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Caring in crises – Unsettling care in soil carbon sequestration

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ABSTRACT

This article investigates the European policy context of soils and carbon farming where care for soils is promoted alongside climate neutrality and economic growth goals. Through a close reading of four policy documents, we outline three discourses to explore what is done in the name of care, and what care is acceptable and promoted. We speak back to these discourses through Whyte's (2021) conceptualization of epistemologies of crisis, where we see a concern or care for nature, where nature is not in fact the subject of concern. Instead, to care for nature is about caring for humans and human futures. A focus on care reveals important information about the challenges of translating response-able care for soils into formal decision-making systems, and we propose that concepts of care ethics that align with feminist and indigenous conceptions can inform different priorities and methods in the project to care for soils. We argue for the necessity to unsettle ways of engaging with the world that work from epistemologies of crisis which hinder diverse and relational care and lead to colonized futures.

1. Introduction – "Caring for soil is caring for life"?

The modern story of soils makes clear the necessity for deep changes in soil-related activities and society-soil relations. Soils are demonstrated to be degrading worldwide (FAO, n.d.; Lal, 2023) as a consequence of conventional industrial agriculture and connected food systems (Campbell et al., 2017; Clapp et al., 2018; Janzen, 2004; Lin et al., 2011; Sachs et al., 2010). A report "Caring for soil is caring for life" advocating for a European Union (EU) mission on soil health communicates that 60–70 % of EU soils are unhealthy (European Commission et al., 2020). Amplified by the burning of fossil fuels, these changes caused by agriculture and food sectors make them simultaneously chief causes of and highly vulnerable to the effects of climate change and related ecological crises (Clapp et al., 2018). As the largest terrestrial carbon pool (Scharlemann et al., 2014), EU policy frames healthy soils as an important asset for climate change mitigation and adaptation and long-term economic goals (EC, European Commission, 2021b, 2021c). In official communications, the EU states that "Our soils are suffering" and deserve our utmost attention to avoid the impacts and risks of soil degradation on human wellbeing and the economy (EC, European Commission, 2021c, p. 1). "We have to take responsibility for this" declared a keynote speaker at European Union Mission Soil Week in November 2023.[1] We thus see a growing campaign in international governing bodies to "care for soil" tied closely the continued generation of economic value.

Within this policy framing, carbon farming is prioritized as one way to work to achieve multiple goals that pave the pathway to EU climate neutrality (EC, European Commission, 2021a). Carbon farming is included in policy discussions as a nature-based negative emissions strategy, while at the same time tied together with soil health in parallel policy discourses where the discussions of how to monitor, verify, and report (MRV) on the progress of carbon farming schemes lies foremost (Panagos et al., 2022; Verschuuren, 2017). Carbon farming is defined as "a business model that rewards land managers for carbon sequestration in full respect of ecological principles" and "should contribute to reaching the LULUCF [land use, land use change, and forestry] target of −310 Mt CO_2 eq net removals" (EC, European Commission, 2022, p. 2; see also Lal, 2023). Framed as an important action for sustainability, we focus our exploration in this paper on care for soils in the context of carbon farming in agriculture in the EU.

This policy framing of care for soils is an appealing manifesto. Yet policy interventions that focus on the creation of economic incentives and commodification of nature to counteract ecological damages caused by human activity have mounted heavy critique (Carton, 2019; Dunlap and Sullivan, 2020; Jackson and Palmer, 2015; Kolinjivadi et al., 2023; McAfee, 2012, 2016). These studies document how economic framings

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[1] Mission Soil Week in November 2023 - recorded symposium

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of climate action dominate, where market-based policies around, for example, carbon removal and the kinds of technological, expert-based knowledge tied to legitimizing these policies perpetuate structural inequalities and vested political and corporate interests (Carton et al., 2020). Facilitated by the MRV of data which is "necessarily based on the simplification, abstraction, and standardization of local and regional processes" (Carton et al., 2020, p. 7), the financialization of environmental value constricts approaches to the ecological crises by distancing the environment from humans (Fitz-Henry, 2017; Sullivan, 2009, 2013). In what Fairhead and colleagues have called the "finance-science-policy nexus" (2012, p. 246), the economic valuation of nature is seemingly value-neutral, tying decarbonization of the global economy to continued economic growth (Hickel and Kallis, 2020; Stephan and Paterson, 2012).

Motivated by this background, as well as recent contributions to discussions of caring in policy contexts (Ressiore et al., 2025), we use the EU policy context of soils and carbon farming as a case study to investigate: **what is done in the name of care? What types of action are connected to care in European policy contexts where soil is seen as an important actant in mitigating climate change? And where and how does care come into these actions? In other words, what care is acceptable and promoted?**

To work with these questions, we investigate strategies and policies that are part of the European Green Deal (EGD), currently the highest climate law in the EU, where care for soils is framed as the protection, restoration, and sustainable use of soils. The EGD was introduced in 2019 as the EU's legislative pathway towards climate neutrality by 2050.[2] It emerged from the EU's climate commitments as part of the 2015 Paris Agreement and the Sustainable Development Goals of Agenda 2030 (The European Green Deal, 2019) and comprises eight policy areas, including climate ambition and food and agriculture (see Enberg and Ståhl, 2025; Vela Almeida et al., 2023). The Farm to Fork strategy at the heart of the EGD outlines ambitious strategies to reform the European food system that go far beyond the dominant policy community that oversees the Common Agricultural Policy (Candel and Daugbjerg, 2025). Climate neutrality and carbon neutrality are prevalent throughout the EGD, often used interchangeably (Hereu-Morales et al., 2024). Sequestering carbon via soil management is thus a core focus of the EGD (The European Green Deal, 2019), exemplified by the standing as one of four Green Deal Missions (EU, European Union, 2023).

