European Law Open (2024), **3**, 199–208
doi:10.1017/elo.2024.11

DIALOGUE AND DEBATE: SYMPOSIUM ON ECOSYSTEM RESTORATION AND EU LAW

Carbon removals, ecosystems and the European Green Deal

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(Received 9 January 2024; revised 26 March 2024; accepted 4 April 2024)

Abstract

Restoring ecosystems and enhancing biodiversity is one of many regulatory ambitions under the European Green Deal. The motivations to do so include, but are not limited to, enabling carbon removal by capturing and storing carbon dioxide from the atmosphere in land. The business model of such schemes is to help the EU and its Member States meet their climate obligations whilst safeguarding biodiversity, and when relevant, enable sustainable agricultural practices by creating transferable carbon credits awarded to land managers pursuing such practices. The idea of introducing market-based mechanisms in the management of ecosystem services is not a novelty, but the increasing prominence of carbon removals in the European Green Deal and its related legislative actions warrants careful consideration of legal quandaries about how such removals are to be carried out, why, where and by whom.

Keywords: carbon removals; sustainable carbon cycles; certificate of carbon removals; carbon farming; European Green Deal

1. Introduction

The *leitmotif* of the European Green Deal (EGD) is well-rehearsed: it lays out a growth strategy that 'aims to transform the EU into a fair and prosperous society with a modern, resource-efficient and competitive economy',[1] and commits itself to making Europe the first climate-neutral continent by 2050. To realise these ambitions, the EGD has set in motion a long list of legislative actions. This includes the 'Fit for 55' legislative package, deemed 'the most comprehensive building block'[2] in the efforts to implement the 2030 climate target – that is, reducing net greenhouse gas emissions by at least 55 per cent by 2030. It requires all sectors to make their contribution – ecosystems being no exception.

One such contribution is outlined in the Commission's Communication on sustainable carbon cycles, which sets out to increase removals of carbon from the atmosphere by storing it in nature.[3] As explained by then-executive vice president for the EGD, Frans Timmermans[4]:

> Carbon removals are vital in keeping our climate commitments within reach. Together with sharp emission reductions, we need sustainable solutions for removing and recycling carbon,

[1]The European Green Deal, COM (2019) 640 final at 2.

[2]Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) 2018/842 on binding annual greenhouse has emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement, COM (2021) 555 final at 1.

[3]Communication on Sustainable Carbon Cycles, COM (2021) 800 final.

[4]As cited <https://ec.europa.eu/commission/presscorner/detail/en/ip_21_6687> accessed 1 December 2023.

which will make our economy more resilient and help us fight both the climate and biodiversity crises.

Importantly, carbon removal is not a singular activity but refers to a broad range of approaches often seen as falling into two separate groups: nature-based approaches (such as forestation, soil carbon sequestration and wetland restoration) and technology-based projects (such as enhanced weathering, and carbon capture and storage) – although such a distinction is disputable.[5] In terms of relying on ecosystems to remove carbon, the Commission proposes the introduction of 'carbon farming', which encompasses a broad category of 'improved land management practices'[6] that seek to capture carbon through sequestration and thereby help reduce the release of carbon into the atmosphere. Farmers are incentivised to engage in such agricultural practices through the award of sellable carbon credits equivalent to the amount of carbon captured. The logic is explained by Timmermans: 'If we sequester carbon in our ecosystems – forests, wetlands – it also has to bring benefits for biodiversity as well. Then farmers, foresters and other land managers need to be rewarded for this financially'.[7]

Market-based approaches, such as the introduction of carbon farming credits, are often projected as 'no-brainer'[8] solutions to complex problems on the grounds that they enable a win-win (regulatory) scenario to materialise. In the second half of the 20th century, 'Market Romanticism'[9] or, as more forcefully put, 'economic imperialism'[10] began to 'captur[e] the imagination of both legal scholars and policymakers'.[11] The idea of markets in law grew so powerful that domestic, regional, and international environmental laws are 'now *presumed* to incorporate it'.[12] The Commission's Communication on sustainable carbon cycles is yet another example of this particular trend in legislative imagination.

