



INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT OF NON
TIMBER PRODUCTS AND SERVICES

Potential Rural Communities Sustainable Development through Bamboo Forest Management and Utilization in Peru

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INTRODUCTION



PERUBAMBÚ

SOUTH AMERICA : PERU

- Surface: 17'900,000 Km²
- Density: 18 hab/km²
- Amazon Rain Forest:
6'915,000 km²
- Surface Peru: 1.2 million km²
- Population Peru: 28,674,757
- Andean Mountain:
Huascarán 6,768 m



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ANDEAN RURAL COMMUNITIES

- 5,818 Andean Communities
- 7'000,000 Rural Population
- 711,580 Andean Native People
- +/- 50% Women
- Andean Communities Land: 2'026,481 hectares.
- Main activities: small scale agriculture, dairy farm and others.
- 2'000,00 million hectares available for forestation and reforestation.

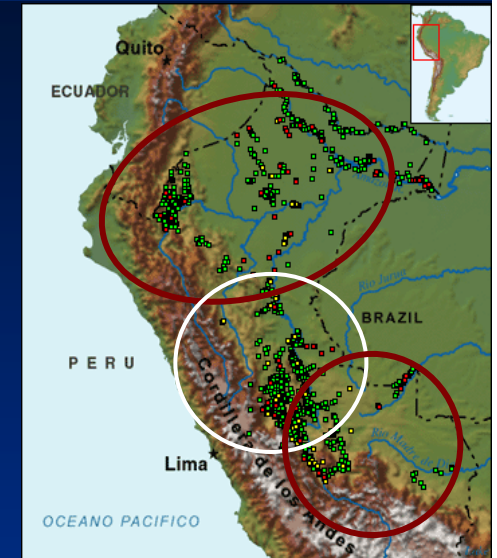


AMAZONIAN RURAL COMMUNITIES

- 1,265 Native Communities
- 300,000 Native People
- 59 grupos/15 linguistic families
- 1'000,000 Rural Mestizos
- +/- 50% Women
- Native Communities Land: 10.5 million hectares tropical forest.
- Main activities: migratory agriculture, timber (mahagomi) and NTFP extraction (wildlife animals, nuts, bamboo, etc.).
- 10 million hectares available for reforestation.



THE MAIN PROBLEM INCREASING TROPICAL FOREST DEFORESTATION



■ Present
□ Past



250,000 ha/year

BAMBOO BIODIVERSITY



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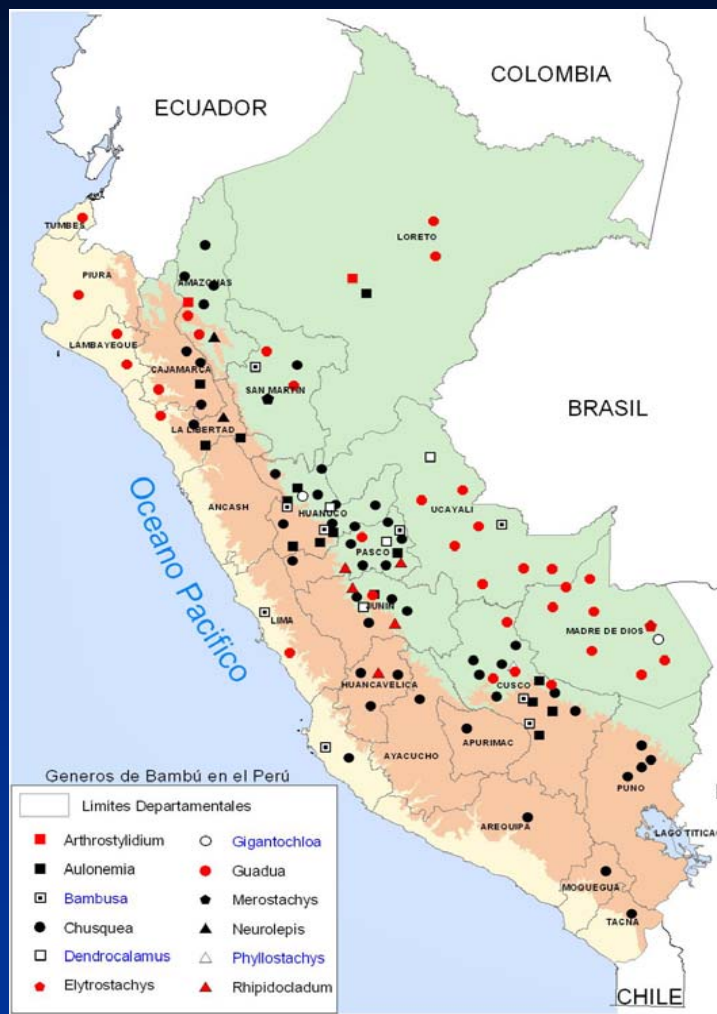
Latin America's countries
with highest native bamboo
diversity

