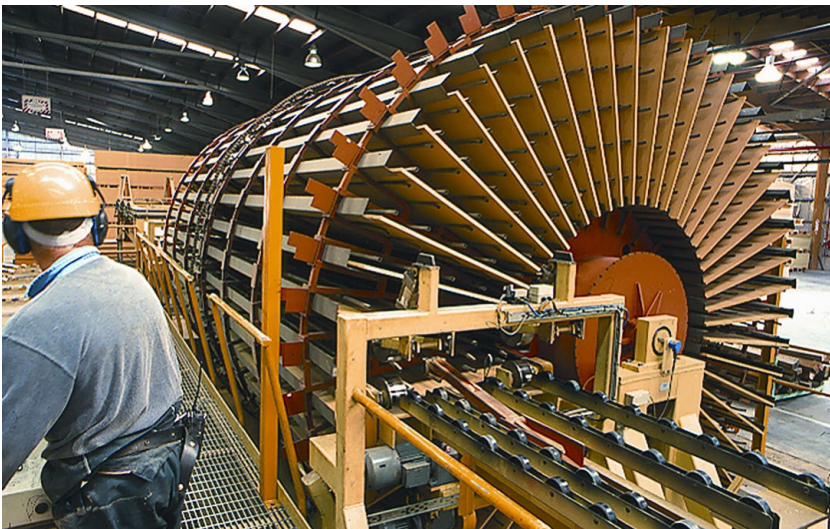


*“Everything made with fossil materials  
today can be made with trees tomorrow”*

Rob McBrearty, Scion  
July 2021



# Current uses of wood



# Integrated Forest Biorefineries (IFB's):

- Definition: By producing **multiple products**, a Integrated Forest Biorefinery (IFB) takes advantage of the various components in the biomass and their intermediates **maximising** the value derived from the biomass feedstock. These can be grouped into:

## BioMaterials

- Paper
- Fibers
- Composites
- Polymers
- Nanofibres
- Textile
- PHA
- etc



## BioChemicals

- Proteins
- Lignin
- Turpentine
- Gasification
- Glycerine.
- Acetone
- Fertilizers
- etc



IFB

## BioFuels

- BioGas
- BioDiesel
- BioEthanol
- BioHydrogen
- BioButanol
- BioMethanol
- BioSNG
- etc



## BioEnergy

- Chips
- Pellets
- Torrefaction
- Combustion
- Hydrolysis.
- Fuel Cells
- BioOil
- etc

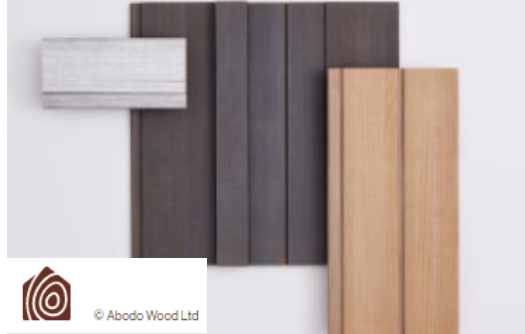


# Why modify wood?

- Temperate wood abundant
- Rapidly renewable
- Poor performance (stability/durability) unless treated with heavy metals



# Modified wood



## Decking

Sourced from FSC®-Certified forests, our Kebony® Clear decking is engineered to handle the harshest of conditions.

# Coloured wood

- Full thickness colouring of wood using dye rather than surface coating
- Give radiata look of a tropical hardwood



# Engineered wood

- Example of “massive timber” that can be used to build mid-rise buildings (CLT, PLT)
- Lightweight – savings
- Earthquake resilient
- Carbon neutral



# Bioplastics - replacing fossil fuel derived plastics

## PLA

- Made from sugar cane
- Industrially compostable
- Could replace poly...
- Available - expensive

## PHA

- Made from bacteria
- Fully compostable
- Replaces most plastics
- Limited - NZ Futurity





# Stock feed from wood


- Wood waste squeeze/steam to extract molasses
- Replace 250,000 tonnes of imported molasses
- Substitute for palm kernel extract?



# Wood plastic composites

- Wood product that acts as reinforcer for plastics
- Being trialed by car companies to add bio-based products to car parts





## 'Forest Bathing' Really May Be Good For Health, Study Finds

A new meta-analysis in the journal *Environmental Research* finds that people who spend more time in green spaces have significantly reduced risks for a number of chronic illnesses. There are probably several mechanisms behind the connection, but one of the more fascinating ones likely has something to do with phytochemicals that trees emit, and humans breathe in.