



Main Principles of the Renewable Carbon Initiative (RCI)

October 2023

How to achieve a net-zero circular economy by 2050?

Twelve principles for a sustainable chemical and materials industry:

1. RCI and its member companies want to **contribute to achieving net-zero emissions by 2050** by promoting the concept of renewable carbon. This is key to tackle raw-material related emissions from industry, which are a major part of Scope 3 emissions.
2. RCI supports the well-known strategies of decarbonisation for the energy sector, i.e. the **massive expansion of renewable energies and the hydrogen economy**, complemented by the utilisation of carbon-containing **e-fuels** based on green hydrogen and **sustainable biofuels** in particular for aviation and container shipping.
3. RCI stresses the need for **a robust, innovative and sustainable chemical and material sector as crucial** for achieving net-zero in almost all industrial sectors. Tackling energy emissions will not be enough – raw material related emissions also play an important role to achieve climate neutrality. Chemicals and derived materials are used in almost all applications.
4. RCI promotes the **strategy of defossilisation** as decarbonisation is not possible for chemicals and materials, because they are largely based on carbon. For chemicals and materials, carbon is a permanent need with rising demand. Today, 90% stems from fossil resources. In our vision, these are to be replaced by renewable carbon by 2050.
5. RCI facilitates the **transformation of the entire chemical and material industry** from fossil to renewable carbon as a key target. Replacing embedded fossil carbon – the carbon in the molecules – by renewable carbon is the biggest transformation of the chemical and material industry since the industrial revolution.
6. **Renewable Carbon entails all carbon sources** that avoid or substitute the use of any additional fossil carbon from the ground. Renewable carbon can come from the biosphere, atmosphere or technosphere – but not from the geosphere. This means that biomass, utilisation of CO₂ (CCU) and recycling are the only available sources for renewable carbon. They can circulate between biosphere, atmosphere or technosphere, creating **sustainable carbon cycles**.

7. **Renewable carbon serves as a strong guiding principle** for a sustainable future of the chemical industry. The chemical industry must decouple from fossil carbon from the ground as a raw material and the renewable carbon concept delivers concise ideas on how to achieve the necessary transformation. It leads to effective **carbon management**, enabling more than 1 Gt of embedded renewable carbon to supply the chemical industry's growing demand by 2050.
8. RCI maintains that renewable carbon as a guiding principle contributes to the **rapid transformation of the chemical industry**, as it leaves flexibility for actors in the value chain and offers manifold investment opportunities in terms of raw materials and technologies.
9. RCI envisages comprehensive **carbon management** as integral for organising the complex transition – in time and volume – from today's fossil carbon from the ground to renewable energy and to renewable carbon across all industrial sectors. This management will not only require effort from the industries, but should be structured and directed by policy measures, technology developments and major investments. This comprehensive setting would offer certainty to industry and brands to make the system change to renewable carbon.
10. RCI recognises that, in regard to the three sources of renewable carbon, there is **no a priori hierarchy or discrimination** between various types of **biomass** (e.g. first and second generation), utilisation of different **CO₂ sources** (biogenic and fossil) or mechanical and chemical **recycling** options. The technology-open concept allows taking specific regional and application-related features into account to identify the most sustainable carbon source. While not every application based on renewable carbon is automatically sustainable, **no fossil-based application will ever be sustainable**.
11. RCI commissions **science-based reports** to provide knowledge on and shape the renewable carbon transformation, **supports collaboration** between stakeholders to stimulate investment, and publishes **position papers** to advise policy makers.
12. RCI advocates for an **appropriate policy framework** that involves carbon management and which includes:
 - Carbon recycling at all levels;
 - A robust circular economy;
 - Science-based selection of sustainable biomass streams;
 - Utilisation also of fossil CO₂ emissions as long as they exist;
 - Acceptance of a wide range of chemical recycling processes;
 - Different legislative treatment of products based on fossil or renewable carbon sources; and
 - New methods such as Mass Balance and Free Attribution (MBFA) if the replacement of fossil carbon is proven.