Bamboo natural forest:
Latin America: > 11 million ha
Peru: > 4 million ha



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NATIVE BAMBOO SPECIES



Natives: 8 Genus and approx. 54 species

■ Aulonemia sp	7
■ Arthrostylidium sp	2
■ Chusquea sp	22 - 29
■ Elytostachys sp.	1
■ Guadua sp	6
■ Merostachys	1
■ Neurolepis sp	2
■ Rhipidocladum	2 - 4

Exotic: 4 Genus and 13 species.

■ Bambusa sp.	8
■ Dendrocalamus sp.	1
■ Phyllostachys sp.	3
■ Gigantocloa .	1

NOTE: Preliminary information.

An specific research project for bamboo species identification & characterization is going to start in 20

PREDOMINANT BAMBOO GENUS



GUADUA



CHUSQUEA



ALOUNEMIA



Guadua angustifolia Kunt

High: 24-30 m

Diameter 0.15-0.25 m

Yield: 1,200 – 1,300 culms/ha

Density: 0.8 g/cm³

Tension: 15 kN/cm²

Flexion: 7.6 kN/cm²

Elasticity: 1.800 kN/cm²

Simón Eicher – Inst. Otto Graf (AI)

Dr. Jules Janssen – Eindhoven University (NL)

Arq. Oscar Hidalgo L. – Univ. Nac. of Colombia

PREDOMINANT SPECIES IN SOUTH EAST BAMBOO FOREST

- *Guadua weberbaueri*
- *Guadua sarcocarpa*
- *Guadua angustifolia*

Others:

1. *Guadua superba*
2. *Guadua paniculata*
3. *Guadua chacoensis*



G. paniculata



G. chacoensis

	REGIONS	AREA	VOLUME
■	Junín	96,052.00	
■	Cusco	386,791.00	
■	Ucayali	1'903,535.00	
■	<u>Madre de Dios</u>	<u>1'611,422.00</u>	
	TOTAL	3'997,800.00	152,000 M3

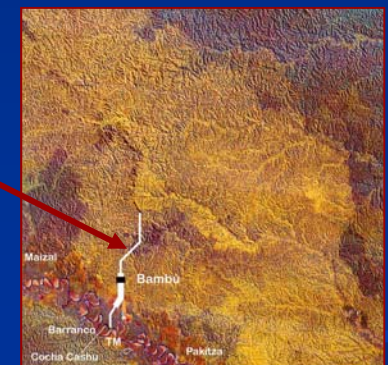
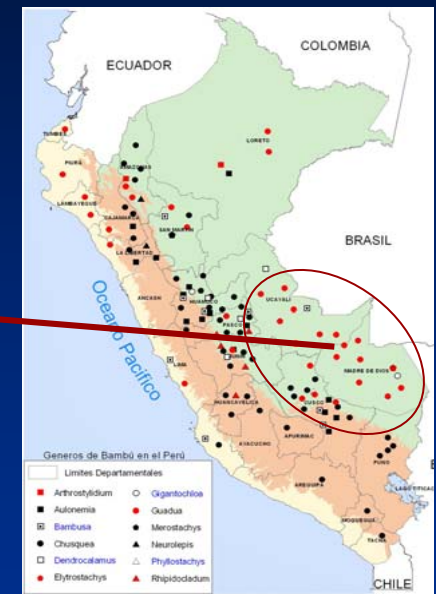
Density:

- 30% to 70%



G. superba

IMAGE OF THE SOUTH EAST BAMBOO FOREST





MAIN BAMBOO USES IN PERU PAST & PRESENT



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PRE INCAS CULTURES: CARAL 5000 years BP



