Enabling Coherence for Sustainable Land Management and Climate Policy

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This synthesis paper is a product of a first workshop on upscaling the potential of soil organic carbon for climate action, held in April 2020. Experts came together for the "Climate-Soil Community of Practice" to disseminate information on successful land management and soil carbon projects, highlight good practices for overcoming adoption barriers and strengthen the case for sustainable land management as a key to effective climate action. This synthesis paper presents the outcomes of the presentations and discussions derived during the event on the linkages between sustainable land management and climate change. It aims to provide guidance on a holistic approach to land use and climate policy processes within the scope of international agendas and national actions. It offers entry points at the national level and presents good practices to current barriers in aligning these two closely interconnected, yet often separately treated processes.

1 The potential of sustainable land management for climate action and food security

Healthy soils are fundamentally important for human livelihoods, economic and social prosperity and for resilient ecosystem services. They are the resource for food, fiber and energy in our ecosystem. They provide nutritious food while being indispensable for biodiversity. However, in contradiction to its vital role, the current food and land use systems are damaging these indispensable ecosystems. In general, land is both a source and a sink of greenhouse gases (GHGs), while at the same time, being vulnerable to the negative consequences by climate change and weather extremes. Globally, about a quarter of land is degraded due to human activity, with climate change exacerbating this process by changing temperature and rainfall patterns (IPCC, 2019).

Sustainable land management (SLM) address desertification and land degradation while reducing the negative impacts by climate change by representing a holistic approach to achieve long-term productive ecosystems.[1] Increasing Soil Organic Carbon (SOC) stocks is key to most SLM practices and provides synergies for addressing land degradation and climate benefits. Besides contributing to climate change mitigation by removing CO_2 from the atmosphere, enhancing organic carbon in soils improves soil health and fertility, water

[1] See also: GIZ (2018) "Sustainable Land Management for upscaled climate action" URL: https://www.adaptationcommunity.net/wp-content/uploads/2019/05/Sustainable-Land-Management-for-Up-scaled-Climate-Action.pdf

and nutrient retention capacity, food production potential and resilience to drought (Sanz et al., 2017; FAO, 2019). [2]

Linkages between land use and climate change

The steady increase in demand for food due to increasing population and changes in consumption patterns have led to an intensification of agricultural production and an expansion of areas for agriculture and forestry. The Agriculture, Forestry and Other Land Use (AFOLU) sector is one of the biggest emitters of greenhouse gases with about 23% (12.0 +/- 3.0 GtCO2e yr-1) of total GHG emissions (IPCC, 2019). At the same time, it is one of the most vulnerable sectors to the negative effects of climate change and food security has already been affected through changing precipitation patterns, increasing temperatures and greater frequency of extreme weather events.

Moreover, climate change exacerbates land degradation processes through e.g. more extreme weather events, increased risk of forest fire, increased rainfall intensity or heat waves (IPBES, 2018).

Besides contributing a huge share of GHG and being vulnerable to climate change, the land sector has great mitigation potential, while also playing a crucial role to adapt to climate change.

Potential of sustainable land management and soil organic carbon for climate action

Land is both a source and a sink of CO_2. It is estimated that in the period of 2007-2016, the land-atmosphere flux lead to a net removal[3] of 6.0+/-2.6 GtCO2 yr-1. However, future net increases from vegetation and soils due to climate change are projected to counteract increased removals (IPCC, 2019).

Figure 2 Increasing SOC holds multiple benefits for climate, biodiversity and food security (Source: Aaron Roth/NRCS)

Figure 1 An example of eco-efficient agriculture, provided by a CIPAV silvo-pastoral system at Reserva Natural El Hatico, familia Molina Durán, near Palmira, Colombia (Source: ©2010CIAT/NeilPalmer)

Many land-related responses that contribute to climate change adaptation and mitigation can also combat desertification and land degradation and enhance food security (see figure 3). These responses include e.g. sustainable forest management, reduced deforestation or increasing the soil organic carbon content.[4]

Sustainable land management can prevent and reduce land degradation, maintain land productivity, and sometimes reverse the adverse impacts of climate change on land degradation, while also contributing to mitigation and adaptation (IPBES, 2018; IUCN, 2015). Examples include agroecology, conservation agriculture, crop rotation and many other (for more examples see WOCAT SLM database https://qcat.wocat.net/en/wocat/).

