

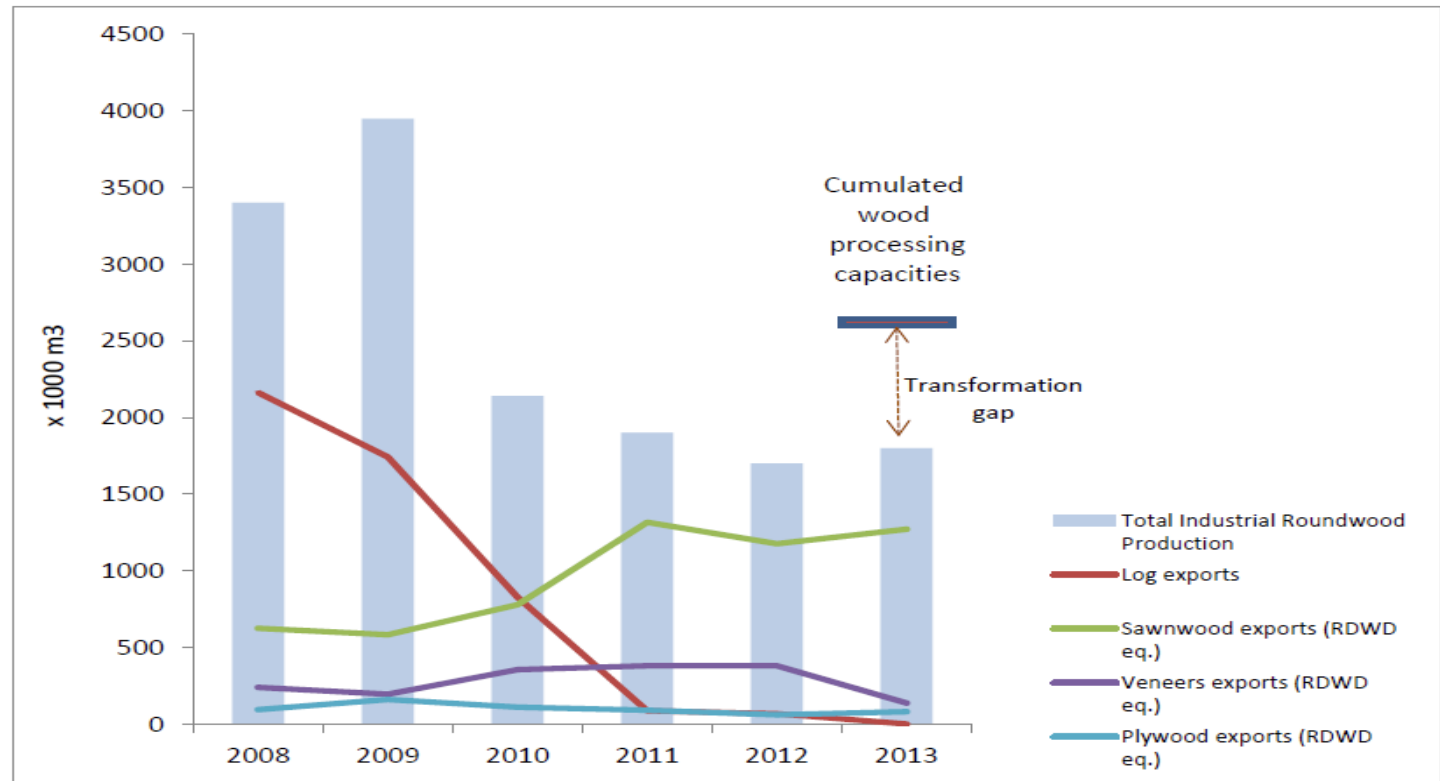
The role of quality, innovation and technology in strengthening the wood sector of Gabon

