

CO₂ removal

The key points at a glance

Would you like to
know more?
Further information in the
CO₂ removal white paper

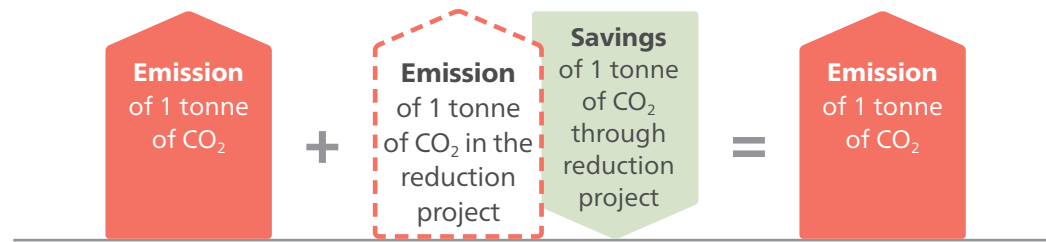


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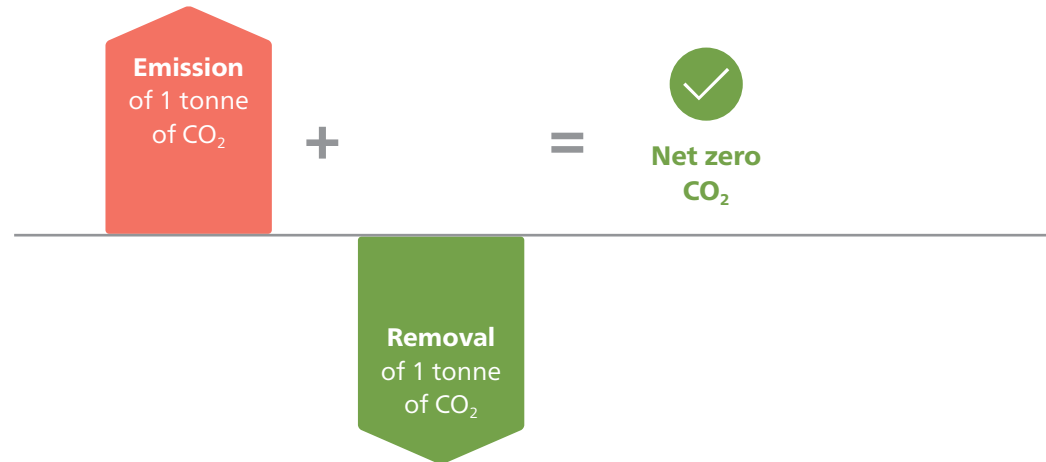
CO₂ removal: essential for our climate targets

To stop climate change, global greenhouse gas emissions must be reduced to net zero. In Switzerland, the goal is to achieve this by 2050. The remaining emissions that cannot be eliminated must be removed from the atmosphere using CO₂ removal.

Classic offsetting



CO₂ removal



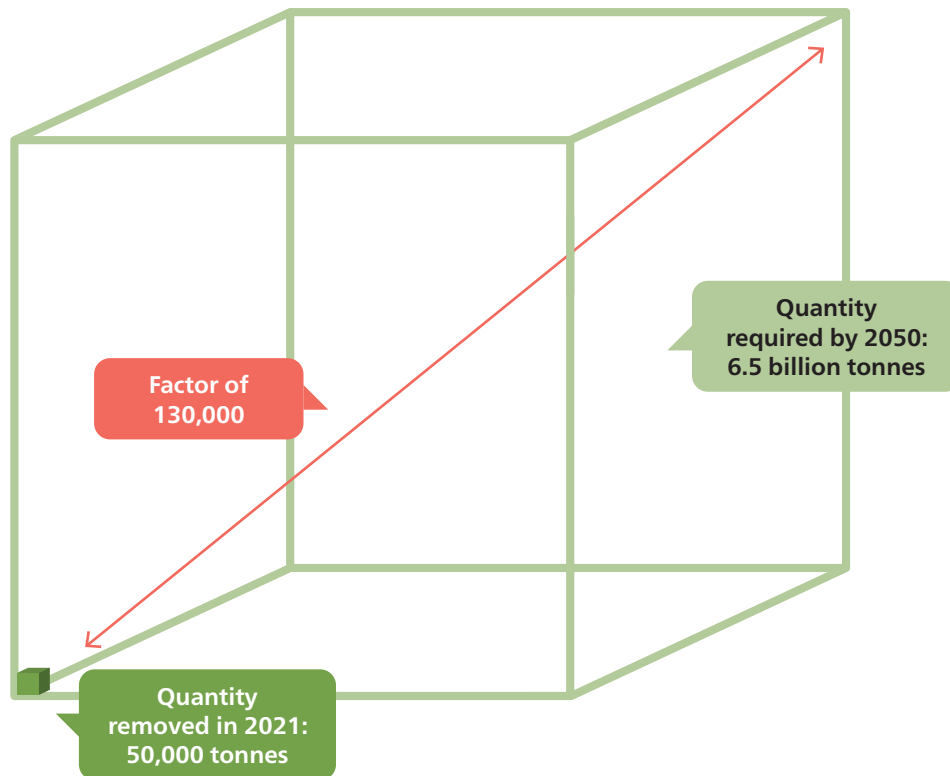
Carbon dioxide removal (CDR) – often also known as negative emission technologies (NET) – removes CO₂ from the atmosphere and permanently stores it in the ground, in oceans or in products. This reduces the CO₂ content of the atmosphere.