Although the Commission's proposal to create carbon farming, as part of its broader pursuit of carbon removals, is in its early stages, the present commentary considers some of the legal questions that arise regarding *how* such removals are to be carried out, as well as *why*, *where* and by *whom*. Like other types of market-based environmental regulatory strategies, carbon removals generating sellable credits are riddled with legal complexities and demand scholarly attention.

2. Carbon removals: the 'New Business Model' in a dynamic but thin regulatory context

Carbon, as the Commission rather poetically writes, 'is the atom of life, of our societies and economies'.[13] At the same time, fossil carbon emissions, industrial processes, and land use change have culminated in climate disruption, biodiversity loss and the acidification of oceans.[14] It is against

[5]See R Bellamy and S Osaka, 'Unnatural Climate Solutions?' 10 (2020) Nature Climate Change 98.

[6]'Sustainable Carbon Cycles' (n 3) at 2.

[7]As cited in K Taylor, 'EU Wants to Reward Farmers and Foresters for Nature-Based Carbon Removals' *Euractiv* (24 February 2022). <https://www.euractiv.com/section/climate-environment/news/eu-wants-to-reward-farmers-and-foresters-for-nature-based-carbon-removals/>

[8]F Di Sario, 'EU's Carbon Farming Plan Comes Under Fire', *Politico* (30 November 2022). <https://www.politico.eu/article/eu-carbon-farming-global-warming-climate-change-plan-comes-under-fire/>.

[9]T McNish, 'Carbon Offsets Are a Bridge Too Far in the Tradable Property Rights Revolution' 36 (2012) Harvard Environmental Law Review 387, 394.

[10]E P Lazear, 'Economic Imperialism' 115 (2000) The Quarterly Journal of Economics 99.

[11]R P Malloy, *Law in a Market Context: An Introduction to Market Concepts in Legal Reasoning* (Cambridge University Press 2004) 3.

[12]S Bogojević, 'Trading Schemes' in E Lees and JE Viñuales (eds), *The Oxford Handbook of Comparative Environmental Law* (Oxford University Press 2019) 926, 931, emphasis added.

[13]'Sustainable Carbon Cycles' (n 3) at 1.

[14]Ibid.

https://doi.org/10.1017/elo.2024.11 Published online by Cambridge University Press

this backdrop that the Commission calls for 'sustainable and climate-resilient carbon cycles'[15] based on three action points: reducing our reliance on carbon; recycling carbon; and upscaling carbon-removal solutions. The latter, which is in focus here, is projected to become 'a new business model'[16] for the EU.

Carbon removal practices find support in multiple legislative texts and scientific reporting. In its 2022 report, the Intergovernmental Panel on Climate Change (IPCC) identified carbon removals as essential to achieving climate neutrality, outlining that their deployment 'to counterbalance hard-to-abate residual emissions is unavoidable if net zero CO_2 or GHG emissions are to be achieved'.[17] Carbon removals are similarly endorsed in the European Climate Law as a way 'to achieve a *balance* between anthropogenic economy-wide emissions . . . within the Union by 2050'.[18] Although this suggests a broader usage of carbon removals under the EU regime compared to the IPCC report, neither provides a distinct list of when carbon removals may, must, or may not be employed.

This is not the only regulatory mention that carbon removals enjoy in the EU context, and more precisely in light of the EGD. The proposal for a Regulation on Nature Restoration which, as part of the EU's biodiversity strategy, is embedded in the EGD, underlines that 'ecosystems can make an important contribution to maintaining, managing and enhancing natural sinks and to increasing biodiversity while fighting climate change'.[19] Beyond this note found in the recital, there is no further detail as to which carbon removals should be employed to this end, nor to what extent.

The Regulation on land use, land-use change, and forestry ('LULUCF')[20] that regulates the contribution of the forestry and land-use sector (including soils, trees, plants, biomass and timber) to the EU's 2030 climate goals, provides a bit more regulatory context for at least some nature-based carbon removals. As part of the legislative framework captured under the mentioned 'Fit for 55' which implements the EGD, the LULUCF is amended and made more ambitious in that it sets a revised Union target for net annual removals by 2030 and assigns an annual greenhouse gas emission and removal limit value to each Member State. These targets, which are part of the Member States' carbon budgets for 2026–2029[21] are transferable to the extent that, if the number of total removals should exceed total emissions in one Member State, that Member State may transfer the remaining quantity of removals to another Member State.[22] It is hoped that through this market-based feature, along with streamlined monitoring, reporting, and tracking of emissions and removals, the Regulation will provide a framework for more accurate accounting of

[15]Ibid, at 1–2.