RACEWOOD. Libreville (Gabon) 20-22 June 2018



Gabon wood sector – Main figures

- 80% of forest surface (13.5 million ha of logging potential)
- Export-oriented (internal market demand low)
- Contribution 2.5-3% GDP // Employing 25-28% workers
- LEB since 2010 and updating Forest Code
- Government and private actors investment (i.e. GSEZ)




Source: FAO (2016) Forestry policy working paper (Data: ITTO Annual statistics on-line)

Factors influencing the competitiveness and development of the timber sector



Role of quality, innovation and technology



- 
- A proofed driver of economic development
 - Innovation is not just about high-technology
 - Innovation and technological strategic plan (public-private)
 - Building up a reliable and competent quality infraestructure

WOOD TECHNOLOGY LABORATORY



“To increase growth and profitability rates of the industry by contributing in increasing sales or reducing productive costs”

- Providing testing, certification and inspection services to the local industry (under accreditation i.e. ISO 17025)
- Remove trading barriers associated with meeting local and international standards
- Contribution in building local high-skilled labor (training services)
- Representing the industry in local technical regulations and standarization
- To be the technological and innovation partner for the timber sector
- Evolve to a research center for local industry (applied research)

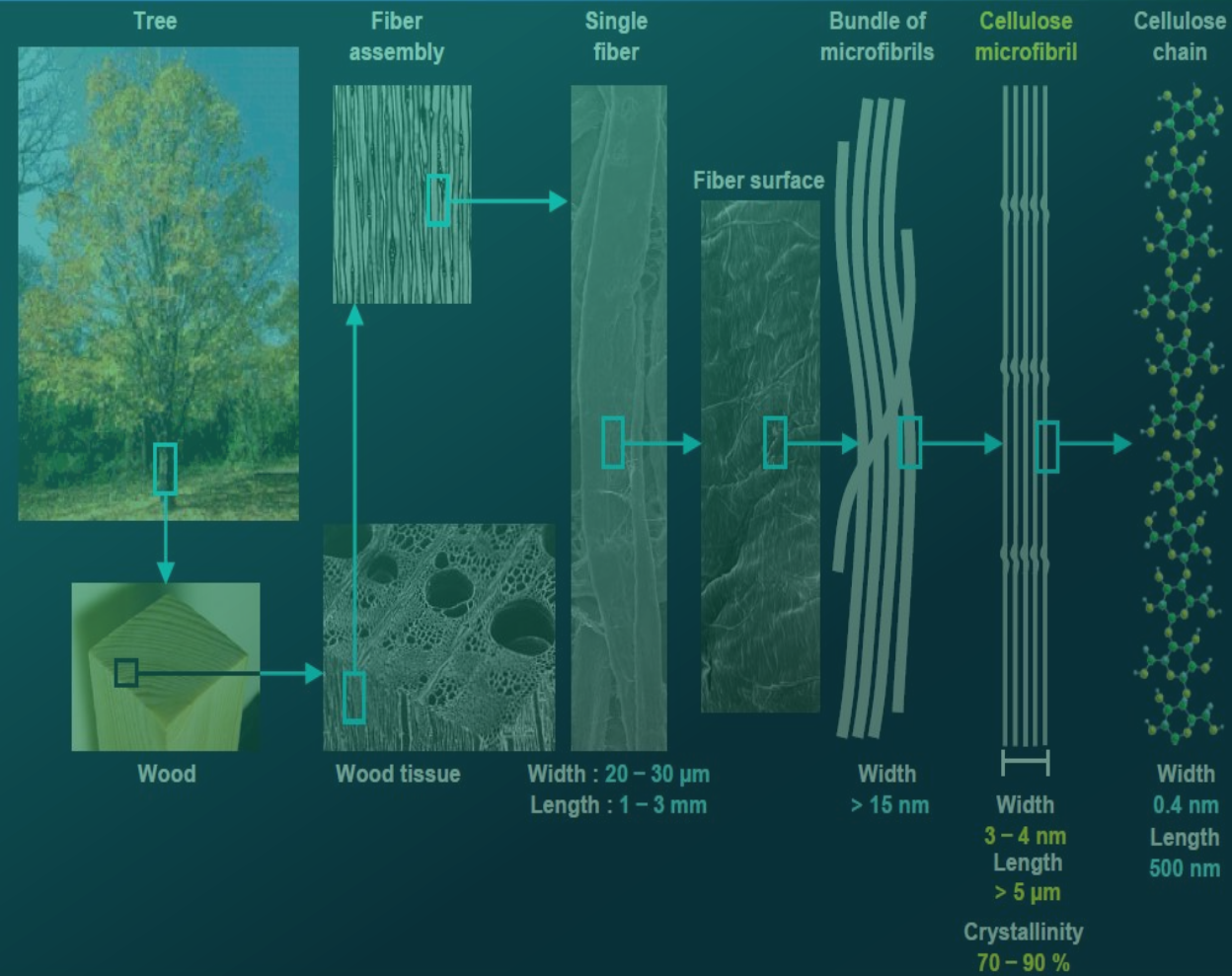
Research and Technology challenges for the timber sector



