



Future of emissions trading in the EU

Report n°5 : Agriculture

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1. Background

- The authors of the report acknowledge wide range of regulatory options available to decarbonise the agri-food sector.
- This report focuses specifically on one such option: a cap-and-trade system. Other options that need to be evaluated such as domestic offsets and product standards have not been considered, especially in relation to a cap and trade system. This is an analysis that is a “necessary condition” before making a policy decision on how to address agricultural emissions.
- We argue that a cap-and-trade approach warrants further discussion and the report introduces new arguments that have not been addressed in existing publications.
- The report examines the legislative context for an agricultural emissions trading scheme (AgriETS), explores its potential benefits and barriers, and outlines key considerations for its effective implementation.
- A set of recommendations is provided at the conclusion of the report.

1. Background

1.1. Status of Agriculture Emissions in the EU

- Agriculture was responsible for 11.58 % of EU's emissions in 2023, with 365 MtCO₂eq [1]. The sector's absolute emissions, after not significantly decreasing between 2005-2022, have seen a decreasing trend in the last two years (3.35 % and 0.74 % year-to-year decrease) [2].
- Carbon intensity decreased on average 6% in 25 EU MS (2000-2018), driven by productivity and efficiency gains. Absolute emissions do not reflect this reduction in intensity, as it was offset by an increase in agricultural output during the same period [3]
- GHGs emissions in agriculture can be attributed to three main types of activities:
 - Farm production activities (crop and livestock),
 - Land use change (such as deforestation and peatland drainage); and
 - Pre-/post-production processes (retail, consumption, and disposal).
- **CO₂ and non-CO₂ emissions:** 50% of agricultural GHGs come from livestock, mainly CH₄, 36% GHGs comes from nutrients in soils, mainly N₂O used in applications of chemical fertilisers, including emissions from manure application, and 14% GHGs from land use change, mainly CO₂ from peatlands and carbon sequestration on cropland and grassland [4].

[1] Of which NH₄ makes up 62.7%, N₂O 34.76% and CO₂ 2.54%.

[2] [EEA \(2025\)](#), EEA greenhouse gases - data viewer [WWW Document]. European Environment Agency. URL accessed (29.09.2025)

[Ercst.org](#) [3] [ECA \(2021\) Common Agricultural Policy and climate](#). Half of EU climate spending but farm emissions are not decreasing. Special Report 16/2021. Figure 2 Key sources of greenhouse gas emissions (in CO₂eq). Pp.7.

1. Background

1.1. Status of Agriculture Emissions in the EU

- **Overall**, 55% of the EU's methane emissions came from agriculture in 2019 - from livestock's enteric fermentation, and from manure management. Similarly, 73% of the EU's overall N₂O emissions were also a source of the agricultural sector in 2019, mostly caused by the application of nitrogen fertilisers to the soil, both for food crops and feed crops for livestock.
- **Projections**: Without additional measures at a BAU, MS project that their agricultural emissions will increase from 2023 levels until 2030 [1].
- **Installation numbers**: In 2019, there were, in the EU, more than 41,000 farmer producer organisations of which 22,000 are cooperatives [2]. In 2020, there were 9,1 million farms in the EU.
- Across the food value chain, the only current coverage by EU ETS1 is at the Food and Drink producer level, where GHG emissions associated with combustion activity covered by EU ETS. This only concerns combustion units with a total rated thermal input of more than 20MW (mainly boilers, dryers, furnaces and heating equipment) [3]. The agri-food value chain is highly fragmented, comprising millions of small farms. It is also complex and interlinked, spanning farmers, processors, retailers, and consumers. Moreover, there is little familiarity with emissions trading within this sector.
- The agriculture sector's ability to reduce emissions and meet decarbonisation objectives, depends on its capacity to remain productive under changing climate conditions, such as droughts, seasonal changes, floods etc. Strengthening resilience to these impacts is essential to achieve a decarbonised food-agri value chain [4].

[1] [EEA \(2024\)](#), Greenhouse gas emissions from agriculture in Europe

Ercst.org [2] [Amat, L., et. al \(2019\)](#), Study of the best ways for producer organisations to be formed, carry out their activities and be supported.

[3] [Ricardo Energy & Environment \(2021\)](#), Decarbonisation road map for the European food and drink manufacturing sector

[4] [European Scientific Advisory Board on Climate Change \(2024\)](#), Towards EU climate neutrality: Progress, policy gaps and opportunities; Assessment Report 2024.

1. Background

1.2. Current EU Agriculture legislative coverage

1.2.1. European Climate Law

- “All sectors of the economy – including (...), agriculture, (..) irrespective of whether those sectors are covered by ‘EU ETS’ – should play a role in contributing to the achievement of climate neutrality”. Recital 7.
- The European Commission draft communication on the 2040 EU climate target indicated that with the right policies and support, there is a potential to reduce non-CO₂ GHG emissions in the agriculture sector by at least 30% in 2040 compared to 2015.

