

RIZOME



Climate Smart Construction

We're on a Mission to Sequester Carbon and
Develop Bamboo into a Primary Global Construction Material



Image Source: Sumitomo

Overview

PLANT BAMBOO. MAKE BUILDING MATERIALS.
REPEAT. SEQUESTER GIGATONS OF CO2.

Problem: Ecological Disaster

The construction industry is a global ecological disaster. Embodied carbon from construction accounts for 11% of global CO2 emissions and 28% including lifecycle building operations. Cement contributes 7% and steel up to 8% of global emissions. Wood requires huge land areas and is harvested globally at unsustainable rates, with 18.7 million acres of new deforestation each year. Large-scale reforestation to sequester carbon is slow, has been hampered by expensive and inaccurate verification, and is difficult to monetize in an inefficient and opaque offset market.



Solution: Regenerative Bamboo Building

We believe that one of the largest revolutions in building materials in the coming years will be the widespread adoption of high-tech engineered bamboo lumber. As this shift occurs, every new building will support climate positive CO2 drawdown and provide regenerative local bamboo economies in regions that need it the most.



Ultra Renewable Material

- The new Pine
 - Grows 15 times faster
- Harvest Each Bamboo Plant Every Year
 - Each pole matures in 3-5 years
 - Sustainably harvest 20-33% of poles or up to a ton each year from each plant
 - Plant it once and Harvest for 100 years



