Renewable Carbon Initiative (RCI)
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PRESS RELEASE

Renewable Carbon-based Materials Show Significant Lower CO_2 Footprint Than Fossil Counterparts

The Renewable Carbon Initiative (RCI) published their latest report "*Case Studies Based on Peer-reviewed Life Cycle Assessments – Carbon Footprints of Different Renewable Carbon-based Chemicals and Materials (Second, Extended Version)*". The report was conducted by the sustainability experts from nova-Institute

Hürth, 22 January 2026: In the extended, second version of the report, RCI summarises and presents eleven peer-reviewed lifecycle assessment (LCA) case studies – representing the highest possible scientific standard – that examine the carbon footprint of materials and products made from renewable carbon compared to fossil-based products. These eleven products and the respective LCAs are from RCI members Avantium (NL), BASF (DE), Braskem (US), Econic (UK), Fibenol (EE), IFF (US), LanzaTech (US), Lenzing (AT), Neste (FI), Peter Greven (DE), and Primient Covation (US) and have been peer-reviewed by external, independent experts.

In times of "Code Red" warnings by the UN on climate change, the carbon footprint of chemical and materials is one of the most crucial indicators. Fossil resources are the main cause of human-made climate change, responsible for more than 70% of global warming. Where feasible, like in the energy sector, decarbonisation reduces the dependence on fossil carbon as a feedstock. But for carbon-dependent industries, **defossilisation is the essential strategy** to eliminate additional influx of fossil carbon into the chemical industries' carbon cycles and the atmosphere. To achieve defossilisation, renewable carbon feedstocks which can be bio-based, CO_2-based or recycled, need to substitute the dominant fossil feedstock in the production of chemicals and derived materials. The respective sectors rely on carbon as a feedstock and cannot do without.

At the same time **the sectors need to ensure that the alternatives really reduce greenhouse gas emissions**. While fossil resources are undeniably the main driver of climate change, it cannot be assumed that alternative production pathways are automatically superior. Transparent evaluation and comparison is critical because process emissions, energy needs, and current production scales must be fully accounted for.

This report provides conclusive proof. **It clearly demonstrates that renewable carbon products already on the market today can achieve significantly reduced carbon footprints**, with GHG savings ranging from 30% to 90% compared to their fossil counterparts. This is exemplified in the figure, which shows the comparison for one of the 11 case studies covered. These peer-reviewed LCAs offer the solid evidence needed to inform policy and investment, countering doubts that the climate benefits of renewable carbon are merely theoretical. At the same time, these materials and products still have significant potential to further reduce emissions in the future.

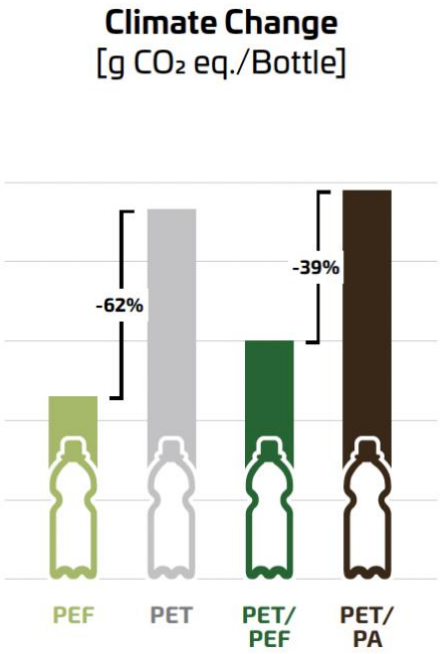

Figure: Comparative analysis of the climate change impact of the case study covering Avantium PEF monolayer and PET/PEF multilayer bottles vs. their fossil counterparts

The case studies in the latest RCI report provide essential information to guide policy in pursuit of climate targets. A key implication is clear: the less additional fossil carbon we introduce, the smaller the future burden of costly atmospheric carbon removal. By enabling truly circular carbon loops, renewable carbon feedstocks are a proven, viable solution for defossilising chemical industries already today.

The full report can be downloaded here: https://renewable-carbon.eu/publications/product/case-studies-based-on-peer-reviewed-life-cycle-assessments-carbon-footprints-of-different-renewable-carbon-based-chemicals-and-materials-2nd-extended-version-rci-report-pdf/

Disclaimer

RCI members are a diverse group of companies addressing the challenges of the transition to renewable carbon with different approaches. The opinions expressed in these publications may not reflect the exact individual policies and views of all RCI members.

About RCI

The Renewable Carbon Initiative (RCI) is a global network of more than 60 prominent companies dedicated to supporting and accelerating the transition from fossil carbon to renewable carbon (bio-based, CO_2-based and recycled) for all organic chemicals and materials. Its work focuses on scientific background reports, position papers, advocacy and networking.

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