[16]Ibid, at 22. Notably, the term 'business model' used by the Commission refers to a new economic sector, whereas in more general carbon removal literature this term refers to commercial frameworks and standards that underpin carbon removal practices, see eg <https://www.gov.uk/government/publications/greenhouse-gas-removals-ggr-business-model> accessed 5 January 2024.

[17]IPCC, 'Summary for Policymakers' in *Climate Change 2022: Mitigation of Climate Change:* Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2022) 47.

[18]Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law') (2021) OJ L243, preamble 20 (emphasis added).

[19]Proposal for a Regulation of the European Parliament and of the Council on nature restoration (COM (2022) 304 final, Recital 16.

[20]Regulation (EU) 2023/839 of the European Parliament and of the Council of 19 April 2023 amending Regulation (EU) 2018/841 as regards the scope, simplifying the reporting and compliance rules, and setting out the targets of the Member States for 2030, and Regulation (EU) 2018/1999 as regards improvement in monitoring, reporting, tracking of progress and review (2023) OJ L 107/1.

[21]Ibid, Art 4.

[22]Ibid, Art 12.

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the relevant land-based sinks, and as such put these back 'on a path to growth'.[23] This is no small feat considering the difficulty of quantifying this sector's emissions and removals impact.[24] However, the Regulation sets out Member States' commitments for land use and forestry,[25] whereas carbon farming – though still part of a Member State's tally of carbon removal within its territory[26] – will be led by farmers and land managers.

In this context, the proposal for a Regulation on an EU certification for carbon removals,[27] which, at the time of writing, has been provisionally agreed on by the European Parliament and the Council but has yet to be formally adopted, is of relevance. Its objective is to 'facilitate the deployment of carbon removals' by establishing a voluntary EU framework for the certification of carbon removal techniques,[28] and, in this way, ensure high quality carbon removal and counteract greenwashing. The Commission still needs to develop tailored certification methodologies for different types of carbon removal activities, but the provisional agreement is a 'first step' signalling the development of a comprehensive EU carbon removal framework in which both private and public actors could operate.[29]

It is within this dynamic legislative context that the Communication on sustainable carbon cycles, in which carbon farming as a carbon removal practice is endorsed, unfolds. Understanding how the various legislative actions relate to each other – where they overlap, clash, or overlook each other – is not straightforward, even if the measures mentioned above all have links to the EGD.

But there is more. The Communication is also part of the so-called 'Farm to Fork Strategy', which is 'at the heart of the European Green Deal', aiming to make food systems 'fair, healthy and environmentally friendly'.[30] As such, the Strategy attempts to align climate action and biodiversity safeguarding with improved agricultural practices, hoping to transform the agricultural sector from being a source of climate- and biodiversity problems to being 'a critical part of the solution'.[31]

Whence the confidence to speak with finality of *the* solution? And how big a part, exactly, is a 'critical' part? The range of activities that could be categorised as 'carbon farming' are inevitably broad and include 'the management of carbon pools, flows and GHG fluxes at farm level, with the purpose of mitigating climate change'.[32] As such, carbon farming may reference the management of both land and livestock, and all pools of carbon in soils, materials and vegetation, and may be both action-based (where land managers are rewarded for adopting climate-friendly agricultural practices) and result-based (where payment to land managers is directly indexed to measurable

[23]F Timmermans, as cited in F Simon, 'Deal reached on EU Law Regulating CO_2 Removals from Forestry and Land Use', Euractiv (11 November 2022); <https://www.euractiv.com/section/climate-environment/news/deal-reached-on-eu-law-regulating-co2-removals-from-forestry-land-use/>.

[24]See A Savaresi, L Perugini and M Vincenza Chiriaco, 'Making Sense of the LULUCF Regulation: Much Ado about Nothing?' 29 (2020) Review of European, Comparative and International Environmental Law 212, 212–3.

