

WOOD &
LUMBER

USE OF
TROPICAL
TIMBER IN
JAPAN



Timber by use



Charcoal



Pellets



Firewood



WOOD FOREST
PRODUCTS
ROUNDWOOD

Sawnwood



Panels and
agglomerates



Paper



Wood fuel (energy)

50% WORLDWIDE

90% AFRICA

30% JAPAN

Industrial Roundwood

50% WORLDWIDE

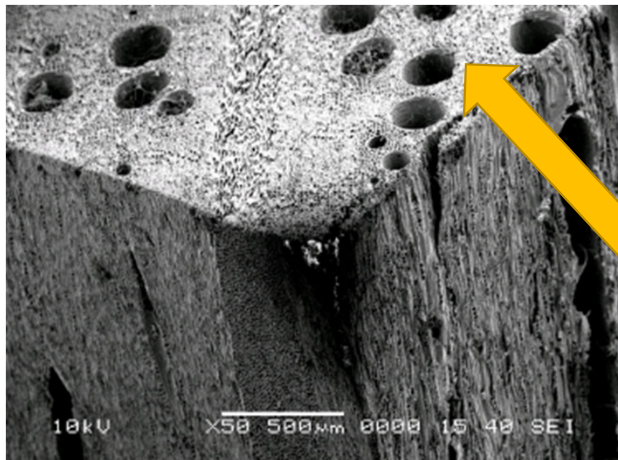
10% AFRICA

70% JAPAN

2 Types of wood

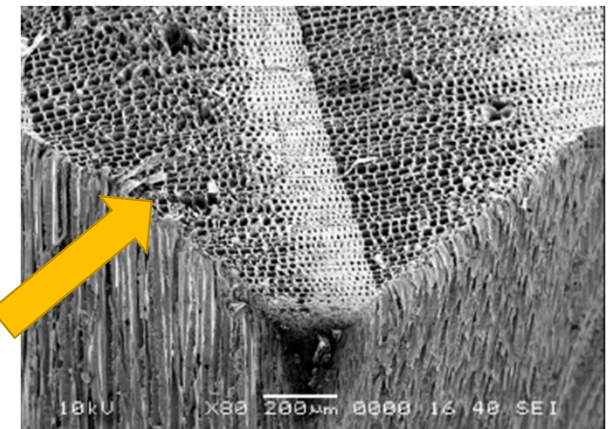


Hardwoods	Softwoods
 Comes from deciduous trees This is a broad-leaved tree which loses its leaves in the winter.	 Comes from coniferous trees This tree is an evergreen (green all year), needle-leaved, cone-bearing tree.
Beech	Pine
Oak	Spruce
Ash	Cedar
Teak	Fir



VESSEL ELEMENT
Carrying water and minerals from the root to the leaves

The cell structure is very different. Strength, density, etc largely differ.



RESIN CANALS

2 Types of wood (contd.)

SOFTWOOD

- Very homogenous timber
- There are 400 species which share many common properties
- Grows faster than hardwood
- It is less durable and less strong than hardwood.
- It can grow anywhere but mainly outside of the Tropics and particularly in the Northern Hemisphere

HARDWOOD

- Very diverse wood, vessel canals are not always regular.
- There are thousands of species.
- Grows slower than softwood.
- It is more durable and it has more density but it is usually more expensive than softwood.

"TROPICAL" HARDWOOD

- A subset of hardwood
- There are thousands of species.
- We discover new species everyday
- A large variety of timber, properties, colors grain, density etc...
- Grow only under the Tropics.
- Most of the time, very durable and strong but can be much more expensive than regular hardwood.
- Overexploited, can lead to deforestation in tropical countries.

Types of wood in Japan

Hinoki cypress



Japanese beech



Japanese cedar (sugi)



