

# Timber recycles carbon



## The Facts: timber, climate change & sustainability

### Queensland timber industry facts and figures

- \$4 billion annual turnover
- \$1.0 billion in value adding to State's economy
- \$215 million in exports
- Employs 20,000+ people direct, plus 1.3 full time equivalent jobs created

### Timber use

- Queensland consumes 1.1 million m3 sawn timber annually. Based on current consumption it will increase to 1.5 million m3 in 10 years. Consumption could increase further as timber's environmental credentials & sustainability attributes are increasingly recognised.

### Sawmill residue/Bioenergy

- Plantations generate large volumes of wood residues which have potential to replace fossil fuel as an energy source, reducing greenhouse gas emissions.
- Burning clean, sustainably sourced wood in modern equipment is actually cleaner than other fuels as wood contains little sulphur and nitrogen compared to coal or gas.<sup>4</sup>
- Queensland produces approx 1.3 million tonnes per annum of sawmill residue – chip, sawdust etc. This residue could produce 1.15 million MWh of electricity – support the power needs of 150,000 average households and save 1 million tonnes of CO2 emissions. Not all residue would be available – a proportion is currently used for panel products, boiler fuel, export chip, landscaping etc.
- Using wood to generate energy results in over 50 times less greenhouse gas emissions than the combustion of coal and over 30 times less than natural gas when used in industrial facilities.<sup>5</sup>

### Carbon storage

- Queensland's forests store an estimated 2.1 billion tonnes of carbon (excluding soil carbon), equivalent to around 8 billion tonnes of CO2.<sup>1</sup>
- The carbon store in Queensland plantations increased by almost 3 million tonnes of CO2 since 1990, with around 1 million tonnes in Kyoto compliant forests.<sup>1</sup>
- Queensland builds around 45,000 houses each year. If all of those houses were timber framed we could store an additional 450,000 tonnes of CO2. This is new and additional storage because the harvested plantations are replanted to begin the cycle all over again.

### Forestry helps manage carbon

- Forests are a major store of carbon and when properly managed, significantly contribute to reducing carbon dioxide in the atmosphere. Wood is the only material to naturally store and lock away carbon<sup>10</sup>, and the forest and wood products industry is the only industry sector in Australia that stores more carbon dioxide than it releases into the atmosphere.<sup>11</sup>
- A hardwood plantation tree containing 1 m3 of saw log sequesters over 2 tonnes of CO2-e at maturity
- Active forests store more carbon than senescent forests. A plantation estate of 1,000 hectares planted over 25 years would maintain a permanent store of around 185,000 tonnes of CO2, with 100,000 tonnes of CO2 stored in wood products produced from harvest over a 25 year rotation.<sup>2</sup>

- Cars release an average of around 4 t CO<sub>2</sub>-e per annum. One hectare of actively growing plantation could offset the emissions of around 5 cars.<sup>3</sup>
- The attractiveness of plantations as a carbon sink investment will be heavily influenced by trading and accounting rules which are still being developed.
- In the process of growing 1 cubic metre of timber, about 230 kg of carbon dioxide is absorbed from the atmosphere and 160 kg of oxygen is released. One large tree is estimated to provide sufficient oxygen for up to four people per day, and 500 mature trees can absorb all of the carbon dioxide emitted by a typical car covering 20 000 km per year.<sup>16</sup>

### Wood products store carbon

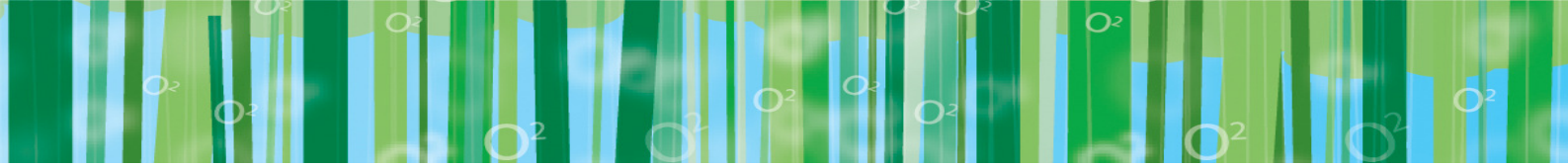
- While some carbon is released when a tree is harvested, carbon remains stored in the timber used in buildings and wood products.
- A timber house frame for an average dwelling is storing around 10 tonnes of CO<sub>2</sub>.
- Wood releases carbon only when it is burnt or when it decays.<sup>8</sup>
- Recent research shows that more than 95 per cent of the carbon in wood remains stored even after up to 30 years in a landfill.<sup>9</sup>

### Timber compares favourably with other products

- Production of wood generates far less (very few) pollutants to air, water and land compared to other building products.
- One study has indicated that timber can store up to 15 times the amount of carbon that is released during its manufacture.<sup>5</sup>
- It takes 8 times less energy to produce a tonne of timber than it does a tonne of steel & a staggering 46 times less energy than a tonne of aluminum.<sup>5</sup>
- To construct an average family home an extra 15 tonnes of CO<sub>2</sub> is released to lay a concrete floor compared with a timber floor. The Australian Greenhouse Office estimates it would take 64 years to recover this carbon debt in energy savings.<sup>5</sup>
- More than 25 tonnes of CO<sub>2</sub> would be saved if timber products were used to build a single storey house compared with constructing the same house using alternative materials.<sup>5</sup>
- If half of Australia's new homes were built using mainly timber products, more than 1.3 million tonnes of CO<sub>2</sub> emissions could be saved per annum.<sup>5</sup>
- An average 1080 m<sup>2</sup> timber framed house can store 7.5 tonnes of carbon whereas a steel-framed house accounts for the release of 2.9 tonnes of carbon.<sup>12</sup>
- A wood beam requires 10 times less energy to make than the equivalent steel beam.<sup>13</sup>
- Wood window frames use 50 times less energy to make than aluminum window frames.<sup>13</sup>
- Wood cladding for houses requires significantly less energy than brick cladding.<sup>13</sup>

### Timber and emissions trading / carbon pollution reduction scheme

- Several schemes are already operating in Australia using forests to generate carbon credits / offset greenhouse gas emissions.
- The timber industry welcomes the plan to recognise carbon stored in new forests in the Australian Carbon Pollution Reduction Scheme.
- Carbon accounting rules should reflect that carbon is stored in timber during use, and for many decades after disposal.
- There should be acknowledgement and benefit for the current high levels of renewable energy use in the wood and paper industry.
- There should be mechanisms to maintain the viability of the wood and paper sector competing with producers in other countries where no carbon cost is imposed, or alternative products



where support to address emissions intensity may erode the competitive advantage of timber as a low energy building product.

## Recycling timber

- Recycling is an important way to prolong the life of wood products and to keep the carbon stored in wood for longer. The longer a timber product is used, the longer the carbon remains in the product.
- Over half of building and demolition wood can be reused, 15 percent as sawn timber, 36 per cent recycled and 36 per cent as wood-based panels.<sup>14</sup>
- Each year nearly 500,000 tonnes of waste wood from end-of-life is recovered and in Australia and not sent to landfills.<sup>15</sup>

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