The EU's focus on soils is legitimated by the following key arguments: 1) soils are an essential ecosystem for life, 2) soils act as a carbon sink offering support in climate change mitigation, and 3) that the loss of ecosystem services caused by soil degradation is worth billions of euros annually (European Commission Directorate-General for Environment, 2021). Under the remit of the EGD, the EU has launched key soil initiatives, including the EU Soil Strategy for 2030, which creates measures to protect and restore soils for sustainable use. At the end of 2025, the EU published the Soil Monitoring and Resilience Directive that establishes an EU-wide monitoring system for healthy soils. These are ongoing policy discussions, and this paper focuses on four documents (outlined in Section 3.1 – Identifying key texts) that represent key strategy frameworks for the EU where soils and carbon farming are core elements. Using epistemologies of crisis as a lens to look at care, we examine the discourses in these documents. We propose that the kind of care that is suggested in these texts for achieving economic and climate goals motivates action based on putting a price on nature and denies the expansion of diverse ways to care for soils.

2. Care and epistemologies of crisis

With this line of questioning around care, we work to unsettle care (Murphy, 2015), meaning that we challenge what care entails to further contribute to the articulation of a politics of care (Martin et al., 2015; Tronto, 1993). The characterization of care that we work with is about a willingness to respond – response-ability (Haraway, 2016) – involving choices about who to care for and how to go about doing it (Martin et al., 2015). Care thus deeply concerns power, and a focus on care can shine light on political commitments that reflect different ethics and practices towards soils. We see the EU policy context as an important site to explore the manifestations of care with the support of Whyte's (2021) conceptualization of epistemologies of crisis. Epistemologies of crisis belong to an articulation of politics that denies complexity and entanglement, where certain humans and certain knowledges are prioritized. Thus, unsettling care is to disrupt the non-innocent narratives linking care with positive feelings and as a political good (Murphy, 2015) and critically examine how these positive associations uphold the status quo. It is through this commitment to unsettle that we investigate what kind of care is possible when translating care for soils into formal decision-making systems (Whyte and Cuomo, 2016).

We approach care through feminist and indigenous scholarship that understand care "as recognizing and learning from one's place in a web of diverse relationships and being drawn by the responsibilities that are embedded in such relationships" (Whyte and Cuomo, 2016, p. 8). Care fundamentally thus concerns the inevitability of interdependence, requiring attentiveness, responsiveness, and responsibility to take care of others, and the competence to provide good care (Tronto, 1993). Feminist care ethics further foregrounds the virtues, skills, and knowledges for caring relationships as well as the need for appropriate caring as remedies to historical injustices to marginalized peoples and nature which counters the domination of abstract ethical judgements (Whyte and Cuomo, 2016). Approaching issues as matters of care emphasizes their "extensive, contestable and dynamic social, technical, and political" nature and foregrounds what and how things come to matter (Murphy, 2015, p. 721; Puig de la Bellacasa, M., 2017). Rather than providing a normative ethic or a sort of "truer" knowledge, care must be open-ended because one form may not work in a different relation and may need to be adjusted (Puig de la Bellacasa, M., 2017). In this way, care disrupts the reductionist approaches to complex ecological interdependencies and "an obsession with mastery and modeling, efficacy and efficiency" (Bawaka Country et al., 2013 in Jackson et al., 2017, p. 872). Care ethics thus stands in contrast to dominant views of isolated, rational individuals that are making decisions about how to act in the world (Gilligan, 1982; Tronto, 1993; Whyte and Cuomo, 2016). Care is an ethic and practice of attentiveness – a "practical and political project" – (Krzywoszynska, 2019, p. 664) that reconceptualizes human-non-human relationships.

Krzywoszynska (2019, 2020) gives ideas about what a commitment to good soil care entails, including "a speculative probing *attentiveness* which pushes beyond what can be directly experienced by individual bodies" (2019, p. 664, our emphasis). In conceptualizing what she calls care networks, Krzywoszynska (2019) provides an interpretation of care relationality where "*attentiveness is always attentiveness towards*" (p.665). The point is a crucial one that aims to be pragmatic, highlighting that the necessity of providing care for certain things includes and excludes others; it is not possible to pay attention to all relations at once (Staffa et al., 2022). Furthermore, she makes the point that "Care is also urgent – if something is in need of care it means it is somehow broken" (Krzywoszynska et al., 2020, p. 96) where the implication is that care for degraded (broken) soils cannot wait for the perfect knowledge – an impossible position because knowledge is always partial. From this perspective, scientific processes are understood as important but insufficient in that they lack the perspectives of lived experiences which are essential to knowing landscapes better (Krzywoszynska et al., 2020). These perspectives align with Tronto's (1993) argument that the question of how to best meet caring responsibilities has both universal (general responsibilities) and particular components (depends on situatedness).

[2] For a review of literature on the EGD's transformational ambitions, see Enberg and Ståhl (2025).

