



OPINION

High 'steaks': Building support for reducing agricultural emissions

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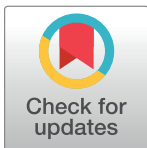
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Despite significant progress in climate change mitigation in industrialized countries, agriculture is so far barely subject to explicit regulation to reduce greenhouse gas emissions (GHGs). Yet the global food system on its own may preclude achieving global climate targets if not substantially regulated. One reason for the absence of regulation is that politicians feel generating public support and societal consensus for climate protection measures is hardest in this sector. Here we argue that some form of pricing of GHG emissions is necessary for mitigation and that it is politically possible in the European Union.

The “Green Deal” policy objective of the European Commission aims at reducing GHG emissions by -55% by 2030. Carbon pricing in the form of emissions trading is the primary policy tool and was introduced in all major sectors except agriculture. There are currently policy discussions about extending carbon removals (through e.g. afforestation and rewetting of peatlands) and jointly accounting for mitigation efforts from such land-based sinks and agricultural emissions—even if land-based sinks could become more vulnerable in the future. Furthermore, [Fig 1](#) shows that the agricultural sector in the EU has, taken on its own, barely reduced emissions in the past 15 years. It also shows that even if additionally planned measures were implemented, no significant reduction would be achieved.

In fact, the European Scientific Advisory Board on Climate Change [\[3\]](#) shows that, even in pathways that consider all carbon removal possibilities (447 Mt carbon removals max. in 2030), wide-reaching abatement in the agricultural sector will be necessary to reach net zero. In particular, 81% of the climate impact of the agricultural sector in the EU can be attributed to livestock farming [\[1\]](#). Hence, ambitious mitigation scenarios see demand for livestock for food fall by around 50% [\[3\]](#). To translate such objectives into regulation, policy instruments such as labelling, subsidies for climate-friendly alternatives and those related to visibility and food composition are helpful and needed as part of policy packages to make diets sustainable [\[1\]](#). We argue, however, that for meeting climate targets in agriculture, some form of emissions pricing is indispensable for three main reasons and that it is possible to garner societal support for it.

First, pricing instruments such as emissions trading or taxes are economically efficient. By internalising the societal cost to agriculture in a trading scheme or with an emissions tax, investments in low GHG-farming methods and crops are incentivized. In the absence of pricing, limited technological options are available that could raise production efficiency for livestock by up to 10%. However, rebound effects through demand increases would have to be tackled [\[3\]](#) unless GHG intensive products were made unattractive. Furthermore, pricing emissions is environmentally effective as estimates of consumer reactions to pricing food

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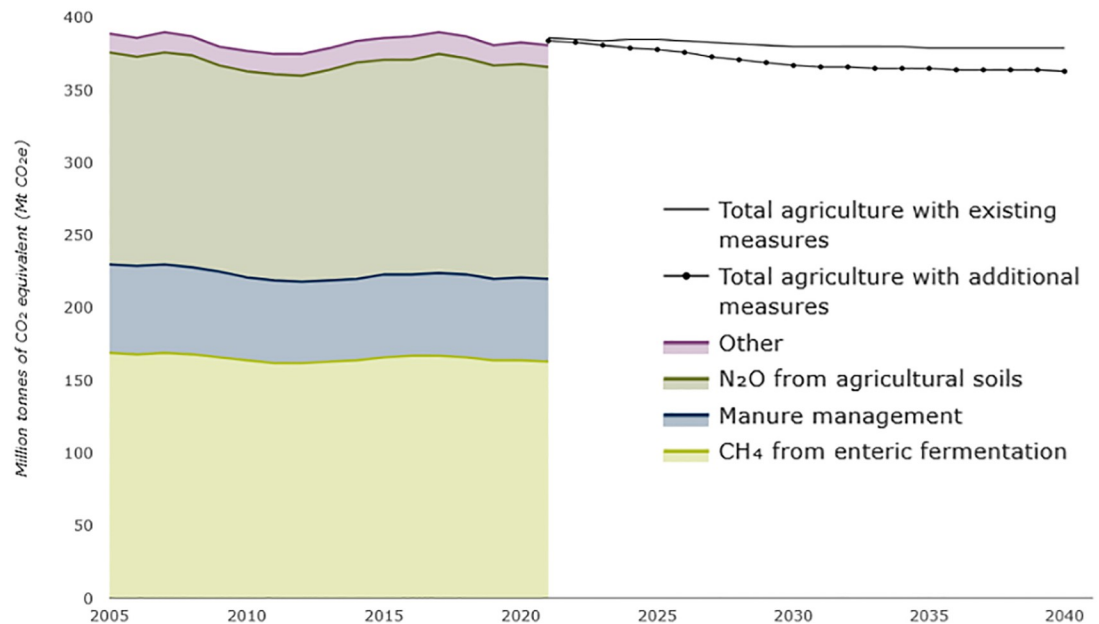


Fig 1. EU agricultural emissions 2005–2040 (by pollution source for past emissions, and projected emissions under current measures). Approximately 80% of agricultural emissions result from livestock farming [1]. Figure adapted from EEA [2].

