



Press release

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Carbon Footprint and Sustainability of Different Natural Fibres for Biocomposites and Insulation Material

nova-Institute publishes first results of the sustainability assessment within the project MultiHemp

Gaining more and more importance in our everyday life natural fibres are experiencing an impressive revival as insulation material and biocomposites in automotive applications. Time to look at their environmental impact and to ensure the sustainability of this revival.

As a first step towards supporting the development of sustainably produced and innovative biorefinery products, nova-Institute has carried out a carbon footprint for various natural fibres. These include: hemp, which was assessed as part of the European (FP7) project MultiHemp, whose aim is the development and implementation of sustainable hemp biorefinery concepts; in comparison to flax, jute and kenaf. Our preliminary results show that the carbon footprint of all four fibres is decisively lower in comparison to their conventional counterparts i.e. glass and mineral fibres. Moreover, we found the carbon footprints of the natural fibres to be very similar to each other. For more details download the full report at: <http://www.bio-based.eu/ecology>.

Natural fibres such as flax, hemp, jute or kenaf are being used more and more in technical applications, especially in biocomposites in automotive interiors and insulation.

These natural fibres have a much lower carbon footprint than their counterparts glass and mineral fibres. The production of 1 tonne of glass fibres shows a carbon footprint of about 1.7–2.2 tonne CO_{2-eq}, whereas natural fibres only have a carbon footprint of about 0.5–0.7 tonne CO_{2-eq} per tonne of natural fibre (until the factory gate, excluding transport to the customer). This is only one third of the carbon footprint of glass fibres. Even as the initial advantage decreases in further processing, natural fibre composites have a 20–50% lower carbon footprint compared to glass fibre composites.

The carbon footprints of the different natural fibres are not very different. In the range of uncertainty, the carbon footprint to the factory gate of the European non-woven producer in the automotive or insulation sector is about 750 kg of CO_{2-eq} per tonne of natural fibre for all four natural fibres. Jute and kenaf show lower emissions during cultivation, harvesting and decortication because of manual processing, but long transport to Europe levels this advantage.

Fertilizers have a high share in the total calculation of emissions. Therefore substituting mineral fertilizers by organic fertilizers leads to a lower carbon footprint of 650 kg of CO_{2-eq} per tonne of natural fibre. Using organic fertilizer is only possible if the crop and the region are suitable (availability of an organic fertilizer surplus from meat production). Currently pig slurry and fermentation residues are only used for hemp grown in the north of the Netherlands and Germany.

The data on GHG emissions in the production of natural fibres still show some gaps, especially for water and field retting, where no solid data are available. Trials in Italy in the year 2015 within the MultiHemp project framework will fill these gaps.



Natural fibres that show ISCC PLUS or RSB certificates for the sustainable production of biomass have hitherto been unavailable on the world market. European hemp fibres are expected to be the first natural fibre with an ISCC PLUS certificate, at the end of 2015.

The European (FP7) project “Multipurpose Hemp for industrial bioproducts and biomass – MultiHemp” brings together 21 European partners from science and industry to achieve rapid targeted improvements in hemp productivity and raw material quality for enduser requirements. Within this project nova-Institute assesses the economic and environmental implications of each innovation so as to maximise economic return and increase sustainability. For more information about the MultiHemp project, please visit <http://www.multihemp.eu>.

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Responsible under press legislation (V.i.S.d.P.):

Dipl.-Phys. Michael Carus (Managing Director)

nova-Institut GmbH, Chemiepark Knapsack, Industriestraße 300, DE-50354 Hürth (Germany)

Internet: www.nova-institute.eu and www.bio-based.eu

Email: contact@nova-institut.de

Phone: +49 (0) 22 33-48 14 40

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