bamboo
products

Benefits of the bio-cycle
Case: MOSO bamboe

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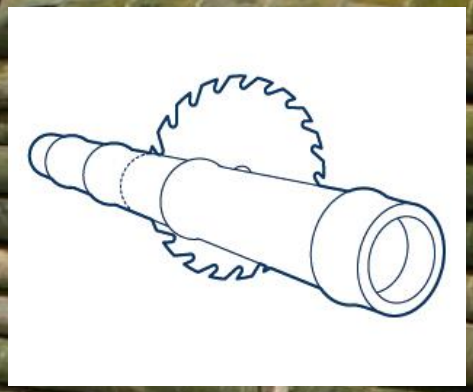
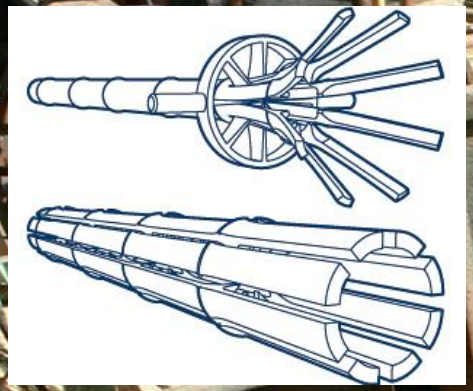
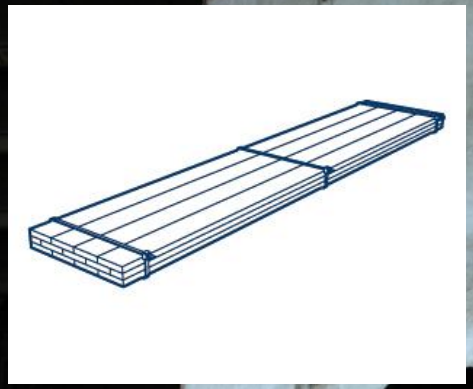
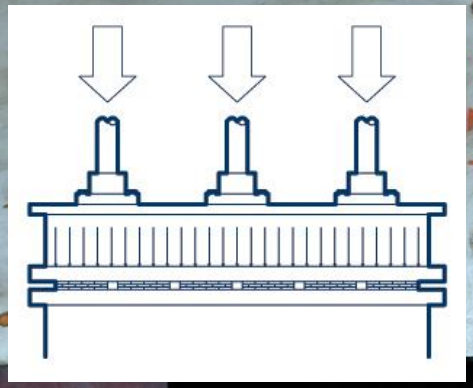
Plenaire bijeenkomst CE-markering - 10 november 2016

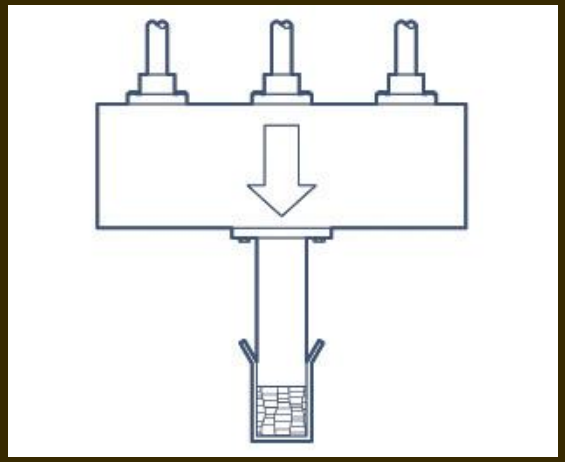






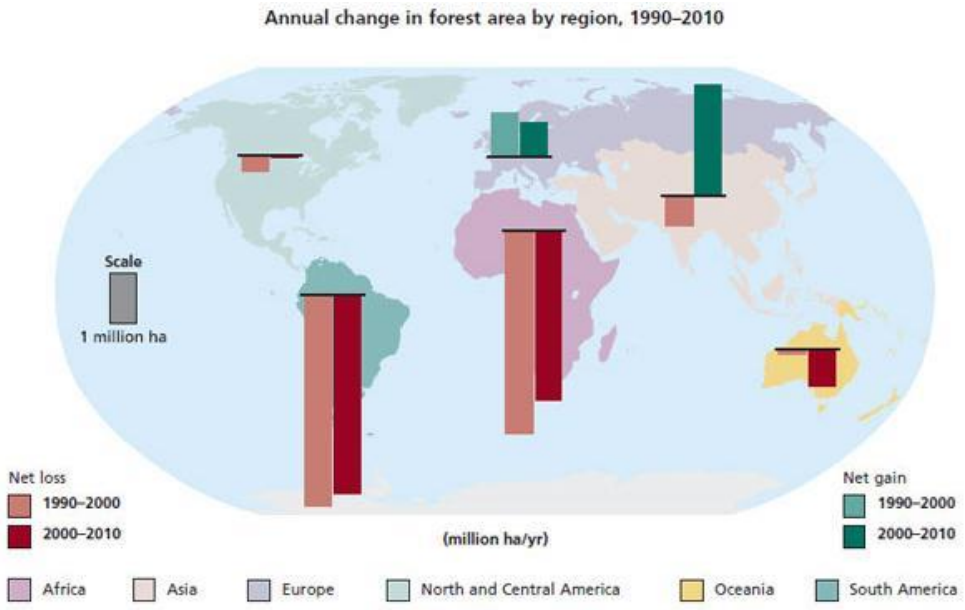


械有限公司
TEL:0532-88313105
规范操作
小心压伤



Continuous Deforestation

- Mostly in tropical regions, severe effect on
  - Biodiversity
  - Carbon sink degradation – climate change
  - Erosion



