

Introduction.

A massive ramp up in of carbon dioxide removals, including CCS, are needed to meet global climate targets. The findings of Working Group III to the IPCC Sixth Assessment Report supports this.

Norway welcomes the work on sustainable carbon cycles and a carbon removal certification scheme.

Perspectives for a carbon removal certification scheme.

For a future carbon removal certification scheme, the following perspectives of the Norwegian Government is highlighted:

Norway shares the view that a price on carbon emissions is the most cost-efficient way to reduce emissions. We have an ambitious carbon price policy nationally, in parallel with being part of EU ETS.

While a price on emissions is relevant for current and future emissions (to compensate for negative externalities and incentivise alternatives), additional policies are needed to incentivise carbon removals and carbon farming.

1. Keeping additional carbon in eg. soils, rather than in the atmosphere, would be advantageous. Any temporary removals could be handled in the same way as the carbon stock “in harvested wood products” with a yearly flux. Therefore we propose that a certification scheme should incorporate both permanent and temporary removals, with a clear distinction between the two.
2. We support certification of carbon farming to release the potential for carbon sequestration in terrestrial systems. For agriculture in particular, we note that carbon farming can turn agriculture into a part of the solution, and this is supported by findings by the IPCC and is high on the agenda among farmers. While potentials in Norwegian agriculture may be modest, there are promising examples of practices that maintain or increase carbon reservoirs in the short term, while offering co-benefits by supporting soil fertility, soil ecosystems, climate adaptation and hydrological and nutrient cycles. In addition there is a large potential for long term removals in the norwegian forest sector.
3. We agree that barriers remain against widespread uptake of carbon farming. These barriers include a financial burden while revenues are uncertain, lack of trust in the environmental integrity, and costly MRV. As per point 3 above, we believe that lack of permanence of carbon removals must be solved. While costly MRV is a core challenge for carbon farming, we propose that this is a challenge to be solved, as any resource use on carbon farming, either by farmers or by policy incentives, is mostly justified if effects can be documented.
4. Creating a self-sustaining market for CO₂ removals and geological storage should be the goal of the certification scheme.
5. An important market restraint for permanent CCS is the lack of permanent sinks such as geological storage. It is important that all types of removals by sinks are developed to accommodate for the necessary emission reductions.
6. As a point of departure a market-based scheme for permanent removals should have a technology neutral approach. For any sequestration in forests or soils to qualify as permanent, certain requirements must be in place to safeguard the longevity of the reservoirs. As many farmer and land-owners will be hesitant to such requirements, this underlines the interest for a separate market for temporary removal services.
7. A value on carbon removals and a carbon removal certification scheme should fit with existing frameworks and EU regulations. Consistency with existing legal framework for certification schemes, and the state aid guidelines should be pursued, in order to ensure predictability and coherence across sectors.

This contribution should be read as based on preliminary assessments on the administrative level, without prejudice to further and future comments. Norway is looking forward to cooperate and contribute in the development of this and related upcoming framework processes.

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Additional comments on scope.

The scope of the scheme for certification of carbon removals should be designed to give added value, and be in coherence with existing frameworks and EU regulations. The Fit for 55'-package and an upcoming certification scheme for carbon removals would further incentivise the development of a market for sustainable CCS. The costs are still high and public funding is needed, but over time a market should be in place.

In light of this, we wish to give an update on carbon capture and storage in Norway, in order to ensure that the scheme is designed to give impetus to further positive development.

Norway has more than 25 years of experience with storing CO₂ under the seabed on the Norwegian Continental Shelf (NCS). We know how to store CO₂ safely and permanently in line with the CCS Directive.

The Norwegian Petroleum Directorate has mapped potential storage reservoirs on the NCS, and this work has resulted in a CO₂ storage atlas. The atlas shows a theoretical potential to store more than 80 billion tonnes of CO₂ on the NCS.

In April, the Norwegian Ministry of Petroleum and Energy awarded two new licences for CO₂ exploration. One in the North Sea and one in the Barents Sea. In addition to this, a new area for CO₂ storage in the North Sea was made available for applications.

The full-chain CCS project, Longship, is currently in construction. Longship is developing an open access infrastructure with the intent and the capacity to store significant volumes of CO₂ from Europe. It consists of carbon capture at a cement factory in Brevik, and possibly at a waste incineration facility in Oslo conditional on sufficient own funding and funding from the EU or other sources. The waste incineration project would result in negative emissions – so-called 'BECCS', as approximately 60 per cent of the waste in the incineration plant consists of biomass. The capture facility at Brevik will also capture biogenic CO₂. Approximately 12 per cent of the emissions at the cement plant are of biogenic origin. Northern Lights is responsible for the transportation, in part by ship, and permanent geological storage of CO₂.

Northern Lights will at start-up in 2024 have a transport and storage capacity of 1.5 million tons CO₂ per year. Work has already been started on the development of a phase 2. A phase 2 will secure a capacity to store more than 5 million tonnes of CO₂ annually.

Links for further information:

[CO₂ atlas for the Norwegian Continental Shelf - \(npd.no\)](https://npd.no)

[Full-scale CCS project in Norway - Longship | \(ccsnorway.com\)](https://ccsnorway.com)

Additional comments on certification methodologies.

Mitigation efforts in the forest sector can contribute significantly to enhance carbon removals. Forests typically grow slowly the first years after regeneration / afforestation, but the removals (and the carbon stocks) will increase considerably as the forests mature. To take advantage of the long-term potential for removals, in the forest sector it is important with immediate action and deployment at large scale. The removals must be accounted for in a climate relevant time scale.