Japanese Spruce



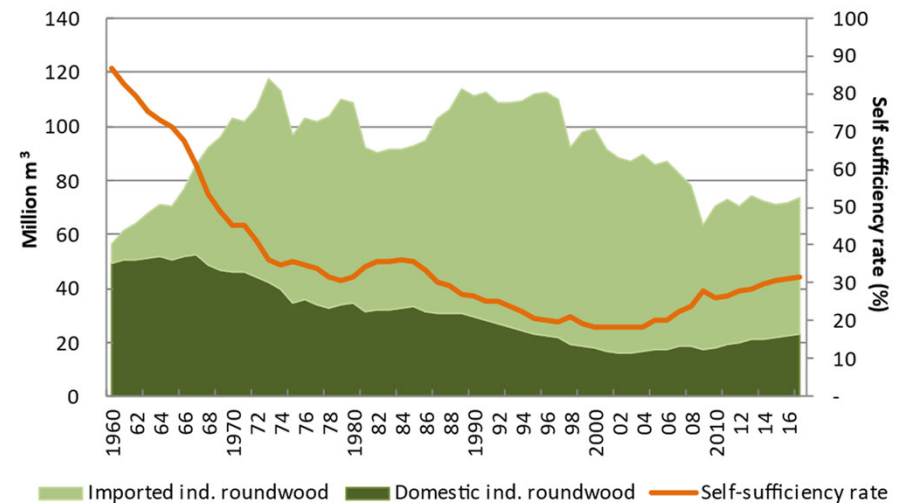
Japanese larch



Fir



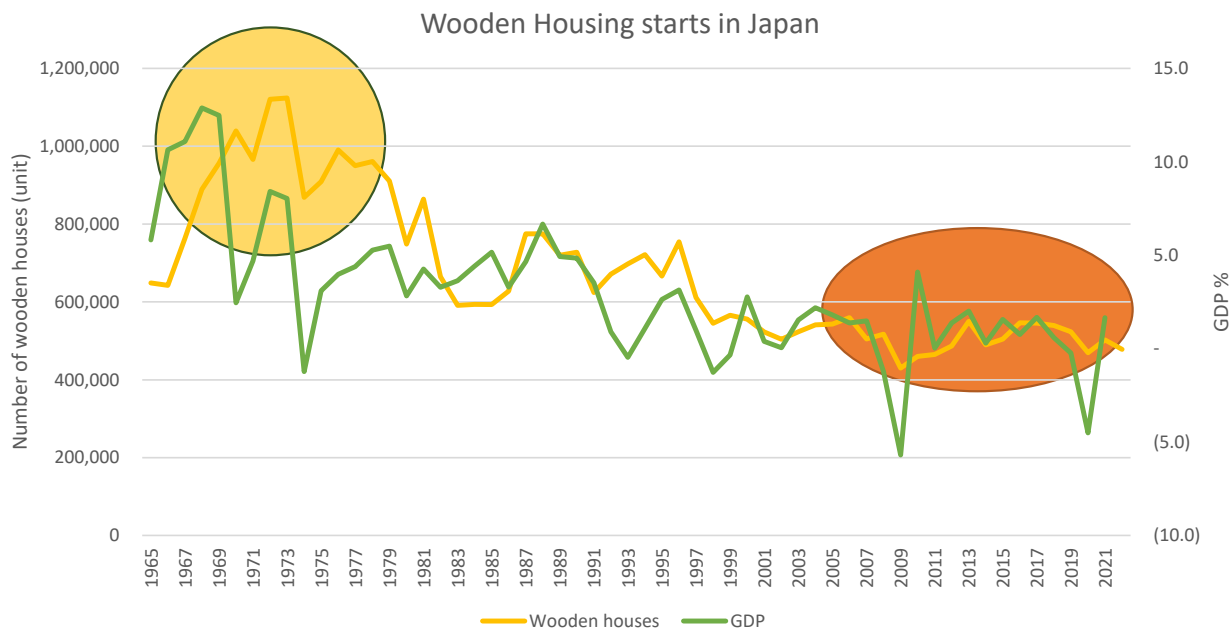
- **SUGI** and **HINOKI** grow straight and are easy to process.
- 40% of Japan's forest area is planted forest (mainly hinoki and sugi)
- Japan produces 90% coniferous industrial timber
- The Japanese forests don't produce enough timber compared to the domestic demand.
- The self-sufficiency rate has increased recently due to a lower demand and increasing domestic supply.
- Therefore, Japan relies on timber imports for meeting its own timber needs.



Main driver for the wood demand in Japan: housing



- Construction consumes 80% of the industrial timber.
- The construction greatly depends on the GDP but also contributes to it.
- The higher the GDP growth, the higher the housing starts will be and will in turn contribute to a higher GDP.



- Peak of timber demand was in the 70s, housing starts was at the highest. The GDP rates were also at the highest.
- Construction of wooden houses has been relatively stable over the last 30 years.
- GDP strongly slowed down.
- Wooden housing starts are now three times lower than what it was during the 70s.

Types of wooden products in Japan

- Houses are primarily wood-based.
- **Wet method:** to combine square lumber as posts and beams and the space between them are filled with bamboo plaid sheets with wall plaster on top.