Source: FAO Global Forest Resources Assessment 2010

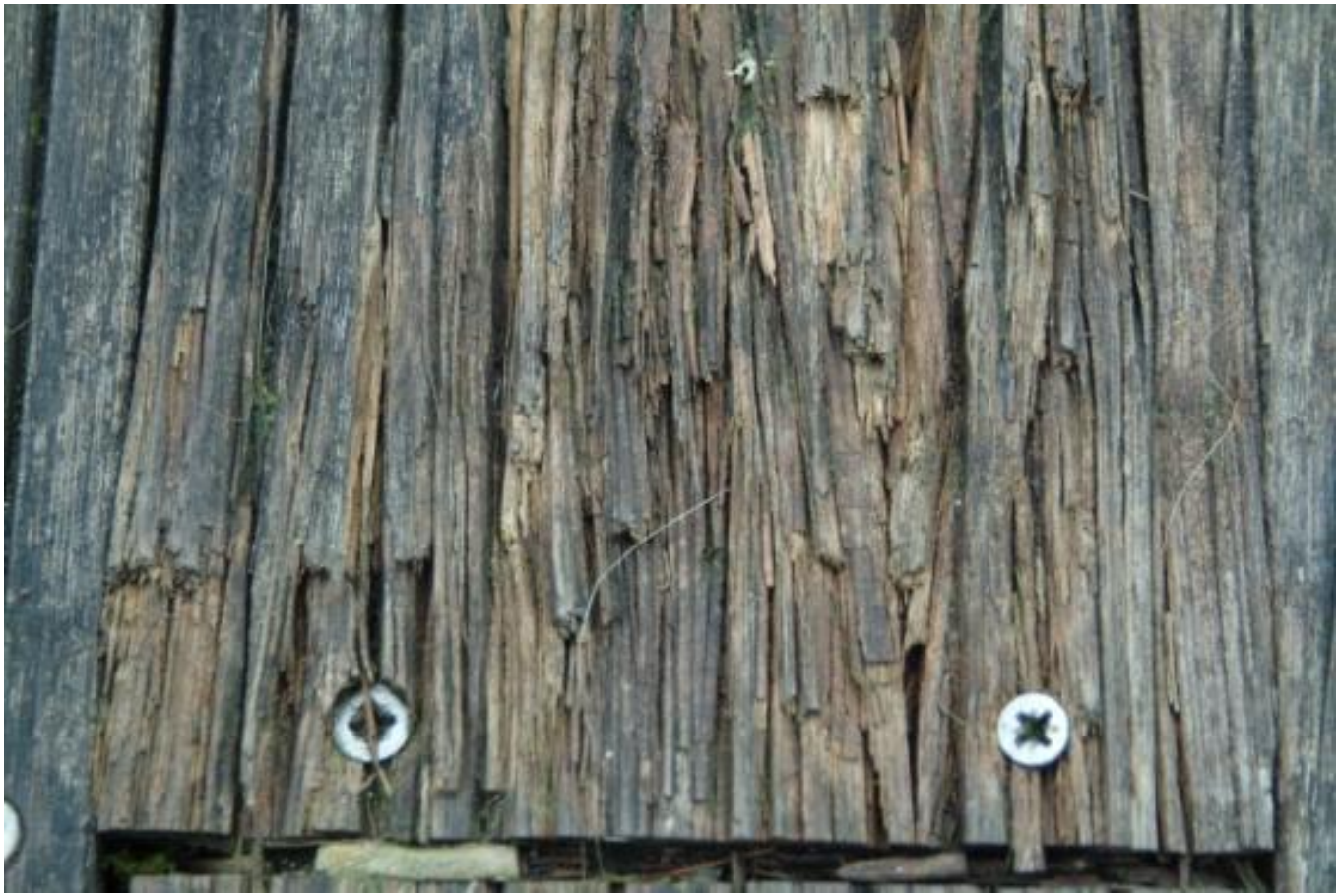
Chinese bamboo reforestation

0,3 mio hectares / year

= 300 mio. tons CO2

= Annual energy consumption 75 mio. households

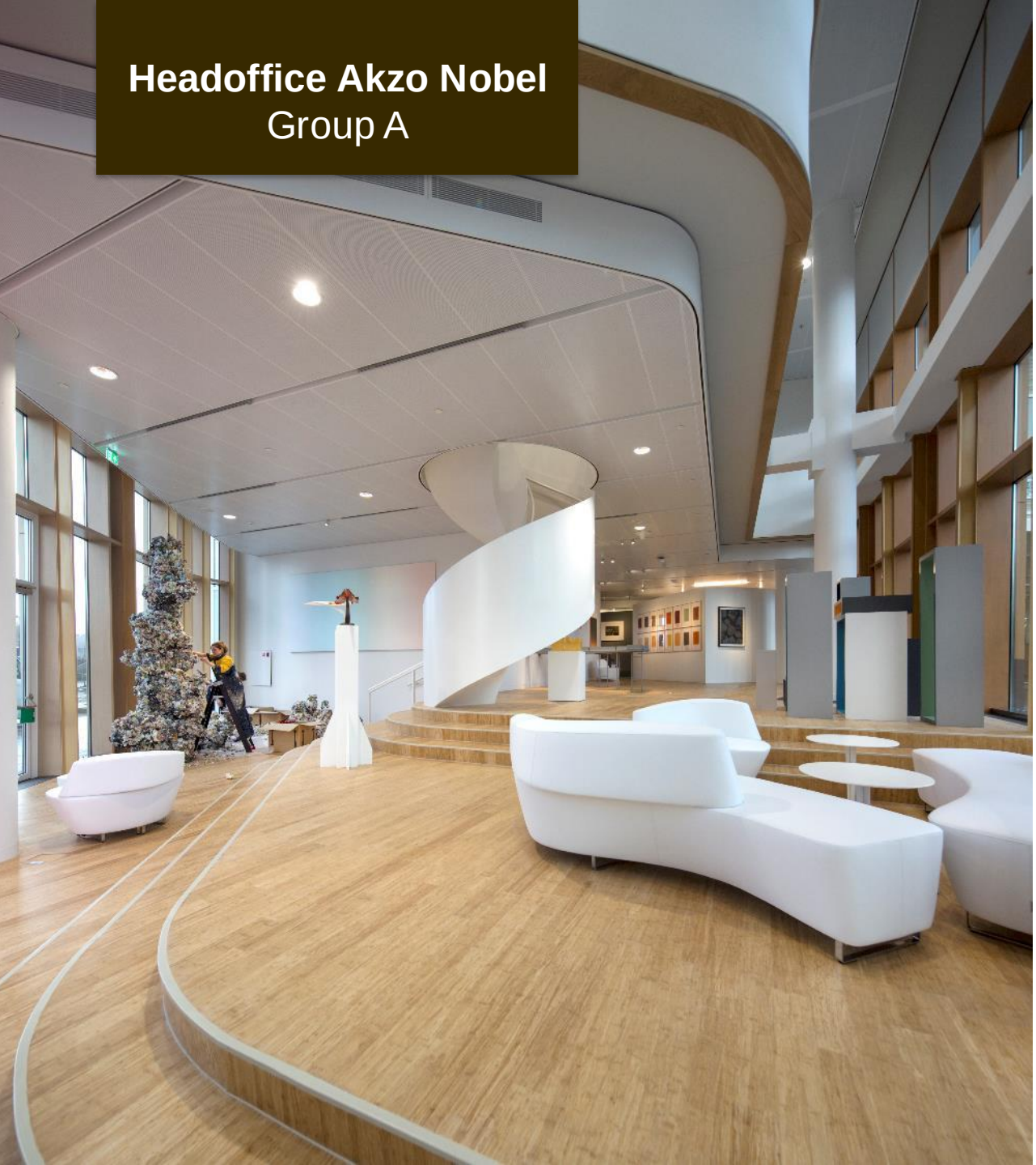
Low durability in outdoor circumstances



Thermally modified bamboo strips

MOSO Product Groups


Rabobank Breda
Ilse Winthagen



Headoffice Akzo Nobel
Group A

PWC Barcelona
BAAS design


Stadskantoor Utrecht
Kraaijvanger architects

Schiphol Lounge 2
Kossmann de Jong

Rijkswaterstaat
Paul de Ruiter

AGC Glass Head Office, Belgium

BREEAM Excellent


bamboo x-treme
outdoor collection
Venco campus
(Breeam Excellent)
Eersel, the Netherlands
design: Ad van de Ven

Madrid International Airport, Spain
Richard Rogers

Solar Carport BMW

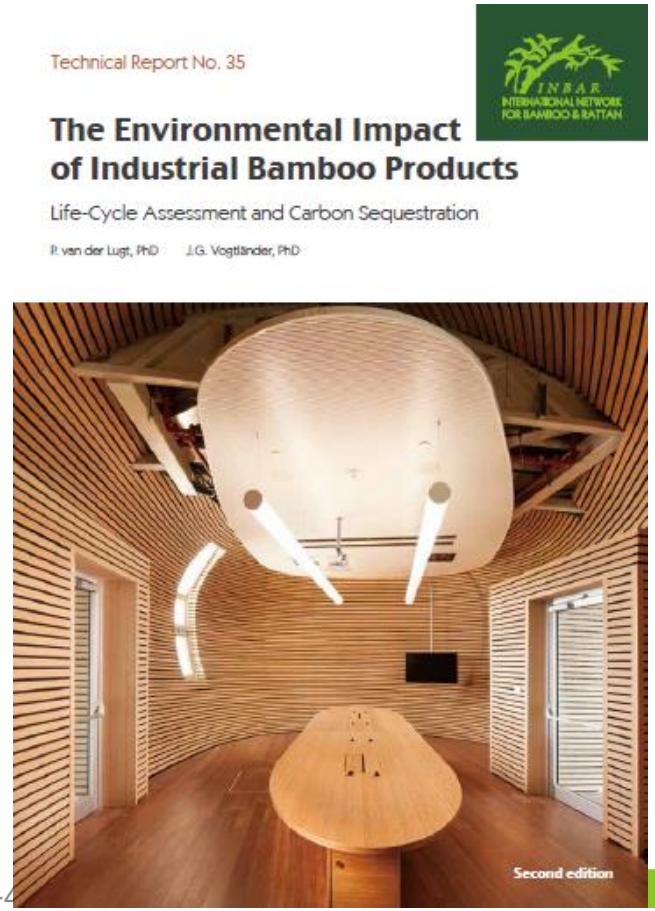
BMW Dashboard

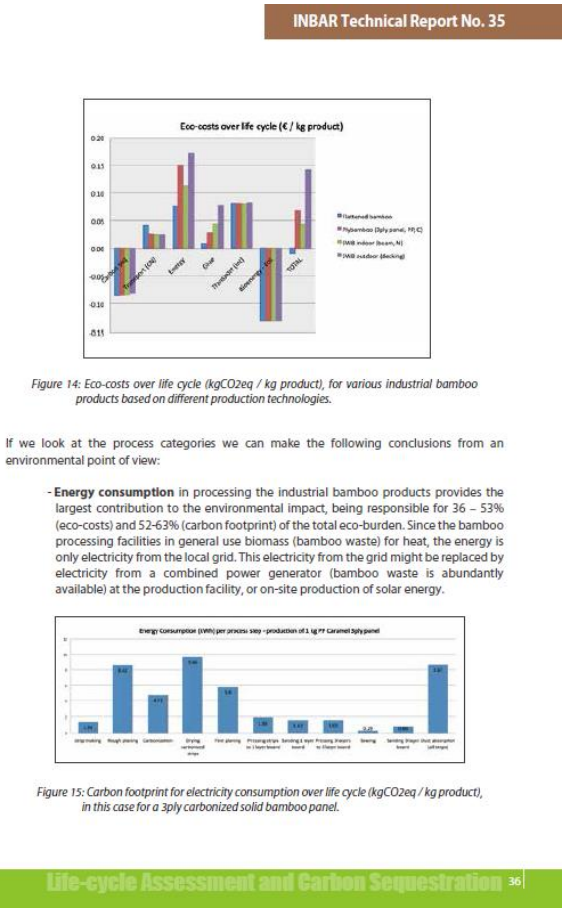
Green Credentials over Life Cycle

- For full picture of environmental impact:
- Analyse complete life cycle from ‘Cradle till Grave’:

Measuring Environmental Impact: LCA

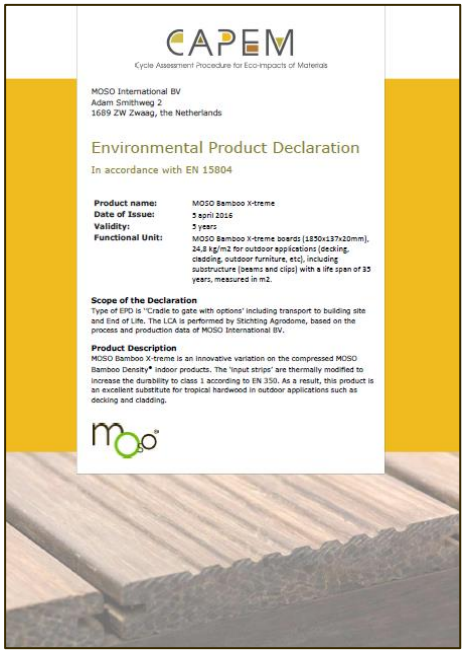
- INBAR Technical Report no. 35 → presented at COP 21
- moso.eu/lca

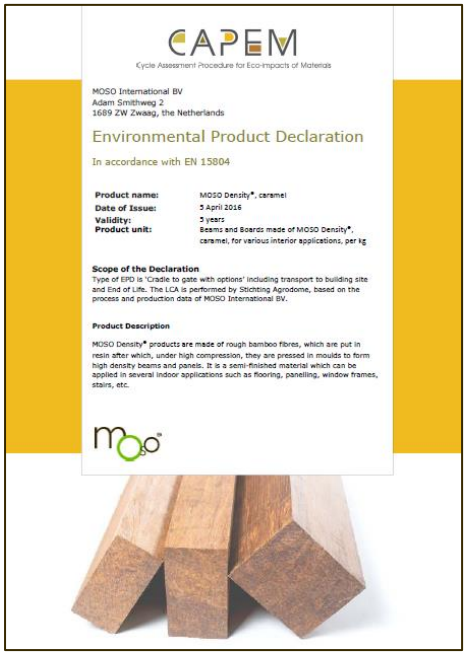


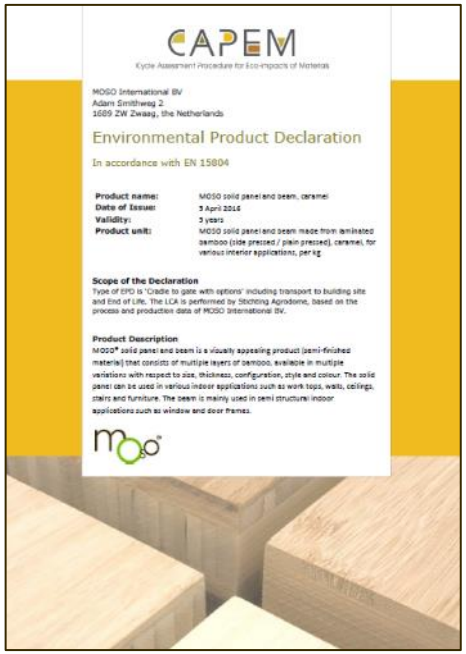


Environmental Product Declaration - EPD

- EPD's (EN 15804) available for MOSO Bamboo Products:
  - MOSO Bamboo X-treme
  - MOSO Density® products
  - MOSO laminated bamboo products
- www.moso.eu/epd

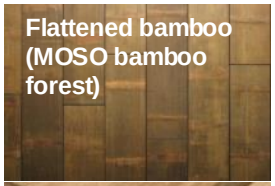


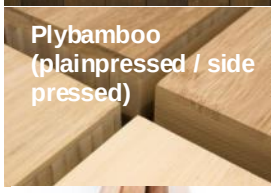


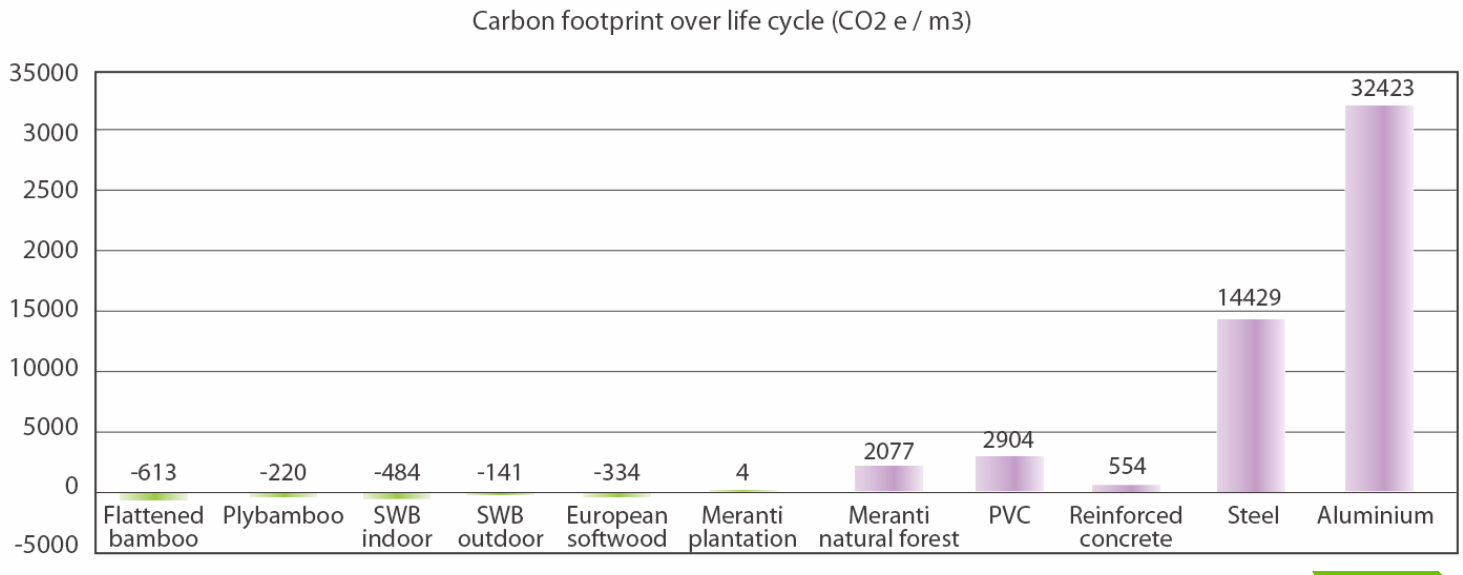


LCA & Carbon Footprint - Results

- Compared to other commonly used building materials
- Carbon footprint per cubic meter material



