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This presentation

1. How (and to what extent) are on-farm carbon emissions (both direct emissions and uptake) now regulated in international and EU law?
2. Experiences with regulatory carbon farming offset schemes in general
3. Proposal for an EU certification framework for carbon removals
4. Experiences with soil carbon credits in Australia
5. Outlook: agriculture and food transition

[not: peatland rewetting, agroforestry]

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1. Current laws on-farm carbon emissions - international

- UNFCCC, Paris Agreement: nothing really
- However, COP28 Dubai (December 2023):
 - UAE Declaration on sustainable agriculture, resilient food systems and climate action
 - 'commit to expedite the integration of agriculture and food systems into our climate action and, simultaneously, to mainstream climate action across our policy agendas and actions related to agriculture and food systems'
 - 'revisit or orient policies and public support related to agriculture and food systems to promote activities which increase incomes, reduce greenhouse gas emissions, and bolster resilience, productivity, livelihoods, nutrition, water efficiency and human, animal and ecosystem health while reducing food loss and waste, and ecosystem loss and degradation'
 - First Global Stocktake Decision ("UAE Consensus")
 - states are 'called upon to accelerate and substantially reduce non-carbon-dioxide emissions, including in particular methane emissions by 2030'
 - states are urged to achieve by 2030 'climate-resilient food and agricultural production and supply and distribution of food, as well as increasing sustainable and regenerative production (...)'



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1. Current laws on-farm carbon emissions – EU (1)

- Agricultural emissions are covered by the Effort Sharing Regulation 2018/842/EU (ESR)
 - MS have to develop policies, no specific goal for agriculture alone
 - LULUCF emissions are not covered
- LULUCF Regulation 2018/841/EU
 - Emissions shall equal sequestration (net zero emissions for LULUCF as a whole)
 - Only emissions from cropland, grassland, forestry (not animal husbandry, also not animal excretions from grazing livestock = ESR)
 - Proposal to add emissions from livestock rejected 2023
- Common Agriculture Policy (CAP), income support for farmers, 40% focus on climate change:
 - MS must develop 'eco-schemes' as part of their CAP Strategic Plan that contain agricultural practices beneficial for the climate
 - 'List of potential agricultural practices that eco-schemes could support' (EC 2021):
 - Agro-ecology (e.g., improved rice cultivation to decrease methane emissions, use of crops/plant varieties more resilient to climate change, winter soil cover), agro-forestry, carbon farming (e.g., conservation agriculture, establishment and maintenance of permanent grassland, appropriate management of residues in soils), precision farming, and other GHG emissions-related practices (e.g., feed additives to decrease emissions from enteric fermentation, improved manure management and storage)
 - Carbon farming technical guidance handbook (EC 2021): help MS to stimulate carbon farming under the CAP



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1. Current laws on-farm carbon emissions – EU (2)

- Domestic policies based on ESR/LULUCF Regulation largely non-existing
- Many shortcomings current CAP when focusing on mitigation, adaptation and food security:
 - 'high path-dependency and inertia' of the sector, allocated budget for climate measures not used
 - insufficient funds for deep and full transition of Europe's agriculture sector
 - commitment period too short: 1-5 years. Should be: 100 years
 - accounting not based on quantification of carbon sequestration/emission reduction
 - payments based on amounts of hectare under a certain management scheme or on income forgone/additional costs, not on amount of carbon sequestered
 - generic character, general rules, not sufficiently tailored to individual farms
 - a lot of "flexibility" for member states: not always sufficiently climate smart, implementation & enforcement issues
- Confirmed by [European Court of Auditors](#) (2021): €100 billion of CAP funds attributed to climate action (2014-2020) → 0% GHG emission reductions... ECA: "Polluter pays principle not applied to agriculture"
- European Commission investigates other regulatory pathways, especially the EU ETS (2023/2024)
 - Pricing emissions (downstream & upstream?) and stimulating sequestration (voluntary carbon credits?)



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2. Experiences with regulatory carbon farming offset schemes

- On-farm emissions not in ETS's around the world, only as offsets in some countries
- Canada & California: farmers can sell carbon credits to regulated entities under ETS
- Australia: farmers can sell carbon credits to the government
- Farmers sell most credits, however, on the private (voluntary) carbon market (airlines!)
- Highly regulated in protocols/methodologies for specific measures that increase sequestration or reduce emissions: additionality, permanence, monitoring, reporting, verification
- Examples: soil carbon sequestration, beef cattle herd management, conservation cropping, nitrogen fertilizer efficiency, beef feedlot operations, capturing and destroying methane from manure management system
- Many examples also in Europe, mostly unregulated and as part of EU funded projects. See: [K. Springer, Innovative carbon farming initiatives: an overview of recent and ongoing projects across the EU](#) (2023) Institute for European Environmental Policy



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3. EU certification framework for carbon removals (CFCR)