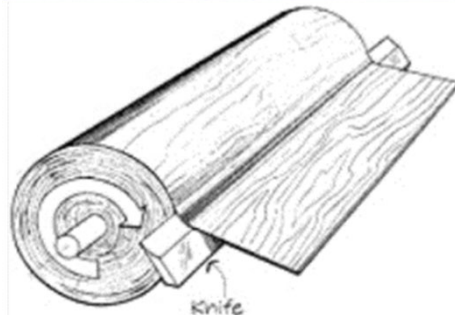
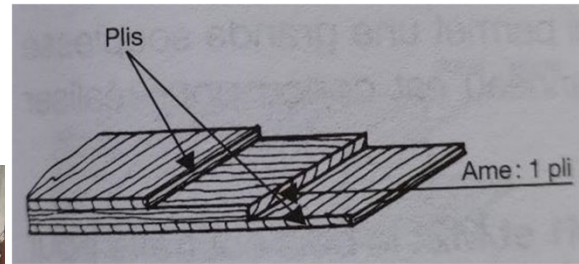
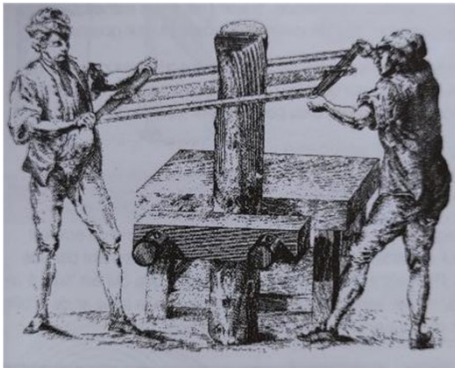


- Wet method: too slow.
- Changed to **dry method** where wall plaster are replaced by structural plywood and gypsum board.

- Demand for plywood strongly increased.
- The Japanese industry strongly developed to meet the demand.

What is plywood?

- Plywood is a board made of thin wood veneer that are glued together with adjacent layers having their wood grain rotated up to 90 degrees to one another.
- Great stability to the board.
- Made of solid wood, resistant, great alternative to sawnwood.
- Plywood has been used for centuries and it was proven more solid than sawnwood. Plywood is also less sensitive to humidity.



PLIES

3 ply
3 layer panel



4 ply
3 layer panel



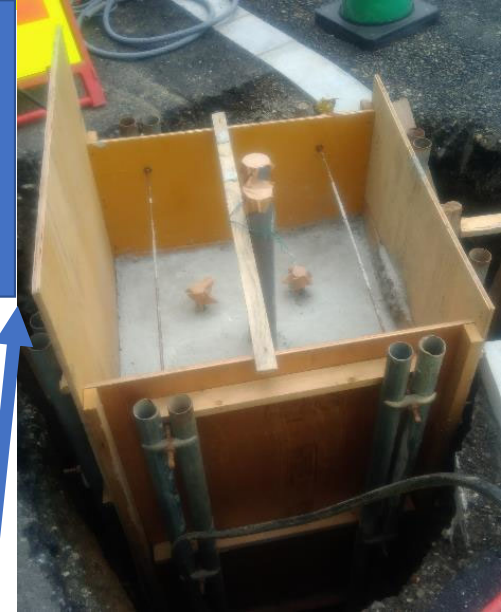
5 ply
5 layer panel



Tropical plywood (cont.)

- It can be curved depending on the requirements. Because of its resistance, it can be used in aircraft and boat construction.
- Tropical plywood is superior to softwood plywood due to its density, strength, evenness of layers, and high quality.
- It is usually more expensive than the other types of plywood.

- Plywood has many uses particularly in floors, walls, roofs, packages and boxes, fencing, panels in concrete formwork systems, furniture, musical instruments, sport equipment, decorative purposes, etc...



- Japan imports mainly Indonesian and Malaysian plywood. Indonesian and Malaysian plywood are used for concrete formwork and floorboards.
- Malaysian plywood is suitable for concrete panels, Indonesian plywood for floor bases and many versatile uses (foundation material at construction sites for example).
- Tropical plywood can be used several times for concrete formwork. It is also used for non-structural interior plywood, is mostly used for decorative and aesthetic finishes and applications, such as wall or paneling, joinery and furniture.