[*here, a detailed description of the potential of SOC for climate action is still missing*]

[2] It is important to note that the potential for land-related responses and the relative emphasis on adaptation and mitigation is context specific, including the adaptive capacities of communities and regions. (IPCC, 2019).

[3] Comparing the sum of the net CO_2 removals due to the natural response of land to human-induced environmental changes and the FOLU net CO_2 emissions (IPCC, 2019).

[4] It is important to note, that the successful implementation of response options depends on the local environment and socio-economic decisions and that the integration of multiple responses across different scales and sectors is most promising to reach land degradation neutrality and climate targets.

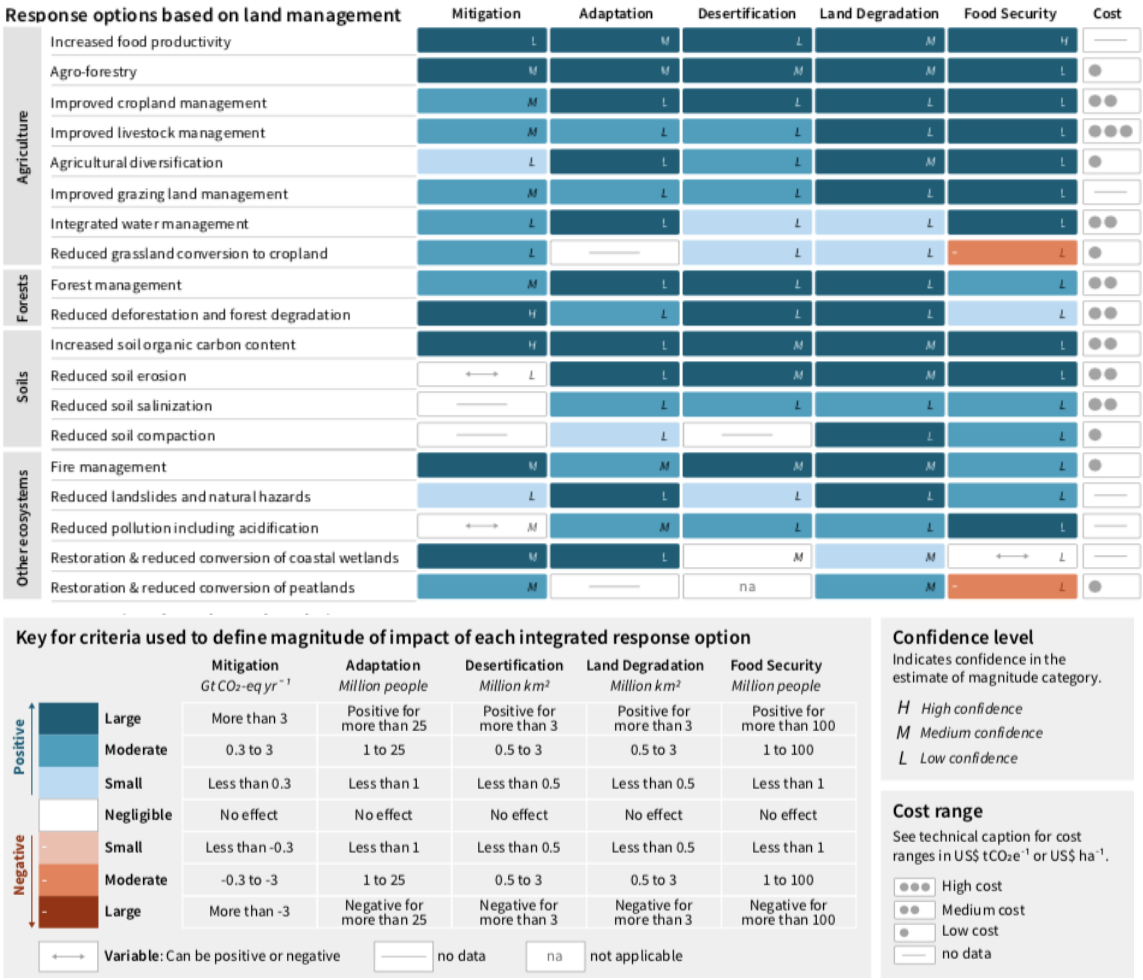

Figure 3 Potential global contribution of response options based on land management to mitigation, adaptation, combating desertification and land degradation, and enhancing food security (Source: IPCC 2019)

2 Sustainable land management within international agendas and national targets

Holding high potential for climate mitigation and adaptation action, sustainable land management is a crucial element to meet the targets of international agendas, including, but not limited to, the Paris Agreement and the Sustainable Development Goals. Even though there has been an increase in enabling a political environment to link climate and land policy, the potential has not been fully recognized yet and requires strengthening, especially implementation at scale.