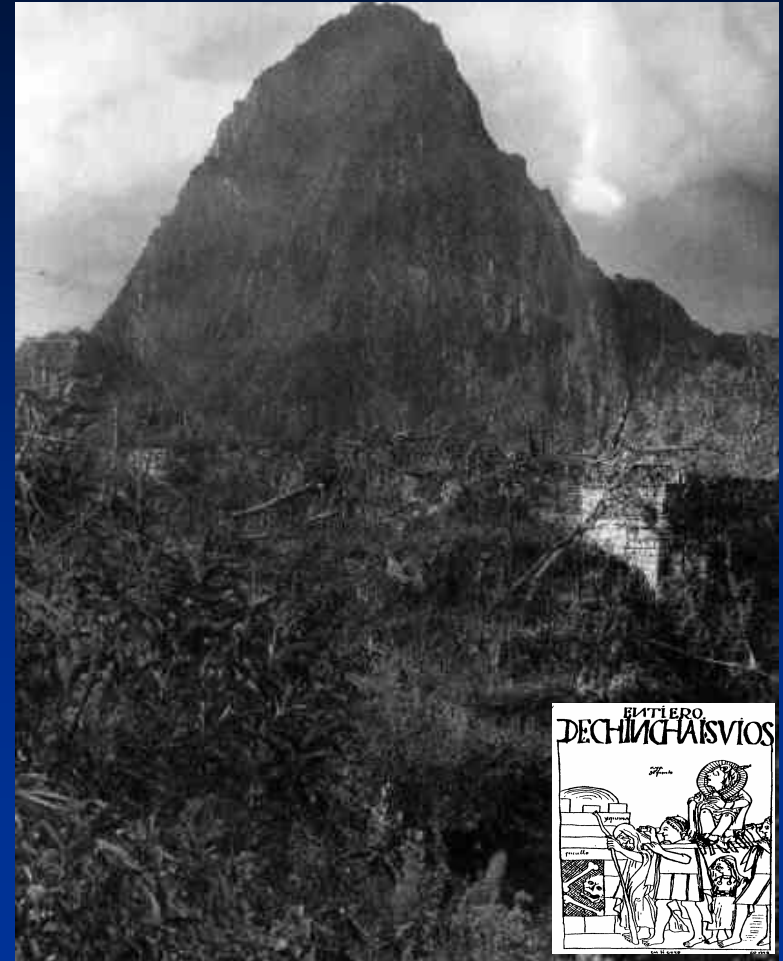
Bamboo canes & clay: quincha



PRE INCAS and INCA CULTURES



Real Tomb's Lord of Sipan: 2000 BC



Manchu Picchu ruins with a curtain of bamboo plants (H. Bingham 1911)



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BAMBOO'S QUINCHA COLONIAL & EARLY REPUBLIC



BAMBOO'S MODERN HOUSES



BAMBOO'S MINOR INFRAESTRUCTURE



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FURNITURE AND HANDYCRAFTS



BAMBOO POTENTIAL USES IN PERU



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SUSTAINABLE BAMBOO USES FOR RURAL COMMUNITIES DEVELOPMENT

BAMBOO PRODUCTS MADE BY RURAL PEOPLE

- HANDYCRAFTS
- CHARCOAL
- FURNITURE & HOME ACCESSORIES

PRODUCTION OF BAMBOO FOR LARGE SCALE DIRECT USE & TRANSFORMATION

- CONSTRUCTION MATERIAL FOR HOUSING PROGRAMS, LODGES FOR ECOTURISM & RURAL PUBLIC INFRASTRUCTURE
- STANDS FOR AGRICULTURE
- BAMBOO FLOORING & BOARDS
- PAPER PULP & PAPER
- CELLULOSIC ETHANOL ?

BAMBOO FOREST ENVIRONMENTAL SERVICES

- SOIL & WATER MANAGEMENT
- BIODIVERSITY CONSERVATION
- ECOTURISM
- CARBON SINK & O₂ PRODUCTION

COMPARATION WITH OTHER MATERIALS FOR SEISMIC RESISTANT CONSTRUCTIONS

- Bamboo is 30 % cheaper than a traditional construction in concrete & steel.
- Less energy used for bamboo production. →
- Improves rural people economy: Income US\$ 9,000 to 10,000/Year/Ha from *Guadua angustifolia* plantation.
- Rural labour for production and construction (gender equal opportunities).
- Sustainable resource: perennial.
- Short term for productive yields: (5 years).
- Promotes reforestation and prevents deforestation.

Material	Unid	Cost
Bamboo	MJ / m ³ per N/mm ²	30
Timber	MJ / m³ per N/mm²	80
Concrete	MJ / m³ per N/mm²	240
Steel	MJ / m³ per N/mm²	1500

Prof. Jules Janssen, Eindhoven University (Holand)

IMPROVE AND INCREASE THE USE OF BAMBOO FOR HOME, AGRICULTURE & INDUSTRY



FURNITURE



CHARCOAL



HANDYCRAFTS



STANDS

BAMBOO SEISMIC RESISTANT HOUSING PROGRAM



KL85MR2T7Q8

ENVIRONMENTAL SERVICES

WATER & SOIL MANAGEMENT, CO2 SINK, WILDLIFE HABITAT, ECOTOURISM



1,856 Bird species
3-4% bamboo forest obligated habitat

RAW MATERIAL FOR INDUSTRIAL USES



Some bamboo species have 40 to 60% more cellulose and less hemicellulose than most tropical timber, therefore produce more sugar/ha/year by microbial fermentation.