It is important to ensure that credits generated through carbon farming can be coupled to long-term benefits and stabilization goals, and not only to short term goals (2030).

Re. the scope for carbon farming, we propose that practices that can be implemented within existing production systems and land uses, and thus have high degree of buy-in from farmer/landowner, rank high on the agenda. This includes practices within cropland management, grassland management and (silvo)pastoral systems. We see these as potentially more important than responses that require a shift in land use.

Thematically, certification of carbon-negative approaches could in the future also be supplemented with methane-negative solutions, as eg. upland soils typically are a sink of methane.

There is potential for carbon farming in the norwegian forestry sector. In White paper no.13 (2020-2021) "*Climate plan 2021-2030*" Improved forest management measures like reforestation, tree breeding, fertilization, prolonged rotations and silvicultural activities can increase long term removals by 6,5-8 MTCO₂. In addition there is an unrealized potential for afforestation that is not yet quantified. Norwegian forests at northern latitudes grows slowly, and carbon farming in the forestry sector must have a long term perspective to avoid perverse incentives. Carbon farming in the forestry sector requires an appropriate baseline to demonstrate the additionality of removals. To take advantage of the long-term potential for removals by sinks in the forest sector it is important with immediate action and deployment at large scale. Removals (offset of biogenic carbon in geological structures) of carbon from bioenergy with carbon capture and storage (BECCS) should be accounted for separately. Otherwise it will be difficult to distinguish between measures for reduced emissions (like CCS) and carbon removed from the carbon cycle (BECCS). A separate account for biogenic carbon is needed for BECCS and sequestration in soil (biochar).

Additional comments on BECCS and DACCS.

We believe that the main avenues for BECCS are:

- Pulp and paper industry produce energy by burning waste products from forestry. The process can be fitted with CCS, leading to CDR. Three such projects are under consideration in Norway, and we believe probably many more in Sweden and Finland.
- Waste incineration in waste-to-energy-plants or cement and lime kilns result in a mixed CO₂ stream of bio-CO₂ and fossil CO₂, and CCS will lead to CDR. This is the case in both capture projects in the Norwegian "Longship" full scale CCS-project, which is currently under construction. Several similar CCS-projects are also under consideration in Norway.
- In pyrometallurgical processes, such as the production of ferroalloys, biomass and coking coal are used in combination as reducing agents, resulting in a mixed CO₂ stream of bio-CO₂ and fossil CO₂. Norwegian industry is planning to increase the use of biomass to reduce their emissions, while at the same time exploring CCUS. At least three such projects are under consideration in Norway.

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- Production of biogas, bioethanol and other liquid biofuels and chemicals often result in large streams of concentrated CO₂ that can easily be captured and stored, but the facilities lack any incentive or regulatory framework to do so. To our knowledge, most of these facilities do not report the CO₂ emissions, so they are not even part of national inventories.

At least five DACCS-projects are active in Norway, some of them targeting megaton sized capture plants before 2030. They plan to utilize the same infrastructure for CO₂-transport and storage that are under construction on the Norwegian continental shelf, as well as waste heat from EU-ETS installations, and renewable energy or natural gas with CCS. Large DAC-installations will have far higher energy needs than the 20MW capacity limit in the EU-ETS, so they might become EU-ETS installations in their own right.

Most CCS-projects we know of are planned to reduce emissions from EU-ETS facilities, and many plan to capture CO₂ from a stream resulting from co-firing of biomass and fossil fuels. Bio-CCS will therefore be indirectly covered by the MRR-regulation for these projects.

Moreover, to our knowledge, existing and planned CO₂-storage sites are - or will be - EU-ETS installations. Storage of CO₂ from BECCS and DACCS projects therefore indirectly be covered by the MRR-regulation. Transport using pipelines are covered by the EU-ETS now, and all types of transportation of CO₂ to a storage site is suggested included in the future. The transport of CO₂ from CDR-projects will therefore indirectly be covered by the MRR-regulation if they share infrastructure for intermediate storage and transport with EU-ETS installations.

It is our view that:

- CDR involving geological storage at storage sites permitted under the CO₂-storage directive leads to permanent removal of a known quantity of CO₂ with very stringent rules for monitoring, reporting and verification already in place.
- CDR involving geological storage is very closely connected to the EU-ETS. Transport, storage, and most of the capture projects will be EU-ETS installations.
- The regulatory framework for industrial CDR is thus already in place. Relatively small adjustments in the relevant directives and regulations should suffice.
- The regulatory uncertainty around bio-CO₂, and the complete lack of incentives for all forms of industrial CDR, is emerging as a considerable barrier to CCS projects in Norway. It is a matter of urgency to sort this out.
- BECCS, DACCS and CCS in general still need a supporting framework to drive the deployment necessary to reduce costs by scale and learning-by-doing, to bring down other barriers such as coordination problems and asymmetrical information, and to mature the market for these vital climate mitigation technologies. We believe that an accumulated capacity of 10-20 million tonnes CO₂ per year in Europe will be sufficient to bring the costs for BECCS and industrial CCS in general down to the EUA-price range. We have limited knowledge of DAC-costs, but most sources seem to believe that they will have a higher price point, and the technologies are also much less mature (TRL6 and less). It is reasonable to expect that DAC-projects will need a stronger supporting framework for longer than BECCS and industrial CCS.