[25]Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU [2018]OJL 156, Art 1.

[26]Proposal for a Regulation of the European Parliament and of the Council establishing a Union certification framework for carbon removals, COM (2022) 672) at 2.

[27]Ibid.

[28]Ibid, Art 1.

[29]European Council, 'Council and Parliament Agree to Establish an EU Carbon Removals Certification Framework' (*Press Release*) 20 February 2024, <https://www.consilium.europa.eu/en/press/press-releases/2024/02/20/climate-action-council-and-parliament-agree-to-establish-an-eu-carbon-removals-certification-framework/> accessed 12 March 2024.

[30]Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 'A Farm to Fork Strategy for a fair, healthy, and environmentally friendly food system' COM (2020) 381 at 1.

[31]E Toensmeier, *The Carbon Farming Solution: A Global Toolkit for Perennial Crops and Regenerative Agriculture Practices for Climate Change Mitigation and Food Security* (Chelsea Green Publishing 2016).

[32]COWI, Ecologic Institute and IEEP, *Technical Guidance Handbook – Setting up and Implementing Result-Based Carbon Farming Mechanisms in the EU: Executive Summary*, Report to the European Commission (Publications Office for the European Union 2022) 3.

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indicators of the positive climate impact they achieve).[33] Despite these variations, and without outlining in much detail how exactly such a model should be set up and managed, the Communication makes the case that carbon farming is 'a green business model'[34] – and thereby fitting for realising the many ambitions laid out in the EGD.

In this vein, the Commission recommends that pilot initiatives be rolled out at local and regional levels 'to gather experience to upscale carbon farming'.[35] To this end, it has published a *Technical Guidance Handbook* for how to set up and implement carbon-farming mechanisms in the EU based on a two-year study of carbon sequestration in five different areas, including peat-land restoration and agroforestry.[36] The guidance concerns issues like participation, monitoring, permanence risks, and reporting and verification; but the advice is indeed *technical*, with limited attention to legal questions beyond mentioning the importance of governance and flagging the possibility of 'legal obstacles' to the pursuit of carbon farming – without further detail as to what, more precisely, may constitute such an obstacle. Thus, even if its overarching message is that carbon removals 'can contribute significantly'[37] to the EU's climate pathways, these pathways are highly impressionistic, with thin, if any, legal content.

3. Why, how, where and by whom?

The above shows that carbon removals are endorsed as a crucial climate pathway, which, in the context of carbon farming, is able to also address the biodiversity crises. More generally, debates on carbon removals are shifting away 'from *whether* [they are] required, to questions around how, where, why, and by whom'[38] – none of which admit of simple answers. On the contrary, each raises a further set of legal quandaries, which will be briefly outlined next.

A. Why?

At this point, it may seem obvious why carbon removals relying on ecosystems are promoted through the policy and legislative measures mentioned: they may help the EU and its Member States fight both the climate and the biodiversity crises.[39] In the case of carbon farming, they may also help align the agricultural sector, where emissions reductions have traditionally been difficult to address, with sustainable land management practices. It is hard not to agree with these aims but they leave open at least two significant legal questions.

The first concerns how to manage unintended consequences of carbon removal policy. As explained by Seddon and her team, land-based carbon removal approaches tend to be less reliable, cost-efficient, and resilient in combatting climate change as compared to technology-based removals. If climate mitigation policy encourages carbon removals with 'low biodiversity value, such as afforestation with non-native monocultures', this runs the risk of maladaptation, 'especially in a rapidly changing world where biodiversity-based resilience and multi-functional landscapes are key'.[40] Along similar lines, and focusing on forest ecosystems services and biodiversity, Blattert and his co-authors argue that the effectiveness of

[33]Ibid.

[34]Ibid, at 5.

[35]See <https://climate.ec.europa.eu/eu-action/sustainable-carbon-cycles/carbon-farming_en> accessed 1 December 2023.

[36]COWI, Ecologic Institute and IEEP (n 32).

[37]For an overview see <https://climate.ec.europa.eu/eu-action/sustainable-carbon-cycles/carbon-farming_en> accessed 1 December 2023.