1.2.2. Common Agricultural Policy

- The CAP’s general objective is to supply affordable food to EU citizens and guarantee a fair standard of living for farmers, while preserving the environment and its natural resources.
- Despite these stated aims, the allocation of CAP resources reveals only a limited orientation toward climate change mitigation. For the 2023–2027 programming period, approximately 75% of Pillar I expenditure and 65% of Pillar II expenditure remain directed towards agricultural practices that do not directly contribute to emission reductions. Pe’er et al. (2022) observe that the CAP reinforces the existing greenhouse gas–intensive farming systems, rather than steering their gradual transformation [1].

1. Background

1.2. Current EU Agriculture legislative coverage

1.2.2. Common Agricultural Policy

- More recently, Scheid et al. (2025) [1] note that although the CAP provides financial support through mechanisms such as eco-schemes, agri-environment-climate measures, investment support, and coupled income support, their application to livestock-related emissions has been minimal. Out of 51 relevant interventions identified across 5 Member States (MS), only 4 had the potential to directly reduce emissions, while 25 were assessed as indirectly contributing. Budgetary allocations further illustrate this imbalance, with more than €9 billion directed toward coupled support for livestock, compared to less than €3 billion devoted to measures with potential climate mitigation benefits.

1.2.3. Effort Sharing Regulation

- ESR covers all non- emission trading system emissions, except LULUCF. Around half of the non-CO₂ emissions in the EU come from the agriculture sector. Non-CO₂ emissions from agriculture sector under ESR accounted for around 400 MtCO₂eq in 2023.

1.2.4. Regulation on land, land use change and forestry (LULUCF)

- The goal of the LULUCF regulation is to ensure the accounting of LULUCF emission and removals in the EU, and to increase the land sector's capacity to act as a “carbon sink,” with the EU MS collectively aiming to remove 310 MtCO₂eq by 2030.

1. Background

1.3. Timeline and potential developments

1.3.1. 2040 Target and social implications

- The Commission has proposed a 90% net GHG reduction by 2040 compared to 1990, setting the framework for all major sectors, including agriculture, in the decade after 2030. This target will guide the next NDC ahead of COP30. Social acceptance will be decisive. Costs for reducing agricultural emissions will ultimately have to be borne somewhere, either along the food value chain, either by consumers or socialised. Transparency about “who pays” is essential. Predictability in policy and the distribution of costs will be key factors for how a policy for reducing agri emissions, such as an AgriETS, is received.
- The 2040 target thus provides the timeline, but the resulting policy instruments will determine whether agricultural carbon pricing is workable and socially acceptable.

1.3.2. Agriculture, Forestry and Other Land Use (AFOLU)

- Non-CO₂ emissions from land-use practices in agricultural are regulated under the ESR, while CO₂ emissions or removals in agricultural are reported under the LULUCF. Both policies expire in 2030 and the post-2030 policy framework is still to be determined.
- In 2021 the EU proposed to expand LULUCF to non-CO₂ emissions from agricultural sector, starting from 2031. This new sector, AFOLU, combined the emissions of the land sector with emissions of agriculture. In addition to national binding land sector targets, it proposed the establishment of an emission trading system in the EU unique to the land sector, complete with a fund to purchase certified land-based credits and agriculture emission reduction targets. It failed to pass to the final legislation.
- The AFOLU sector has being brought up once again in discussions surrounding the post-2030 climate change policy framework.

1. Background

1.4. Existing international context

1.4.1. Paris Agreement

- The Paris Agreement, in its preamble states “the fundamental priority of safeguarding food security” whilst also calling for “low greenhouse gas emissions development, in a manner that does not threaten food production” [1].
- This framing recognises both the need of implementing regulation to reduce agricultural emissions, but also how its design needs to be in such a way that does not undermine food security. Any policy for AgriETS needs to take this delicate balance into account.

1.4.2. The example of New Zealand

- New Zealand had intended to add agriculture to its ETS from 2025, covering emissions of CH₄ and N₂O from livestock and fertiliser use. However, following a change of government in 2024 and strong opposition from farming stakeholders, agriculture was permanently excluded, with fertiliser producers and processors also exempted.
- This reversal in policy showcases how challenging and complex it is to integrate agricultural emissions into an ETS, without facing resistance and ensuring long-term viability.

2. State of play: Climate Policy for Agriculture

2.1. European Commission feasibility study

- In 2021 the European Court of Auditors (ECA) tasked the EC to come with a study to analyse the feasibility of extending ETS to agriculture after 2030.
- The study was published in 2023 by Trinomics [1]
 - EU agriculture sector value chain: Fertilizer producers, farmers, food processors.
 - Options: 1) Upstream, 2) Farm level, 3) Downstream.
- A follow up report was announced by the commission but is yet to be published [2].

2.2. Strategic Dialogue on the Future of EU Agriculture

- The report on ‘Strategic Dialogue on the Future of EU Agriculture’ “calls on the European Commission to further work with stakeholders and experts to assess the feasibility and relevance of such a system”. With a view to addressing a number of “fundamental concerns” [3].