WOOD-BASED NANOMATERIALS



- | Lightweight material, builds network structures
- | Renewable resource, biodegradable
- | High strength and stiffness
- | Transparent, translucent, water storage capacity, rheology modifier
- | High Surface area & aspect ratio
- | High reactivity, barrier properties

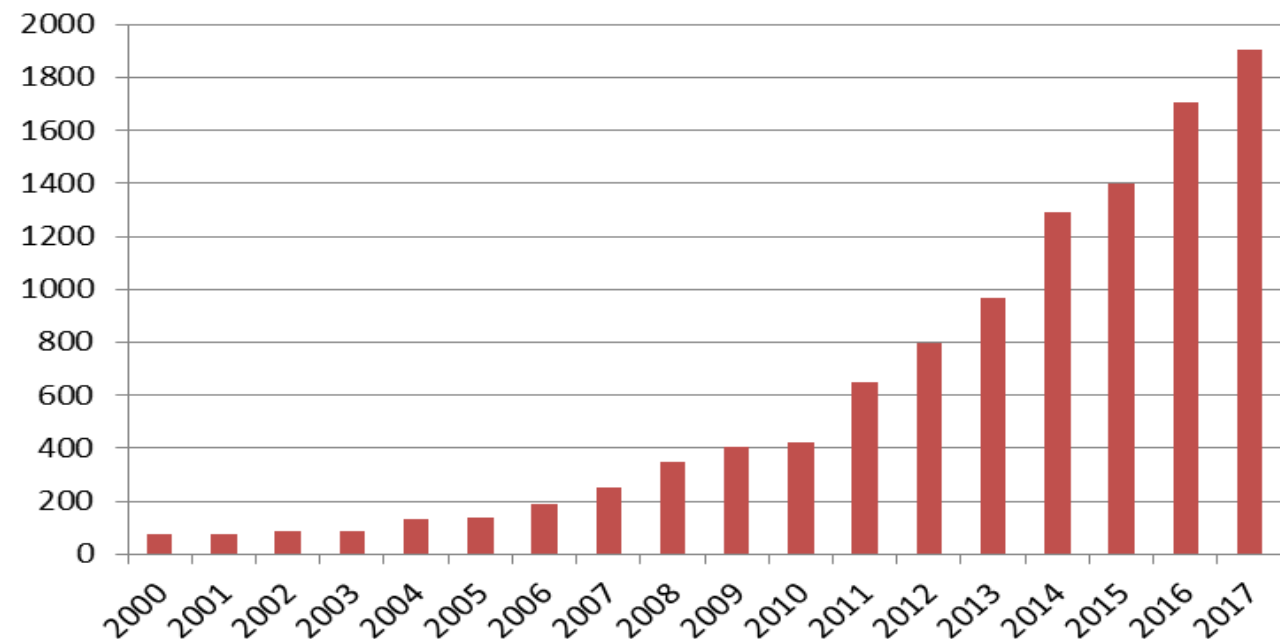


WOOD-BASED NANOMATERIALS

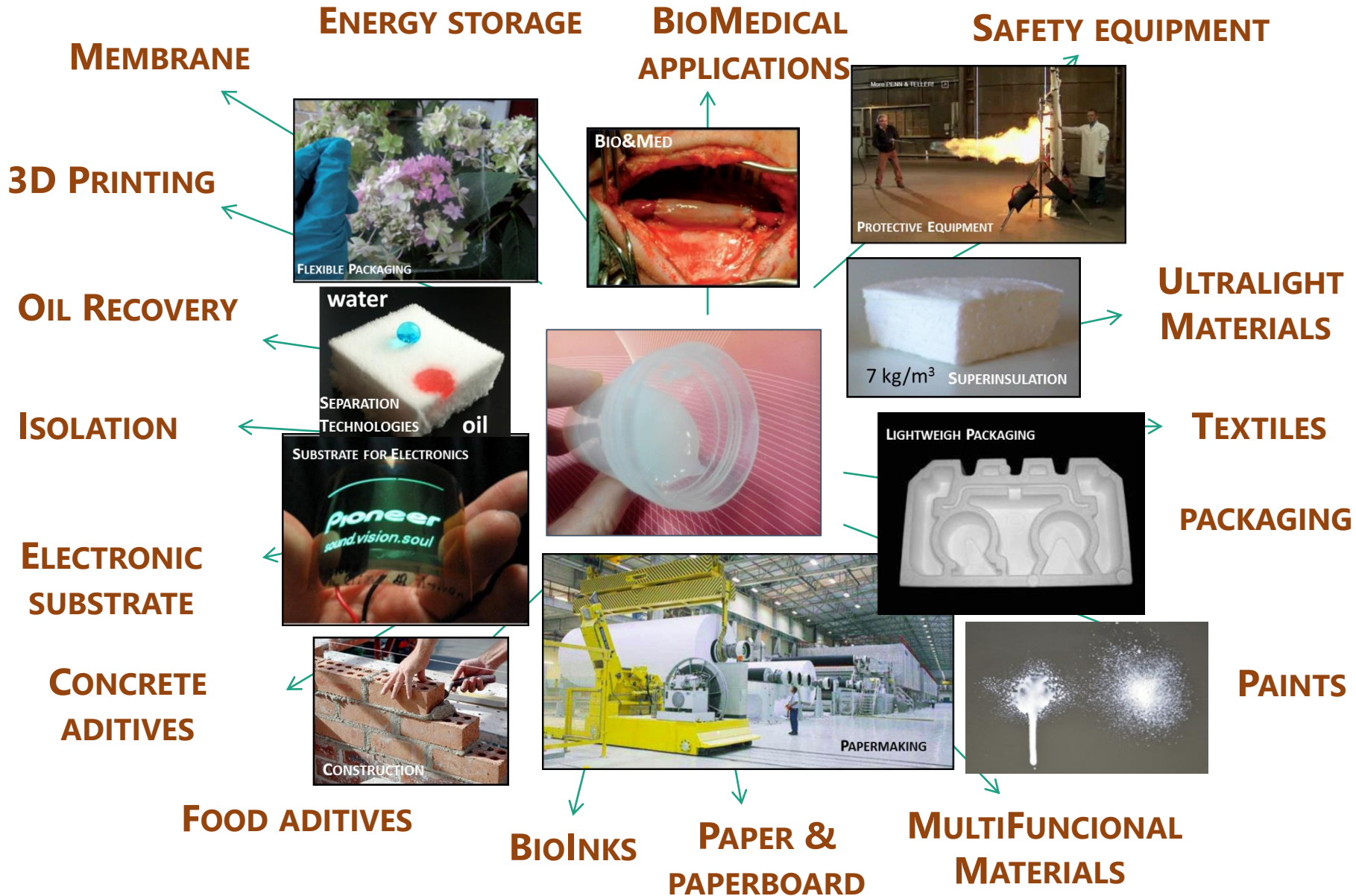