[38]H Hilser et al, 'Localized Governance of Carbon Dioxide Removal in Small Islands Developing States' 49 (2024) Environmental Development 100942.

[39]See Timmermans (n 4).

[40]N Seddon et al, 'Understanding the Value and Limits of Nature-Based Solutions to Climate Change and Other Global Challenges' 375 (2020) Philosophical Transactions of the Royal Society: Biological Sciences 1.

https://doi.org/10.1017/elo.2024.11 Published online by Cambridge University Press

natural sinks risks being overstated, and report that their study saw the targets for achieving high harvest demands for climate change mitigation clash with targets for boosting multifunctionality and biodiversity.[41]

These outcomes could potentially be addressed through life-cycle assessments of carbon removals – an idea that has gained some traction in academic debates.[42] Still, some compromises may be difficult to avoid,[43] which makes it even more significant to address how to balance different EGD-specific policies when implementing carbon removals.[44]

The second question concerns what precise quantity removals can be expected to contribute to achieving climate neutrality by 2050 as compared to emission reduction and mitigation efforts. After all, it is crucial to ensure that credits generated through carbon farming, or other carbon-removal mechanisms, do not divert resources from other mitigation efforts and are accompanied by a net long-term benefit in terms of GHG emission avoidance[45] – a point that the Commission recognises by insisting that 'climate neutrality in the EU needs to build on reducing GHG emissions and our efforts must focus on that'.[46] Notably, under the European Climate Law, determining the extent to which climate neutrality will be achieved through emission reductions, and how much it will rely on land and/or technical sinks, has been deferred to the Commission's 2024 proposal for an indicative EU carbon budget for 2030–2050.[47] With regard to carbon farming credits, the Commission explains that these 'can complement [climate mitigation and reduction] efforts and help address those situations where further reduction of GHG emissions is no longer possible at reasonable socio-economic costs and additional climate action through carbon sequestration is possible'.[48] This is much broader than both the wording under the Paris Agreement that, as mentioned, supports sinks in order 'to counterbalance hard-to-abate residual emissions', and the European Climate Law that trusts these to 'achieve a balance between anthropogenic economy-wide emissions'.[49]

Calls have been made to put in place legal safeguards, such as establishing a ceiling on the total offsetting margins available under climate action aimed to achieve climate neutrality by 2050 to ensure that carbon removals do not replace mitigation efforts.[50] Setting such limits, however, is not a straightforward exercise. As we have seen in the case of the EU Emissions Trading Scheme, benchmark-based allocation of emission allowances (or credits) in market-based regulatory mechanisms is a legally complicated affair that runs the risk of pushback through litigation.[51] Still, in pressing ahead with its action plan for sustainable carbon cycles, the Commission will need to consider a long list of tricky questions, including which situations allow for reliance on carbon removals (or what makes a socio-economic cost 'unreasonable'); whether different removal techniques should be more readily endorsed in this context (for example, should carbon farming be relied upon to a greater extent than other forms of carbon removal mechanisms?); and if so, how to make the distinction between these two categories.

[41]C Blattert et al, 'Climate Targets in European Timber-Producing Countries Conflict with Goals on Forest Ecosystem Services and Biodiversity' 19 (2023) Communications Earth & Environment 4.

[42]See eg T Terlouw et al, 'Life Cycle Assessment of Carbon Dioxide Removal Technologies: A Critical Review' 14 (2021) Energy & Environmental Science 1701.

[43]Similar results found in eg X Zhao et al, 'Trade-Offs in Land-Based Carbon Removal Measures under 1.5°C and 2°C Futures' 15 (2024) Nature Communications 2297.

[44]This is not the only such conflict under the EGD, see M Montini, 'Addressing the Conflicts Between Climate-Related Renewable Energy Goals and Environmental Protection Interests under the RED Directive' (this issue).

[45]See eg D McLaren, 'Quantifying the Potential Scale of Mitigation Deterrence from Greenhouse Gas Removal Techniques' 162 (2020) Climatic Change 2411.

[46]'Sustainable Carbon Cycles' (n 3) at 4–5.

[47]European Climate Law (n 18) Art 4(4).

[48]Ibid.

[49]See Section 2.