While care disrupts reductionist approaches, it can be tempting to link "care as a route to emancipated science and alternative knowledge-making" (Murphy, 2015, p.719). The assumption that more care can and will change things is problematic. Care can also be instrumentalized to maintain the sense of security for those who benefit from the status quo. Puig de la Bellacasa writes:

> *This sense of crisis and the need to care more is stressed by the perspective of a few, albeit powerful, ontological loci that had benefited from a relative sense of "security" marketed as the norm, while "the rest" of the world, at home and beyond, could carelessly be left in a state of exception (Brown et al., 2012). If only we all could care! Really? And what would that mean?* (2017, p.9)

We are reminded that care demanded in response to crises often comes from places of entrenched power. The instrumentalization of care draws attention to care's non-innocence and how the kinds of care that are (de)valued reflect a knowledge politics driven by productionism (Puig de la Bellacasa, M., 2017; Yusoff, 2013). This is not unexpected given the prevalence of views that speak about nature's functions and uses through ecosystem services, where care might be perceived as a form of control through management practices (see e.g. Singleton, 2010). In the case of how to care for soils, for example, what "good" care constitutes is shaped by what is deemed desirable land-use. Without reflexivity on the part of the soil science community and beyond, what healthy soils look like will continue to be shaped by the dominant political commitment of climate mitigation and carbon sinks as long as it is economically viable (Mauro, S., 2014; Krzywoszynska et al., 2020). In the emerging context of care networks around soil health, Krzywoszynska (2019) argues that we see a primary focus on soils as objects of practical concern that centers humans' wellbeing.

Given the urgency of acting on climate change, as communicated by short-term goals such as the 2030 Sustainable Development Goals and the pathways to net-zero by 2050, as well as the dominance of ecosystem service framings and nature-based solutions that are based in onto-epistemological positions that separate humans and non-human nature (see Fairhead et al., 2012; Jackson and Palmer, 2015; Sullivan, 2009, 2013), the risk is that soil care in practice will continue to set aside a deeper ethical engagement in responding to anxiety about human well-being and survival linked to climate emergency (Puig de la Bellacasa, M., 2017). In our commitment to unsettling care in this policy context, we turn to Whyte's epistemologies of crisis framing.

Whyte's (2021) discussion of epistemologies of crisis as a way of knowing the world emerges from his observations of the perpetration of colonialism through dominant ways of confronting different crises such as climate change. In this way of knowing, the actions taken to mitigate crises, real or perceived, uphold the status quo ways of achieving power and protecting privilege in ways that may suspend ethics and justice. Whyte's observations help us to distinguish the kinds of power at work in ongoing responses to climate and ecological crises. The claim here is that the ways that we approach real and perceived crises include a select few perspectives that lead to the perpetuation of colonial structures of power, unequally distributed capacity to contribute to creating sustainable futures, but also narrow possible futures. This discussion connects deeply with the commitments of indigenous and feminist scholarship in its examination of power and political commitments also emerging in care literature.

Epistemologies of crisis, as Whyte describes them, are ways of knowing the world that uphold a narrative that the present crisis is *new*. This presumption of newness disregards diverse pasts, for example that Indigenous peoples worldwide have endured multiple crises and environmental injustices already (Whyte, 2020), and in this way demonstrates the unequal power of some in the present to decide what matters and who matters (Simpson, 2017 in Whyte, 2021). Whyte expands upon two presumptions that accompany this "presentist narrative". First, that the crisis is unprecedented, and therefore there are few lessons from the past that can help resolve or get through the crisis. Second, that the crisis is urgent and must be acted upon quickly. These presumptions allow for responses with the "best intentions" to still have harmful, but acceptable, consequences to some beings and systems in the name of fixing the crisis. The all-consuming imminence of the present crisis makes it easy to sacrifice ethical approaches which, in turn, perpetuates inequalities. These presumptions further make it possible to ignore lessons from previous crises. The implications of these presumptions make it possible to talk about climate change as a crisis without talking about its root causes, coloniality being one of them. Instead, the focus is on preserving the present under threat, thereby obscuring diverse other experiences of the present. This way of knowing the world is incompatible with living ethically in a world of complex relationalities.

Drawing on how many Indigenous responses to crisis manifest, Whyte writes about how a different way of knowing the world might be through an understanding of the importance of webs of relation and the responsibilities of those relations. In this way, we see how responses to crisis can also be used to understand care. The current EU policy context is upheld by the benefits created and maintained by historical and systemic colonialism. The practices of knowing associated with epistemologies of crisis mask different forms of power such as colonialism, capitalism, imperialism, and industrialization (Whyte, 2021). Whyte's discussion is closely linked to conversations in care literature that point out how dominant onto-epistemological positions that uphold anthropocentrism hinder deeper ethical engagement with the roots of socio-ecological crises. As such, epistemologies of crisis is a lens through which to look at texts that can help us to read how soil care in the climate crisis is articulated – is this crisis unprecedented? What urgent responses are deemed necessary? How are the root causes articulated and addressed? Working to detect articulations of epistemologies of crisis in relation to soil care supports the naming of forms of entrenched power and political commitments that shape care. In this way, epistemologies of crisis supports inquiry into how this policy context organizes responses to climate change, and the practices of care made possible and denied where soils are concerned. This lens helps us to name the ways that discourses make possible and deny different forms of soil care.