Emission offsets do not count towards CO₂ removal:

Classic offsetting consists of projects where CO₂ emissions are reduced or prevented at a different source. Offsetting is not sufficient to achieve the net zero target, as there will always be residual emissions.

A new global market worth billions is emerging

The market for CO₂ removal is currently still in its infancy. Exponential growth is needed to ensure that the required capacities will be available in time.¹



¹ 2050: Calculations based on IPCC 1.5 degree scenario, 2021: see cdr.fy.

What role do companies play in the CO₂ removal market?

- 1** For difficult-to-avoid emissions, only CO₂ removal can help to achieve net zero.
- 2** High-quality removal projects minimize reputational risk.
- 3** A company can even decide to become net negative and thereby remove past emissions.

Depending on the method and provider, you currently pay 100 to >1,000 dollars for one tonne of CO₂ removed – significantly more than with conventional offset certificates. At an average long-term price of USD 200 per tonne of CO₂, this would mean revenue of USD 1,300 billion per year.

How can a company express its commitment?

For CO₂ removal to scale successfully, prices must also fall. This requires more customers and greater investment security for providers. Private companies make a significant contribution both as suppliers and consumers of CO₂ removal. Wherever CO₂ is produced from biomass, it can be captured, stored and the certificates sold in future. However, you can also set up your own projects independently of this business model. Those currently buying certificates usually do so with the help of external consultants or join one of the existing buyers' clubs (NextGen, Frontier).

How companies are already committed to NET²



" By 2030, existing CO₂ avoidance certificates will gradually be replaced by CO₂ removal certificates, financed by means of an internal CO₂ price. Swiss Re obtains the certificates from strategic partners with long-term purchase agreements or from the NextGen buyers' club, which was co-founded by Swiss Re. "



" Post CDR Ltd was founded in August 2022 with the goal of building a carbon neutralization portfolio. Swiss Post has opted for a 'make strategy' with a preliminary focus on nature-based solutions (NBS) (...). At the same time, Swiss Post is also adding technology-based CDR solutions to its portfolio in order to promote their development and distribution – particularly in Switzerland. "