2. State of play: Climate Policy for Agriculture

2.3. ESABCC recommendations

- In its recent assessment [1], the ESABCC recommended that the EU progressively extend its greenhouse gas pricing regime to all major sectors, including agriculture, food and LULUCF. Recommendation 13 highlights that leaving these sectors outside carbon pricing creates a major policy gap, given their significant share of non-CO₂ emissions and their potential to deliver carbon removals.
- For agriculture, the ESABCC stresses the importance of preparing now for the introduction of pricing instruments after 2030. These should provide a signal that will force reductions in methane and nitrous oxide emissions while also encouraging carbon sequestration through practices such as carbon farming, agroforestry, and sustainable land management. At the same time, the Advisory Board notes that the design of such instruments must take into account the specific characteristics of the sector:
 - the complexity and cost of monitoring agricultural emissions,
 - the presence of unavoidable biogenic emissions,
 - the balance between reductions and removals, and
 - the risk of carbon leakage and competitiveness impacts.
- The ESABCC also underlines that any pricing scheme should be embedded in a broader policy framework (aligning carbon pricing with reforms of the Common Agricultural Policy, and aligning with the Farm to Fork Strategy).
- What the ESABCC does not refer specifically to are changes in lifestyle, traditional foods and general impact on the quality of life as EU citizens have traditionally understood it to be, especially those in rural areas and the inherent value of cultural identity with food production which should not be impacted. Respect for traditional values should also be considered for Europeans, not only when it comes to other cultures.

2. State of play: Climate Policy for Agriculture

2.4. Danish GHG tax on agricultural production

- In 2023, Denmark adopted a tripartite agreement between government, industry, and farming organisations to introduce a greenhouse gas tax on agricultural production. This makes Denmark the first country to implement such a measure, with application beginning in 2030. The agreement is intended to ensure that agriculture contributes to national climate targets while maintaining food production, livestock numbers and competitiveness. It does not directly impose cultural, dietary and traditional cultural changes on the population but will likely do so indirectly. The main elements of the Danish model are:
 - Base deduction: 60% of agricultural emissions are recognised as unavoidable. Farmers are taxed only on the remaining 40%, reflecting the limited short-term mitigation potential of biogenic emissions, particularly methane.
 - Phased introduction: The tax will start in 2030, providing several years for farmers to prepare, adopt new practices, and integrate new technologies.
 - Revenue recycling: Revenues from the tax will be reinvested into the agricultural sector to support innovation, deployment of low-emission technologies, and the broader farm transition.
 - Peatlands: A two-step approach applies to emissions from drained peatlands. Voluntary support schemes are available to incentivise rewetting. From 2028, a tax will be introduced on remaining emissions where voluntary measures have not been adopted.
 - Differentiated potential: The system acknowledges that mitigation options vary across farm types, with intensive livestock systems offering more technical possibilities for reduction than extensive or pasture-based systems.
- The Danish model reflects an attempt to balance climate action with food security, livestock numbers, and rural livelihoods. It was designed in response to growing pressure to ensure that agriculture contributes to national climate goals, while avoiding abrupt production losses or relocation of farming outside Denmark. The phased approach, base deduction, and revenue recycling are intended to make the system workable for farmers and politically sustainable.

3. Why Agriculture in carbon markets?

- Agriculture plays a unique role in carbon markets: it is both a significant source of non-CO₂ emissions and one of the few sectors capable of delivering large-scale carbon removals. While traditionally outside emissions trading systems, its integration is increasingly debated as the EU moves toward its 2040 climate goals. Bringing agriculture into carbon markets could not only address a major policy gap but also unlock new incentives for farmers to adopt climate-friendly practices and innovations.

3.1. Benefits

- Carbon pricing is one of the most effective policy instruments to tackle climate change, however, the benefits for establishing an AgriETS vary depending on the policy design choices.
- **Cost effectiveness.** Having agriculture emissions linked with the EU ETS enables emissions abatement to happen where it is least costly, thus reducing the aggregate cost of decarbonisation in the EU ETS. If agricultural emissions are not reduced other sectors such as transport and industry will need to deliver beyond what is cost-effective with the risk of hampering industrial competitiveness. Therefore, this is likely the best way, at an EU wide level, depending on its impact on EU citizens.
- **Price signal:** By attaching a price to agricultural emissions, the ETS provides a price signal that incentivises investment in technological innovations and decarbonisation. Measures for decarbonisation in the agri-food sector can bring with them, complementary benefits. More fertile soils, more water retention, less exposure to water scarcity and a more diverse income stream.
- **Liquidity:** Integrating agriculture into an established EU ETS system increases both the supply of the traded commodity, and market participation, therefore providing much needed liquidity in the EU carbon market post 2030. This benefit depends on the number and trading experience of agricultural installations and the amount of GHG emissions, that are integrated.