3. Methodology – Close reading

Our approach to working with this policy context is through a close reading. Coming from an interpretive framework, close reading incorporates the context of the text and the positionality of the reader (Lukić and Sánchez Espinosa, 2011). This approach therefore does not hide the subjectivity of the readers, but rather explicitly incorporates it. We are white, female social scientists from northern Europe who experience the privileges that come with systemic colonialism. At the same time, we are committed to feminist research agendas, having both written about care previously, and hold political and normative commitments to transforming present unjust and unequal conditions (Staffa et al., 2022). We interpret this method through Ahmed's (1998) close reading of feminist postmodern texts to read the policy texts in our study. Ahmed writes:

> *For me, the purpose of reading is to be critical and to question. It is my belief that a reading which works against, rather than through, a text's own construction of itself (how the text 'asks to be read') can actually 'do' more. The disobedient reader is not in this sense a failed reader who is asking questions that the text itself has rendered obsolete. Rather it is a reader who interrupts the text with questions that demand a re-thinking of how it works, of how and why it works as it does, for whom.* (1998, p.17)

In practice, this means getting closer to this policy context to "trace the particularity of its inscriptions" (Ahmed, 1998, p.12), where we read for the differences in the conception of care that we carry and what is done in the name of care in the policy context. We are disobedient readers who ask about the particular effects on care, and work "against" these texts with a critical lens on how this policy context approaches

crisis. Reading "against" the texts using questions that epistemologies of crisis provides, as exemplified in the previous section, help us examine how these texts work, for whom they work, as well as how and why do they work as they do. Furthermore, this method supports criticality for important concepts like care which we see as "taken for granted and dropped into claims about accountable practice without accompanying evidence" (Kier-Byfield, 2025, p. 186). Care cannot simply be inserted into policy texts. Our choice to read closely through a lens of epistemologies of crisis thus affects how we "speak back" to EU policy texts in ways that unsettle care (Ahmed, 1998). Close reading further entails reading responsibly or a responsibility to the text (Lentricchia et al., 2002), which aligns with our commitment to be response-able, to speak back. We thus read closely to investigate what is done in the name of care and what care is acceptable and promoted in European policy documents where soil is seen as an important actant in mitigating climate change. We now detail our process with the documents.

3.1. Identifying key texts

The EU's Climate Law,[3] adopted in June 2021, sets Europe on the path to climate neutrality by 2050 and therefore shapes current and future environmental and social patterns, including a number of communications, reports, and legislation that guide Member State action to uphold the Climate Law, making these texts important to examine. The EU's discourse on carbon farming manifests within several texts produced predominantly since 2020. Our examination started with a cursory reading of the texts associated with carbon farming and the role of soils in EU climate and sustainability goals with the goal to familiarize ourselves with the organization of this policy landscape. To find texts we started at, first, the Carbon Removals and Carbon Farming[4] and, second, the Soil Strategy for 2030[5] webpages of the European Commission. Rather than focus on detailed technical reports of the practical feasibility and potential success of carbon farming through different land management practices (e.g. through implementing cover crops or rewetting peatlands),[6] our analysis focuses on how carbon farming and soils are portrayed in the wider sustainability context. We therefore focus on four key texts outlined in Table 1.

These texts represent three core dimensions of soil-focused climate action: nature-based carbon removals in the form of carbon farming, land as a carbon sink, and the specific role of soils in meeting the objectives of the EGD. In order to deliver on its legal obligations under the Climate Law, and with the necessity of carbon removals to meet emissions reductions targets laid out by the Intergovernmental Panel on Climate Change (IPCC), the EU aims to create business opportunities and support innovation to drive expansion of carbon removals. The first two documents outline the role of carbon farming in achieving these goals. The third document concerns a study advising on how to assess the impacts of LULUCF, identifying the need to increase carbon sinks in land and problems associated with achieving this goal. The study proposes options for reporting and accounting and the improvement of market-based mechanisms as a policy framework to trigger short-term action. Finally, the fourth document outlines the importance of soils for the EU's climate, biodiversity, and long-term economic goals and sets out concreate measures to reach these objectives. It identifies carbon farming as a priority, naming the strong link between healthy soils and carbon farming.

Table 1
Documents for analysis.

Document title	Year	Abbreviation in text
Communication on Sustainable Carbon Cycles	2021	SCC
Commission Staff Working Document on Sustainable Carbon Cycles – Carbon Farming	2021	SWD SCC
Reviewing the Contribution of the Land Use, Land-use Change and Forestry Sector to the Green Deal - Final Study	2021	LULUCF
Communication on the EU Soil Strategy for 2030 Reaping the benefits of healthy soils for people, food, nature and climate	2021	Soil Strategy

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119

[4] https://climate.ec.europa.eu/eu-action/carbon-removals-and-carbon-farming_en

[5] https://environment.ec.europa.eu/topics/soil-and-land/soil-strategy_en

[6] For example: Carbon Farming - Making Agriculture Fit for 2030 and Operationalising an EU carbon farming initiative (plus Technical Guidance Handbook)

3.2. Close reading through an epistemologies of crisis lens

Having identified the texts, we began the analytical process. We read the texts multiple times, using different colored pens to mark different themes, and discussed them to develop a deeper understanding. During these readings, we were guided by our research questions: What is done in the name of care?; What types of actions are connected to care in EU policy contexts?; Where and how does care come into these actions?; What care is acceptable and promoted?. We began to notice three discernable discourses present thorough the texts that characterized an approach to carbon farming as an urgent necessity for humanity and a tool to support the growth strategy of the EU as it strives to becomes the first climate neutral entity in the world. We named these three discourses and describe them in the analysis below: 1) commodification of nature, 2) care for nature, and 3) in pursuit of data.

