

Challenges in meeting global GHG emission reduction standards



Inspiring the next “material revolution” by creating sustainable and high-performance materials from oil palm waste, **Peter Fitch** together with IOI have set up IOI Palm Wood to commercialise this untapped potential.

Wood is a renewable product, but to enable the supply of wood, non-renewable materials are also necessary, which can have negative environmental impacts. The provision of wood is climate-friendly, and its use enables the substitution of fossil fuels or materials with

higher negative effects on climate change such as plastics, aluminium, steel, or concrete.

The concept of sustainability in the forestry sector should consider three dimensions of the whole forest wood supply chain: economic, environmental, and social. Avoiding negative environmental impacts in the manufacturing process of products and the provision of services is becoming increasingly important.

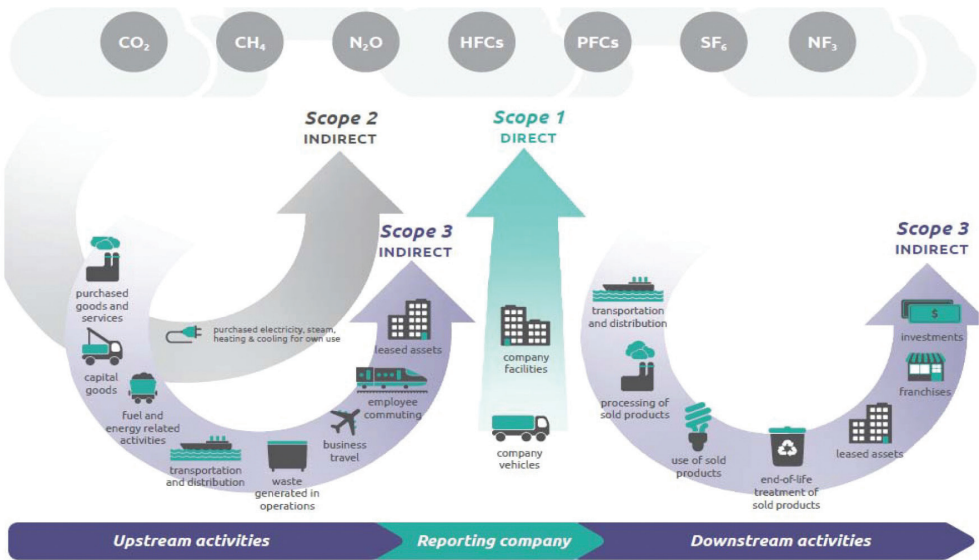
In terms of the magnitude of the environmental impacts on forestry, assessments often focus on certain aspects, such as biodiversity, water, soil and air. In the last few decades, there has been a prevailing discussion about climate change and the increasingly critical attitude of consumers in terms of sustainability and mitigating climate change.

Anthropogenic greenhouse gas (GHG) emissions tend to lead to an increasing annual average surface temperature, which

threatens species and ecosystems. For climate change mitigation, Malaysia aims to reduce GHG intensity emissions by 45% by 2030, compared to the emission levels in 2005. The most important goal of climate protection is to reduce energy consumption through increased energy efficiency while at the same time reducing non-renewable shares in the energy mix. The development of strategies to avoid negative environmental impacts affects all and therefore must also include the forestry sector.

In general, increased usage of wood as a renewable raw material is seen as part of the solution to mitigate climate change. However, it should be considered that non-renewable resources are used for the harvesting and supplying of wood to the industry and consumers, which does not allow the designation of wood as a 100% CO₂-neutral product. Although studies have shown that the non-renewable share is low compared to the carbon storage of wood, holistic analyses of the total forest supply chain are important to demonstrate and reduce the non-renewable resources and thereby the environmental impacts for the supply of wood and the provision of wood products.