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items such as meat products are significant [4]. Overall pricing reforms of agricultural goods can be made progressive by compensating lower-income households with the tax proceeds or partly by subsidising climate-friendly foods, as exemplified by Klenert et al. [5] for GHG taxes on meat products for 19 EU countries.

Second, upstream emissions trading on agricultural products is feasible. Considering heterogeneity of emission reduction potentials across producers, targeting large companies could limit implementation cost while protecting small farmers [6]. It would need to be combined with some protection of domestic industry such as the Carbon Border Adjustment Mechanism currently pioneered by the European Union. Alternatively, another effective (even if not fully efficient) pricing measure for mitigation are consumption taxes. For example, a consumption tax imposed on meat and other animal products while differentiated by the carbon contents, could reduce demand at low societal cost. Exports could be exempted, and imports taxed to protect domestic producers [7].

Third, as the reduction of agricultural emissions implies fewer animal products, society can reap a number of substantial co-benefits [8]. High meat consumption is associated with a significant incidence of chronic diseases. In fact, public health benefits alone motivate high taxes on red and processed meats to reduce such health costs [9], independent of the incentive to reduce emissions. Furthermore, animal welfare concerns preoccupy society [10] and a price on agricultural emissions could help making cheap animal products with low rearing standards less attractive to consumers. Finally, further environmental problems beyond climate change such as eutrophication and water scarcity as well as biodiversity loss and deforestation could be mitigated by the improved land use that pricing agricultural emissions would yield, as less land resources and less fertilizer are needed for animal production [7].

Political feasibility for pricing agricultural emissions is constrained by government-industry dependence, market power and trade policy conflicts including protecting domestic farmers [1]. Notably, obstructionism from the meat and dairy industry includes shaping public

discourse with disinformation. For example, Clare et al. [11] find that the meat industry in the UK seeks to influence public opinion by (a) emphasizing free choice and depicting meat reduction as an elitist vegan agenda, (b) portraying industry as a solution by emphasizing voluntary self-regulation, (c) falsely emphasizing that science was open for debate and meat needs to be eaten to keep healthy. Furthermore, overcoming inertia to realise dietary change for emission reduction in agriculture also includes changing social norms. First, the (erroneous) lay belief that eating meat is natural whereas plant-based meals are unenjoyable is still widespread [12], second there is a connection between perceived “masculinity” and meat consumption [13].

Despite these societal constraints and obstructionism from incumbent industry, studies of policy design show that it is possible to garner support from the public for pricing the social costs of animal products. Strategic framing, e.g. emphasizing the benefits through word choice, alone does not suffice to increase support for policies that implicitly or explicitly increase prices in GHG-intensive agricultural products [14]. Instead, combinations of pricing with further food policies build support as well as further increase mitigation effectiveness [15]. Stricter animal farming standards increase the share of food policy package support in China, Germany and the US. In Germany, the majority of subjects approve of a policy package containing a moderate tax if simultaneously subsidies for their producers are reduced; or when revenue is earmarked for supporting low-income households [15]. Perino and Schwickert [10] find that a majority of Germans support a tax on meat products corresponding to a 50€/tCO₂eq. price on agricultural emissions if it is motivated through animal welfare rather than climate change. There is also a need to communicate clearly the behavioral impacts resulting from such a tax [10].

Against this background, we summarise several examples of policy initiatives for agricultural emissions pricing and taxes on meat. New Zealand, where approximately 50% of GHG emissions stem from agriculture, is the global pioneer for pricing agricultural emissions, with an emission pricing mechanism scheduled for implementation in 2025. At the level of the European Union, a revision of the emission trading systems (ETS) to include agriculture seems politically possible. While a major reform of the Common Agricultural Policy subsidies is difficult, ETS revenues could be used to help transition farmers to more sustainable business models. In Germany, political discussions about introducing an “animal welfare levy” are ongoing. Such uniform excise tax on meat products seems appealing for achieving societal consensus: It aligns with citizens’ concerns, helps farmers sustainability and partially delivers on the principle of pricing social costs. The agriculturally exporting Netherlands considered but abandoned a meat tax in 2022. Here, nitrogen pollution remains the primary agricultural problem, with current planned 70–80% cuts leading to significant political protests. In Ireland agricultural emissions are 38.4% of total national GHG emissions but should fall by 25% by 2030. Political debates about instrument choice for mitigating GHG emissions from livestock are ongoing. Denmark set a legally binding target of -55% agricultural emissions comparing to 1990 by 2030. The country plans to achieve this by increased carbon sequestration and focusing on plant-based protein.

Summing up, putting a price on agricultural emissions is key to ensure environmental targets are achieved cost effectively. Our essay shows that it is possible to raise public support for it. While emission trading systems of agricultural emissions could achieve maximum economic efficiency, at least if combined with instruments to contain carbon leakage, consumption taxes on animal products could potentially reap more co-benefits including to human health and animal welfare. Beyond regulating agricultural emissions, a general strategy for political consensus for reducing emissions from land use may include land-use sinks and afforestation next to mitigation of agricultural emissions. However, as the co-benefits are enormous, societal solutions should not shy away from including options to reduce livestock emissions.

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