Despite being one of the discourses we identified, care was often not an explicit focus of the texts we read. In contrast, the language of epistemologies of crisis was prominent. To deepen our work with these discourses, we formulated supporting questions from Whyte's epistemologies of crisis lens which were inspired by policy analysis aiming at identifying deep-seated problem representations underlying a particular policy (Bacchi and Goodwin, 2016). These questions were: is this crisis unprecedented? What urgent responses are deemed necessary? How are the root causes articulated and addressed? In the discussion that follows our presentation of the discourses, we "speak back" to the documents through this lens to bring nuance to our questions concerning care. Next, we illustrate these three discourses and then expand upon how they uphold epistemologies of crisis and try to settle care.

4. Three overlapping discourses

We present the following discourses in three sections, while noting that they are overlapping and reinforce each other.

4.1. Commodification of nature

The long-standing argument that in order to protect nature, it must have an economic value, is strongly represented in the documents. This discourse was most prevalent in our reading, which is not strange considering the description of carbon farming as a green business strategy. However, its prevalence is significant, particularly in light of the parallel discourse of caring for nature, which we will come to in the section below. In this discourse we have called "commodification of nature", the European Commission promotes carbon farming as a "business model for healthier ecosystems" (SCC 2021, p.3). Carbon farming will respond to the "urgency for climate action" (SCC 2021, p.1) and create financial benefits to all involved. It is a "tool" to "provide a novel business model to land managers for the provision of ecosystem services (SCC 2021, p.6). Carbon farming is thus portrayed as a new and original rewards system for land managers who can provide this service,

where carbon farming credits becomes an additional "product" on top of food and biomass (SWD SCC 2021, p.3).

In this discourse, commodification and monetization are of central importance: "the unmonetised carbon asset continues to deplete" (LULUCF 2021, p.84) and if not regulated and financialized then the risk is that carbon will not be accounted for in land management strategies. The same goes for soil: "the value of the soil capital must be properly reflected in natural capital accounts so that our dependence on it becomes more visible (Soil Strategy 2021, p.1). The potential economic payoffs are stated early in the communication, where "halting and reversing current trends of soil degradation could generate up to €1.2 trillion per year in economic benefits globally" (Soil Strategy 2021, p.2). Valuation of these services will create huge payoffs for economy and ecosystems.

Finally, nature is a business collaborator where "soil is a major partner in a resource efficient and circular economy" (Soil Strategy 2021). This transactional discourse demonstrates the requirement that soils must contribute to business, to growth. Soils (and other ecosystem service providers) are not a partner unless they give something to the partnership. This will be supported by the development of monitoring, reporting and verification methods.

> *More fundamental R&I on soils will support the emerging carbon farming business on ecosystems by developing robust, ready-to-use, harmonised indicators and methods for carbon measuring, monitoring and certification as well as supporting the development of incentives, business models and advisory services.* (SWD SCC 2021, p.28)

4.2. Care for nature

As the discourse above shows, commodification of soils and carbon are a key component of sustainable management of ecosystem services. The risk otherwise is that human dependence on soils will not be visible, that carbon will continue to be depleted, and that the economic benefits that soils could generate will be missed out on. In this discourse which we call "care for nature", we also see a desire to heal and restore ecosystems and "the planet's climate balance" (SSC 2021, p.2) and "reverse biodiversity loss and pollution" (SSC 2021, p.2-3). Thus, with improved land management practices,

> *Carbon farming can…[result] in the increase of carbon sequestration in living biomass, dead organic matter and soils by enhancing carbon capture and/or reducing the release of carbon to the atmosphere, in respect of ecological principles favourable to biodiversity and the natural capital overall.* (SCC 2021, p.4)

Respecting ecological principles is thus brought forward as a rather abstract characteristic of carbon farming, without further elaboration except to say that it is favorable to biodiversity and natural capital. This again demonstrates the prominence of nature as a valuable commodity, and that care for nature is about economic value. The opening statement of the EU Soil Strategy illustrates this anthropocentric relationship between humans and soils:

> *Too few know that the thin layer that lies below our feet holds our future. Soil and the multitude of organisms that live in it provide us with food, biomass and fibres, raw materials, regulate the water, carbon and nutrient cycles and make life on land possible. It takes thousands of years to produce a few centimetres of this magic carpet.* (Soil Strategy 2021, p.1)

Soil life is simultaneously the foundation of human lives and futures and a magical artefact. The text continues to urge the "urgent attention" of "governments, parliaments, public authorities at all levels as well economic operators, soil users, local communities and citizens" (p.1). Actors on all levels are called to pay attention to soils on which we are dependent. Indeed, the authors declare that "We need healthy soils now more than ever" (Soil Strategy 2021, p.4).