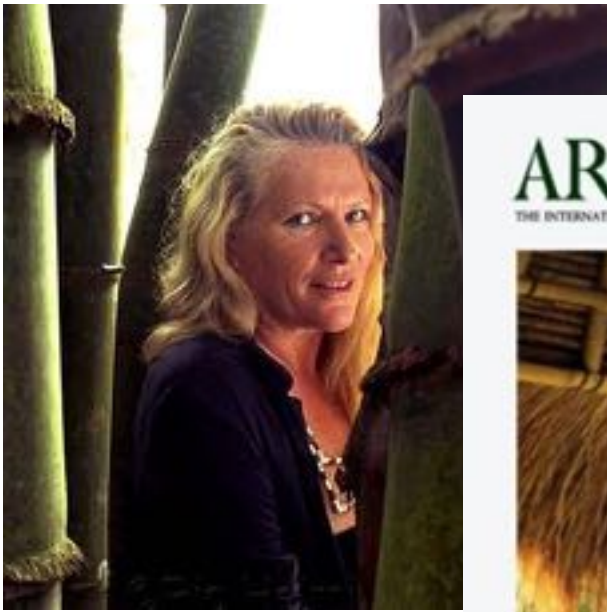
A Lifetime of Bamboo

Grew up playing in a bamboo grove

Made towers and bridges
of bamboo as a scout

Studied bamboo as part of my
Chinese Brush Painting in college

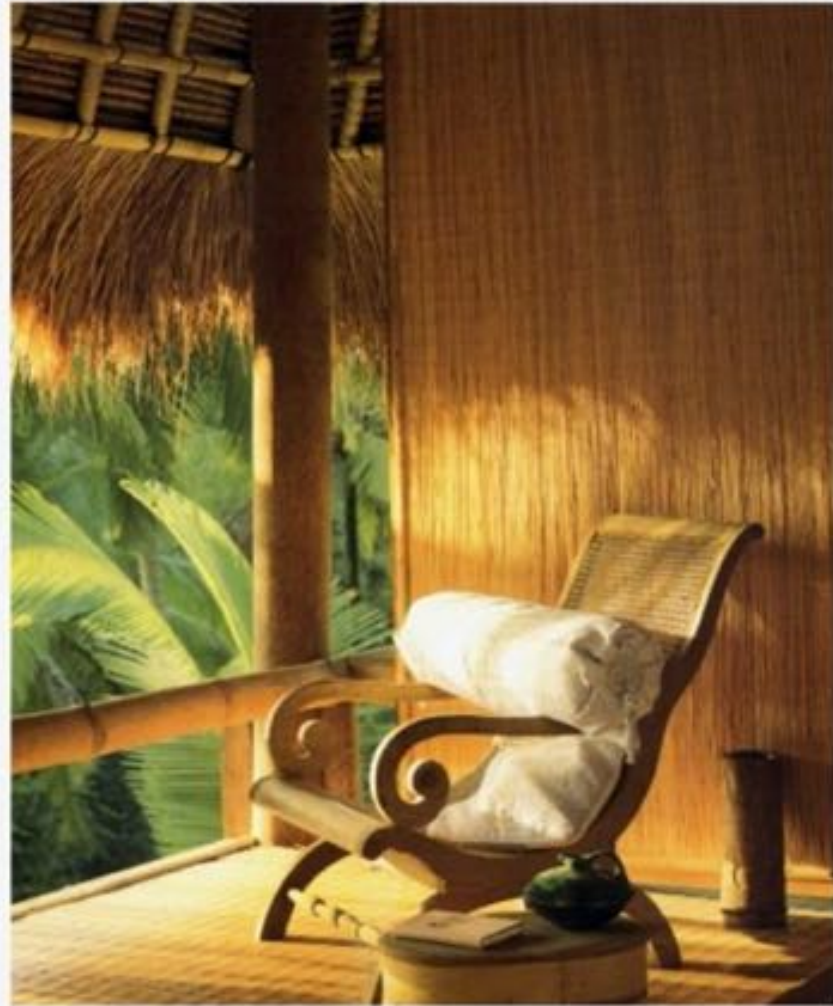




ARCHITECTURAL DIGEST

THE INTERNATIONAL MAGAZINE OF FINE INTERIOR DESIGN

MARCH 1994 \$5.00



My Inspirations

Linda Garland

Simon Velez



From Rockstar to Rock Solid



Structural Bamboo Experts

First Structural Certification for US

We've proven the structural capabilities of engineered bamboo poles. Now we are dimensionalizing the material for broader market applications.



Sammy Hagar House - Maui

From Rockstar to Rock Solid

Hurricane and Earthquake Tested

Multiple Category 5 Hurricanes with Winds up to 200mph

Multiple Earthquakes Up to 6.9 on Richter Scale



















RIZOME®



Our Solution



RIZOME®



Rizome Bamboo Products



Boards

Up to 10' Long

Solid Asper Bamboo

S4S

Free & Clear

1/4 " thick



Veneers

1/4 Inch Thick

Solid Asper Bamboo

4' x 8'

Free & Clear

Custom thickness available



Panels

Multi Ply

Solid Asper Bamboo

4' x 8'

Up to 1.5 " thick

based on customer requirements



LVL

Custom Sized

Solid Asper Bamboo

Cut to Size



Strand

The Green OSB

Strands & wafers

4' x 8'

or

Cut to Size boards

Flexible Fiber



- We can use the fiber to make:
 - Compressed building materials like OSB and strand lumber
 - Laminated building materials like veneers, panels and lumber
 - Biofuel through chips and pellets
 - 3D printing filaments
 - Paper and cardboard pulp
 - Biochar

Philippines: \$159M by 2030



- By 2030 drive: \$159M:
 - \$132M in products
 - \$ 26M in carbon credits

Product: Building Materials

A CLIMATE SMART BAMBOO ALTERNATIVE TO WOOD, STEEL, AND CONCRETE.

Bamboo engineered lumber has superior technical characteristics that can complement or replace wood, steel, and concrete for most structural building applications.

Engineered Bamboo Lumber

- **2.5x stronger** than steel by weight
- **Greater compressive strength** than concrete
- More **fire-resistant** than wood: chars rather than melts to prevent catastrophic collapse in high-rise buildings
- **Regenerative:** 10x carbon drawdown vs. trees, watershed restoration, grows faster when harvested, 12x less land use than wood

Definitions

- **CULM:** A single bamboo pole. Our giant bamboo is typically over 25-30m (80-100ft) tall and reaches 25 cm (10 in) in diameter, one of largest and strongest in the world. A typical pole weighs over 100kg (220lb).
- **CLUMP:** A single bamboo plant, typically 40-50 culms with 10-15 mature poles ready to harvest every year.
- **BOARDS:** 25-150mm x 7-15mm x 2.6-3.2m planed sections of bamboo
- **VENEERS:** 1/4" 4'x8' panels



Why Now?

IF BAMBOO IS SO SUPERIOR TO WOOD, WHY HASN'T IT ALREADY BECOME A MAJOR BUILDING MATERIAL?

History

Bamboo has been a low-tech industry of \$70bn in toothpicks, skewers, paper pulp, chopsticks, cutting boards, and only recently flooring and veneers. While there are huge areas of bamboo forest throughout SE Asia, China, Japan, Central and South America, and Sub-Saharan Africa, nearly all species have small diameter, so the product mix is limited. There has never been an accessible supply of bamboo with the dimensions of culms necessary to make slats large enough to service the global construction market.



Why Now?

Price

Existing bamboo 4x8' panels cost up to \$200/sheet retail. When bamboo reaches cost parity with wood, the world changes.

Technology

Bringing modern western lumber manufacturing processes, adhesives, data collection, and automation to bamboo.

Regulation

Wood Skyscrapers/Mass timber buildings are newly IBC compliant since 2018 (up to 18 stories in 2021).



Embodied Carbon

Read any architectural newsletter recently, and low embodied carbon, along with mass timber, is the new face of construction. Bamboo is the most climate smart structural scalable building material.

Decreasing global timber supply

Logging moratoriums around the world are increasing timber prices and demand for alternative materials.

Impact

RIZOME ADDRESSES ALL 17 OF THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS - SDG17



Economy

Bamboo processing facilities dramatically benefit local communities. Farmers can generate additional revenue from their existing bamboo stands and have access to stable fair employment in regions where people rely on wages far below global poverty levels. The indigenous peoples and other farmers can be paid to plant bamboo.