3. Why Agriculture in carbon markets?

3.1. Benefits

- **Carbon Removals:** Agriculture is a sector with a potential to supply additional high-quality removals. Carbon removal credits generated in the AgriETS could be exported to support the decarbonisation of sectors covered.
- **Additional Income for Farmers:** An AgriETS could set a business case for farmers and landowners to invest in carbon removals with a view to exporting credits to the established ETS. Carbon farming can create a new revenue stream for farmers by adopting practices such as improved soil management, agroforestry, and restoration of degraded lands. This provides a tangible financial incentive that complements food production and helps build financial resilience.
- **AgriETS revenue:** Revenues generated by the AgriETS could be recycled to finance farmers' decarbonisation and invest in carbon sequestration projects on agriculture. A carbon price for EU agriculture could trigger 229.6 billion EUR between now and 2048 [1]. Revenues could be linked with the CAP to enhance the budget of an already established agricultural financial tool.

3. Why Agriculture in carbon markets?

3.2. Barriers and Risks

3.2.1. Impact on the Agri-food production

- Agriculture is not only an economic sector but also a way of life for 17 million EU citizens [1], it is an existential condition for rural communities, and any measure perceived as undermining farmers' ability to farm is likely to face strong political and social resistance. Farmers in the EU, who already face tight margins and weaker bargaining power, have already expressed strong concerns regarding the impact of new climate measures on their livelihoods. The widespread farmers' protests of 2024 highlighted the sector's perception that additional regulatory or cost burdens could threaten farm viability at a time when the number of farmers in the EU is already declining.
- An emission trading system by design, is geographically agnostic, meaning that the location of abatement is irrelevant so long as the emission reduction is achieved at least cost. Unlike energy or industrial production, agricultural activity is not readily transferable or substitutable across regions, as it is a pillar for food security, rural livelihoods, and socio-economic cohesion. A purely emission-efficiency-driven relocation of production would be perceived as politically untenable and economically distortive. Fair competition between MS needs to be ensured, as agriculture stakeholders are unlikely to accept agricultural production decreasing in one part of EU and production increasing in other parts.

3. Why Agriculture in carbon markets?

3.2. Barriers and Risks

3.2.1. Impact on the Agri-food production

- An additional impact to consider is on the cultural value of food linked to national identity. It is not only about food security, but about which food is available. Food is not a fungible commodity, a purely emission-efficiency driven AgriETS is agnostic to whether agri-food products remain economically viable and does not account for the preservation of traditions, local heritage and cultural identity embedded in products. An AgriETS model needs to recognise the inherent value of maintaining Italian salumi production in Italy, ensuring French cheeses remain affordable to French consumers, or safeguarding Spanish wine traditions within Spain. For feasibility these risks on agri-food production have to be taken into account.
- Any new policy should balance the emission reduction gains with the economic viability of maintaining agri-food production. Demand for food is expected to increase. Similarly, demand for biomass and biomaterials (such as biogas) is also at an upward trend, which notably can serve as a key enabler for decarbonisation in other sectors. A feasible policy solution implies reducing emissions and not only, maintaining EU food production but producing even more with less. An AgriETS should not jeopardize EU-based food production.
- Predictability is essential for the farming industry. Farmers operate with long investment cycles and high exposure to global market volatility, which means that regulatory uncertainty can undermine their ability to plan production and invest in innovation. Stakeholders have questioned whether an AgriETS would provide such predictability or instead add a new layer of complexity. Similarly, if an AgriETS only leads to additional financial, labour, time and resources costs, then it will not function as intended, and uptake will be minimal. It is paramount that an AgriETS comes with its benefits.

3. Why Agriculture in carbon markets?

3.2. Barriers and Risks

3.2.2. Impact on food prices and public acceptance

- Agriculture is a strategic sector for the EU economy, with multiple interactions across the value chain and with a direct impact on final consumers through the price and availability of food. Unlike other ETS-covered sectors, the agri-food sector's high level of interdependence means that carbon pricing or regulatory measures could have impacts that cascade through supply chains, affecting production processes, farms, processors, retailers, and ultimately consumers.
- Introducing an AgriETS would therefore risk raising food prices, with potentially significant consequences for public acceptance. Any perception that climate policy is driving up the cost of basic food staples could trigger strong political and social resistance, especially in a context where farmers are already under pressure and citizens face higher living costs.
- Similarly, impacts on current dietary preferences of EU citizens could be significant. Changes in the availability or affordability of staple local foods will disrupt established consumption patterns. This is especially important when considering food of cultural or traditional significance. Any expected shifts need to be clearly communicated to the public, as failure to do so could undermine acceptance of the system and compromise its overall feasibility. For an AgriETS to succeed, transparency regarding the implications for consumer diets and behaviour is essential

3. Why Agriculture in carbon markets?

3.2. Barriers and Risks

3.2.2. Impact on food prices and public acceptance

- Economic analysis reveals that the cost of transitioning to more sustainable agriculture in the EU is estimated to be in the range of €28-35 billion for the first year and expected to decrease with time [1]. However, the same study concludes that the cost of inaction is far greater at around €50 billion annually. This underlines both the importance of action but also raises sensitive questions about who should bear the costs of the transition. How should the financial burden be distributed across farmers, processors, retailers, and consumers?
- Concerns over food security are also prominent. Higher costs could reduce the competitiveness of domestic production, potentially increasing reliance on imports and leaving the EU more exposed to global market volatility. Whilst there is no short-term threat to the availability of food in Europe, the long-term outlook is uncertain in light of geopolitical and economic volatility. Food production has also become an instrument of geopolitical influence, which makes the preservation of production capacity in the EU a matter of political autonomy as much as of economic policy. This aligns more with the broader notion of food sovereignty, which is the capacity to guarantee access to food while retaining control over what is produced and consumed.