In paying attention to soils through carbon farming, we "also preserve EU food safety and security and ensure a just transition in the context of EU enhanced climate objectives" (SCC 2021, p.5). The Communication on Sustainable Carbon Cycles writes out a list of all the ways that carbon farming will contribute to other EU policies, for example, enabling nature-based solutions, supporting a vision for healthy soils, and recovering biodiverse and resilient nature across the EU (p.6). The connection of soils to humans and the need to care for soils is stated as such:

> *Our soils need to be healed. It is a matter of our own survival. This Strategy sets therefore ambitious and necessary objectives, on which we need to urgently deliver. It is backed by scientific evidence and puts forward a set of actions that will help get us there.* (Soil Strategy 2021, p.24)

In sum, safety, security, and solutions – survival – are promised by caring for nature (i.e. sustainably managing carbon, sustainably managing soils). We even see arguments for not depleting the carbon pool in the soil based on the importance of both soil health and the economy: "Yet, that carbon pool is the 'bank account' of farmers and foresters in terms of natural capital. It is essential not to deplete it, as the carbon content is the basis for soil's biodiversity, health and fertility" (Soil Strategy 2021, p.6). Care and commodity are linked on the basis that if the "bank account" is depleted, so is soil health.

4.3. In pursuit of data

Across these documents, we notice a third discourse around building knowledge, know-how, and literacy, which we call "in pursuit of data". In other words, what is important when it comes to knowing about soils and carbon farming? First, we see the ideal of standardization brought up in different ways. Standardization of methodologies linked to MRV methods is seen as necessary for several reasons: 1) to assure buyers of the quality of carbon farming credits, 2) to help land managers estimate potential revenues, 3) to reassure policy makers of the use of such credits in regulatory frameworks, and 4) to ensure the success of a carbon farming market (SCC 2021, p.8). In this instance, how we know about soil and carbon is framed with economic motivations. We see this also in the demand for "more and better MRV data on soil carbon" where

> *High quality and resolution data and monitoring of carbon flows and stocks, and ecosystem services at farms and in managed forests in general, will be a crucial enabler for a future policy setup that can introduce clear price signals, farm level incentives and obligations, and hence create revenue streams from ecosystem services and allow valuation of carbon assets* (LULUCF 2021, p.90).

Data – more and better – are part of creating the right climate for making visible the economic values associated with performing carbon farming, which we also see strongly in the previous two discourses. Furthermore,

> *Being a pioneer in the regulatory certification of carbon removals will make the EU the trailblazer. This will provide a global inspiration for designing, under Article 6, robust and ambitious methodologies aligned with the objective of the Paris Agreement* (SCC 2021, p.21).

We thus see that climate objectives are an important motive for the pursuit of creating a robust methodology that account for carbon removals as well as the attractiveness of being the first to do so. Competitiveness is important.

The LULUCF report further discusses that "carbon farming practices rely on good carbon and ecosystem data, and hold potential to enable the transfer of incentives and obligations to land owner levels" (LULUCF 2021, p.91) It follows by pointing out that standard setting for MRVs is considered a key practical obstacle to the wide adoption of carbon farming (LULUCF 2021). What "good" data means in this context is thus part of the challenge of adopting carbon farming practices, and also begins to point at who should be the ones receiving knowledge about

carbon and ecosystems, in this case, land owners.

Land managers are argued to need incentives to participate in carbon farming and "the financialization of ecosystem services offers opportunities for land managers to benefit economically from participating in carbon farming schemes" (SWD SCC 2021, p.3). The staff working document on SCC that takes a deeper dive into carbon farming states:

> *Providing land managers with improved knowledge, tools and methods for a better assessment and optimisation of the carbon benefits is key for cost-efficient implementation of mitigation action and to securing their engagement in carbon farming. This is particularly relevant for European small farmers or forest holders that often lack know-how and expertise for adjusting their businesses, face important administrative burdens and the complexity of required measurements and monitoring.* (SWD SCC 2021, p.23)

Access to "good" data is perceived as complex, and the threshold for joining carbon farming schemes is lowered by offering "improved" knowledge, though with hints of the bureaucratic burden of participation. "Lack of sufficient knowledge and agronomic advice on carbon farming techniques and their outcomes" is reported as a common argument for why land managers do not join carbon farming schemes (SWD SCC 2021, p.11-12). This is complicated by the "very site-dependent" effects of carbon farming techniques (SWD SCC 2021, p.3). To understand these effects, digital technologies and data technologies will be prioritized to ensure

> *more accurate, cost effective and efficient estimates of carbon emissions, removals from plants and soils and carbon farming practices. Coupled with in-field instruments and experience from the ground, those technologies will also help to adjust carbon farming practices for an optimization of environmental benefits* (SCC p.11).

Tools to certify removals should be "harmonized, user-friendly, and cost-efficient" (SWD SCC 2021, p. 11). Data, which is sourced from technologies as well as site-specific knowledge, will thus serve to make management choices for optimal environmental and economic benefit easier.

We see this discourse on standardization extend further to soils where "more and better knowledge and data about soils" must be made available for use by different centralized research data centers (Soil Strategy 2021, p.20). Here, "open standards for data should improve the interoperability of national, EU and global soil monitoring frameworks (Soil Strategy 2021, p.20). Soils and carbon farming are explicitly linked in the Horizon Europe mission A Soil Deal for Europe. This mission identifies carbon farming as a "'hotspot' area for research and innovation" where "harmonized soil monitoring in Europe" will contribute more and better knowledge and data about soils (SCC 2021, p.11). The project of increasing knowledge on soils extends to the vision of broad public awareness and societal engagement to increase soil literacy. The need for soil literacy comes from soil being "the most undervalued element of nature" where increasingly urbanized populations are unaware of the importance of soil in their lives, seeing it as just "dirt" (Soil Strategy 2021, p.23). To build soil literacy "combines broad awareness with specialised understanding across a range of disciplines through communication and educational activities that bring soil closer to people's lives" (Soil Strategy 2021, p.23).