Within the **Nationally Determined Contribution** (NDC) about 28 countries referred directly to soil carbon or targets which are related more broadly to SOC, wetlands and peatlands by December 2019. Also, numerous countries refer to agricultural practices which would sequester carbon without explicitly mentioning SOC (Wiese-Rozanova et al. 2020). With the **updating of NDCs in 2020** there were several intentions by countries to include SLM or soil within the next round of NDC formulation (Chorover & Martini, 2020). The AFOLU sector made up 20% of all requests to the NDC Partnership. Within these, the majority refers to SLM or forestry (50% of AFOLU requests) while only a minor percentage (5%) specifically refers to soil carbon (sequestration). Thus, the integration of SOC in NDCs remains very limited, despite its great potential for ambitious climate action. This may be due to the debate on what is achievable and how to monitor or verify improvement in SOC due to poor data and lack of capacity to collect and analyze data for calculating the sequestration potential (Wiese-Rozanova et al., 2020). Also, countries that do not address SOC in their NDCs have sometimes significant other national policies and actions in place.

Land use also play a prominent role within the United Nations Convention to Combat Desertification (UNCCD), which passed the 2018-2030 Strategic Framework, with the particular focus on soil management. As of October 2020, more than 80 countries have set their **targets to achieve Land Degradation Neutrality** (LDN), while over 120 countries have committed to it (UNCCD, 2020). Increasing soil organic carbon is a response option which positively contributes to the fight against desertification and land degradation to reach LDN targets while equally contributing to climate targets and food security (Sanz et al., 2017). Therefore, the pursuit of land degradation neutrality "provides impetus to address land degradation and climate change simultaneously" (IPCC 2019: 31).

Soils are an essential ecosystem since they host quarter of our planet's biodiversity, thus being reflected in the UN **Convention on Biological Diversity (UNCBD).** The Convention has a cross-cutting initiative for the conservation and sustainable use of soil biodiversity which aims to increase the recognition of the essential services provided by soil biodiversity across all production systems and its relation to land management (CBD 2012). Soil organisms are responsible for performing vital functions in the soil ecosystems, ensuring food security and nutrition. In 2021, the 15th Meeting of the Conference of Parties to the CBD will adopt a Post-2020 Global Biodiversity Framework. The zero draft foresees to "conserve and enhance the sustainable use of biodiversity in agricultural and other managed ecosystems to support the productivity, sustainability and resilience of such systems" (CBD, 2020). Soil also plays a role within target 15 of the **Sustainable Development Goals (SDG)**, especially 15.3, which states that to "combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world".

As seen, all the listed agendas include land use and sustainable land management emphasizing its cross-cutting character. Already many targets set in the NDCs correspond to the SDG and vice versa (see https://klimalog.die-gdi.de/ndc-sdg/ and https://www.climatewatchdata.org/ndcs-sdg). To strengthen synergies and avoid conflicting goals in the implementation of both NDC and SDG agendas, policy coherence of targets is crucial (Shawoo et al, 2020). Moreover, linking the efforts in achieving these different targets, can lead to multiple benefits at all levels of government (GIZ, 2019).

3 Enhancing sustainable land management within policy processes at the national level

To achieve the national commitments under the beforementioned international agendas, countries develop **national strategies**. These national strategies act as operational vehicles that elaborate how these commitments will be achieved. They include overarching development plans, National Adaptation Plan (NAP) processes, DRR strategies, National Biodiversity Strategy and Action Plans as well as sub-national and sector-specific plans. Due to its cross-cutting characteristics, soil and SLM measures are often incorporated into a variety of policies, plans and programs on food security, agricultural development, climate and sustainable development (GIZ, 2018).

Enhancing and prioritizing SLM within national policies and strategies will likely be an effective way to meet the multiple national commitments under the different agendas. Moreover, mutually supportive climate and land policies have the potential to save resources, create efficiency and effectiveness while fostering engagement and collaboration between multiple stakeholders (Dazé, Terton & Maass, 2018; IPCC, 2019).