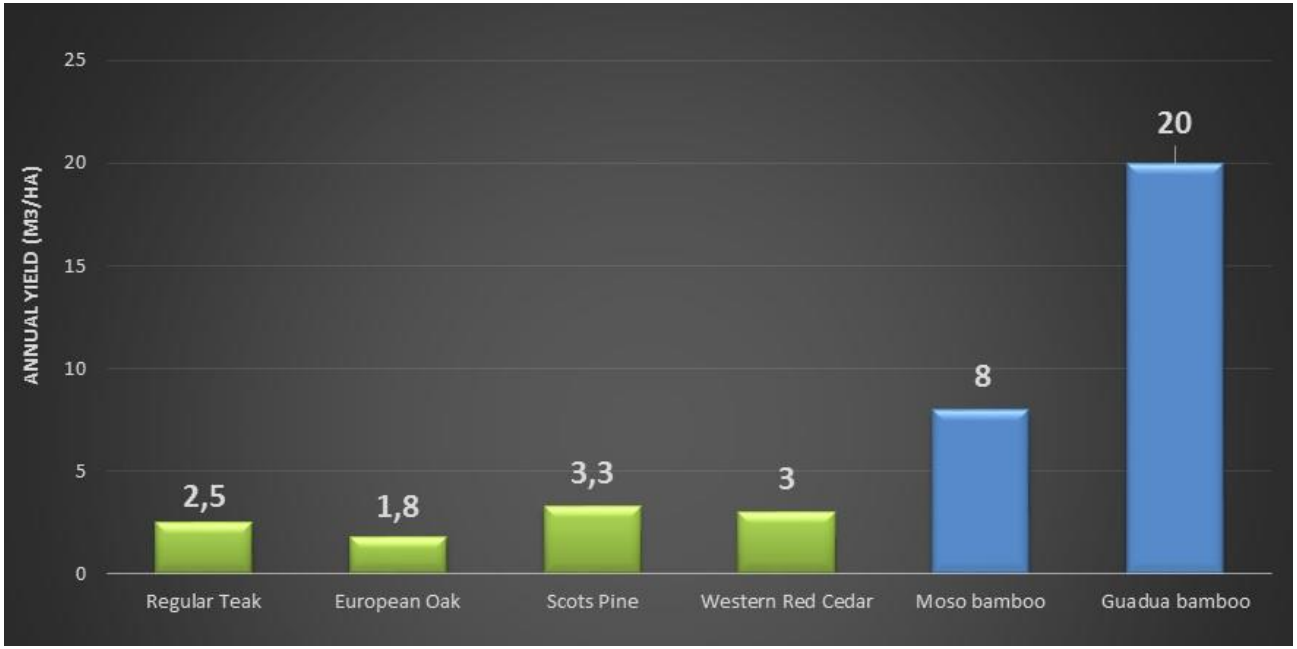




- MOSO materials & softwood outperform hardwood, plastics & metals
- MOSO Bamboo Forest most sustainable option available

Not even taking into account:

- Annual yield



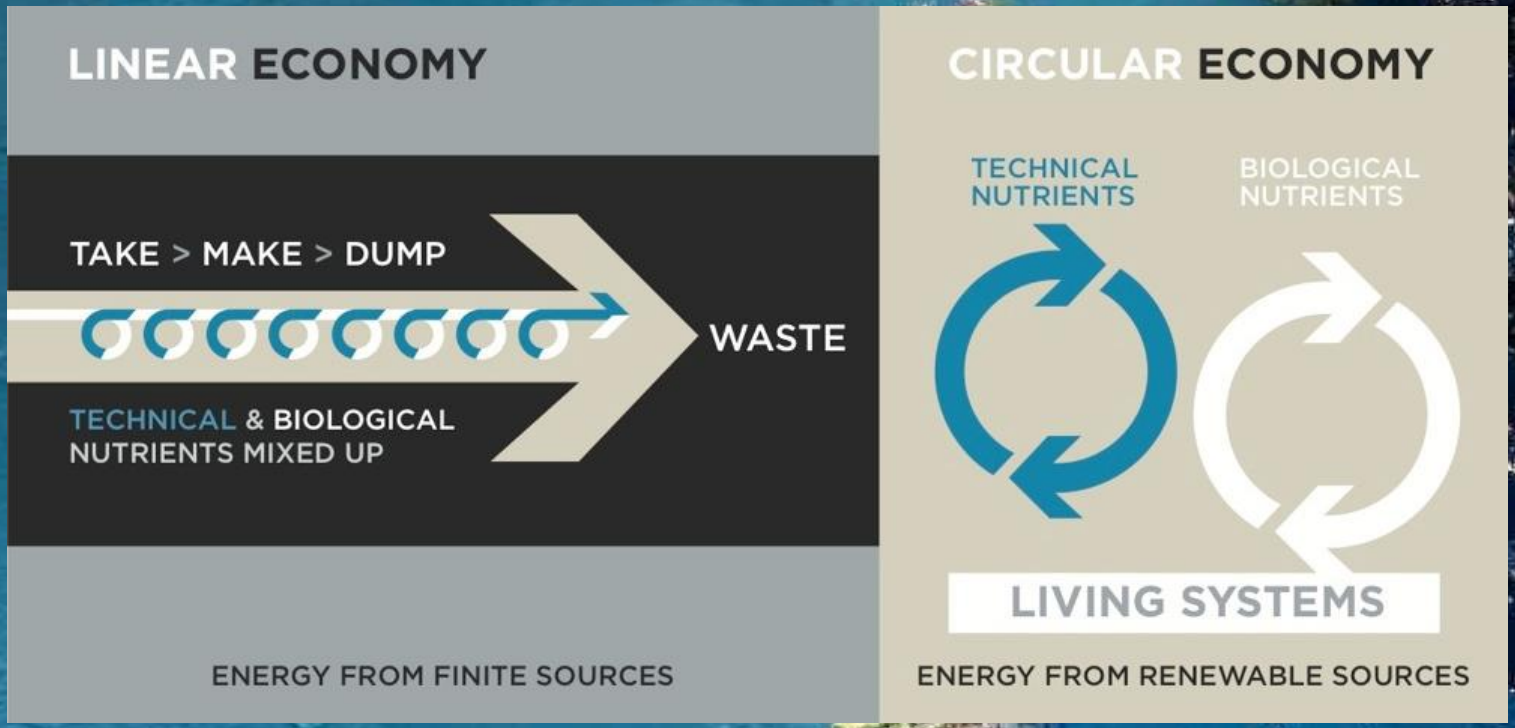
- Additional growth related environmental benefits vs wood:
  - annual harvesting provides better growth > no deforestation
  - reforestation on degraded land possible
  - short establishment time