5. Speaking back – care at what cost?

We have illustrated three discourses from the four texts and now we "speak back" to them. Through the lens of epistemologies of crisis (EoC) we work with our research questions related to care to unsettle this Eurocentric approach crises through carbon farming. We do this by showing the entanglements of care, commodification, and the pursuit of standardized data in these policy documents.

In applying an EoC lens, we can see that the discourses create a *presentist narrative* that declare the importance of the now (more than other times) with a focus on preserving the perception of the present that is under threat. Humans need soils "now more than ever" (Soil Strategy 2021, p.4) and carbon farming is presented as a novel tool that responds to the urgency for climate action. The discourse "care for nature" demonstrates a clear organization of the management of soils and carbon around safety, security, and solutions for human survival. *Urgency* is communicated in the implication that care is needed *now* and that healing soils can ensure a "just transition in the context of EU enhanced climate objectives". Without negating the perception that soil degradation and climate change are indeed real crises, Whyte's lens invites us to ask by whom, for whom and why these crises are deemed important *now*. This prompts the observation brought forth clearly in the discourses "commodification of nature" and "in pursuit of data" that soils will not be seen or cared for if they do not have an economic value. Thus, underpinned by economic valuation of carbon assets and soil capital, where carbon becomes an additional product to sell, the incentives of economic gain are foregrounded. The crisis is framed as significant for those who might gain financially from the commodification of carbon. In fact, it is assumed that soils in particular will remain invisible and mere "dirt" under our feet if not translated into and communicated as natural capital. Respecting ecological principles is thus carried out in favor of natural capital where care for nature is about economic value. The declarations of "urgency for climate action" (SCC 2021, p.1) that come forth in these documents are illustrative of EoC and make the preservation of the here and now paramount, where the promise of safe financial futures are in focus. Soil is pronounced as the foundation of human life, but the focus on economic valuation of soils foregrounds the interests of those who stand to gain financially and politically from it. This obscures diverse other experiences of the present, where different soil values exist, and where healthy soils benefit all. Conserving and regenerating soils are thus tied to securing the EU's economic future and efforts to reach "net-zero" emissions through, for example, soil carbon sequestration (Cimpoiasu et al., 2021; Dominati et al., 2010; Verschuuren, 2018).

The discourse "in pursuit of data" in particular adds further contours to the presentist narrative in terms of illustrating the unequal power of some in the present to decide what matters and who matters. As we have shown, for example in the LULUCF with "clear price signal" and "farm-level incentives" (p.9), what matters is the communication of economic value of soils and carbon as well as the actors that would benefit from this. This communication is aided by scientific evidence which backs the urgent call to action and will also help actors "get there" – to healthy soils. References to the high quality and robustness of the data in the SCC and LULUCF, for example, are argued to be reassuring to policy makers, land managers, and buyers of carbon credits alike; to specify and confirm healthy soils. Centralized data centers for soil and harmonized, "ready-to-use" indicators for carbon certification will support the pursuit of data but erase the contestable and dynamic nature of soils that would come from approaching soils as a matter of care (Puig de la Bellacasa, M., 2017). Carbon is seen as an additional product, decontextualizing and detaching it from its relational network. Promoting ready-to-use indicators might be seen as a form of mastery, as predetermined factors to understand soils. Harmonizing and commodifying soil health indicators works to universalize soil needs and is an "aspect of the false universalism" that "obscures the processes of care necessary to meet needs" (Tronto, 1993, p.138).

It is stated that land managers need this knowledge not only to be incentivized to action but to carry out their "obligations" (LULUCF 2021, p.91). Again, the implication is that care or "obligation" will follow scientific knowledge and economic incentive. The Soil Strategy document speaks particularly to soil literacy through awareness and education that will prompt people to care for soils. Not only is there a normative implication that people are "soil illiterate" but that being soil "literate" suggests particular ways of knowing about soils. The production of "more and better" data is thus prioritized. In turn, this makes soils and carbon legible in particular ways and sanctioned by particular

authorities, which is validated by the imminent threat to humans posed by degrading soils and by climate change. This implies what good knowledge is and where it comes from and who needs it. Legitimate knowledge about soils emerges from science, illustrating Fairhead et al. (2012) finance-science-policy nexus and the particular power of this nexus in deciding what counts. The economic valuation of nature is seemingly value-neutral, presumed as the "right thing" to do (Paterson and Stripple, 2012) as it is backed by scientifically derived data. A hegemonic agenda where carbon accounts have to be made legible in certain ways e.g. by harmonized MRVs – only then can projects get institutionalized support. In not recognizing actors who are already caring for soils or who are not able or reject joining these types of schemes, this hegemonic agenda also delegitimizes other kinds of action (Borras and Franco, 2018). As we have shown in this paper, calculation and simplification based on efficiency (through, for example, ready-to-use indicators) privilege certain ways of knowing soils over others (see also Turnhout et al., 2014).

A further exemplification of EoC emerges in how the crisis is narrated as *unprecedented*. In the discourse "in pursuit of data", being "a pioneer in the regulatory certification of carbon removals will make the EU a trailblazer" which will inspire the rest of the countries committed to climate mitigation. Being a pioneer blazing the path to high quality MRVs align with the EU's interest in being first in the world to become climate neutral. This rather heroic portrayal of the EU's intentions is a further articulation of EoC which Whyte does not elaborate on, but which makes plain a morally problematic assumption about the kinds of action that are seemingly warranted by the unprecedentedness of this crisis (Machado de Oliveira, 2021; Whyte, 2021: see also Vela Almeida et al., 2023). To "get there" requires unprecedented action including of data pursuit in centers of knowledge.

