

Closing the loop: OnCore as a green material solution

IOI Palm Wood has developed its operations around a large stream of agricultural material generated by Malaysia's oil palm industry. The country manages 5.67 million hectares of plantations. According to the Malaysian Palm Oil Council (MPOC), around 27% of this area consists of trees aged 20 years or older.

About 622,000 hectares have passed the typical 25-year productive cycle, when yields decline and replanting is required. In 2023 alone, 131,000 hectares were replanted. The process generates large volumes of oil palm trunks, which can be recovered as a secondary material stream.

THE CLIMATE IMPACT OF CONVENTIONAL PRACTICE

In many cases, felled oil palm trunks are left to decompose in the field. While often described as natural decomposition, this can carry environmental risks.

In warm and humid conditions, decomposing biomass can create oxygen-poor environments, leading to anaerobic breakdown and the release of methane, a greenhouse gas with a global warming potential 28 times higher than carbon dioxide over 100 years. If unmanaged, this process may contribute to plantation emissions.

SELECTIVE EXTRACTION APPROACH

IOI Palm Wood uses a selective extraction method to remove mature trunks from plantations. The approach does not involve full clearance.

Some biomass, including micro-roots, upper trunk sections and fronds, is left in the field to support nutrient recycling and soil condition. The aim is to maintain soil fertility and support subsequent replanting cycles.

ONCORE MATERIAL

The company processes recovered trunks into OnCore, a high-performance,



sustainable timber-alternative material used in applications such as joinery, doors and furniture.

The material is associated with three main environmental characteristics. It retains carbon absorbed during the tree's growth within the finished product. It can be used as an alternative to tropical timber, potentially reducing pressure on natural forests. It is produced from existing replanting cycles and does not require additional land clearing.

WASTE-TO-ENERGY PRODUCTION

IOI Palm Wood also applies a circular production model within its manufacturing facility.

Residues generated during processing — such as sawdust, fibre, and off-cuts — are utilised as biomass fuel for on-site thermal oil energy plants. These systems generate heat energy for production and reduce reliance on fossil fuels.

POTENTIAL WIDER USES OF OIL PALM TRUNKS

Research suggests that oil palm trunks may have applications beyond material use, although these are not part of IOI Palm Wood's operations.



LEGEND

- 1 OnCore, derived from oil palm trunk biomass, is a high-performance, sustainable timber-alternative material
- 2 Oil palm trees in a plantation in Malaysia

Studies have indicated that sugar-rich sap from the trunks can be converted into bioethanol and further refined into sustainable aviation fuel (SAF). Other research suggests the sap can be processed into sweeteners with a lower glycaemic index and antioxidant properties. **P**

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