Bundesministerium für Wirtschaft und Klimaschutz

Carbon Removals in the EU's 2040 climate framework: a new relevance requires new policy options

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Structure

- Carbon Removals – definitions, methods
- The role of removals in EU climate policy
- The EU legal framework: Climate Law, ETS, LULUCF, CRCF
- 2040 climate framework: options and instruments
- (Bonus:) Agriculture in 2040 framework

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What are removals?

- **Carbon removal** – human activities removing CO2 from atmosphere and durably storing it in geological, terrestrial, ocean reservoirs, or in products - includes anthropogenic enhancement of biological/geochemical sinks and direct air capture and storage, excludes natural CO2 uptake not directly caused by human activities (IPCC 2022, p. 807).
- **Temporary vs. permanent** – time-frames of carbon storage ranging from decades to over 10.000 years depending on the CDR activties.
- **Natural removals (nature-based solutions) –** based on biogenic carbon pools for uptake of CO2, mostly more cost-effective and viable in the short run, generally shorter storage times and prone to natural disturbances.
- **Technological/industrial/permanent removals –** technological alternatives mostly based on CCS (i.e. DACCS or BECCS), more costly but generally storage time of over several centuries, potential to become more relevant in the long run.

Carbon removals: methods

→ Land-based removals:

- Afforestation
- Forest management
- Soil carbon sequestration
- Biochar
- Peat- and wetland restoration

→ Technical removals:

- Bioenergy with Carbon Capture & Storage (BECCS)
- Direct Air Carbon Capture & Storage (DACCS)
- Biochar

CCS in itself is not a removal!

→ Products (CCU)

- Harvested wood products
- Enhanced rock weathering (incl. concrete)

[→ Ocean-based methods:]

- Coastal revegetation
- Ocean alkalinity enhancement
- Ocean fertilisation

Why are we speaking about removals?

- Global warming has reached approx. 1.5 degrees
- This means:
    - We have to **reduce emissions** at a very fast pace
    - We have to capture and permanently store CO2 to accelerate emission reductions and compensate for **residual emissions**
    - We need to have **net negativ emissions** after 2050
- Residual emissions mostly expected from **agriculture and industry**

Why do we limit the role of removals?

- Emission reductions are **permanent**: A decarbonised process never causes emissions again – sinks need to be maintained over time and prone to climate change
- Climate-friendly technologies are important for **competitiveness,** air quality, geopolitics, employment and other **co-benefits**
- Energy and resource **efficiency**: Electricity, land-use and raw materials (natural removals and BECCS), storage locations, infrastructure
- **Deterrence** effect: Strong emphasis on sinks can reduce mitigation efforts
- **Planning certainty**: Need predictable pathways for policy and business
- Perspective of **net negative emissions**

EU position on energy & CCS: COP 29

Para. 27: HIGHLIGHTS the importance of achieving the global phase out of unabated fossil fuels and a peak and decline in their consumption already in this decade to deliver the necessary mitigation as indicated by the IPCC. In this context, UNDERLINES the importance for the energy sector to be **predominantly free of fossil fuels** well ahead of 2050, and the importance of aiming to achieve a fully or predominantly decarbonised global power system in the 2030s, leaving no room for new coal power, since cost effective **zero emissions measures are already widely available** in that sector, which provide multiple benefits, inter alia, for sustainable development, human health and air quality, job creation as well as energy security and of the phasing out of existing global unabated coal power generation in energy systems consistent with keeping the 1.5° C temperature goal within reach. Furthermore, UNDERLINES that emission abatement technologies which do not significantly harm the environment, **exist at limited scale** and are to be used to **reduce emissions mainly from hard to abate sectors** and that removal technologies are to **contribute to global negative emissions**, and EMPHASISES that they should **not be used to delay climate action** in sectors where feasible, effective and cost efficient mitigation alternatives are available, particularly in this critical decade. At the same time RECOGNISES the progress reached in the development of emission abatement technologies and their potential role in the future in reducing emissions in hard to abate sectors, to accelerate the decarbonisation and achieve climate neutrality by 2050. CALLS ON all parties, particularly other major economies, to operationalise their contribution to the global transition away from fossil fuels in energy systems, through the development and implementation of domestic plans, policies and actions. STRESSES that the oil and gas industry should assume a leadership role in global efforts required to reduce GHG emissions; HIGHLIGHTS the cost-effective methane emission reduction potential in the fossil fuel extraction, production and transport as well as the agricultural and waste sectors. COMMITS to engage agencies such as the IEA, IRENA to work with the UNFCCC to ensure transparent and timely reporting in the delivery of tripling renewable energy capacity globally and doubling the global average annual rate of energy efficiency improvements by 2030, committed to in COP28.

