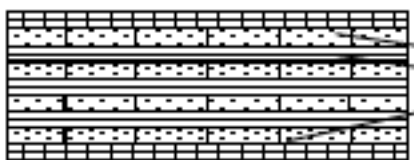
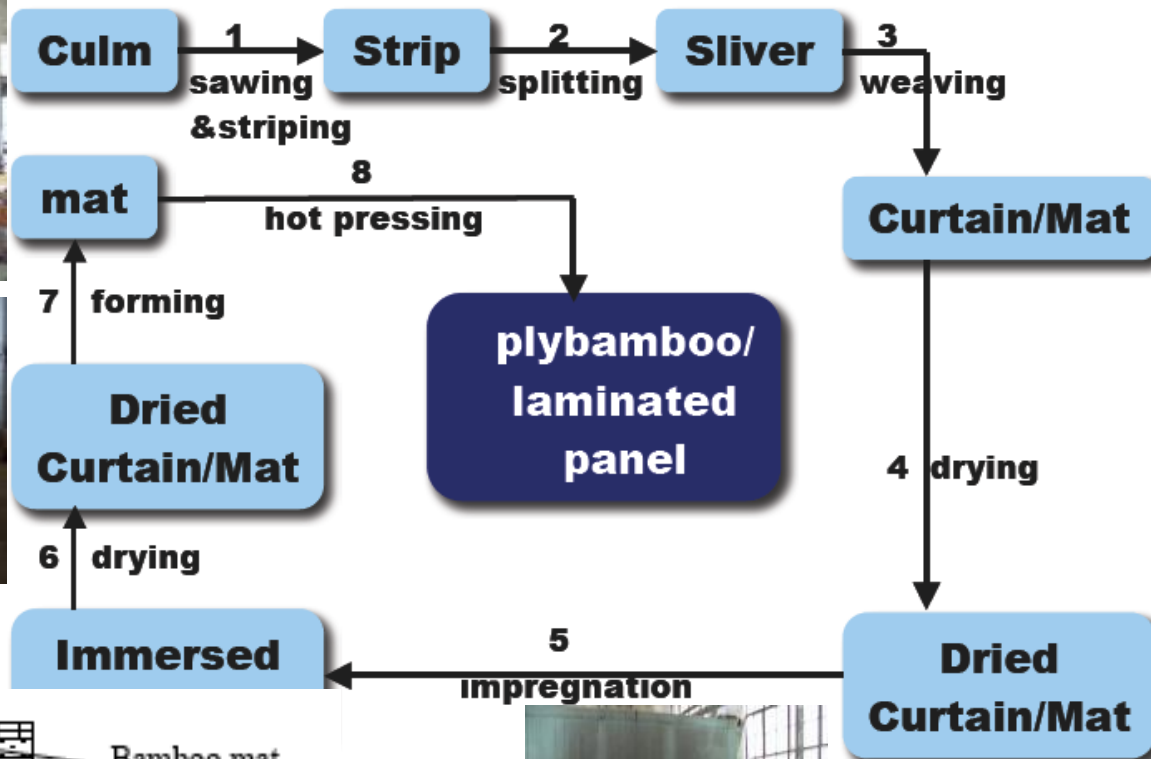
**Rehabilitate
the damaged
environment**

**Damaged
natural
environment**

Bamboo Supply Chain For Recovery



Processing for Bamboo Plywood



Case Study 3: Adaptation to climate change, Ecuador

Components:

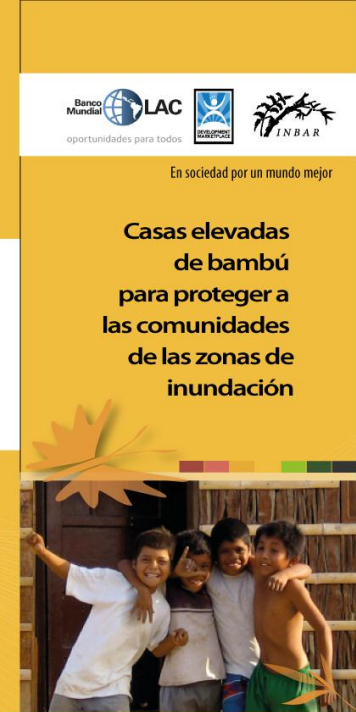
- Analyzing vulnerability to CC
- Strengthen local capacities
- Build CC adapted bamboo houses
- Policy development



Socios del Proyecto



Aliados estratégicos de esta propuesta son la Empresa Privada y Organizaciones de la Sociedad Civil



La tecnología a implementar también se prevé ser difundida y replicada en la región a través de los socios de la Red y el hecho de contar con la Universidad Católica como socio en este Proyecto, incide en la preparación de nuevos perfiles profesionales que se capacitan en el uso y aplicación de estas tecnologías constructivas.

Una casa de bambú actualmente tiene una duración de 3 a 5 años, siempre y cuando no sea afectada por deslizamientos e inundaciones.