[50]RF Stuart-Smith et al, 'Legal Limits to the Use of CO_2 Removal' 382 (2023) Science 772.

[51]S Bogojević, *Emissions Trading Schemes: Markets, State and Law* (Hart 2013) chapter 5.

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B. How?

The second issue pertinent to carbon removals concerns *how* to operate and/or manage them. According to the Commission's *Technical Guidance Handbook*, in the context of carbon farming schemes 'there is no one-size-fits-all approach'.[52] Considering the great variation and scope of carbon removal techniques available,[53] this is a sound starting point. In the context of nature-based removal approaches, including carbon farming, the level of carbon storage available depend, for example, on site conditions such as topography, soil type, and past and current land use practices,[54] making generalisations about carbon removal practices difficult – at least regarding their climate impacts. To enhance and support the reliance on removal, the Commission has proposed the above-mentioned regulation on creating a Union certificate. As discussed elsewhere,[55] this proposal raises at least three legal dilemmas.

First, it is not obvious *how* to categorise carbon removals.[56] The proposal sets forth three separate groups – carbon farming, storage in products, and permanent storage – but fails to clearly demarcate these. For example, biochar – a carbonised biomass used to absorb carbon when added to soil[57] – could be categorised as both 'storage in products' and as carbon farming when used on agricultural land; but each category is regarded as different in terms of 'their maturity, cost-effectiveness and related monitoring costs'[58] and thereby call for different monitoring requisites for certification.

Second and relatedly, it is not clear how to quantify carbon removal. The proposal suggests that irrespective of the type of removal activity, and how long it will store carbon, a generic carbon-removal unit for a tonne of carbon removed should be applied.[59] This would mean distinct carbon removal mechanisms, such as carbon farming, on the one hand, and direct air capture into geological storage, on the other hand, would be treated as fungible despite the fact that the former is much less durable.[60] This is significant: the lack of discrimination between different techniques risks putting durable, high-cost CDR methods at a disadvantage[61] and thereby defeat the underlying purpose of the regulation.[62]

Third, the proposal defers a long list of crucial questions concerning certification methodologies for specific carbon-removal projects, including how to determine which removal methods are to be used, what reporting requirements to impose, and what baselines to use, delegating these questions to the Expert Group on carbon removals.[63] This has raised legitimacy concerns over the influence of non-elected bodies on crucial climate action and biodiversity safeguarding pathways, and left the legal framework in limbo until such delegated powers are exercised.[64]

This list of concerns about the operation and management of carbon removals is not exhaustive.[65] But it provides a snapshot of some of the challenges to establishing a common legal

[52]Technical Guidance Handbook (n 36) 49.

[53]NS Ghaleigh and J Macinante, 'Déjà vu All Over Again: Carbon Dioxide Removals (CDR) and Legal Liability' 35 (2023) Journal of Environmental Law 377.

[54]'Sustainable Carbon Cycles' (n 3) at 5.

[55]L Štrubelj et al, 'The New EU Carbon Removal Certification: Landmark Legislation or an Empty Promise? 6 (2023) One Earth 1093, 1094.

[56]Ibid, 1095.

[57]For an overview of the legal complexities related to biochar, more specifically, see L Štrubelj, 'Waste, Fertilising Product, or Something Else? EU Regulation of Biochar' 34 (2022) Journal of Environmental Law 529.

[58]Carbon Removal Certification (n 26) at 6–7.

[59]Ibid, Art 2(1)(o).

[60]Štrubelj et al. (n 55) 1095.

[61]Ibid.

[62]The issue of permanence is crucial and discussed at length in Singh Ghaleigh and Macinante (n 53).

[63]See <https://climate.ec.europa.eu/eu-action/sustainable-carbon-cycles/expert-group-carbon-removals_en> accessed 1 December 2023.

[64]Štrubelj et al (n 55) 1095.

[65]For a more comprehensive research overview of carbon removal projects see <https://co2re.org> accessed 1 December 2023.

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framework for carbon removals. It also shows the difficulty of assigning decision-making powers within that process.