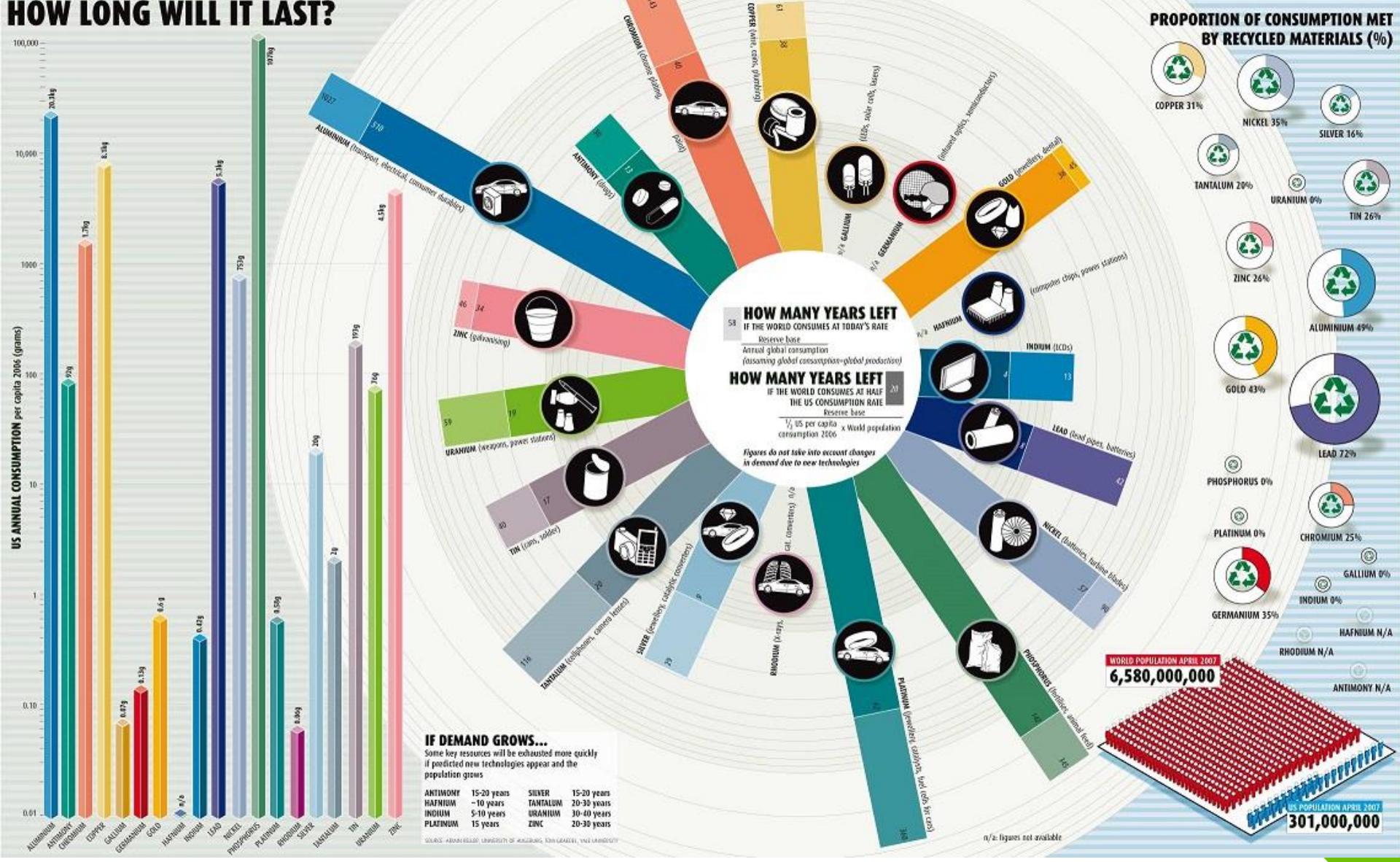
Bamboo and the Circular Economy

moso® bamboo products

Circular Economy

Source: Ellen MacArthur Foundation

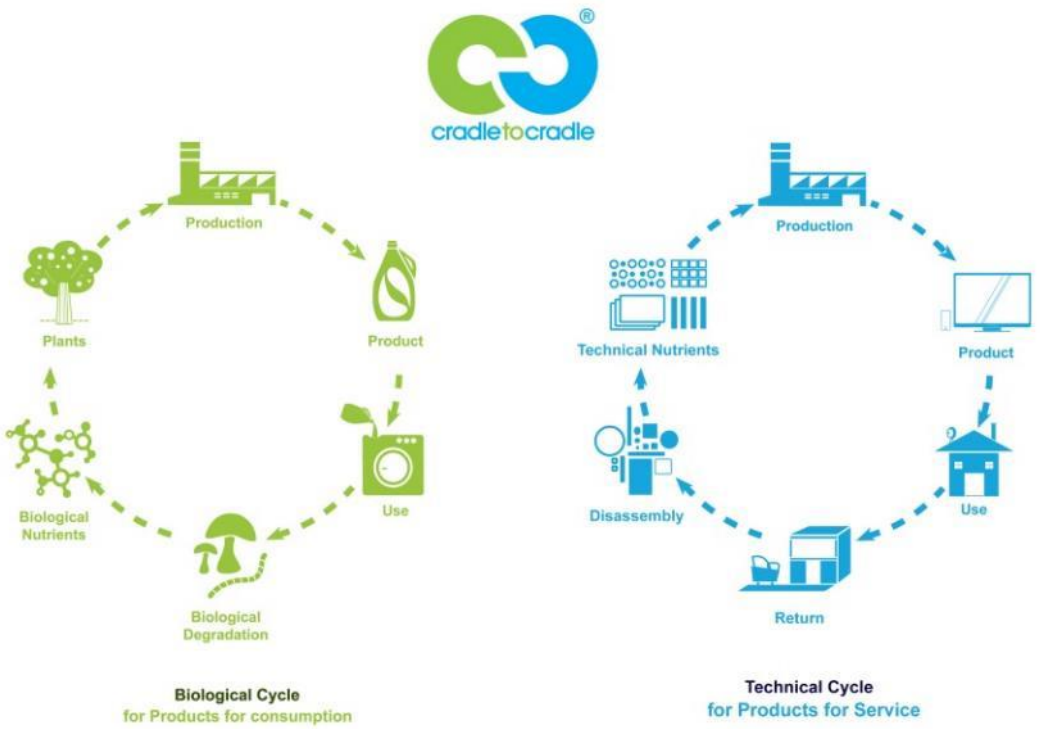




Abiotic Resources: Reserves

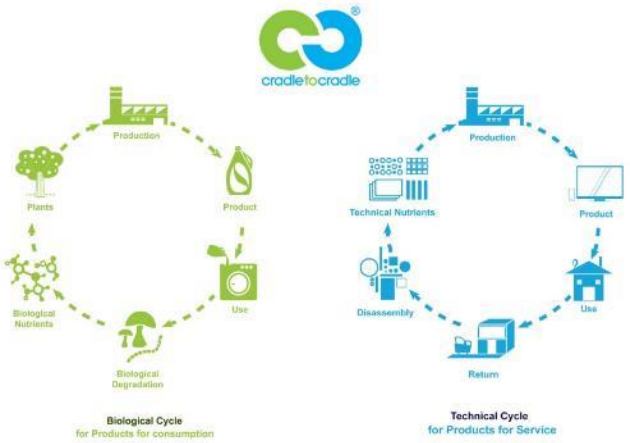
- Copper: ~60 years
- Zinc: ~45 years
- Tin: ~30 years

Benefits of the biocycle



Benefits of the biocycle

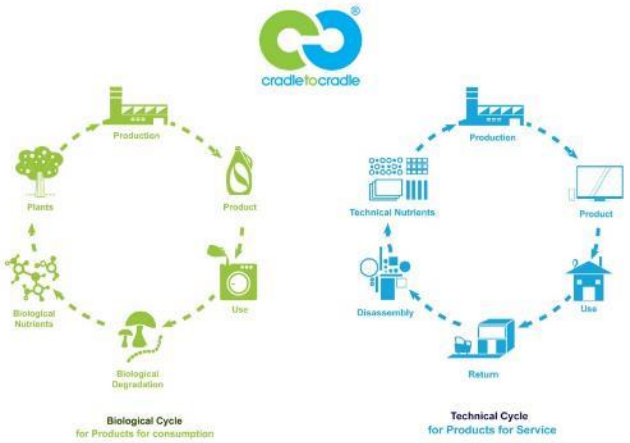
- Low embodied energy



- High embodied energy

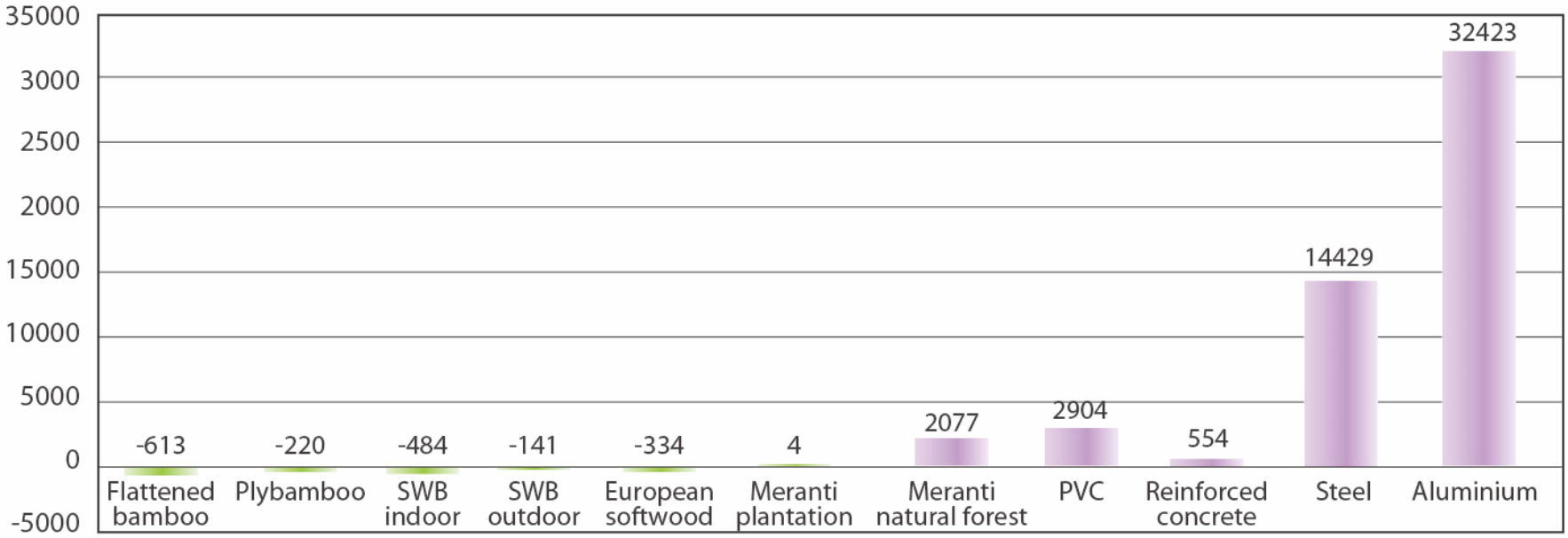
Benefits of the biocycle

- Low embodied energy



- High embodied energy

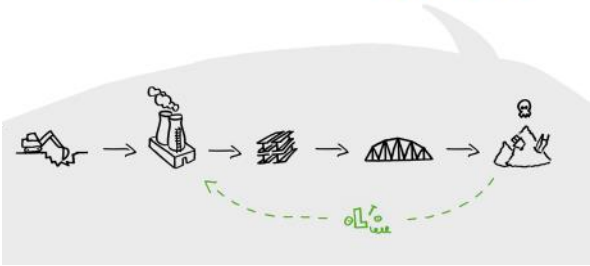
Carbon footprint over life cycle (CO2 e / m3)