3. Why Agriculture in carbon markets?

3.2. Barriers and Risks

3.2.3. Impact on trade and agricultural exports – Carbon leakage

- The EU is a net exporter of agricultural goods, which makes the sector's competitiveness in international markets a central concern. Introducing an AgriETS could increase production costs for domestic goods, which potential consequences on the production levels. If the supply of EU agricultural goods is impacted by the AgriETS, while the demand for high-emission agri-food products remains constant, the climate objectives will be reached in the EU, but will be counteracted by international imports. This dynamic risks emission leakage, as production shifts outside the EU to regions with less stringent climate policies. Such a shift would not only weaken the position of EU farmers and processors but could also undermine global climate efforts by increasing concentration of GHGs in the atmosphere.
- The potential additional costs are particularly acute in livestock and dairy sectors, which account for a large share of export commodities. Smaller livestock and dairy producers could be disproportionately affected, with resulting consequences on EU imports. This concern is especially relevant in the context of an EU-Mercosur trade agreement.
- There is also a broader geopolitical dimension. Higher production costs for EU agricultural products could weaken the competitive position of European exports on global markets. If, in addition, measures such as a carbon border adjustment mechanism were introduced to protect EU producers, this could trigger negative reactions from trading partners, particularly those that export food to Europe. Overall, without accompanying safeguards, an agricultural ETS could create significant risks for EU agricultural exports, both in terms of competitiveness and international relations.

3. Why Agriculture in carbon markets?

3.2. Barriers and Risks

3.2.4. Monitoring, reporting, and verification (MRV)

- MRV for agricultural emissions is considerably more complex than in other sectors. Emissions are highly dispersed across millions of farms, vary by geography and production type, and span different greenhouse gases including CO₂, CH₄ and N₂O. Measuring these emissions with precision is costly and existing methodologies remain underdeveloped and insufficiently harmonised across MS.
- Unlike large industrial installations, agriculture consists largely of small and medium-scale producers, which means that a compulsory MRV system would involve very high administrative and compliance costs, including potentially extensive verification visits. This raises questions of proportionality, especially for smaller farms.
- MRV at the food-producer level is much more feasible, however varying degrees of measurement certainty remains.
- At the same time, the credibility of any agricultural emissions trading scheme depends on having a robust and transparent MRV framework.

3. Why Agriculture in carbon markets?

3.2. Barriers and risks

3.2.5. Unavoidable and biogenic emissions

- A major part of emissions in the agriculture sector cannot be avoided. Determining which emissions are indeed unavoidable is difficult and varies by agricultural practice and geographical location.
- The simplest definition is that ‘unavoidable residual emissions’ are those that persist after all technically available measures have been implemented. However, this varies in light of any technological developments, whereby the technical reduction potential could still change [1].
- Estimates for unavoidable emissions in agricultural are about 60-65% with CH₄ (92%) and N₂O (8%) emissions from enteric fermentation and manure management from livestock. There are only limited mitigation measures available to address these emission sources by technical mitigation measures. For example, the maximum technical mitigation potential of livestock emissions with currently available measures is approximately 25%. 75% of greenhouse gas emissions remain unavoidable. These emissions can only be reduced by lowering livestock numbers, or with shifts in consumer demand for animal products [2].
- Unavoidable emissions also vary strongly by geographical area. High intensity dairy livestock in stables have higher mitigation potential than livestock kept on large areas of land such as the alps.

4. Integrating agriculture in carbon markets

4.1. Proposed models

A central central question for the post-2030 policy framework is how agriculture could be integrated into carbon markets. Several models have been identified, each with distinct implications for environmental effectiveness, market functioning, and political feasibility.

4.1.1. Separate EU ETS and AgETS

- One option is the creation of a separate EU Agricultural Emissions Trading System (AgriETS). There would be no interlinkages between the new AgriETS and the current ETS1 and ETS2.
 - **Design:** A separate ETS for agriculture would institutionalise the distinction between agricultural emissions from industrial emissions, embedding from the outset that these sectors require different treatment. This model would establish its own linear reduction factor (LRF), tailored to the specific mitigation potential of agriculture.
 - **Cost-effectiveness:** This model is the least cost-effective as abatement will not happen where the abatement costs are lowest across sectors.
 - **Liquidity:** Separation prevents the current ETS system from benefitting from additional market liquidity. The AgriETS may struggle with market participation and thin liquidity.
 - **Removals:** Separation prevents the established carbon market from benefitting from additional agriculture removals.
 - **Price Discovery:** Separation does not allow for a cross-sectoral price signal. With less liquidity there will be weak price discovery, as in fragmented systems, carbon prices would reflect the balance of supply and demand within the ETS1 separately from that of the AgriETS.
 - **Other Considerations:** By isolating agricultural emissions from the existing ETS1 and ETS2, it would acknowledge the unique characteristics of biogenic and largely unavoidable emissions, while ensuring that emission reductions in farming are pursued in parallel to other sectors. A separate ETSs would allow for more considerations for the political and economic sensitivities of the agri-food sector.

