

# EU 2040 – Incorporating Negative Emissions and Improving Incentives for Circularity

In addition to Stockholm Exergi's response to the web-questionnaire, this submission is a separate contribution focusing on how to integrate permanent negative emissions in the EU's climate structure as well as better ways to report and account for emissions from waste incineration.

## Introduction

The need for negative emissions – land-based as well as technological – is now well accepted. Without them, it is, according to IPCC, for all practical purposes impossible to reach the objectives of the *Paris Agreement*. The challenge is that the volumes needed require a new gigatonne industry to be built with unprecedented speed. At the same time, efforts to reduce emissions must not be compromised. Furthermore, the future of current removal methods that exist at scale are uncertain, since land-based methods (*e.g.*, carbon farming) are themselves impacted by global warming.

From this perspective, a main question is how negative emissions should be integrated into the EU's climate framework to maximize the potential for success, both in terms of achieving climate targets and in terms of ensuring that the emerging industry for permanent negative emissions gets the right conditions to grow and deliver the necessary volumes in time. To answer this question, a range of perspectives are addressed in this note, with focus on the role of permanent negative emissions. In addition, ways to improve the incentives for waste minimization and circularity are addressed by rethinking how waste residual volumes are treated in reporting and accounting by member states and corporations.

## Summary and recommendation

1. *Make permanent negative emissions a pillar in its own right, and keep removals and reductions apart.* In parallel to ETS, ESR and LULUCF, the EU should set up a new pillar with binding targets for permanent negative emissions, based on the need to neutralize projected hard-to-abate emissions outside the land sectors, to reach EU climate targets 2035, 2040, 2045 and 2050. Emission reduction trajectories must be protected.
2. *Make landfills a part of ETS and report waste-based emissions upstream in the value-chain.* Waste landfills should be integrated into the EU ETS from 2030, and emissions from waste incineration with energy recovery should be reported by the waste sector, not by the energy sector, to better promote waste minimization and circularity.

## Estimate how much is needed

The first step is to make a proper assessment of the need for negative emissions. This should be done per economic sector and country.

In this analysis, the hard-to-abate emissions should be estimated. Since "hard-to-abate" is a non-scientific concept which may be impacted by political preferences, it is important that a range of scenarios are considered and that a conservative approach is applied.

It is almost impossible to produce too many negative emissions considering the global need and the opportunity to trade in negative emissions with other regions. However, producing too few would clearly come with the risk of failing to meet the overall climate target of the EU.

In assessing the need, it is important to be clear about what type of removals are used for what purposes. Considering the difference in permanence, it is recommended that a clear distinction is made between the need for land-based removals and the need for permanent technical removals.

Land-based removals should only be used to counterbalance the AFOLU sector, where removals are prone to reversals. Permanent technical removals should be used to address all other hard-to-abate emissions.

In working out the scenarios, the EU should be realistic about the long-term capability of the land-based sectors to deliver high volumes of removals. Even if the use of biomass for different purposes is not going up, increasing temperatures and drought will likely have a dampening impact on the land-sector's ability to deliver removals in many regions. Furthermore, managed as well as unmanaged forests will trend towards a state of balance where they will become carbon stocks rather than carbon sinks.

Considering the amount of emissions in ETS, ETS2 and non-AFOLU sectors still not covered by the emission trading, Stockholm Exergi believes that the amount of permanent negative emissions needed for non-AFOLU sectors is in general underestimated.

## Set independent removal targets and create a new pillar for permanent negative emissions

Based on the assessment of how much removals are needed, the next step is to set targets. Such targets could preferably be set for milestone years 2035, 2040, 2045 and 2050. These targets should, from a demand perspective, be specified per member state, while the supply need not to come from the same countries at the same quantities.

The importance of setting independent removal targets for the land-sector (AFOLU) and the technological sector is founded on the need to protect the EU's emissions reduction path and at the same time create a very clear demand signal to the industry, in addition to the signal coming from the voluntary market, to attract the necessary capital to the technological removal sector.

Keeping land-based removals and technology-based permanent removals separate, targets for the latter should, in terms of the EU climate structure, be set in a new pillar of its own, in addition to ESR, ETS and LULUCF. This should be done irrespective of how the permanent removals are reported in the UNFCCC or in other contexts.

Stockholm Exergi supports the transition from LULUCF to AFOLU, where the land-based removals would reside and impact the net position. However, this must be done at a time and in a way such that achievable emission reductions in the agricultural sector are realized. Nations with a net negative AFOLU position (net sink) should be entitled to compensation for their contribution to other nations whose AFOLU sector is a net positive emitter of GHG emissions.