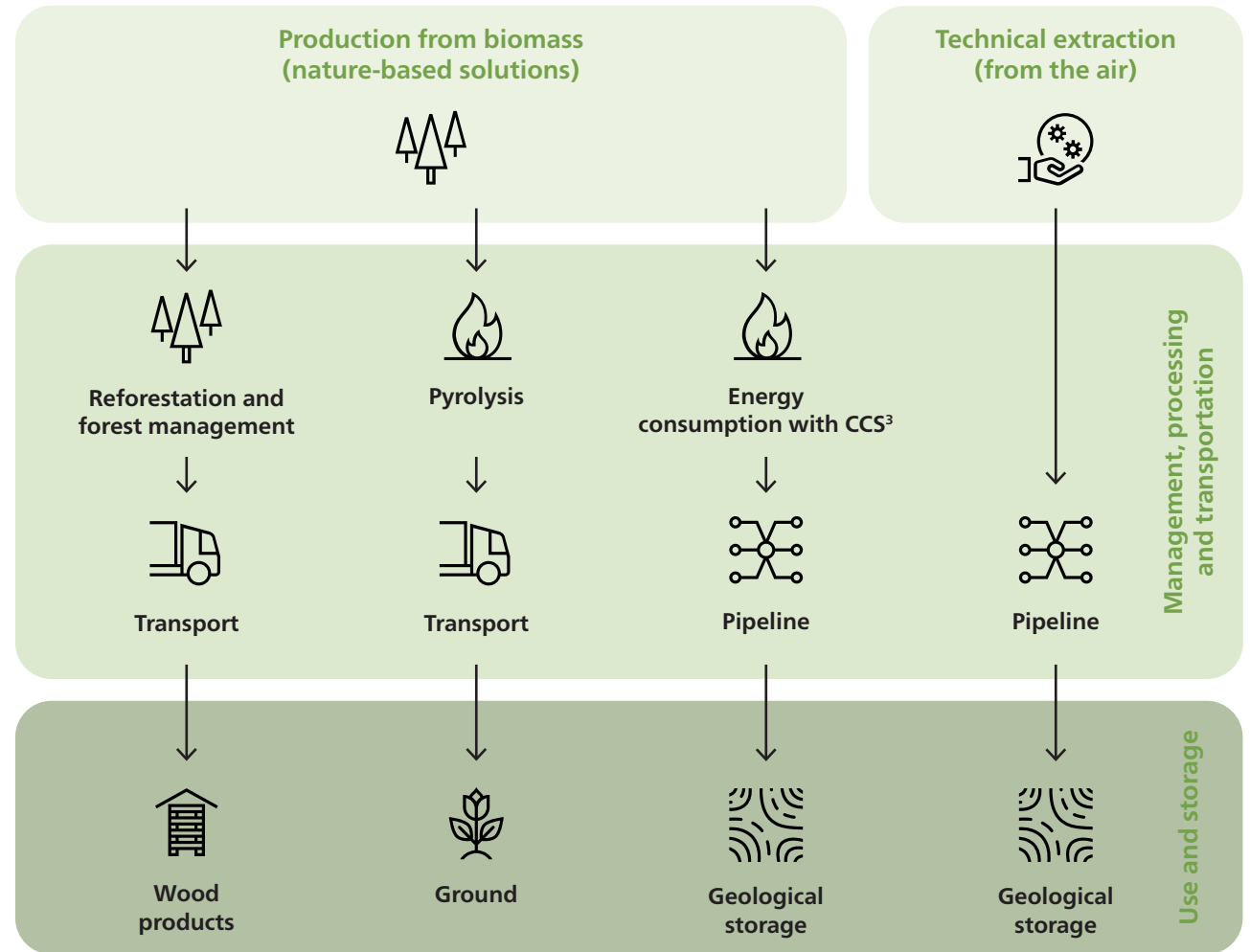


" (...) We are also neutralizing our remaining emissions now and in the future (...). From 2030, we will switch to 100% carbon removal projects and have already signed a service agreement with Climeworks in Switzerland to remove emissions from the atmosphere by 2030. "

² All the companies listed have net zero targets and interim targets and only remove the residual emissions that are difficult to prevent with CO₂ removal – the partners/companies named are not promoted here.

The most important technologies

CO₂ removal involves the following steps: extraction from the air, processing, transportation and storage. Technical solutions are already available for all steps, but there are also challenges. In Switzerland, there are limited options for storing CO₂. This is why cooperation with other countries is important.



Technology	Wood products	Biochar	Bioenergy with CCS (BECCS)	Direct air capture (DAC)
Costs USD ⁴ tonne of CO ₂	100 to 200	100 to 300	200 to 400	400 to >1,000
Technical maturity	Good	Good	Medium	Medium
Storage permanence	Decades to centuries	Centuries to millennia	Probably permanent	Probably permanent

³ Carbon capture & storage

⁴ see cdr.fy. However, there is currently still insufficient available data and the range of costs is correspondingly high.

Four important steps for the future



Reduction of regulatory hurdles

- Regulatory requirements must be clarified. Clear, internationally coordinated quality requirements are needed along the entire production chain.



Promotion of the domestic CO₂ removal economy in two key areas

- Nature-based solutions from sustainable forest management such as biochar or durable wood-based products.
- Waste incineration and cement production are important point sources of CO₂. Capturing and storing this CO₂ generates negative emissions thanks to the biogenic fuel content and promotes the necessary infrastructure for CO₂ removal.



Connection with the international transport and storage infrastructure

- This requires concrete projects as well as international agreements and clear rules on accountability.



Create incentives for the economy: Implementation of the “polluter pays principle”

- The CO₂ price must reflect the external costs.
- CO₂ removal must be taken into account in emissions trading.



Swisscleantech brings together climate-conscious companies.
Together we are moving politics and society towards a carbon-neutral
Switzerland.

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