4. Integrating agriculture in carbon markets

4.1. Proposed models

4.1.2. Linking of AgETS with EU ETS

- A second possibility is a linked system, in which an AgriETS would operate as a standalone market but allow linking with the existing EU ETS under certain conditions or limitations.
 - **Design:** Quantitative limits on the number of allowances allowed to be transferred between the two systems brings certainty on the amount of agriculture allowances allowed into the market.
 - **Cost-Effectiveness:** By creating some level of fungibility, it allows for a level of cost-effectiveness and allocative efficiency, where abatement occurs where marginal abatement costs are lowest, whether in agriculture or in ETS1 sectors.
 - **Liquidity:** Such partial integration could provide some of the much-needed liquidity in the ETS1, especially as allowances approach zero, and scarcity increases. However, this is dependent on what the final design of a linking model would look like.
 - **Removals:** Linking also creates the potential for agriculture to contribute GHG removal allowances to the EU ETS.
 - **Price Discovery:** Importantly, linking strengthens price discovery. With higher liquidity there will be strong price discovery. In a linked system, carbon prices would reflect the balance of supply and demand within the ETS, and the allowances allowed to be transferred from the AgriETS. Linking facilitates the emergence of a more credible carbon price signal that integrates information from different sectors. It also reduces the risks of thin liquidity by broadening the market. This strengthens the ability of the carbon price to guide long-term investment, signalling both where abatement should occur and where innovation is most valuable.

4. Integrating agriculture in carbon markets

4.1. Proposed models

4.1.2. Linking of AgETS with EU ETS

- **Other considerations:** At the same time linkage would also recognise that agriculture is an inherently different sector but still has a role to play in decreasing emissions. It would allow for agriculture to be treated differently and could be shielded from the negative impacts of a carbon market that has been designed for other sectors.
The design details of any linking mechanism will determine whether the arrangement encourages genuine on farm mitigation and innovation or simply bring negative impacts into a sector with limited short term abatement options.
Such integration therefore attempts to balance economic efficiency with political acceptability by allowing differentiated treatment without prohibiting the benefits of an expanded ETS.

4. Integrating agriculture in carbon markets

4.1. Proposed models

4.1.3. Inclusion of AgETS in EU ETS

- A third model would be the full inclusion AgriETS into the ETS1 with agricultural and industrial operators participating in the same carbon market and trading under the same market rules.
 - **Design:** This model would see the ETS expand to include agriculture as another sector in its scope.
 - **Cost-effectiveness:** This approach could maximise cost-effectiveness by ensuring that emission reductions are achieved where the MAC is cheapest across all sectors.
 - **Liquidity:** Full integration maximises the overall liquidity benefits of including agriculture into the EU carbon market.
 - **Removals:** This model would allow the EU ETS to benefit from agricultural removals allowances without any quantitative limits.
 - **Price Discovery:** Importantly, full integration optimises price discovery. In separate or linked systems, carbon prices would reflect separate balances of supply and demand. Full integration removes risks of low participation and thin liquidity, and it would facilitate the emergence of the most credible carbon price signal that integrates information from different sectors. This maximises the ability of the carbon price to guide long-term investment, signalling both where abatement should occur and where innovation is most valuable.
 - **Other considerations:** The efficiency gains would be accompanied by risks. Agricultural emissions differ in their origin and avoidability, and farmers would face exposure to risks without the buffer of sector-specific design features. Concerns have been raised over fairness, equity, and the risk of adverse distributional impacts.

Without carefully designed transitional and compensatory mechanisms, full inclusion could undermine political feasibility and risk eroding trust among stakeholders who view agriculture as structurally distinct from industrial sources of emissions.

4. Integrating agriculture in carbon markets

4.2. Point of Obligation: At which level of the value chain?

4.2.1. Upstream

- In the upstream model, the compliance obligation falls on fertiliser and feed producers and importers, i.e. the first economic actors that place these products on the EU market.
- This approach has the advantage of involving a relatively small number of entities, estimated at around 5,300 manufacturing companies. It could potentially cover up to 57% of agricultural GHG emissions (approximately 220 MtCO₂e), largely those related to the use of nitrogen fertilisers.
- This approach is administratively easier to scale than on-farm regulation while still capturing a substantial share of sectoral emissions.
- Some EU manufacturers are already subject to the EU ETS for their direct emissions and systematically track and report product sales to national authorities. Similarly, importers are already obligated to report product classifications for customs compliance. This provides a framework for an MRV system that covers scope 3 emissions.
- Targeting emissions before they occur on farms generates an indirect carbon price signal for farmers through input costs. Its coverage is limited to emissions from fertiliser use and feed embedded emissions that are bought, it does not directly price emissions arising from livestock, where feed is home-produced.

