



Timber - A Renewable Raw Material - A New Zealand Success Story

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A brief story of New Zealand's forest industry and the usage of wood in local construction.

INTRODUCTION

Human beings are voracious consumers with an unlimited demand for more and more raw materials. As our consumption increases, so does the waste produce which aggravates the environmental problems afflicting the planet. Just imagine what it would be like in 100 years when the threat of low petroleum output affects life in this world.

Our world is faced with dwindling natural resources, environmental problems due to pollution and global warming. It has been predicted that world temperatures will rise between one to five degrees Celsius in the next 100 years due to global warming. Estimates expect a 30% rise in energy needs worldwide in the next 10 years. Renewable energy sources such as wind power and solar are alternative options but are presently not as reliable as we would like it to be. In this era of energy crisis, the developed world is going into nuclear energy. How about growing our fuel? The much talked about Biofuel is also very exciting for the future and biofuel technologies are constantly improving. Biodiesel is a common form derived from plants such as oil palms.

We are in desperate need of sustainable and renewable raw materials. One of the most talked about environmental problems is deforestation. Wood is a resource which the world cannot do without and the only way to have a constant supply is through cultivation. Forest plantation is not a new concept Malaysia has started growing trees (in Sabah) in the early 1970s. Timber is one of the most sustainable raw materials, which can be indefinite if cultivation is planned, unlike oil, gas or coal. Furthermore, trees absorb carbon dioxide from the environment which aids in combating global warming and climate change.



Figure1: Pine logs ready for export



Figure2: Wood retaining wall blends with the landscape

NEW ZEALAND FORESTRY PLANTATION

New Zealand's timber plantation industry is very successful because of its good forest management techniques

and the availability of large areas of arable land. The country has one of the most efficient plantation systems in the world and is set to be the world's leading supplier of quality softwood



Figure3: Pole retaining wall



Figure4: Timber crib wall



Figure5: Timber lamp posts

timber. In a time of rapidly diminishing international forestry resources, New Zealand is assured of a long-term supply of wood through plantation-grown softwood. Forestry is New Zealand's third largest exporter which accounts for 4% of its GDP (Figure 1 shows pine logs ready for export). Most of the logs are exported

to Asia, mainly to Korea and Japan. The area of planted production forests in New Zealand as of 1 April 2005 was estimated to be 1.8 million hectares (ref: Marlborough Forest Industry Association). Most of the cultivated wood is the radiate pine which thrives in local soil and climatic conditions despite originating from California.

TIMBER

Wood is probably the oldest construction material and will continue to be a very important part of the construction industry. Timber has the advantage of being light and easy to handle and can be cut easily and does not require heavy equipment to install. It is relatively cheaper than steel and concrete. Timber is widely used in regions with seismic activity to provide earthquake resistance. The University of Canterbury, New Zealand is presently doing research to build timber houses up to four storeys high.

However, most timber has to be treated before use to protect it from decay, termites, wood boring insects and marine borers. Timber is usually treated with copper, chrome and arsenic (CCA) which is a well-established water-borne preservative. The treatment of timber is normally classified into several classes according to its exposure or durability conditions. The treatment of wood ranges from H1 to H6 according to its usage. Preservation H1 is for low exposure to low decay hazard e.g. roof trusses which are not exposed to weather and H6 is for very high exposure such as in marine conditions.

SOME APPLICATIONS OF TIMBER IN NEW ZEALAND

Timber is more commonly used in New Zealand than in Malaysia. Some of the common applications are in the construction industry. Timber is used for houses, retaining walls, fence posts, lamp posts and to a lesser extent, pile foundation.

Timber is also extensively used for many types of retaining walls in New Zealand. Timber retaining walls are aesthetically pleasing and blend well with the environment as shown in Figure 2. Wood also has a softening effect, a contrast to our world of concrete jungle.

One of most commonly used timber retaining wall is known locally as the pole retaining wall (Figure 3). Pole retaining walls are designed as cantilever walls and consist of pine poles as columns and the horizontal members either made of half round pines (poles cut into half) or planks, to provide lateral support for the earth. The column poles are embedded into the ground and the embedment depth of the column poles depends on the height of the wall and soil condition. The dimension of the poles is of a normal diameter from 130mm to 300mm. They are easy to construct and do not require any special skills or heavy equipment. Local manufacturers have standard design tables for builders to follow in their construction.



Figure6: Timber retaining wall used in marine conditions

Timber crib walls (Figure 4) are also common in this part of the world. They have light members and do not require heavy equipments for their construction unlike their concrete counterpart. The design of the wall is similar to the normal concrete wall. Crib walls of up to 8 m can be constructed. Another extensive usage of timber in New Zealand is for lamp posts as shown in Figure 5. Timber is also used in marine conditions (Figure 6).

In conclusion, timber is relatively cheap and easy to use in construction. With sustainable planting, the world may have a sufficient supply of timber as well as reduce the felling of native forests. ■

REFERENCES

[1] www.marlboroughforestry.org.nz