6. Have climate issues been addressed?

Sourcing and legality aspects

Origin
Where do the products come from?

Information accuracy
Is information about the products credible?

Legality
Have the products been legally produced?

Environmental aspects

Sustainability
Have forests been sustainably managed?

Special places
Have special places, including sensitive ecosystems, been protected?

Climate change
Have climate issues been addressed?

Environmental protection
Have appropriate environmental controls been applied?

Recycled fiber
Has recycled fiber been used appropriately?

Other resources
Have other resources been used appropriately?

Social aspects

Local communities and indigenous peoples
Have the needs of local communities or indigenous peoples been addressed?

6. Have climate issues been addressed?

Climate and forests are intrinsically linked. As a result of climate change, forests are stressed through higher mean annual temperatures, altered precipitation patterns and more frequent and extreme weather events. At the same time, forests play a dual role in climate change. Forests mitigate climate change through uptake of carbon and, when sustainably produced, wood-based biofuels to replace fossil fuels. Land-use conversion and forest degradation, however, cause carbon emissions that contribute to climate change.

MITIGATION OF CLIMATE CHANGE

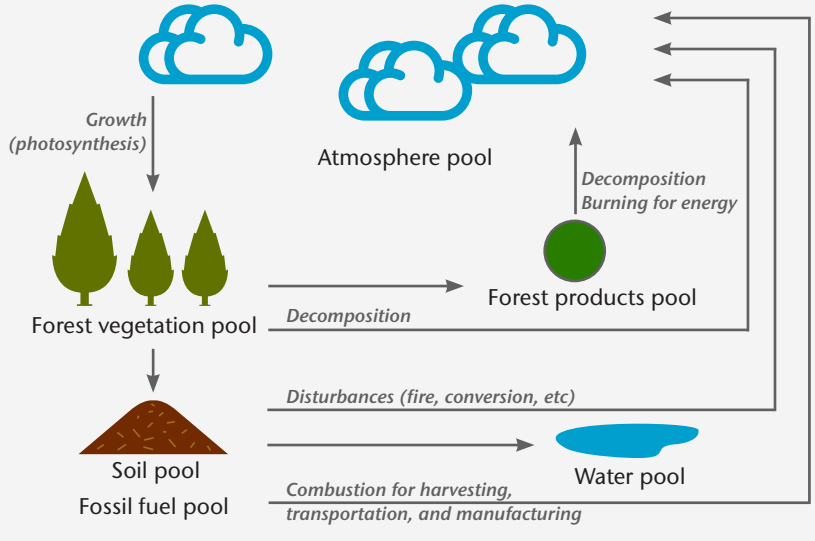
Forests remove carbon from the atmosphere (carbon sequestration) and store it as the biomass (wood and peat) that they produce and accumulate (Figure 7). Some carbon also remains stored in wood products through their lifetime, though this varies significantly between product types (on average, solid wood products last longer than paper-based products). The amount of carbon stored in products is estimated to be increasing by about 540 million tons of CO_2 per year (NCASI, 2007). Carbon in both forests and products is released back to the atmosphere either through decomposition (slowly), or burning (quickly). Establishing new forests on open land and replanting formerly forested areas can store additional carbon.

Wood-based biofuels recycle to the atmosphere carbon captured through tree growth. Burning wood-based biofuels results in no net effect on atmospheric CO_2. Compared to fossil fuels, which transfer carbon from geologic reserves into the atmosphere, wood-based biomass fuels are considered "carbon neutral" when the forests from which the fuels were taken remain as forested areas. There is increasing interest in the use of biomass fuels from forests; however, if carried to the extreme, demand for wood-based fuels could result in negative effects:

- Unsustainable harvesting for biomass
- Reduced carbon sequestration
- Distortion of markets for limited wood supplies.

Wood-based fuels can substitute for fossil fuels; and when they do, they reduce the amount of carbon that reaches the atmosphere as long as the areas from where they originate remain forested or trees are planted elsewhere to compensate. There has been an increasing interest in using biofuels from the forest to reduce fossil emissions, especially from the transportation sector.

Figure 7. Carbon pools and exchanges between pools



The burning of forest products substitutes for the use of fossil fuels.

CONTRIBUTIONS TO CLIMATE CHANGE

When forests are logged, destroyed or burned at a faster rate than they grow back, they contribute to climate change. In a sustainably managed forest, logging is balanced by re-growth, but when forest land is converted to other uses there can be a significant net contribution to greenhouse gas emissions (Figure 8). An estimated 24% of global carbon dioxide emissions are attributable to land-use changes and forestry activities (Baumert et al., 2005).