C. Where?

The carbon removal technologies discussed here are land-based, which implies, obviously, that land is required to make them operational. Less obvious is *where* such technologies should be implemented. Recent reports warn of 'land grab' in Africa for carbon credits,[66] leading to the uneasy ethical question whether those who contribute the least to the carbon emissions that require removal are those most affected by removal activities. This particular example relates to an international carbon market, not yet fully operating, but the dilemma of where to locate removals, and how to balance such choices with competing demands for land, including housing, is relevant also in the EU and its Member States. The Council's insistence that carbon farming must last at least five years to be certified as part of the EU's voluntary carbon removal certification scheme is welcomed as a move to prevent land being acquired for purely 'speculative purposes negatively affecting rural communities'.[67] This alone, however does not help navigate the impact of land squeezes, nor does it consider geography and local complexities against which carbon removals activities unfold. It may be that better linkages between carbon removals and just transition is needed,[68] or as discussed in the next section, that public engagement must be prioritised. Any such measures, however, will require more legal detail and indeed, attention.

Moving to the operation of carbon removals, there is the question of *where* to trade carbon removal credits. As mentioned, the EU Climate Law demands that carbon removals be fully integrated into EU climate policy, meaning that by 2050, each tonne of greenhouse gas emitted into the atmosphere will have to be compensated by the removal of one tonne.[69] The question mark concerns the extent to which existing climate laws, and in particular targets for emission reduction, should be merged with targets for carbon removal – making carbon removal credits fungible with emission permits under the EU ETS – or whether the latter should be part of a separate scheme.[70]

These are contentious issues. Some of the push-back against the merging of the two targets concerns the lack of permanence and the difficulties of verifying carbon removals, as well as the possible displacement of emissions.[71] Along the same lines, there is doubt about the environmental integrity of carbon removals, and a concern that the latter undermines emissions reduction and mitigation efforts.[72] Other commentators, however, insist that net-zero carbon targets could be combined as long as there is transparency. The view is that clear plans should be published detailing each emission reduction and carbon-removal measure's prospect of contributing to the net-zero target, and specifying how the activities are to be managed and monitored.[73] In any case further legal detail on these dilemmas is, once again, required.

[66]K Bryan, 'The Looming Land Grab in Africa for Carbon Credits' *Financial Times* (6 December 2023). <https://www.ft.com/content/f9bead69-7401-44fe-8db9-1c4063ae958c>.

[67]European Council (n 29).

[68]R Carr-Whitworth et al, 'Delivering Net Zero in the UK: Twelve Conditions for Success' 18 (2023) Environmental Research Letters 074041.

[69]See (n 18). This idea of a negative carbon economy is discussed at length in J Bednar et al, 'Beyond Emissions Trading to a Negative Carbon Economy: A Proposed Carbon Removal Obligation and Its Implementation' 4 (2024) Climate Policy 501.

[70]See CO2RE/NEGEM report <https://co2re.org/wp-content/uploads/2022/06/ETS-workshop-report-v3.pdf> accessed 1 December 2023.

[71]See eg K Levin et al, *Designing and Communicating Net-Zero Targets* (World Resources Institute 2020).

[72]Here framing is particularly significant, see R Bellamy and KT Raimi, 'Communicating Carbon Removal' 5 (2023) Frontiers in Climate 1.

[73]SM Smith, 'A Case for Transparent Net-Zero Targets' 24 (2021) Communications Earth & Environment 2. On a similar point see DM Reiner et al, 'Europe's "Green Deal" and Carbon Dioxide Removal' 589 (2021) Nature 19.

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D. By whom?

The fourth quandary concerns how to establish participatory governance of carbon removals. By *whom* must carbon removal projects ultimately be supported, and what precise role should such stakeholders enjoy? As mentioned above, the LULUCF concerns commitments of the Member States in relation to carbon removals in forestry and land use, whereas the Regulation on an EU certification for carbon removals is a voluntary scheme in which both private and public actors can operate. There is limited mention of the role of the public in the relevant legal documents beyond the brief note, in the latter, that the Aarhus Convention regarding access to information, public participation in decision-making, and access to justice in environmental matters 'remain applicable, where relevant'.[74] This is unfortunate, especially considering that carbon removal projects tend to be controversial, and public acceptance is often seen as vital to the viability of such projects.[75]

Much of the empirical scholarship on this topic calls on project leaders on carbon removals to engage with the public by, for example, addressing risk perceptions regarding carbon removals,[76] and reframing communication on these measures.[77] Such engagement may unfold differently depending on the removal project and its location and impact, and is likely to generate different public appraisals depending on the public.[78] In other words, there are no prescribed participatory practices guaranteeing public acceptance. On the contrary, 'localising' carbon removal projects, and enabling governance 'from the bottom up', has been found to be a particularly useful way of mitigating the 'place-based conflicts that are bound to emerge'[79] in developing carbon removal projects at scale.