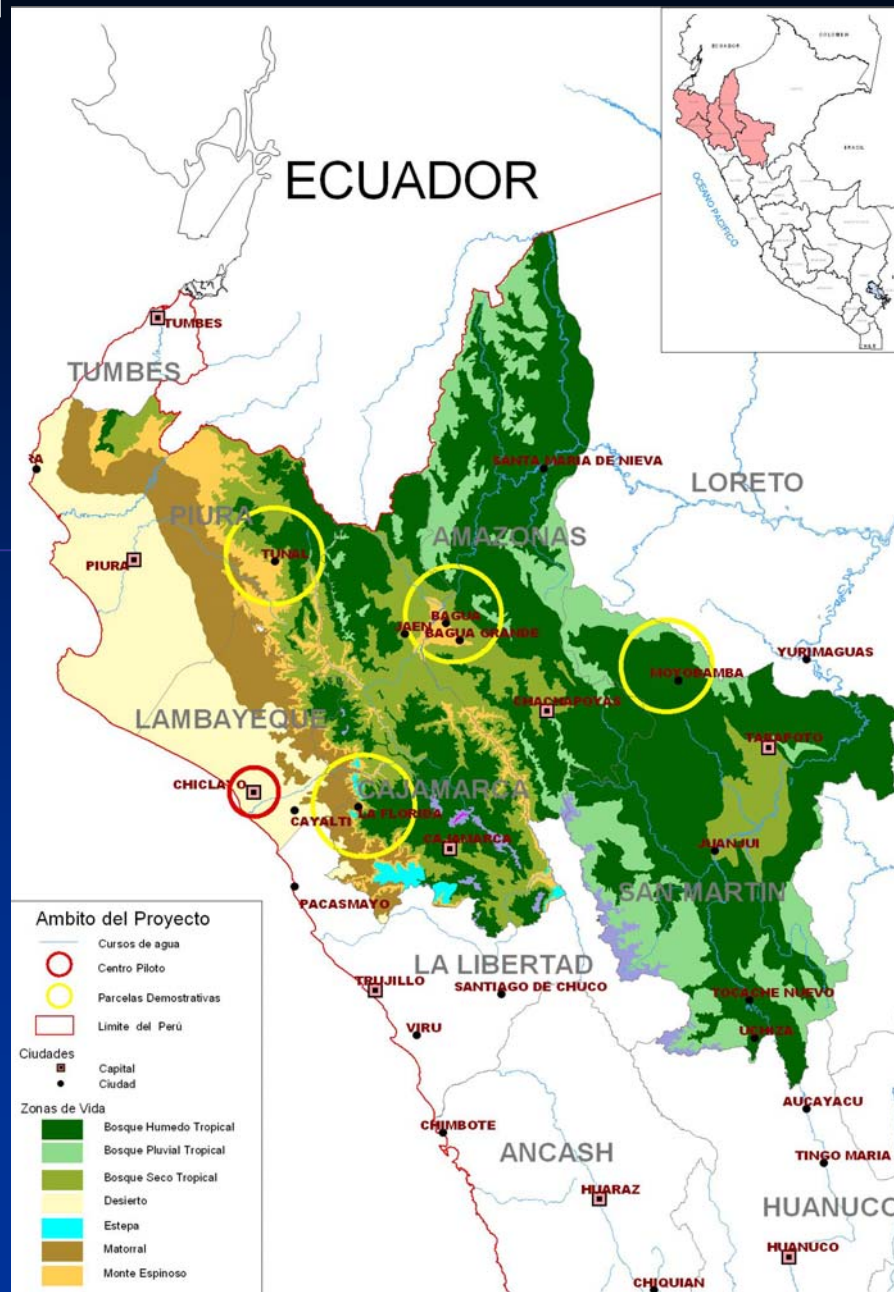


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ITTO PROJECT FOR BAMBOO FOREST REHABILITATION, MANAGEMENT AND USE IN NORTHWEST PERU



PERUBAMBÚ



REHABILITATION, SUSTAINABLE MANAGEMENT AND USE OF TROPICAL BAMBOO FOREST IN THE NORTHWEST REGION OF PERU

(PD 428/06 Rev.1(F))

- 04 Regions
- 10 Amazonian Native Communities
- 02 Andean Rural Communities
- Direct beneficiaries: 250 trained people
- Indirect beneficiaries: 1,500-2,000 people
- 100 hectares for management
- 200 hectares for rehabilitation
- Production of bamboo culms (sustainable managed bamboo forest)
- Transformation (treated material for construction, handy crafts & furniture)
- Environmental Services

Thank you

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