Benefits of the biocycle

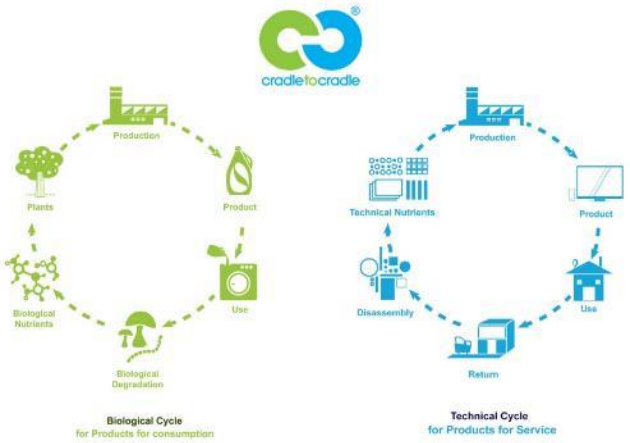
- Low embodied energy
- No waste problem

- High embodied energy
- Not bio-degradable – if recycled considerable energy demand

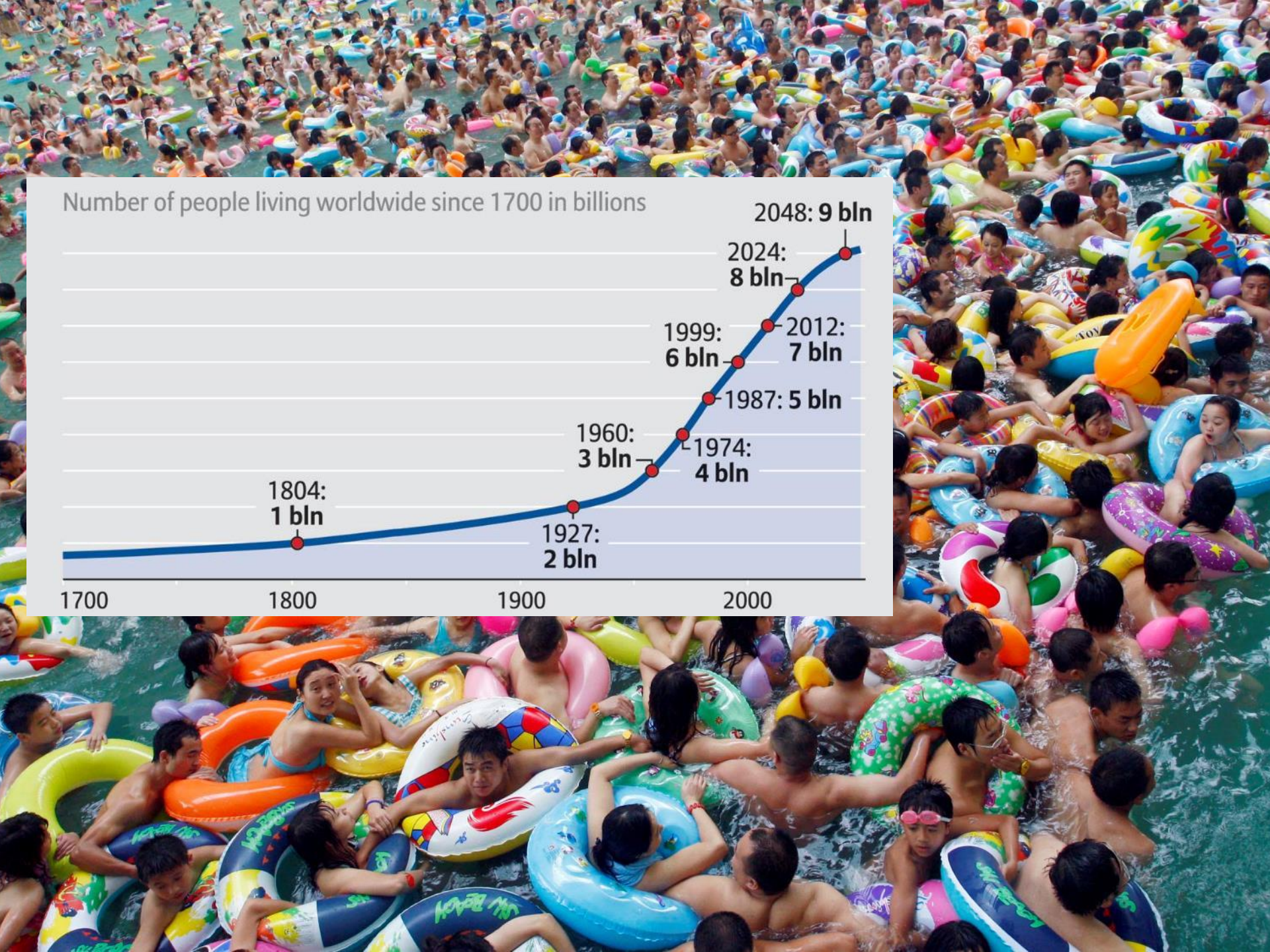


Benefits of the biocycle

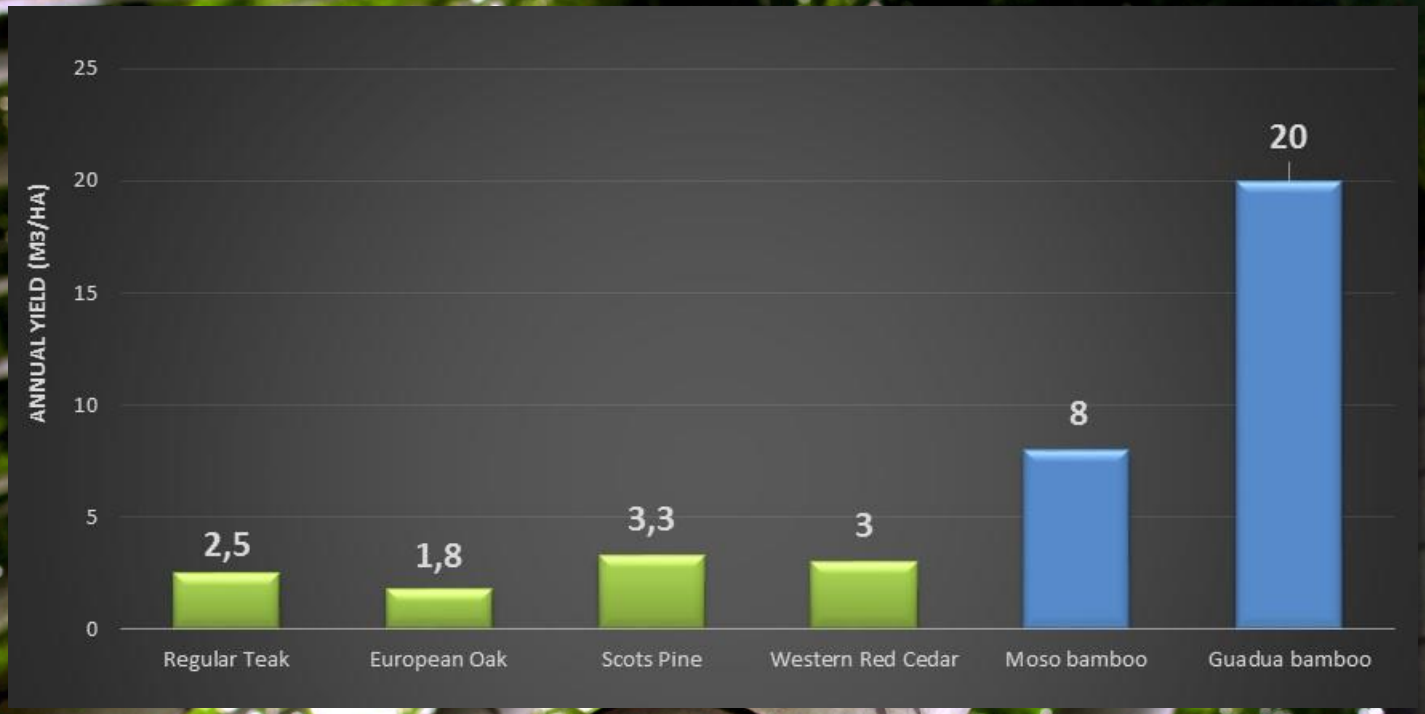
- Low embodied energy
- No waste problem
- (Rapidly) renewable