Although the Commission recognises that securing public trust is a vital stepping stone in realising carbon removal projects, it explains that it has dealt with the issue through the proposal of the framework for the certification of carbon removals that it sees as responding to concerns regarding environmental integrity, additionality or permanence of removals.[80] It may be that this is the extent to which EU institutions can engage with stakeholder questions in relation to carbon removal projects that are inherently local. Yet, the EGD pledges that '[a] new pact is needed to bring together citizens in all their diversity, with national, regional, [and] local authorities, civil society and industry working closely with the EU's institutions and consultative bodies'[81] to realise the EU's current growth strategy. How such a pact may help establish participatory governance of carbon removals, including carbon farming, is a question left open.

5. Conclusion

Carbon removals relying on ecosystem services tend to come with honourable ambitions: to deal with climate change, prevent biodiversity loss and, at least in the case of carbon farming, steer agricultural practices toward sustainable management. As mentioned throughout this commentary, it is hard to disagree with any of these objectives. How these ambitions can be realised, however, is far from clear, leaving multiple legal pathways open, each with its own set of legal quandaries.

[74]Proposal for Regulation on establishing a Union certification framework for carbon removals (n 26) preamble 25.

[75]L Waller and J Chilvers, 'Climate Change Assessments, Publics and Digital Traces of Controversy: An Experiment in Mapping Issues with Carbon Dioxide Removal Researchers' 36 (2023) Science & Technology Studies 2.

[76]E Cox, N Pidgeon and E Spence, 'But They Told us It Was Safe! Carbon Dioxide Removal, Fracking, and Ripple Effects in Risk Perceptions' 42 (2022) Risk Analysis 1472.

[77]Bellamy and Raimi (n 72).

[78]See eg R Bellamy, 'Mapping Public Appraisals of Carbon Dioxide Removal' 76 (2022) Global Environmental Change 102593.

[79]H Hilser et al (n 38) 3.

[80]'Sustainable Carbon Cycles' (n 3) at 6 and 21.

[81]EGD (n 1) at 2.

https://doi.org/10.1017/elo.2024.11 Published online by Cambridge University Press

Above, four major legal questions concerning the motivation, construction, operation and public engagement relating to carbon removals were briefly outlined. This is not an exhaustive overview of the many legal issues relevant to debates on carbon removals, but it shows the essential role that law plays in realising the EU's growth strategy. This is not to say that the law is merely a means to an end. Questions including how to earmark or balance different climate actions against each other (here referencing broadly mitigation and removal efforts); how to assess the extent to which different removal techniques compare (if at all); how to align removal projects to existing climate and biodiversity laws; how to ensure that market-based mechanisms are effective in achieving the many regulatory objectives entrusted to carbon removal approaches, in addition to securing public engagement and support may seem to be purely legal design matters. But once unpacked, they prompt crucial governance issues, including how the many ambitions under the EGD should be balanced or prioritised; who should decide on such matters; and how different market-based mechanisms, now part of the EU *acquis*, fit together. There is no silver bullet that could answer these questions all at once – if at all. But there is plenty of material here requiring the attention of legal scholars.

Acknowledgements. I am grateful to Navraj Singh Ghaleigh, Edoardo Chiti and the anonymous reviewer for comments on earlier drafts. All errors remain my own.

Funding statement. This research was funded by the Natural Environment Research Council (grant reference: NE/V013106/1).

Competing interests. The author has no conflicts of interest to declare.

Cite this article: Bogojević S (2024). Carbon removals, ecosystems and the European Green Deal. *European Law Open* **3**, 199–208. https://doi.org/10.1017/elo.2024.11