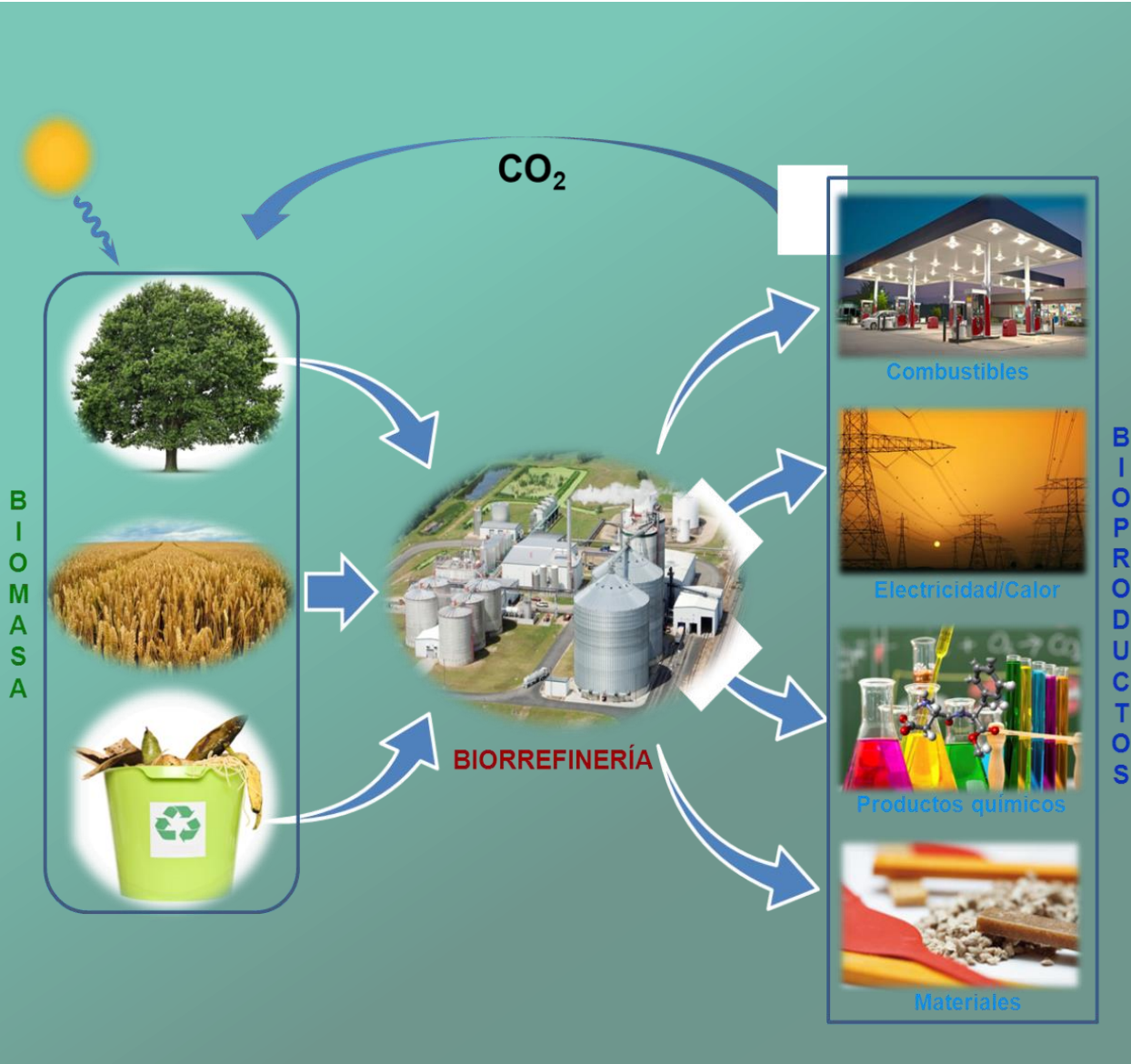
- Nanomaterials and nano-enabled products will grow to exceed a trillion dollars per year as technology is further developed during the 21st Century