Otro aspecto importante es que cada vez que se presentan inundaciones al menos el 70% de las viviendas y otras estructuras (ej. Escuelas) son afectadas por deslizamientos.

Con la nueva tecnología se plantea aumentar la durabilidad de las viviendas por lo menos 10 veces más, es decir que tengan una duración promedio de 30 años.

En otras palabras hacer de la vivienda temporal una vivienda permanente y segura.

La iniciativa busca vincular además a por lo menos 1000 productores de bambú de áreas rurales, quienes serán capacitados en el manejo y cosecha sustentable de bambú, lo que mejorará la calidad del bambú.

Al menos 500 personas se beneficiarán de la capacitación en construcción con bambú y actividades de réplica del proyecto.

Apunta también a disminuir los círculos de intermediación en la comercialización del bambú. En Ecuador existen aproximadamente 20,000 has de bambú en estado natural y plantado. Cada año se exportan aproximadamente a Perú alrededor de 8 millones de tallos, muchos de ellos en forma ilegal.

Zonas de trabajo

Los productores de bambú vinculados con esta iniciativa pertenecen a la comuna Olón en la provincia de Santa Elena, que cuentan con el recurso.

Mientras que las construcciones piloto se desarrollarán en zonas periféricas de Guayaquil y en zonas rurales.

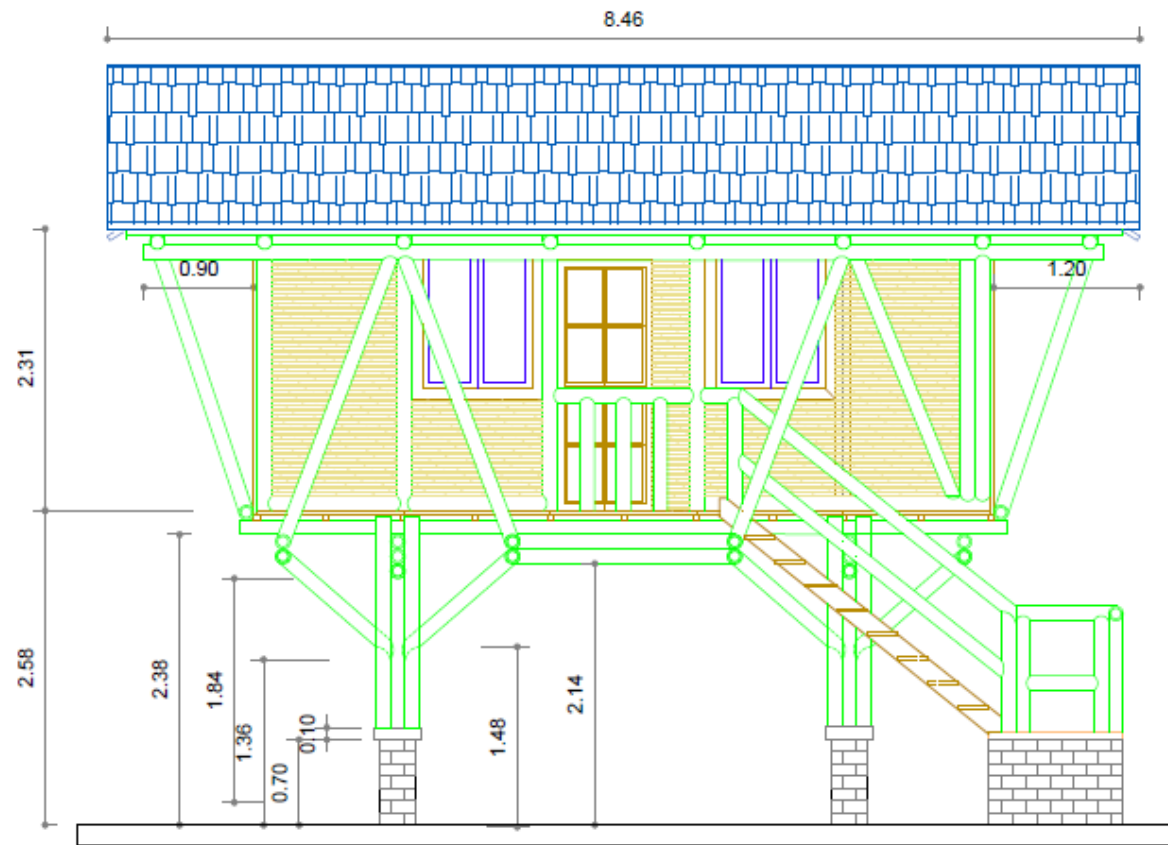




Use of bamboo: Guayaquil, Ecuador







ELEVACION FRONTAL - CASAS ELEVADAS DE BAMBU

ESCALA

1:50

JORGE MORAN / SAUL VERA --- AGOSTO - 2011

Elevated bamboo houses





Better practices





Thank You!

Find out more at:

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