5.2 Environmental Advantages of Wood

Timber has obvious advantages over other materials: it has the potential to regenerate and to provide an infinite supply of timber for our use; wood is recyclable, waste efficient, bio-degradable and non-toxic. Timber has also proven to be particularly energy efficient in use, and as such can play a major role in combating global warming.

Forest area in temperate and boreal regions continues to increase despite a growth in the volume of timber extracted from these forests to meet a rising demand for wood products. Young trees are far more effective absorbers of carbon dioxide, the principal greenhouse gas, than mature trees. Thus harvesting mature trees and planting or naturally regenerating tree seedlings can increase the amount of carbon sequestered from the atmosphere, thereby mitigating the greenhouse effect.

Most timber processing can be highly energy efficient as wood waste is a common fuel source. Timber processing achieves high levels of material utilisation due to the many opportunities to use wood waste for fuel and the so-called sawmilling products (shavings, chips, sawdust etc) in panel production.

Timber has one of the lowest embodied energy values of any material. Timber from a local source can have an embodied energy value as low as 0.7GJ/tonne rising to 8GJ/tonne for microlaminated timber exported across the world. This compares with alternative materials such as aluminium (embodied energy 180-240GJ/tonne) and steel sections which have energy values ranging from 26GJ/tonne (cold-rolled) to 31GJ/tonne (hot rolled).

"Specifying wood in public procurement can help fulfil national and local climate change programmes. Encouraging the use of wood products can act as a greener alternative to more fossil fuel intensive materials. Substituting a cubic metre of wood for other construction materials (concrete, blocks or bricks) results in the significant average of 0.75 to 1tonne CO_2 savings".(International Institute for Environment and Development, Using Wood Products to Mitigate Climate Change, 2004.)

Timber is naturally low in thermal conductivity and an excellent insulator. It is 15 times better as an insulator than concrete; 400 times better than steel and 1770 times better than aluminium. A 2.5cm timber board has better thermal resistance than a 11.4cm brick wall.

"The combined effect of carbon storage and substitution means 1m^3 of wood stores 0.9t CO_2 and substitutes 1.1t CO_2 – a total of 2t CO_2" Dr A Fruhwald, Hamburg University.