Evolution of the number of “Scientific Publications + Patents” related to nanocellulose



POTENTIAL APPLICATIONS OF WOOD-BASED NANOTECH





GREEN CHEMISTRY



THERMOCHEMICAL PROCESSES

- Gasification (oxid 800-1500°C)
- Pirolisis (no O2 at 300-600°C)

BIOCHEMICAL PROCESSES

- Fermentation
- Anaerobic digestion

MECHANICAL PROCESSES

- Compression and extrusion

CHEMICAL PROCESSES

- Hydrolisis
- Transesterification

BIOPRODUCTOS



WOOD MODIFICATION

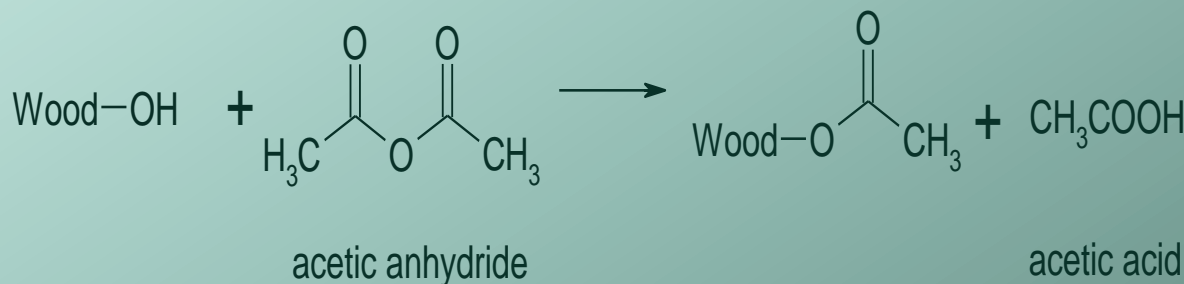
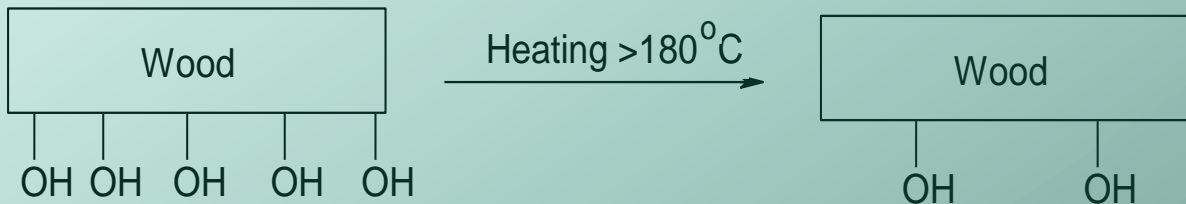


ALTERNATIVE TO TRADITIONAL PRESERVATIVE TREATMENTS (biocide free)