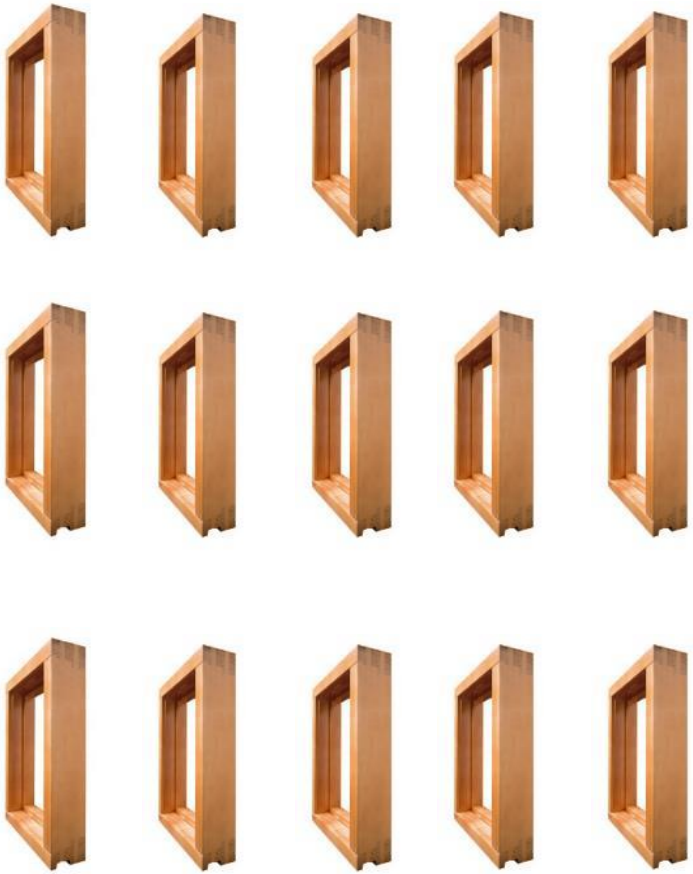
- High embodied energy
- Not bio-degradable – if recycled considerable energy demand
- Non renewable


Number of people living worldwide since 1700 in billions
2048: 9 bln
2024: 8 bln
1999: 6 bln
2012: 7 bln
1987: 5 bln
1960: 3 bln
1974: 4 bln
1804: 1 bln
1927: 2 bln
1700
1800
1900
2000

Power of Renewability



1 m3 of bamboo =
15 window frames



20 m3 of bamboo =
300 window frames

20 m3 of bamboo =
300 window frames

Sustainably grown on
1 hectare per year!

20 m3 of bamboo =
300 window frames

Sustainably grown on
1 hectare per year!

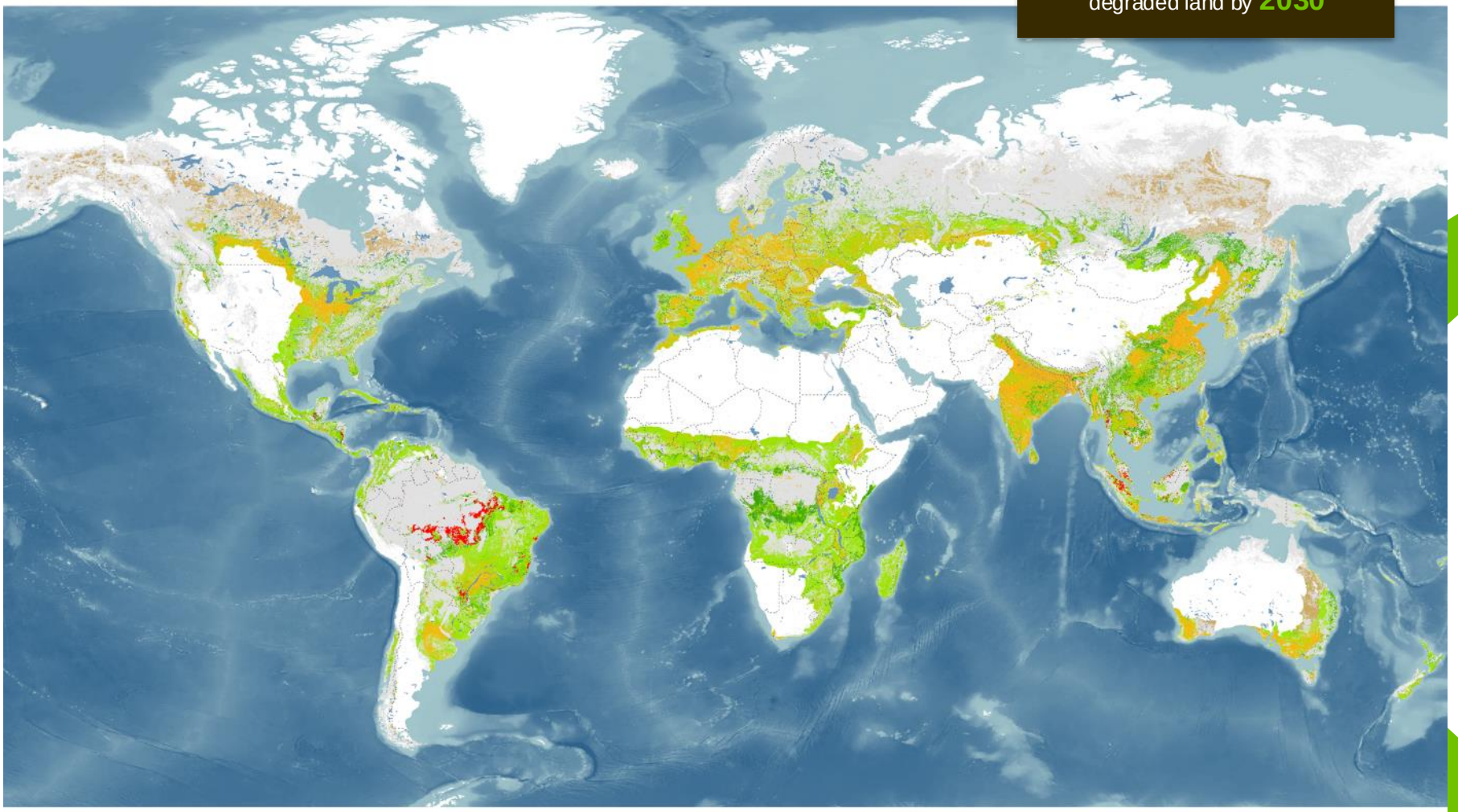
= only 2 soccer fields!

BONN CHALLENGE
on forests, climate change and biodiversity 2011

A World of Opportunity
for Forest and Landscape Restoration

Bonn Challenge

Reforest **500 million ha** of degraded land by **2030**



FOREST AND LANDSCAPE RESTORATION OPPORTUNITIES

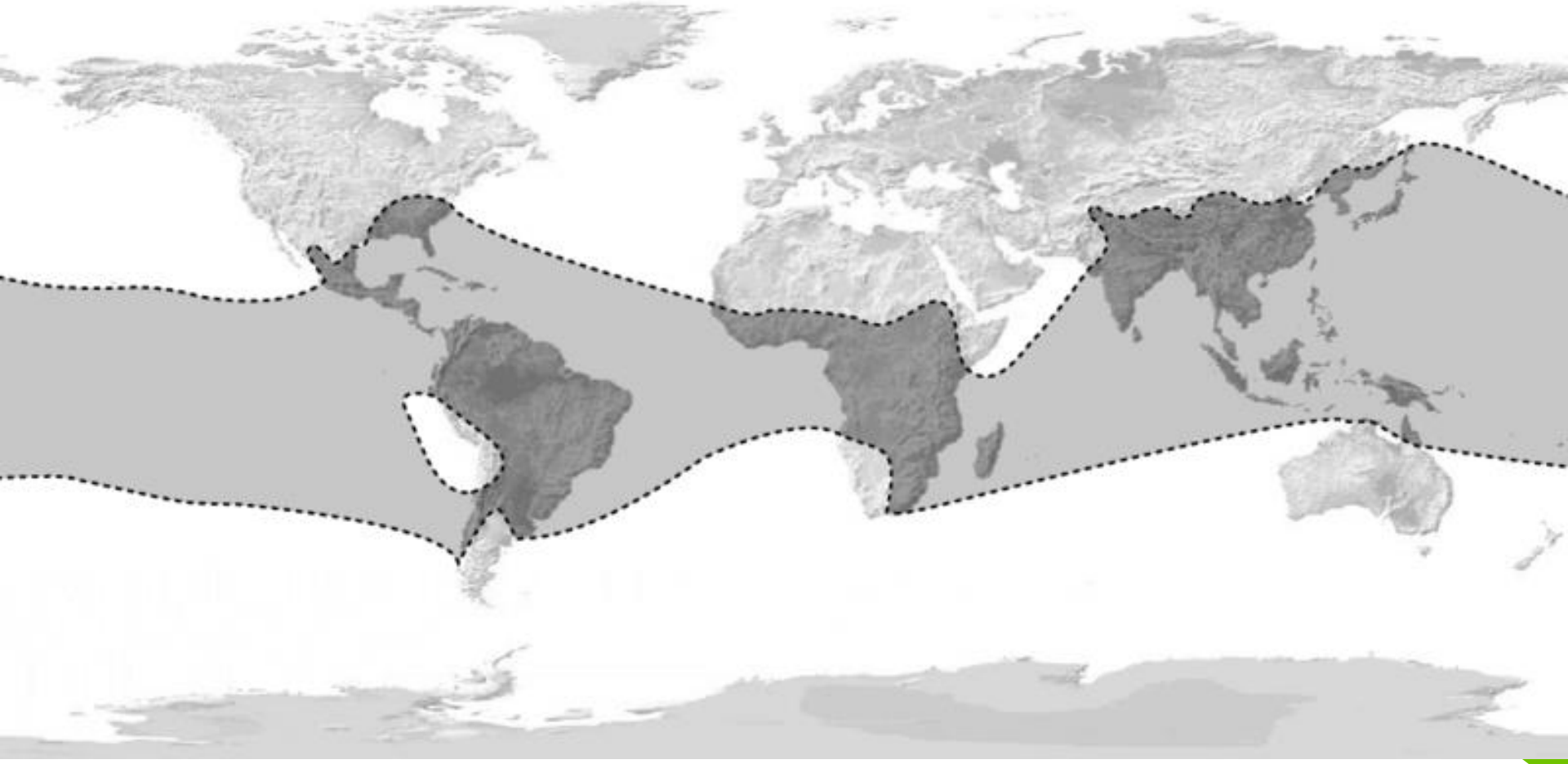
- Wide-scale restoration
- Mosaic restoration
- Remote restoration