Consequently, the permanent negative emissions should not be used instead of meeting the targets and trajectories set out within the ETS, ESR and LULUCF/AFOLU pillars. Of course, at the different milestone years, the actual net position of the entire EU would be a sum of the now four pillars. However, a possible failure to meet the targets in any of the pillars should remain identifiable as a failure and not be excused by

the performance in any of the other pillars, beyond what is already allowed in today's flexibilities. Ideally, current flexibilities should be reduced.

## Approaching hard-to-abate emissions

As far as possible, all non-land-sector emissions should be included in an emission trading framework, like the ETS or ETS-2, while free emissions allowance allocations are being phased out as CBAM is being phased in. At the same time, the yearly reduction factor of emissions allowance progresses that emissions in the system will reach zero before 2040.

Of course, that scenario by itself is untenable, and the availability and price of emissions allowances would bring European industry to a halt. It is assumed that this is not the intention. It is also assumed that the intention is not to reduce the reduction factor as part of the 2040 overhaul. Rather, it is assumed that at one point, permanent negative emissions will be introduced as a complement to emissions allowances, eventually replacing them entirely.

The logical point for this switch is when the emissions reach the hard-to-abate level, where applying permanent negative emissions to counterbalance remaining emissions should be more cost efficient than further, marginal abatement. It is beyond the scope of this paper to suggest exactly when that point in time will occur, how a transition phase may look, and whether the introduction of permanent negative emissions should be differentiated by sector.

While these questions are likely to be at the center of the EU climate debate for many years to come, this paper wishes to stress that before those questions are resolved, it should first be agreed that permanent negative emissions should have a target pillar of its own to clearly define the volume need for these instruments, to attract the necessary capital and to protect the integrity of the existing emission reduction paths.

## Funding of permanent negative emissions

In the time-window leading up to 2030, the funding of permanent negative emissions will be based on grants, like the EU Innovation Fund, government aid and revenues from the voluntary market. Considering the enormous task ahead of the EU and nations to secure a just and equitable decarbonization, the need for investments in adaptation measures in vulnerable areas and the need to continue to support the developing countries in their transition, it should be an essential objective to ensure funding models where nations and corporates can co-fund the necessary investments in permanent negative emissions. This is particularly important right now since the industry for permanent negative emissions is in a critical build-up phase where no compliance measures have yet been introduced.

Such models must by necessity allow corporations to acquire permanent negative emission certificates to reach their net-zero targets, while host nations (that may have provided subsidies to stimulate the production of the permanent negative emissions and the associated certificates) also aggregate the outcome to reach their national target allocations in the new, fourth pillar. The critical question of claims is further addressed in another paper in response to the concurrent EU consultation on Green Claims (<https://beccs.se/about-beccs-stockholm/documents>).

Please note that the voluntary market's desire to acquire permanent negative emissions is in line with the polluters pay principle, thus shifting the burden from the general taxpayer to the actors wishing to take responsibility for their emissions.

In the medium to long-term, it is expected that compliance measures will be essential to fund the full volume of permanent negative emissions. However, it is also expected that the voluntary market will continue to demand permanent negative emissions notwithstanding the emergence of a compliance market, in order to meet the desire of corporations to reach net-zero throughout their value chains.

## Phase out landfilling through material recovery and energy recovery with CCUS

The potential for material recycling is great, but even if high ambitions are met, there will nonetheless be considerable volumes of residual waste and rejects of various kinds that need to be treated. The options remaining for these residuals are landfill or waste incineration, with landfill for MSW being limited to 10 percent by 2035 (1999/31/EC).

By 2030 landfills should be included in the ETS since they represent important points of GHG emissions. In addition, further reductions of MSW and C&I landfill levels should be envisaged to improve resource utilization.

It is difficult to calculate the size of the volumes of residual waste that will need to be treated by 2040, but a reasonable estimate is about 30-40 million tonnes annually. These residual waste volumes represent a potential low carbon energy resource of around 100 TWh of steam (heat and/or electricity). A general shift to waste incineration with CCS would also reduce GHG from landfilling. At the same time, the biogenic fraction in the residual waste would result in significant volumes of permanent negative emissions if CCS is applied.

To maximize waste minimization, sorting and recycling, this development should be accompanied with a change of the reporting of the emissions from waste incineration with energy recovery such that they are reported in the waste sector by nations, not the energy sector. In the framework of GHGP reporting and accounting rules for corporations, the implication of this would be that emissions of waste incineration would still be reported in Scope 1 by the incinerator, but rather than placing these emissions in Scope 2 with the companies acquiring the recovered energy products, it would be placed with the corporations producing the waste. Today's set-up does not fully incentivize a circular economy since waste incineration is at the end of the value-chain, with limited possibilities to impact the behavior of previous links of the chain.

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