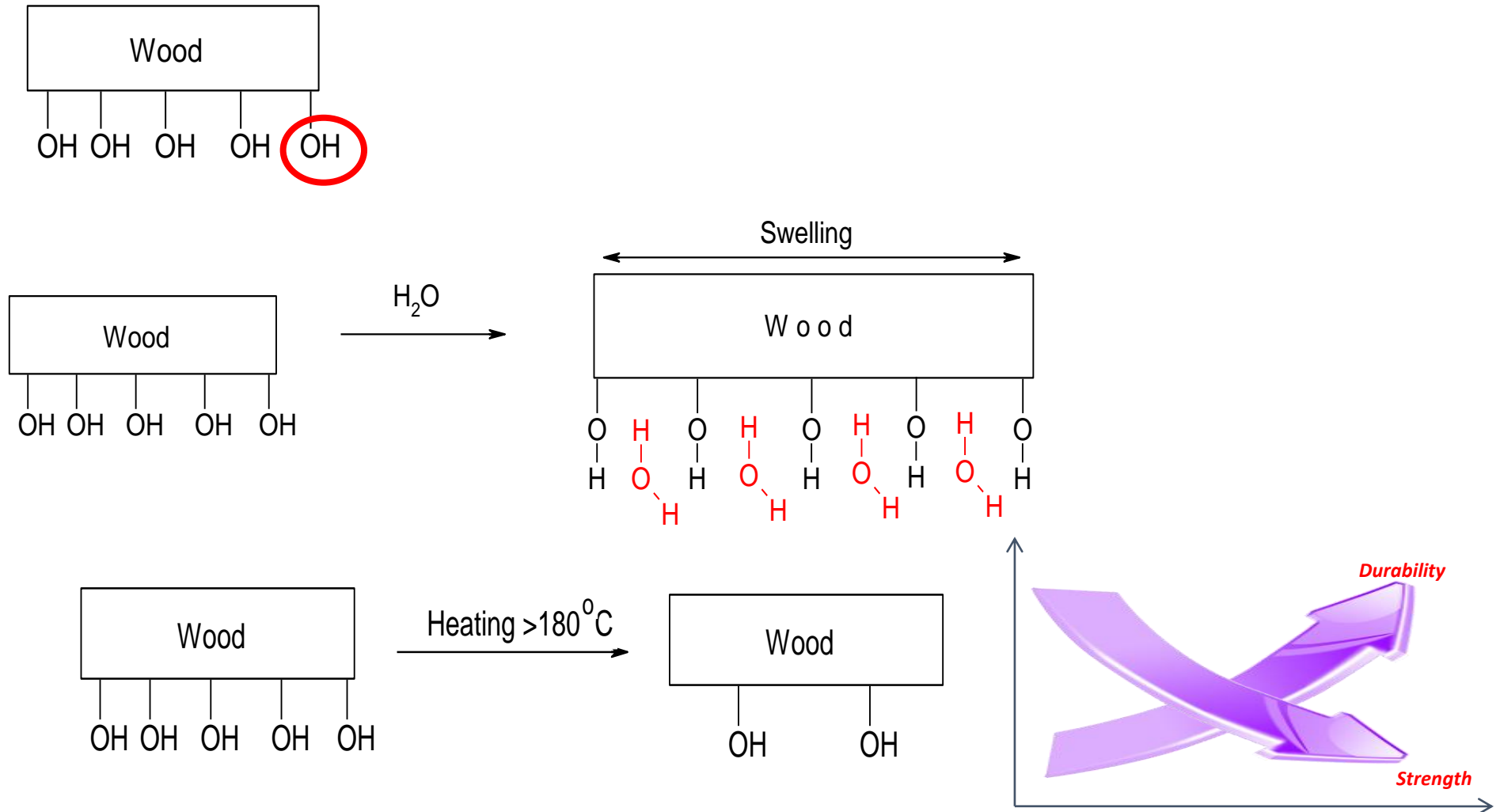
CHEMICAL, BIOLOGICAL OR PHYSICAL TREATMENTS

NON-TOXIC // NO LEACHING OF TOXIC SUBSTANCES

IMPROVED PROPERTIES (DURABILITY, STABILITY,...)