4. Integrating agriculture in carbon markets

4.2. Point of Obligation: At which level of the value chain?

4.2.2. Down Stream

- Under the downstream option, compliance obligation would be placed on processors and manufacturer of animal products, mainly meat and dairy processors, for the embedded on-farm emissions.
- Estimates suggest that 82% of emissions associated with meat production and 91% of emissions linked to dairy production could be captured with approximately 1,600 processors with 50+ employees. These actors represent a significant share of emissions linked to livestock production and are fewer in number than farmers.
- This model creates a strong incentive for processors to work with their suppliers to reduce emissions intensity and could drive sector-wide changes in production practices.
- There are concerns that costs may cascade down the chain, ultimately being borne by farmers with limited bargaining power, as well as by consumers through higher food prices. It also risks weakening the competitiveness of EU agricultural exports if trading partners do not face comparable costs.

4. Integrating agriculture in carbon markets

4.2. Point of Obligation: At which level of the value chain?

4.2.3. Farm level

- The farm-level option places the obligation directly on farmers, who are the primary source of agricultural emissions. This approach can be designed with sub-options, for example, as per the Trinomics study: covering all GHGs, limiting coverage to livestock and mixed farms, or focusing on peatlands used for agricultural production.
- While this approach could ensure that mitigation is pursued where it is most needed and provides the strongest alignment between emission sources and compliance responsibility, it faces serious challenges of political and MRV feasibility.
- The EU has 9.1 million farms, most of them small, which would make administration and verification highly burdensome. Thresholds may be necessary to exclude very small farms, but this risk leaving significant emissions outside the system.
- There are also questions of proportionality and fairness, as farm-level obligations could place additional costs on farmers who already face declining incomes and limited ability to pass on costs.

4. Integrating agriculture in carbon markets

4.2. Point of Obligation: At which level of the value chain?

4.2.4. Hybrid

- A hybrid model combines mandatory obligations for a limited set of upstream or downstream actors with voluntary market instruments for farmers.
- Farmers could participate in a voluntary market, generating and selling certified carbon removal credits (e.g. certified carbon-farming credits, removal credits), while processors or other downstream actors would face binding compliance obligations for their emissions.
- This would allow farmers to benefit from new revenue streams without subjecting all holdings to compulsory MRV requirements, while still ensuring that substantial emissions are covered by mandatory measures. The hybrid approach could provide flexibility and reduce resistance from the farming sector.
- It also raises questions about market integrity. The interaction between voluntary credits and compliance obligations would need to be carefully designed to avoid double counting and ensure additionality.

4. Integrating agriculture in carbon markets

4.3. What type of emissions?

- A further design choice concerns which types of agricultural emissions should be included in an AgriETS. Unlike industrial or energy sectors, agriculture is characterised by a mix of CO₂ and non-CO₂ gases, with methane from livestock and nitrous oxide from soils representing the majority of emissions. Including CO₂ and non-CO₂ emissions in an AgriETS creates a new precedent.
- While a comprehensive approach that covers all emissions would provide the broadest coverage, a large share of biological emissions are considered technically unavoidable in the short and medium term. Applying a uniform carbon price to sources over which farmers have limited control raises concerns about proportionality and effectiveness.
- One option is therefore to focus only on emissions that can be reliably measured and where mitigation options already exist, such as nitrous oxide from fertiliser use and methane from manure management. Another approach is the use of a base deduction model, which excludes a fixed percentage of emissions recognised as unavoidable. This model is already being introduced in Denmark, where livestock emissions will be subject to a 60% deduction from 2030, based on average methane and nitrous oxide emissions per unit of livestock. Such an approach recognises biological limits to emission reductions, while still providing an incentive to adopt innovative practices and technologies
- A clear definition of which emissions are considered unavoidable, and agreement on how to apply deductions across different farming systems and regions, will be essential.
- The 60% is calculated with the same baseline year and is based on the average emissions of cows and pigs and is per unit of livestock not per farmer or farm.

4. Integrating agriculture in carbon markets

4.4. What is the role of GHGs removals?

- Agriculture has potential to bring GHG removals into the EU's carbon market. It offers significant potential for removing CO₂ from the atmosphere via soil carbon sequestration, agroforestry, restoration of peatlands and ecosystems, biochar, and other so-called carbon farming practices. Properly managed soils, grasslands, hedgerows and biomass can store carbon over long periods.
- Recognising removals within an agricultural emissions trading system could create a new supply of certified credits, supporting the EU ETS sectors' decarbonisation.
- For farmers, this would also open up new income streams by rewarding practices that capture and store carbon. Linking financial incentives to on-farm practices could make participation in such a system more attractive and increase public acceptance, as the benefits would be directly visible to those who implement the changes.
- At the same time, MRV for removals in agriculture with sufficient precision presents methodological and governance challenges.
 - Removal activities must be measured, reported, and verified with the same level of rigour as emissions, including safeguards to ensure permanence, additionality, and avoidance of double counting. For example, soil carbon is spatially heterogeneous and responds slowly.
- To maximise the role of removals in EU agriculture, policy needs to align incentives (CAP, taxes, subsidies, payments for ecosystem services), and carry out pilot and demonstration projects to build trust and knowledge. Finance must flow to support farmers in making transitions, absorbing some of the risk.

