Lifecycle CO_2 evaluation of CNF products

~ Towards adoption of CNF as a new environmentally responsible material ~

環境省
Ministry of the Environment

CNF is a material with light weight, high strength and elasticity, that is expected to make a substantial contribution to CO_2 emission reduction. However, as CNF related CO_2 emissions at manufacturing stage are not necessarily low in comparison to other materials, an effective adoption of CNF must be considered thoroughly.

POINT!

To develop environmentally responsible CNF products, it is advised to conduct lifecycle CO_2 evaluation in the planning stage prior to CNF adoption decisions.

■ Examples for effective reduction through CNF adoption

Increase of manufacturing efficiency

- Manufacturing energy consumption reduction
- Yield rate increase
- Waste reduction

Increase of Durability and longevity

- Extension of product life & replacement cycle
- Decrease of product replacement rate
- Reduction of raw material use along the product lifecycle

Weight reduction

- Reduction of raw materials
- Decrease of manufacturing time, reduction of energy consumption
- Reduction of transport burden

Recyclability improvement

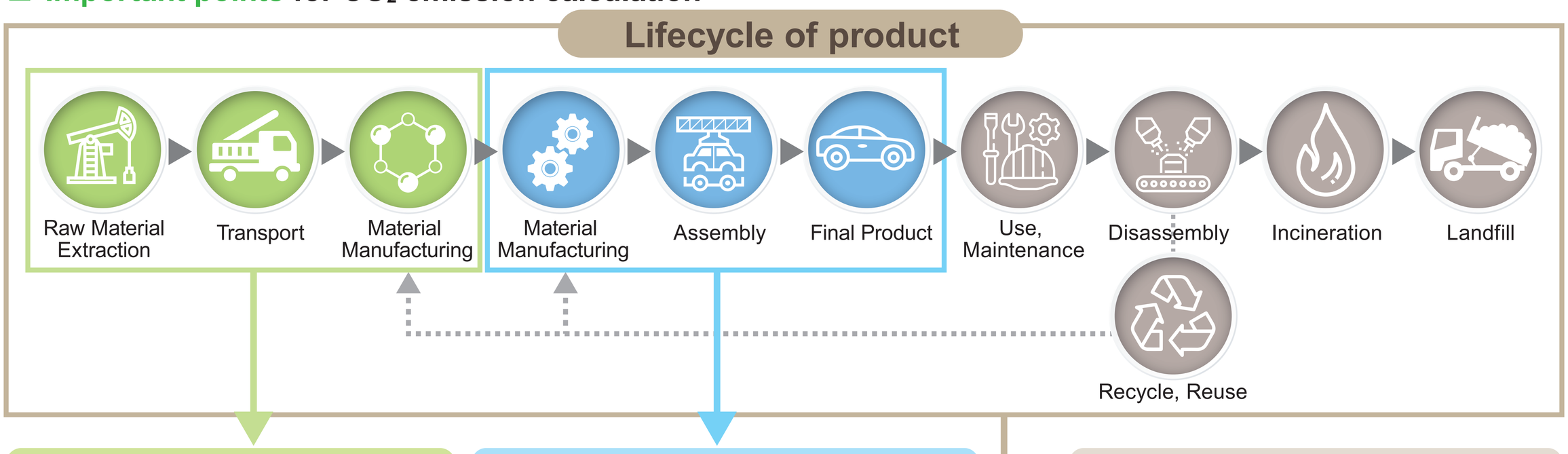
- Increase of recycling rate
- Decrease of waste management

To ensure gaining the highest effects as possible, check which reduction potentials to focus on in case of CNF use.

POINT!

To correctly grasp CO_2 reduction effects, evaluation of CNF along the entire lifecycle (raw material procurement, CNF material manufacturing, CNF product manufacturing, use, disposal, recycling) is vital.

■ Important points for CO_2 emission calculation



In some cases, CNF materials might have higher CO_2 emissions than other materials.

Therefore, lifecycle CO_2 reduction that leverages CNF`s unique characteristics (light weight, high strength) should be aimed at.

Even though CO_2 emissions at manufacturing stage are reduced, CO_2 emissions along the entire product lifecycle might still increase.

Reduction measures should be conducted from a lifecycle point of view instead of limiting consideration to manufacturing and company internal processes.

Through joint efforts along the supply chain, further emission reduction effects can be achieved outside of the company's operation scope.

Lifecycle emission reduction measures should be promoted through communication with stakeholders concerned along the entire supply chain.

The Ministry of the Environment supports the development of CNF products for applications that lead to decarbonization.

Website- Ministry of the Environment- Nanocellulose Promotion (NCP) Project

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