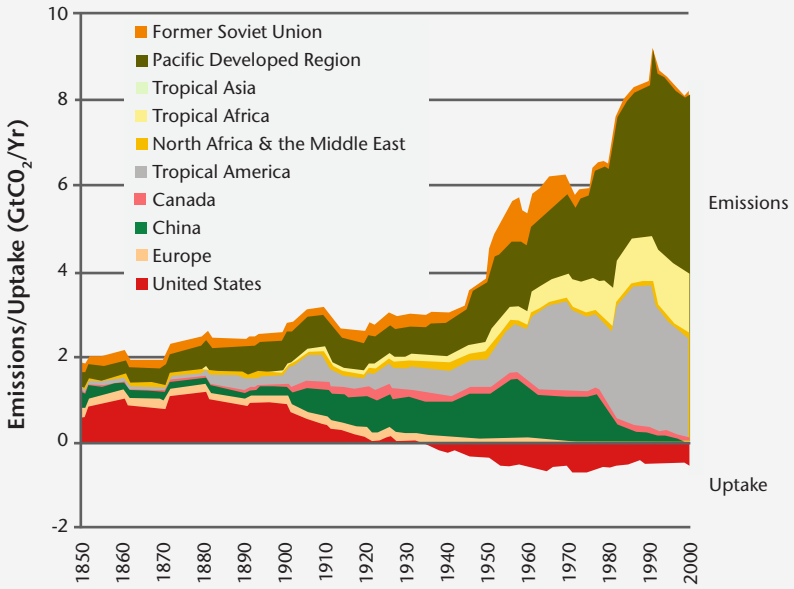
Clearing of forests for agriculture is the leading cause of deforestation. In Africa this is typically small-scale subsistence farming, while in South America it is large-scale cattle ranching and agricultural production. In Asia the production of palm oil, coffee and timber are the primary drivers of land-use change. Deforestation generally does not occur in northern forests, apart from forest loss due to urban sprawl.

Logging of tropical hardwoods can sometimes be the critical first step causing the deforestation process by providing other users with access roads. However, deforestation is generally not driven by the demand for forest products. Logging, if carried out under a sustainable forest management regime, does not contribute to deforestation.

Sustainably managed forests are approximately carbon neutral. They form a mosaic across the landscape in which the growth of trees over a large area will compensate for the carbon lost through annual logging of a much smaller area. On the other hand, a forest landscape subjected to land-use change or over-harvesting will release more carbon than it takes up. The rate of recapture of atmospheric carbon depends on several factors:

- A young stand with small trees will absorb carbon as the trees grow, but the amount of carbon stored is initially small because of the small size of the trees and the more rapid decomposition of organic matter under an open canopy.
- An old stand with big trees is the result of a long period of biomass accumulation. Although the science is still inconclusive, it is generally true that old stands with big trees store large amounts of carbon, but as their growth stagnates they may no longer take up as much carbon as they release.

Figure 8. Uptake and emissions from land-use change between 1850 and 2000



The negative emissions, (uptake) post-1940 are largely due to increasing forest area in the US and Europe. The peak emissions in 1990 are linked to forest fires in Indonesia.

Source: Stern, 2007.

- Some people have suggested that stable old-growth forests should be replaced with stands of young, vigorously growing trees as a way to increase carbon uptake. This would reduce the amount of carbon stored on the land, however, and it would take decades, or even centuries, for the newer stands to recapture it.

Compared with other products, those produced from sustainably managed forests generally are considered carbon neutral, because the wood contains recycled carbon, i.e., carbon that was taken from the atmosphere (rather than from fossil deposits in the ground). The bottom line is to have more carbon stored and less removal (that will capture more carbon), not less storage and more removals.

When the full supply-chain impacts of wood products are measured, significant sources of carbon dioxide can be identified similar to those associated with production of competing products. Emission sources associated with forest products include:

- **Logging operations** – machinery and equipment that use fossil fuels for logging.
- **Transportation** – use of fossil fuels.
- **Manufacturing** – some manufacturing can be considered carbon neutral if the process uses biofuels or some other renewable non-fossil fuel alternatives – that have not been produced in previously forested areas – for energy. However, mechanical pulping (used for newsprint and catalogue papers) does not result in burnable process residuals, so external energy is usually required.
- **Disposal** – emissions may result when products decompose in the landfill. On the other hand, paper products properly disposed of in a modern landfill can sequester carbon long-term.

Factors to consider regarding climate change

- **The forest industry is a major user of wood-based fuels. Sawmills and pulp mills both burn those parts of the tree that they cannot convert into merchantable products, co-generation of heat and electricity is common, and some mills even export electricity to the grid.**
- **In terms of energy and climate change, biofuels are generally considered positive; however, there are real concerns about conversion of forest land to unsustainable biofuel crops (e.g., corn or sugar cane), or an expansion of the agricultural frontier that will result in increased pressure for land-use change of forests.**

SELECTED RESOURCES: CLIMATE CHANGE

Note: because this is an evolving issue, procurement requirements highlighted currently do cover aspects related to climate:

Resources to assess requirements

Paper Profile	Provides information about the total amount of energy procured, possible energy surplus and the CO_2 emissions from burning fossil fuels and peat.
wood for good	Promotes the use of wood to address climate change; greater use of wood stimulates the expansion of forests, greater storage of carbon in trees and products, recovery of stored energy by burning wood as a substitute for fossil fuels, and reduction of greenhouse emissions.
EPAT®	Rates the total CO_2 emitted to the air per unit of product as well as efforts to reduce CO_2 emissions.
WWF **GFTN**	Supports efficient use of energy to minimize direct/indirect impacts on climate change, management to improve levels of carbon sequestration.
WWF Tissue Score	Rates whether or not a company has set a vision and targets for maximizing the use of biomass and other renewable energy, reducing CO_2 emissions, and ongoing research and development of cleaner production and transportation technologies.
WWF Paper Scorecard	Rates fossil fuels' contributions to climate change and global warming through emissions of CO_2.
WWF Guide to buying paper	Provides background information; promotes reduction of CO_2 emissions and showcases companies reducing CO_2 emissions.