For analysing the environmental impacts of products or services, the lifecycle assessment (LCA) method is a useful and well-known approach. Following the EN ISO standard 14040 definition, an LCA is the “compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its lifecycle system”, assuming that the LCA is able to identify most of the environmental impacts. The impact on climate change is one of a manifold set of possible categories. Although LCA has its origin in industrial production systems, they are now also widely used in the forestry sector (Fig. 1).



Science Based Targets initiative (SBTi). Under this scheme, forests, land and agriculture have been identified as contributing nearly 25% of global annual GHG emissions. Moreover, forestry production is expected to double by 2050 to meet the demands of the world's growing population.

Under these new standards it is proposed that there should be zero tolerance for deforestation, which has been defined as the loss of natural forests as a result of: conversion to agriculture or other non-forest land use; conversion to a tree plantation; or severe and sustained degradation. Changes to natural ecosystems that meet this definition are considered to be conversion, regardless of whether it is legal or not.

If these standards and protocols are adopted universally it will be extremely difficult to increase the volume of sustainable timber material coming from recognised and established sources. This is where the opportunity to develop new and sustainable sources of quality raw materials arises, like palm wood (Fig. 2). **P**

Fig. 1: Elements that contribute to GHG emissions

The number of LCA studies for wood supply has increased in recent years. However, many of the LCAs dealt with the supply of fuel wood, and the number of studies covering the production of sawlogs, pulpwood, sawn timber and furniture is still small.

The provision of raw material wood can be described as climate-friendly. Wood can replace fossil fuels or, in the case of material use, materials with a higher negative impact on climate change. However, these positive effects apply

only if sustainable forest management is carried out and the carbon stocks in biomass, organic layers, and mineral soils do not decrease significantly over a longer period of time.

The United Nations and other environmental non-governmental organisations (NGOs) are drafting standards and protocols for the measurement and definition of carbon and GHG reduction benchmarks. One such system which is gaining prominence is the

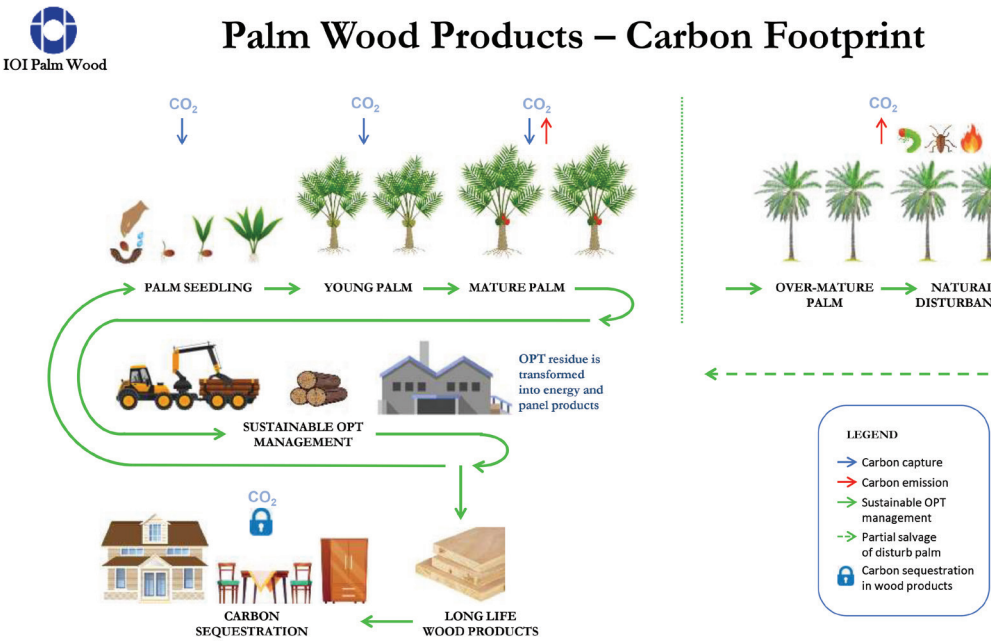


Fig. 2: Palm wood can be an alternative material for wood products