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SUCH Blog post

In the shadows of carbon

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Carbon is one of the key components of life on Earth. Since the industrial revolution, carbon has occupied a centre stage in big societal transformations. Coal - which is basically carbon mixed with hydrogen, sulfur, oxygen, and nitrogen - has had a massive role in enabling the transformation from agrarian to industrial societies and thereby increasing the wealth of nations (Smith 1789). Now, carbon-based substances allow humans to drive cars, cook meals and heat houses. At the same time, however, carbon has become a problem. Paradoxically, while it seems we can't live without carbon, we can't live with too much of it either.

We have reached the point that cutting carbon emissions appears as one of the guiding goals for policy making. The EU is committed to a vision that can lead to achieving net-zero greenhouse gas emissions by 2050. Finland is even more ambitious: it is set to become carbon neutral by 2035 and states that this goal is achieved by accelerating emissions reduction measures and strengthening carbon sinks.

Soil, the new black of the carbon markets

IPCC proposes that emission reductions can be achieved in multiple ways (IPCC 2019). In practice, it appears, however, that instead of regulating industry and corporate actors to radically lower their emissions, political agendas are directed towards more market-based solutions (Kauppalehti 2018, Ministry of the Environment 2019, in Finnish). Among these, harnessing "resources" such as farmland and forests to meet carbon targets appears as a prominent one (EU 2019, in Finnish).

Indeed, in agriculture, much attention has lately been directed to the capacity of soil to act as a carbon sink (see also Minasny et al. 2017, HS 2019, in Finnish). Within a relatively short time in Finland, discussion has started to circulate around regenerative agriculture referring to a set of practices that improve the soil health (USDA 2019) - including, for example, maximizing plant-based cover of the soil, minimizing soil disturbance, increasing plant diversity, focusing on growing roots, and integrating livestock grazing - which in turn increases soil's capacity for carbon sequestration. Slogans like "roots, no shoots" (Williams 2019) direct attention underground and are aimed to make farmers, industry representatives and political decision-makers see business potential in carbon that lies beneath the soil.

Forest policy is characterised by the debate whether to converse forests as carbon sinks or utilise them for the bioeconomy in order to preserve fossil fuels. For countries like Finland, which has substantial forest areas, it has been important to be able to count forests as carbon sinks to reach emission targets more easily. However, despite the increased attention to forests in climate policy, Finnish carbon sinks have actually decreased by 43 percent from 2017 to 2018 (HS 2019, in Finnish).

This is partly due to the altered methods of calculation, but largely due to increases in cuts. It shows that mainly economic rationales continue to guide forest policy.

It does appear a positive development that the health of the soil - both in woodland and farmland - is acknowledged and nurtured. The received attention makes visible that food and energy provisioning are not only important from the perspective of the bioeconomy (MMM 2019), but also form an essential part of climate politics. Sadly, what connects these political and economic discussions in agriculture and forestry is that they are all subordinated to contributing to economic growth. Developing carbon markets with the help of politics enforces this connection.

Towards multiple ways of knowing

We argue that soil, which has become central in agricultural and forest policy, is - and should be seen as - much more than a carbon sinkage. Reducing it to a carbon sinkage places other ways of relating to and valuing the soil in the shadows of carbon.

Both, research within deep ecology and ecofeminist science and technology studies as well as our practical experiences in the field of forestry and agriculture support our argument. Puig de la Bellacasa (2014), for instance, challenges scientific approaches that support industrial and intensive ways of knowing and treating the soil. While soil appears predominantly as a scientific, political and economic playground or as a resource for providing ecosystem services, soil is also a living entity and provides a home for a multitude of living beings (Puig de la Bellacasa 2014).

People who work with or connect to soil in diverse ways - through practices such as gardening, trekking, foraging, restoring ecosystems - form relations with the soil and through the soil to the surrounding habitats and other living beings. These relationships are not primarily symbolic and abstract, but practical and embodied. Knowing that arises through these different practices of engaging with soil emerges through a particular form of relating (Puig de la Bellacasa 2016) and can't be reduced to scientific rationale only but senses and bodily ways of knowing (Lash 2016) as well as intergenerational knowing (Vannini & Vannini 2019) become to define what is (un)real, valuable and worth pursuing.

When knowing *about* the soil becomes knowing *with the soil,* forests and farmland appear as sites of observing, relating, healing, nourishing, nurturing and dying. This is a different paradigm within which soil is never a site for carbon markets or a battlefield for ecological serial killers. There is no win-win between these paradigms: there is life and death. Should that which outweighs the other be decided in the carbon markets?

How and *what* we know about soil are intrinsically connected. This is a basic epistemological claim (Gherardi 2011) and if we accept that these two are connected, then, as Puig de la Bellacasa (2014) argues, what and how we know about soil has implications to the future of life on earth. If political decision making is mainly based on knowledge about soil being produced by soil science and measuring, then that what is (the purpose of) soil becomes reduced to biochemistry, and ultimately, to carbon. But if humanity and the society wants to cultivate a nourishing future for multiple beings, we need to account for and start valuing and validating multiple ways of knowing. Does this happen

by teaching our children how to compensate for their consumption via smart phones? Or, do such approaches distance people from other ways of knowing and connecting, and make them forget biodiversity and the wellbeing of other living beings - without which our life is threatened?

Whilst pursuits for carbon neutrality may make soil pass from the background to focus, it is done in a way that doesn't acknowledge its value beyond human utility. In the end, it doesn't really matter how much carbon is stored and where, if the surrounding ecosystems collapse.

As the famous Albert Einstein quote goes: "We can't solve problems by using the same kind of thinking we used when we created them." By looking at carbon we are trying to fix the problems that are created within the economic growth paradigm with solutions supporting its continuation. Zooming in carbon neutrality overshadows the accelerating mass extinction of species (see e.g. Radford 2019) and bypasses deeply ecological and spiritual ways of knowing and relating to nature (see e.g. Bellacasa 2014, Curry 2011, Eisenstein 2013, Kingsnorth 2013).

What would happen, if more people connected to soil and acknowledged it as a living entity that's valuable for its ability to create life rather than for its ability to sequestrate carbon?

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