
The C-history continues:
First steps on the way towards a circular
economy

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The Challenge

- Current industrial cycles lead to increased CO₂ in atmosphere and oceans
 - large-scale experiment with human beings and the ecological environment
- Possible transfer of the evolutionary developed carbon-cycle to be a model of success for the industry?
- A carbon cycle which is carbon neutral or even extracts CO₂ from the atmosphere?

Back to the C-Cycle

Where does CO₂ come from?

- atmosphere
- unavoidable process emissions

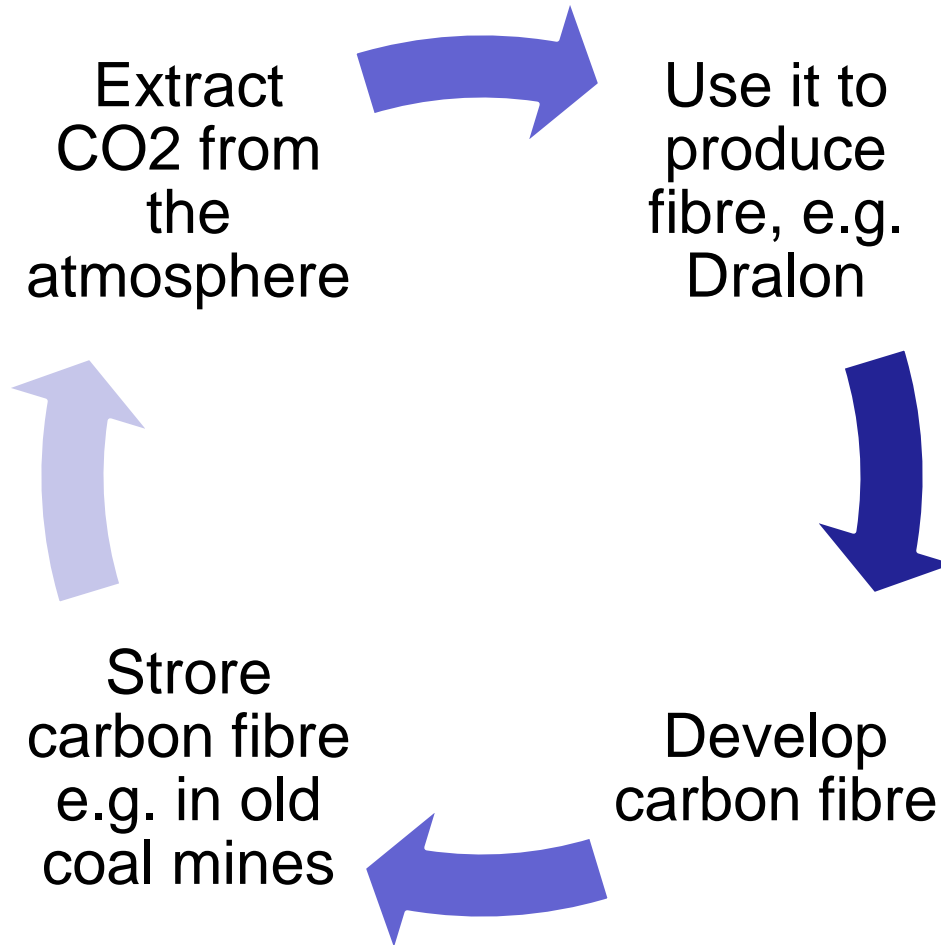
How is carbon used?

- construction material like in nature (timber, biomass)?
- Coolant in motor vehicle air-conditioning
- Detergent in dry-washingmashine
- Basis material for carbon- based chemicals (e.g. plastics)

What happens with the carbon / CO₂ in the end?

- back to atmosphere
- long-term storage in lasting materials like carbon fibre, carbon mineralisation

1. Carbon fibre: A showcase for the carbon cycle



2. Step by step decarbonisation of incineration and plastic manufacturing

Initial Situation in German incineration plants:

- currently about 50% of CO₂-emissions biogenic and Paper/ 50% plastics
- Special feature: Marginal costs for electricity generation close to 0, electricity can therefore be used for hydrogen synthesis
- Capture CO₂ from waste gas
- Trigger a CO₂ and hydrogen reaction: Methanol as a basis for plastic-production: Plastic decarbonized by 50%
- next run of incineration: 75% of CO₂ biogenic
- next run Plastic production decarbonized by 75%
- ...

There will be Surprises in C-Cycle



Thank you very much for your attention!