Throughout the three discourses, we detect a linear logic related to creating action in this sector. It follows the trajectory of better data leading to enabling policies resulting in clear price signals, followed by revenue streams from ecosystem services and carbon assets. The recognition of the necessity of soil care is strongly situated within anthropocentrism. Care for nature is simply portrayed as good for (some of) us and good for the economy. The articulation of care for soils is based on notions of soil quality and healthy soils by their climate mitigating capacities (thereby also helping achieve political goals) and their capacity to support human survival. While generalizable responsibilities towards soils belong to an ethic of care (Tronto, 2013) and thereby might even support the development and spread of helpful indicators for soil health, the opportunity for specific care to emerge in such a policy context remains a tension. Healing soils as "a matter of our own survival" (Soil Strategy 2021, p.24) invites a pursuit of knowledge that excludes soil literacies that emerge from experiential and embodied perspectives that would speak to the situatedness of care required and even how soils care for humans (Suchet-Pearson et al., 2013). In the articulation of crisis through the economic value of production (of carbon credits, of ecosystem services), caring for soils is reduced "into mere control of the object of care" (Puig de la Bellacasa, M., 2017, p.186). There is little room for speculative attentiveness or to be drawn by different relationships which might support a deeper ethical engagement.

6. Conclusion

Our aim has been to contribute to an articulation of care politics in the EU soils and carbon farming context. We have worked to further care scholarship by focusing on how approaches to crisis are integral to how care happens and what care is possible. Additionally, our approach to unsettle care provides grounds for continuing the work in policy contexts to uncover harmful hegemonic patterns (Turnhout, 2024). We demonstrate that how soils and carbon are known is framed by economic motivations and that the notion of caring for soils is based on the value of soil as an important resource for human wellbeing. Care, as it comes forth in the EU documents, is rhetorical or discursive rather than involving responsibility or response-ability in practice, as recognized by the understanding of care as learning from one's interdependences in a diverse web of relations (Whyte and Cuomo, 2016). We thus see a concern or care for nature, where nature is not in fact the subject of concern and that to care for nature is about caring for humans and human futures. In articulating our observations in this way, we also risk renewing the assumptions of this policy context which separate humans and non-human nature. Another way to say this might be that by centering human agency and survival, these texts negate complexity and entanglement, where care for soils falls along a trajectory of scientifically-based, human-centered actions. This is a policy context built around epistemologies of crisis where caring for and healing soils masks the continuation of the status quo. The manifestation of EoC here denies the expansion of different kinds of ethical relationships to non-human nature, which limits the important qualities of soils to the ones that can be measured. This reflects a relationship to soils which restricts the ways care can emerge and reinforces human-nature binaries that makes the possibilities of, for example, seeing soils as agents themselves practically impossible.

This focus on care through an EoC lens reveals important information about the challenges and (im)possibilities of translating response-able care for soils into formal decision making systems. "Unsettling does not promise good effect" (Murphy, 2015, p.732) and we are left with a question: How might we, and is it even possible to, articulate a care for soils in policies that is situated and dynamic in the EU? Concepts of care ethics that align with feminist and indigenous conceptions can certainly inform different priorities and methods (Whyte and Cuomo, 2016) in the project to care for soils. Rather than reductive valuations on soils based on "false universalism", a care approach opens possibilities for multiple relevant practices to emerge where general and specific responsibilities to meet the needs of soils might be legitimized through policy. A care approach challenges the norms of desirable land-use and who it is that is obliged to care. It has been suggested that stronger transdisciplinary commitments could be a strategy for care practice in policy arenas (Ressiore et al., 2025), which could potentially facilitate an ongoing reflexivity around these kinds of norms. A care approach invites to us to speculate on the practicalities of cultural renewal (Jackson et al., 2017) based on a relational worldview which go beyond abstract ethical judgements.

Yet, returning to our unsettling question above, we understand that the work – the attentiveness and willingness to respond – to care for soils cannot be possible as long as EoC is the starting point. Is it possible to restore or repair the diverse human-non-human relationships and if not, what could meaningful policy processes then look like? Inspired by Whyte (2021), we wonder what could policy in response to crises look like if it was instead assessed by its contributions to building the quality of relationships? What might a policy arena that takes the response-abilities of care seriously look like in practice? We are heartened by examples from diverse contexts of policy-making that work from relational perspectives. For example: policies that focus on food webs to capture the interdependencies of an ecosystem, rather than a fixation on singular entities with economic importance (Pérez-Hämmerle et al., 2025); experimentation in law that extends participation in governance to non-human nature (Rickard et al., 2024); and approaching policy as a matter of participating in reciprocal relationships rather than managing nature (Moon et al., 2025). Examples such as these offer speculative guidance that support "a shift in attention and a broadening of language" (Bussey and McNicholl, 2025). Responding to crises from one's position in a web of relations offers an alternative motivation for policy. This is not an undemanding undertaking, but "a politics of reckoning with a world that is already violated" (Murphy, 2015, p.732) – an unsettling that will never be complete but which is a more "realistic" (Whyte, 2021) response.

CRediT authorship contribution statement

Susanna Barrineau: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Stina Powell:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

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