Tropical Plywood in Japan: a major product

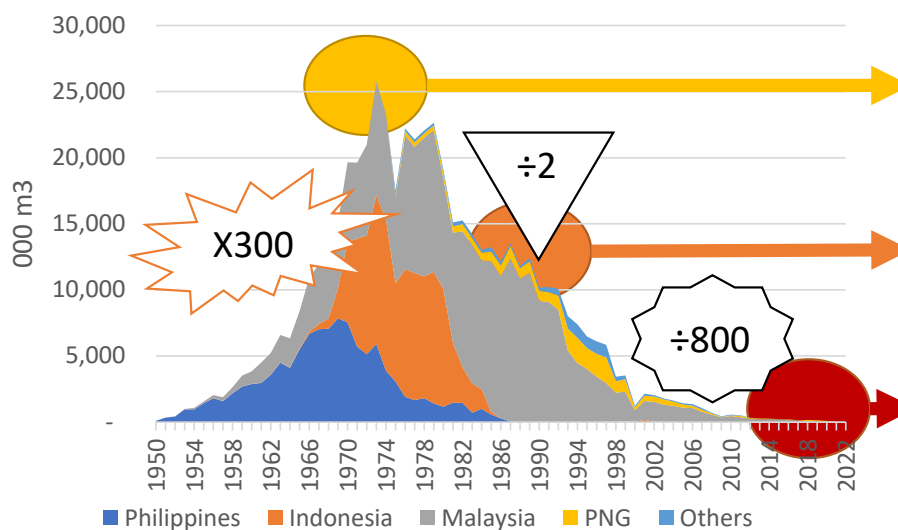
- In the 70s, domestic forestry production was not economically competitive against imported wood
- Imports of roundwood transformed into lumber and plywood.
- It developed strongly the plywood industry.
- Lumber of various dimensions and standards were needed.
- Main supplying sources were South-east Asia, North America and Russia (formerly Soviet Union).
- 80% of tropical wood from South-East Asia was processed into plywood, 20% was processed into lumber.
- Importance on appearance, did not appreciate wide annual rings of Radiata pine from short-rotation planted forests
- It has always favored tropical timber. Appearance used to be a critical factor for timber choice.
- The wood imported from the South-East Asia was particularly fit to plywood production.
- As large diameter logs, the logs imported from that region could be easily transformed into plywood reducing then the waste ratio.



Before WWII, Japan and the Philippines were already trading timber. WWII stopped this trade but it was reestablished in the 50s as the Philippines benefited from Japanese and US investments. In the 60s and 70s Japan started diversifying the supply chain by importing from Malaysia, Indonesia and PNG. Imports increased very quickly during those years.

Japan: a major importer of trop. logs until the mid 70s

Imports of trop. ind. roundwood



At its peak in 1973, Japan imported more than 25 million m3 of tropical roundwood. It imported 51% of trop. industrial roundwood in the world.

By 1990, despite a strong fall of ind. trop. roundwood imports during the 80s, Japan still imported 40% of the tropical industrial roundwood in the world.

In 2021, Japan imported roughly 0.1% of trop. industrial roundwood.

Demand for trop. roundwood is very high. It could be met by the supply side.

Demand flatters because construction flatters, creation of SEAPAL (South-East Asia Lumber Producers' Association) to control prices, quantity and boosting local industries. The Philippines and Indonesia implemented log exports ban in the 80s.

Japanese industries have been affected by the uncertainty of the supply, the reduction of the quality and diameters, but also the illegality and environmental issues (deforestation). Japanese industries have looked for substitutes (con. plywood for concrete formwork, MDF etc....) . Therefore, demand for trop. ind. roundwood completely vanished.

From tropical to coniferous plywood

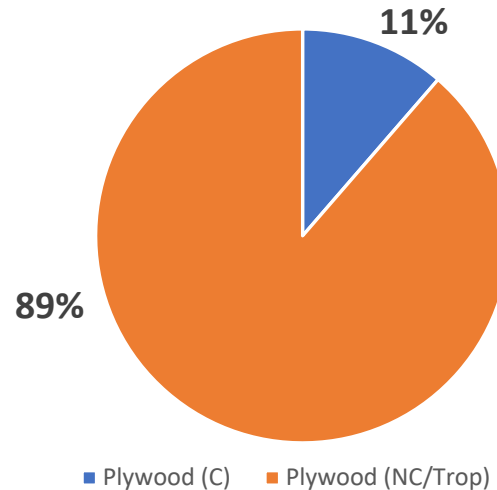
Consumption of plywood almost halved between 1990 and 2021 because of fewer constructions (from 9.3 million m³ to 5.1 million m³).