Ecology and Fire Resistance

Giant bamboo is the fastest growing plant on earth. Regular harvest increases its growth. Bamboo also does not die in the grassfires that have devastated other reforestation attempts with native hardwoods in the area.

We only plant noninvasive clumping bamboo in areas that were previously deforested so that we do not compete with native species or food crops. We are also increasing biodiversity by interplanting with native hardwood trees in locations where seasonal grassfires will not destroy the young trees.

Water

Water is a major issue worldwide. Bamboo helps restore the water cycle. The unique rhizome mat of the plant reduces catastrophic flooding and erosion, and also recharges aquifers to mitigate drought.

Impact

Social

We have already begun to see the early social impact of a thriving bamboo economy.

Gender equality

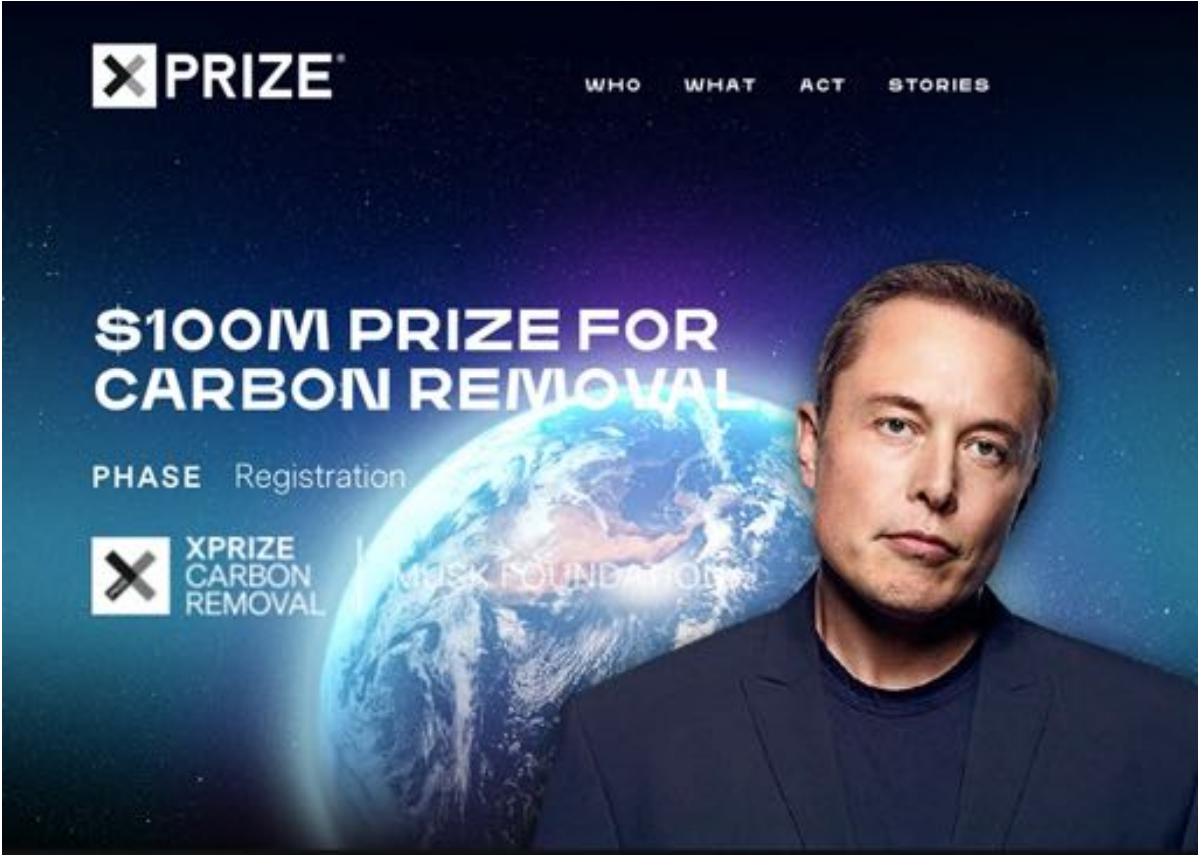
Unlike the lumber industry which is both machine-heavy and male-centric, the lightweight of bamboo enables women to participate in the bamboo economy, as well as the community's decisions to favor women for the nursery portion of the program.

Indigenous Populations

We provided matching funding to help our indigenous partners secure a USAID grant for the reforestation of thousands of acres of their tribal lands with bamboo and native trees. That grant is now being implemented.



**RIZOME: TOP 60 FINALIST
FOR MILESTONE AWARDS**





Saving the Climate

**CONVERT 12% OF GLOBAL CONSTRUCTION
TO BAMBOO BASED BUILDING MATERIALS
ANNUAL IMPACT - ADDRESS 1/3 OF GLOBAL CO2
IN DRAWDOWN AND AVOIDED EMISSIONS**

WWW.RIZOEMBAMBOO.COM

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