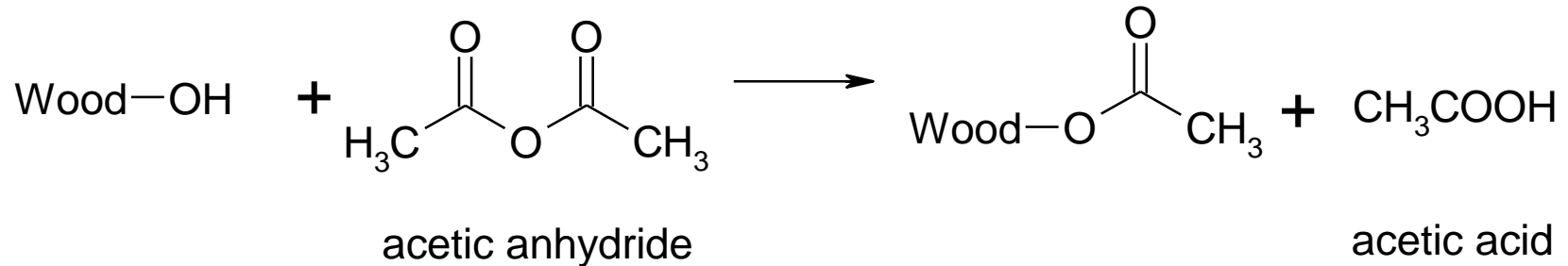


Equilibrium moisture content and dimensional stability of **THERMOTREATED** wood

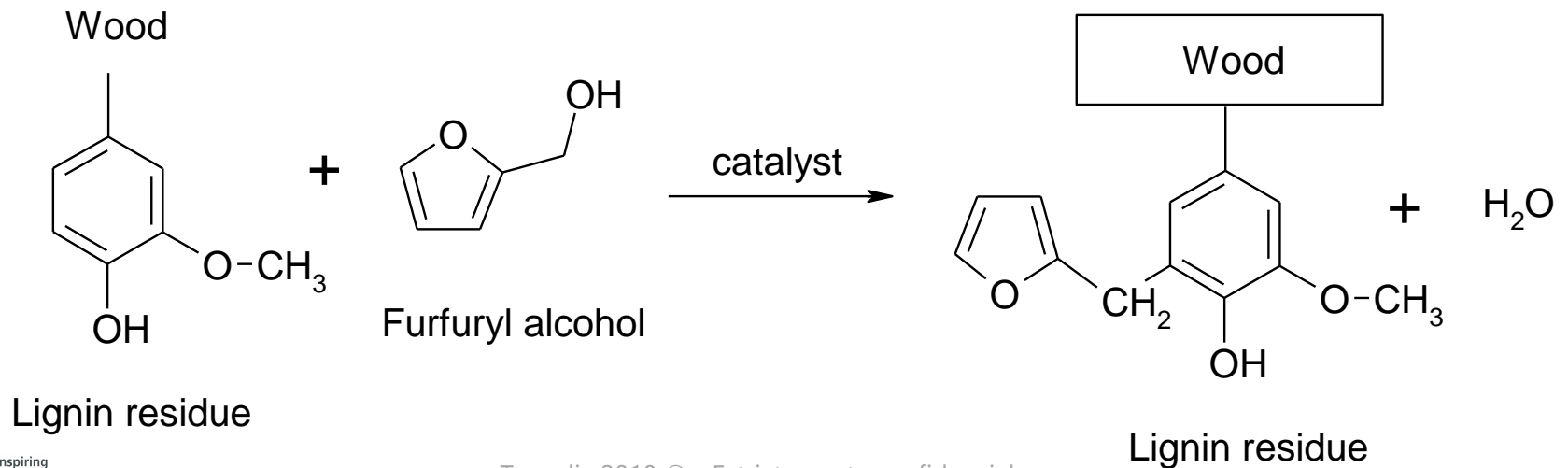


Examples of **CHEMICAL MODIFIED** wood

Acetylated wood (Accoya) - (~ 50 000 m³/year)



Furfurylated wood (Kebony) - (~ 10 000 m³/year)



Examples of modified wood applications





Characterization of unfamiliar Wood Species of Gabon's forests

RESEARCH & TECH CHALLENGES IN GABON



TOPIC PRIORITIES

- Local potentialities
- Alined to industry needs

MORE THAN 400 SPECIES

- Around 60 traded species
- Okumé, Sapelly (60%)

POTENTIAL USES

- Characterization of anatomy, chemical, physical and mechanical properties

MARKETING MARKET LAUNCH

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