The share of coniferous plywood versus non-coniferous/tropical plywood changed drastically over this period of time:

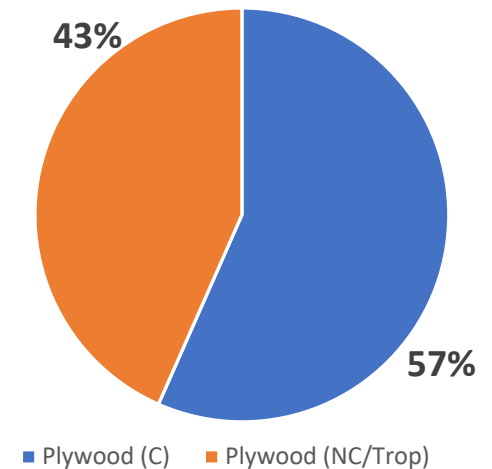
In 1990, 89% of the plywood consumed in Japan was non-coniferous/tropical. Just 11% was coniferous.

In 2021, 57% of the plywood consumed is coniferous.

Consumption of plywood 1990



Consumption of plywood 2021



Future of the demand of tropical products in Japan

There is a global decline for the demand of tropical timber in Japan. It almost does not import tropical roundwood anymore and still imports 1.4 million m³ of tropical plywood. Nevertheless, the downtrend has been extremely significant especially since 2014.

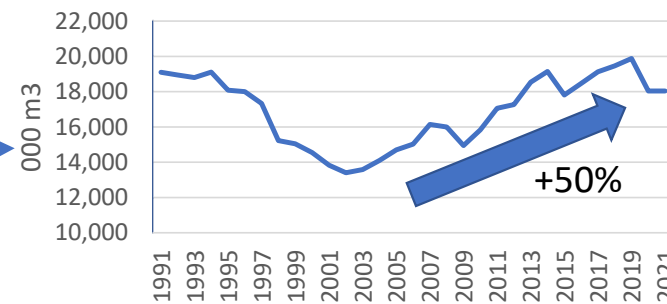
Over the last 20 years, the production of coniferous logs have increased by almost a third. The production of coniferous plywood was also multiplied by 3.

This is partly explained by the fact that the forest stock has more than doubled over the last 60 years and many trees from plantations have now reached the harvesting age.

Tropical timber use in Japan might become a "niche market" in the future as tropical timber might still be suited for some very specific needs. Many companies are averse to importing South-sea wood because of illegal logging measures and many companies are engaged in dialogue with environmental NGOs.

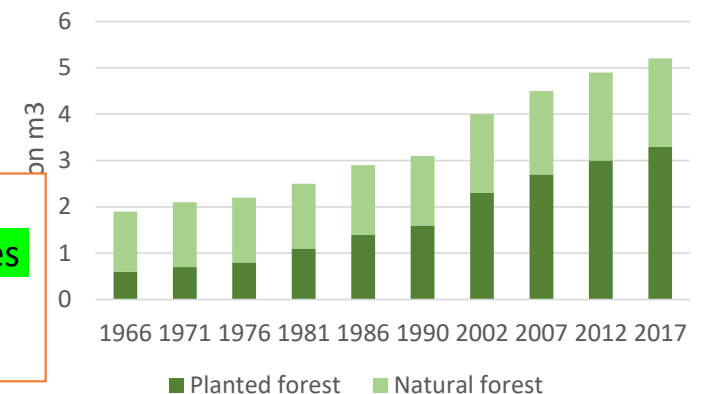
in Japan

Production of coniferous logs in Japan



Considering these circumstances, it is very unlikely that domestic demand for South-sea wood will increase and it is expected that the volume of imports will gradually decline.

Forest stock change



Tropical forest, timber trade and SDGs



- Forests are essential for life on Earth (31% of the planet's land surface).
- Are among the world's most productive land-based ecosystems.
- It is estimated that 1.6 billion people depend on forests for subsistence.
- Tropical forests represent 45% of all forests (1.84 billion ha).



Benefits of sustainable tropical forestry



- The sustainable harvesting, processing and trade of tropical timber and other forest products:
 - supplies residential and commercial consumers worldwide,
 - contributes to local and national economies, and
 - gives value to tropical forests, which is a key factor in reducing forest conversion to other land uses.
- When sustainably managed, tropical forests are:
 - **healthy, productive** and **renewable** ecosystems
 - provide vital ecosystem services (conserve soil and water, regulate climate, host biodiversity, filter the air, prevent land degradation and desertification, and reduce the risk of floods, landslides, droughts and other disasters).
- The COVID-19 pandemic has highlighted the value of forests as a safety net for meeting basic human needs in times of disruption.

Sustainable tropical forestry, crucial for the SDGs

- The world population projected to reach 9.7 billion people by 2050, competition for land is likely to intensify:
 - Will accelerate demand for forest products and ecosystem services.
- The sustainable management of productive forests in the tropics, and a sustainable tropical timber trade, can help in meeting future wood demand and achieving the SDGs.
- For more: www.itto.int/sustainable-development-goals/



GOING FURTHER



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