- Proposal for a regulation (2022): voluntary EU-wide framework to certify carbon removals generated in Europe, with criteria to define high-quality carbon removals and the process to monitor, report and verify the authenticity of these removals
- Aim to boost sustainable carbon farming solutions and fight greenwashing
- carbon farming = 'a carbon removal activity related to land management that results in the increase of carbon storage in living biomass, dead organic matter and soils by enhancing carbon capture and/or reducing the release of carbon to the atmosphere' (Art. 2(1)(h))
- Q.U.A.L.I.T.Y criteria
 - Quantification
 - Additionality and baselines
 - Long-term storage (Permanence)
 - Sustainability



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Quantification (Art. 4 CFCR Regulation)

Net carbon removal benefit = $CR_{baseline} - CR_{total} - GHG_{increase} > 0$

where:

- CR_{baseline} is the carbon removals under the baseline;
- CR_{total} is the total carbon removals of the carbon removal activity;
- GHG_{increase} is the increase in direct and indirect greenhouse gas emissions, other than those from biogenic carbon pools in the case of carbon farming, which are due to the implementation of the carbon removal activity.

In the case of carbon farming, CR_{baseline} and CR_{total} shall be understood as net greenhouse gas removals or emissions in accordance with the accounting rules laid down in the LULUCF Regulation

Carbon removals shall be quantified in a relevant, accurate, complete, consistent, comparable and transparent manner



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Long-term storage (Art. 6 CFCR Regulation)

1. An operator or group of operators shall demonstrate that a carbon removal activity aims at ensuring the long-term storage of carbon.
2. For the purposes of paragraph 1, an operator or group of operators shall comply with both of the following criteria:
 - (a) they shall monitor and mitigate any risk of release of the stored carbon occurring during the monitoring period;
 - (b) they shall be subject to appropriate liability mechanisms in order to address any release of the stored carbon occurring during the monitoring period.
3. For carbon farming and carbon storage in products, the carbon stored by a carbon removal activity shall be considered released to the atmosphere at the end of the monitoring period.



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3. EU certification framework for carbon removals (CFCR)

- Technical methodologies may be adopted later by European Commission (Art. 8 CFCR)
- Certification by independent, third-party certification bodies accredited under Regulation 765/2008/EC
- Certification schemes recognized by EC (rules and procedures; Art. 11-14 CFCR)



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4. Experiences with soil carbon credits in Australia

- Soil carbon methodology operational since 2011, relatively successful
- Currently, three soil carbon project management activities:
 - sustainable intensification (land management aimed at increased soil carbon content)
 - stubble retention
 - conversion to permanent pasture
- Dense regulations to assure additionality & permanence and to regulate MRV
- Stricter than EU CFCR proposal. For example: permanence minimum 25 years
- Monitoring through soil samples (highly regulated!) and, since 2015, also through assessments using default values
- See all the rules and requirements [here](#)
- Similar in Canada (Alberta, now being transferred to federal level)



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4. Experiences with soil carbon credits in Australia

- Empirical research showed
 - High overhead costs for farmers, most hire consultants (carbon agents, aggregators) to help them, they may earn up to 30% of the proceeds
 - These consultants have been the drivers of the scheme
 - Farmers are especially content with the co-benefits (soil health, biodiversity, climate change adaptation, more and better crops)
 - The carbon price alone usually is not enough for farmers to adopt this methodology, although the price they will get for the credits does matter
 - The laws and regulations are robust, little non-compliance



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5. Outlook: agriculture and food transition

- Short term: more focus on agriculture in EU climate law and environmental law
 - Integrate methane and nitrous oxide emissions in EU ETS (downstream and upstream emitters), probably a separate ETS (“ETS3”)
 - Reward farmers for soil carbon sequestration and other removals (under CAP, or stand-alone scheme?)
 - Bring all livestock emissions under LULUCF Regulation (proposal rejected)
 - Apply Industrial Emissions Directive to more livestock farms (proposal rejected)
- Long term: move away from animal source foods to plant based and cultivated meat and dairy products
 - Requires a broad and dep instrument mix aimed at all actors in the food sector, including consumers



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Some of my relevant publications

- J. Verschuuren, F. Fleurke, M. Leach, 'Integrating agricultural emissions into the EU ETS: legal design considerations' [forthcoming]
- J. Verschuuren, 'Cultured meat and dairy as a game-changing technology in the agricultural and food transition in the EU: what role for law?' in Zahar & Reins (eds.), *Climate Technology and Law in the Anthropocene* (Bristol University Press 2024)
- J. Verschuuren, 'Achieving agricultural GHG emission reductions in the EU post 2030: what options do we have?' (2022) 31:2 *Review of Comparative, International and European Environmental Law* 246-257
- J. Verschuuren, 'Agriculture, Forestry and Other Land Use (AFOLU)' in Reins & Verschuuren (eds.), *Research Handbook on Climate Change Mitigation Law* (2nd ed., EE 2022) 433-456
- J. Verschuuren, 'Towards an EU Regulatory Framework for Climate Smart Agriculture: the Example of Soil Carbon Sequestration' (2018) 7:2 *Transnational Environmental Law* 301-322
- J. Verschuuren, 'Towards a Regulatory Design for Reducing Emissions from Agriculture: Lessons from Australia's Carbon Farming Initiative' (2017) 7:1 *Climate Law* 1-51



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Questions?



Agroforestry. Photo credits: Louis Bolk Institute (left); New Food Magazine (right)