EU legal framework: ECL

Rec. 27: According to Commission assessments, the existing commitments under Article 4 of Regulation (EU) 2018/841 result in a net carbon sink of 225 million tonnes of CO2 equivalent in 2030. In order to ensure that **sufficient mitigation efforts** are deployed until 2030, it is appropriate to **limit the contribution of net removals** to the Union 2030 climate target to that level. This is without prejudice to the review of the relevant Union legislation in order to enable the achievement of the target.

Art. 4(1): In order to ensure that sufficient mitigation efforts are deployed up to 2030, for the purpose of this Regulation and without prejudice to the review of Union legislation referred to in paragraph 2, the contribution of net removals to the Union 2030 climate target shall be **limited to 225 million tonnes** of CO2 equivalent. In order to enhance the Union's carbon sink in line with the objective of achieving climate neutrality by 2050, the Union shall **aim to achieve a higher volume of its net carbon sink** in 2030.

EU legal framework: LULUCF Regulation

- Target for natural sinks: Forest, agricultural soils, wetlands
- Target: -310 Mt CO2-eq in 2030
- Binding targets for every Member State
- Current trend: declining sink due to biomass use (incl. bioenergy), natural disturbances incl. droughts, forest fires, bark beetle (climate change!), and age structure of forests

EU legal framework: ETS

- Covers emissions from energy, industry and aviation
- Currently no recognition of sinks – only CCS as mitigation measure
- Negative experiences with international credits makes policy-makers cautious about intruoducing certificates – but perspective is there
- But: Emission allowances reach zero by 2039 whereas residual emissions will still remain (approx. 200 Mt by 2040).
- Review in 2026 to decide on role of ETS for CDR

EU legal framework: CRCF

- New system for certifying carbon removals from private actors
- Focus on MRV: common (voluntary) rules on CDR
- Currently entering into force
- Aim: Setting a standard for what a removal is → Voluntary carbon markets, support schemes, potentially recognition in other EU climate instruments
- First step towards broader inclusion into EU climate policy

EU 2040 target: role of removals

CDR will play a central role in EU 2040 climate target:

COM proposes GHG reductions of **90%** (compared to 1990). For the r**est EU will rely on removals**! In COM scenarios:

  - Nature-based removals approx. **350 Mt CO2eq** and
  - technological removals approx. **60 Mt CO2eq** in different scenarios

- Need for preparing **strong policy framework** to **incentivize and accelerate CDR** activities
- **CDR central to achieve GHG neutrality 2050** (Germany: 2045) and negative emissions thereafter – need for technology and regulation framework development
- But: CDR is a **scarce resource** and must not become a cause for inaction

EU 2040 framework: options

Negative Emissions and CDR play an important role in the design of EU 2040 framework – different options under discussion:

- **Separate removal target (sub-targets)?** Would make reductions more transparent while at the same time increasing complexity. Example: NZIA 50 Mio t /p.a.; German Climate Protection Act.
- **Inclusion of (permanent) CDR into ETS-1?** Effective way to boost development of CDR options, but risk of leading to negative climate impact, slowing the emission reduction rate
- **New instrument or obligation for CDR?** Need to set effective incentives and building a business case for removals

EU 2040 framework: new instruments? (1/2)

EU Removal Trading Scheme (like Californian Carbon Dioxide Removal Act (SB 308) as a part of roadmap to climate neutrality 2045)

- Option of **creating a market for removals** by setting a **minimum target** for EU-wide removals (focus on technological removals).
- Requires **high-emitting entities, to purchase CDR credits** to compensate for their climate impact – ramp up between 2030 and 2045

→ **Pro:** polluter-pays-principle, incentives for CDR development

→ **Con:** possibly leads to slow down efforts to reduce GHG emissions, CDR capacities? Additional financial burden on industry?

EU 2040 framework: new instruments? (2/2)

European Carbon Central (Removal) Bank? [Edenhofer, Kalkul et al]

- Cap set by EU legislators but managed by ECCB
- ECCB to **issue emission allowances** to cover residual emissions.
- The ECCB to **organize procurement** of carbon removal certificates via (reverse) auctions.
- The ECCB would have to **renew non-permanent certificates** immediately after **their expiry (liability for the bank)** to ensure long-term compliance with the net-zero target.
- After 2050: ECCB will manage the residual emissions and **will finance the CDR options** in order to become net-negative.
- A **Carbon Removal Certification Authority** (CRCA) to be established to carry out independent certification based on scientific assessments of all relevant CDR technologies.

EU 2040 framework: agriculture (bonus)

- Close link between natural sinks and agriculture: Management of land
- Discussions around ETS-3 or emission reduction obligations on agrifood industry
- Highly emotional topic: Farmers‘ protests often very successful – careful approach from policy-makers
- Close observation of DNK CO2 tax on agriculture

Thank you!

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