OTHER AREAS

- Agricultural lands
- Recent tropical deforestation
- Urban areas
- Forest without restoration needs

THE GLOBAL PARTNERSHIP ON FOREST LANDSCAPE RESTORATION · WORLD RESOURCES INSTITUTE · South Dakota State University · IUCN · Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit · PROFOR · Forestry Commission

Bamboo Growing Area



VCS VERIFIED CARBON STANDARD
A Global Benchmark for Carbon

VCS PROJECT DATABASE

Home | Projects | VCUs | Buffer | Pipeline | JNR | JNR Buffer

Search For Projects

Keyword Name, ID or Proponent

Country

All
Argentina
Australia
Belize
Bolivia

Sectoral Scope

All
1. Energy (renewable/non-renew
2. Energy distribution
3. Energy demand
4. Manufacturing industries
5. Chemical industry

SEARCH

ECOPLANET BAMBOO CENTRAL AMERICA, NICARAGUA

EcoPlanet Bamboo's project is a reforestation project,utilizing native bamboo, Guadua aculeata, for the regeneration of degraded pasture lands on the Atlantic coast of Nicaragua. The project has already reforested 1,365ha of degraded land, with another 1,855 underway. The project is designed to provide timber manufacturing industries with a sustainable alternative fiber, thereby further reducing pressure on natural forests. In addition to VCS and CCBA, the project is certified under the FSC for sustainable forest management.

BONN CHALLENGE
on forests, climate change and biodiversity 2011

A World of Opportunity
for Forest and Landscape Restoration

Bonn Challenge

Reforest **500 million ha** of degraded land by **2030**

10.000 million m3
bamboo / year

3,6 million
high rise buildings
5000 m2
(2750 m3 bamboo)

100 million
residential villas
170 m2
(100 m3 bamboo)

500 million
social housing
40 m2
(20 m3 bamboo)

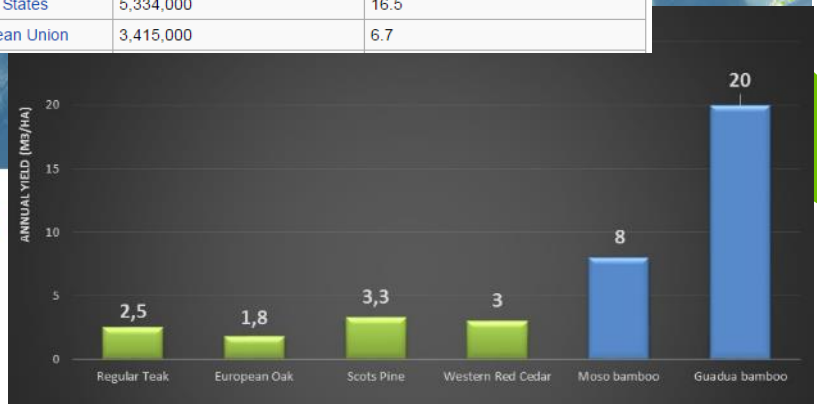
Bamboo reforestation

1 ha ~ 1000 tons CO2

500 mio hectares = **500.000.000 ktons CO2**

* Worldwide CO2 emissons 2014 = 35.669.000 ktons CO2
(15 times less)

Country	CO_2 emissions (kt) in 2014[2]	Emission per capita (t) in 2014[3]
World	35,669,000	5.0
China	10,540,000	7.6
United States	5,334,000	16.5
European Union	3,415,000	6.7



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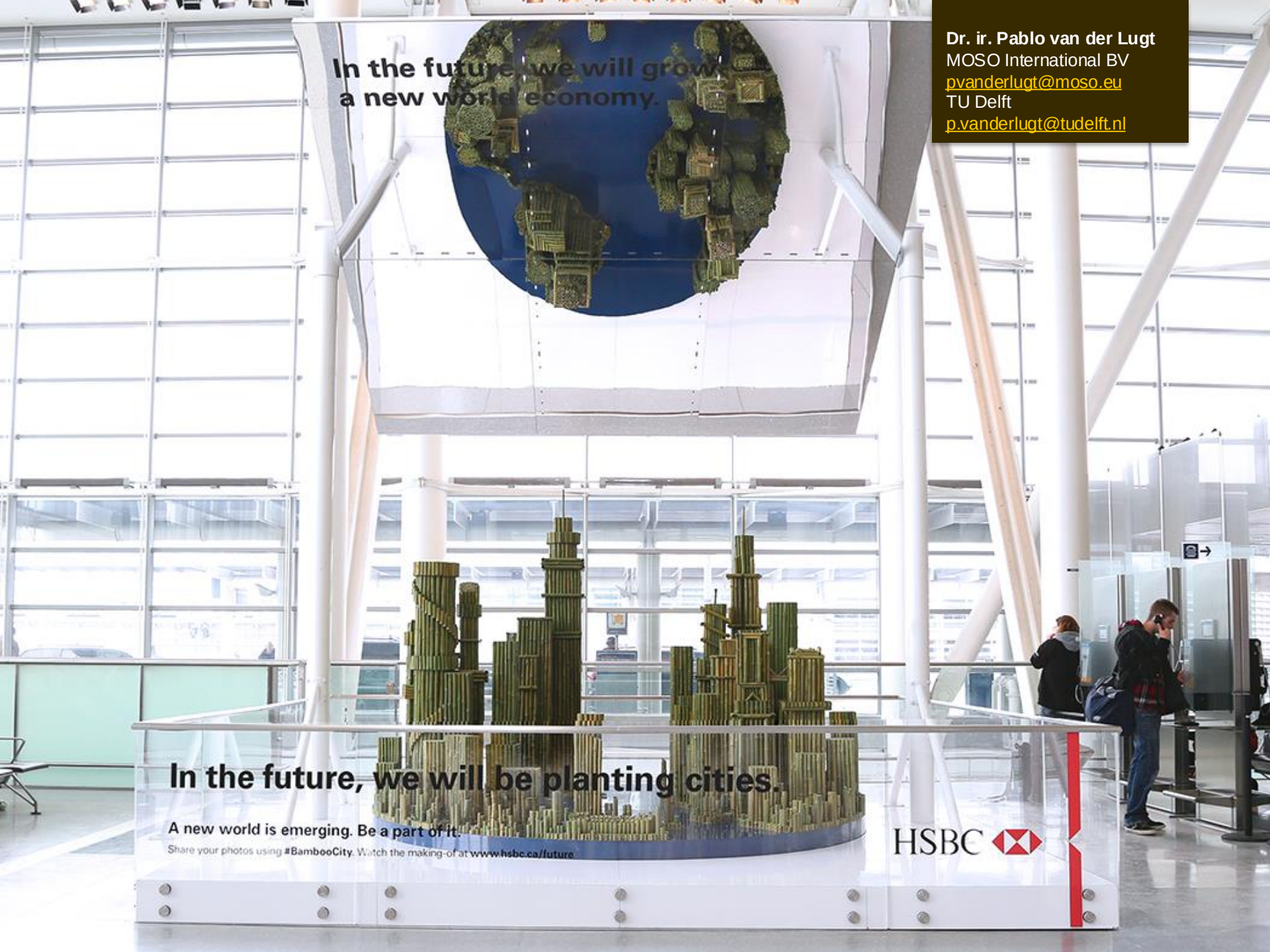

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