4. Integrating agriculture in carbon markets

4.5. Agricultural exports

- Given the risks to competitiveness and potential carbon leakage identified earlier, the design of an agricultural emissions trading system must consider how to safeguard Europe's role as a food producer and exporter while still achieving emission reductions. Several options are available to mitigate these risks.
- One option is the use of free allocation of allowances for sectors or products that are highly exposed to international competition. This could help prevent production shifting outside the EU, at least in the initial phases of an AgriETS. However, free allocation must be carefully designed to avoid weakening incentives for emission reductions.
- Another option is to apply a CBAM to agricultural goods, ensuring that imports face a comparable carbon cost. While this would create a level playing field, such an extension of CBAM would be politically sensitive and could trigger opposition from key trading partners. It would also raise technical challenges, such as how to calculate embedded emissions in diverse agricultural products.
- A more indirect approach is to combine targeted support for farmers and processors with carbon pricing, so that investments in low-emission practices and technologies are actively encouraged. This would reduce the competitiveness gap between EU and non-EU producers by lowering compliance costs within the EU itself.

4. Integrating agriculture in carbon markets

4.6. MRV

- Addressing MRV challenges is essential for the credibility and feasibility of any agricultural ETS. Several design responses have been identified to reduce complexity and cost while maintaining robustness.
- One option is to focus MRV requirements on emissions that are measurable and reducible, such as nitrous oxide from fertiliser use or methane from manure management, while avoiding excessive monitoring of sources that are difficult to quantify at farm level.
- Thresholds and proportionality measures could help to reduce the burden on very small farms, ensuring that compliance responsibilities fall primarily on larger or more intensive holdings where emissions are more significant.
- Investments in digital monitoring infrastructure and harmonised methodologies across the EU would also play a central role. For example, networks of telemetric stations and farm-level digital tools could reduce verification costs and improve data consistency. Harmonisation of emission factors and MRV protocols at EU level would further ensure comparability across Member States.

5. Recommendations (1/3)

On proposed models

Recommendation 1: A stepwise and transitional approach to models

- An AgriETS model should begin with linked or parallel systems (e.g. a separate AgriETS or linked model) before considering full integration into the EU ETS. This allows gradual learning, limits disruption, and maintains flexibility
- Whatever model is chosen it should explicitly acknowledge the structural differences of agricultural emissions compared to industrial sectors, and design safeguards accordingly.

On the point of obligation

Recommendation 2: Design of the point of obligation should be a hybrid approach

- The point of obligation is central to system design. Placing responsibility exclusively on farmers would create disproportionate administrative and economic burdens.
- A hybrid approach, combining obligations for upstream or processing actors with voluntary participation at farm level, should be considered. This would ensure broad coverage of emissions while maintaining proportionality, and it could encourage cooperation across the agri-food chain.

5. Recommendations (2/3)

On the type of emissions covered

Recommendation 3: Scope of emissions should be limited to what is measurable and controllable

- An initial focus on measurable sources, such as N₂O from fertiliser use and CH₄ from manure management, would strengthen credibility and keep MRV costs proportionate.
- For biogenic emissions deemed unavoidable in the short term, base-deduction models (such as Denmark's) offer a pragmatic approach, provided they are harmonised across Member States and periodically reviewed to reflect technological progress.

On the role of GHG removals

Recommendation 4: GHG removals should play a complementary, but distinct role

- Removals should be incorporated into an AgriETS from the onset, under an accounting and compliance framework that allows removals to function as a complementary compliance instrument contributing to overall ETS target reductions.
- Agricultural removals should initially remain voluntary so that farmers are enabled to monetise verified carbon sequestration through the generation of certified credits.

5. Recommendations (3/3)

On agricultural exports and competitiveness

Recommendation 5: Safeguarding competitiveness and avoiding carbon leakage

- An AgriETS must account for the strategic role of agriculture in food security and exports. Transitional free allocation, targeted support, or other protective measures should be introduced to avoid undermining competitiveness in trade-exposed sectors such as livestock and dairy.
- In the medium term, CBAM-like measures for agricultural goods could be explored, though political and technical feasibility will need careful evaluation.

On MRV

Recommendation 6: MRV must be robust, harmonised and proportionate

- Credible MRV is a prerequisite for any agricultural carbon market. Requirements should be proportionate to farm size and emission source, focusing on significant and measurable activities. Harmonisation at EU level is critical for comparability across Member States.
- Investment in digital monitoring infrastructure, data tools, and aggregation mechanisms can reduce costs and facilitate participation, particularly for smaller farms.

Supporters of the initiative

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