"Acknowledging co-benefits and trade-offs when designing land and food policies can overcome barriers to implementation. Strengthened multilevel, hybrid and cross-sectoral governance, as well as policies developed and adopted in an iterative, coherent, adaptive and flexible manner can maximise co-benefits and minimise trade-offs, given that land management decisions are made from farm level to national scales, and both climate and land policies often range across multiple sectors, departments and agencies." (IPCC 2019:33)

This provides the foundation and motivation to create functional linkages between these different planning and policy processes and putting SLM upfront national strategies. Actions can be coordinated to effectively use resources while contributing to several targets enabling more ambitious target setting and implementation (*source*). To minimize the risk that different agenda targets and strategies undermine each other, it is important to identify synergies and trade-offs among sectoral and national priorities as well as expected outcomes.

[here, a detailed outline of corresponding national strategies where SLM should be integrated (e.g. NDC, NAP, NBSAP, Agriculture, development strategies, rural development strategies) is still missing]

However, there is still limited understanding of practical approaches to create coherence within national contexts and how to operationalize linkages between climate and land use targets and strategies (Dazé, Terton, Maass 2018). While a lot of literature focus on the synergies with regard to content, actors still face difficulties at the institutional level.

Challenges that actors face in designing coherent climate and land use strategies[5]:

i. *Awareness & Political will*: The interlinkages between SLM and climate change are often not recognized by national actors, leading to an absence of political will to align and streamline activities. This unawareness hinders the creation of synergies in implementing the different targets.

ii. *Institutional and power dynamics within governments*: Climate change is still not perceived as a cross-sectoral issue but rather as an environmental problem. Additionally, the potential of land use responses for climate action is

[5] These challenges only present a handful of barriers that actors described within the frame of policy coherence and which were discussed during the event in April.

still not fully recognized by climate actors. This makes it difficult to ensure political buy-in by relevant sectors. Additionally, power dynamics often hinder ongoing and open exchange between different actors, hindering necessary cooperation and coordination across ministries.

iii. *Capacities to coordinate across different sectors and levels of government*: Capacities are often limited, which makes it difficult to communicate and coordinate among diverse stakeholders. Creating coherence and synergies between processes requires to "speak the language" of the involved actors considering their respective interests and objectives which is sometimes difficult due to lacking communication and exchange. Also, actors face coordination fatigue.

iv. *Limited human, financial and technical capacities:* Identifying synergies and trade-offs need human as well as financial resources, which are often limited. Resources are needed to guarantee ongoing exchange and meetings.

4 Recommendations and good practices to unfold the full potential of SLM and SOC

During the event in April, some **first ideas** were put together on how to overcome the beforementioned barriers to unfold the full potential of SLM and SOC. These are, by no means, exhaustive but present some first recommendations gathered by climate and soil experts.

Communication of Benefit

To foster awareness and political will, it is important to communicate the potential of SLM for climate targets and strategies, putting at the center the multiple benefits (food systems, mitigation, adaptation, biodiversity etc.) which should be clearly communicated to politicians and decision-makers. Within the climate community, the potential of soil management for reaching the climate targets (NDC) should be highlighted. Within the soil community, the benefits of the climate popularity, public awareness of climate, funding opportunities etc. which can be used for upscaling soil activities should be in the focus.

Scaling up SLM through climate finance

By recognizing the importance of healthy soils for mitigation as well as adaptation, there is an opportunity for SLM activities to be financed through climate mechanisms. This is valid for financing structures on national level, as well as for international climate funds.[6]

Facilitate Communication Between the Levels and Sectors

To overcome institutional and power dynamics, it is important to speak the language of the other. Actors should highlight the multiple benefits of SLM to reach a variety of targets. Moreover, it should be strengthened that all levels/sectors of government are needed to address cross-sectoral policy problems such as climate change.

Installing cross-sectoral structures

To create awareness of the synergies of linking climate and land use processes, intersectoral committees which coordinate/support the climate policy making process can promote collective awareness and responsibility across government. Especially the setting up of an NDC coordination mechanism, helps to overcome institutional and power dynamics by emphasizing the inter-disciplinary nature of climate change, and climate policy solutions. By including multi-sectoral engagement as well as cross-ministerial coordination - inclusion of private sector and NGO's is ideal - such mechanisms can reduce duplication of efforts and streamline processes. Here it is important to create incentives, but to clear responsibilities and mandates. This has the potential to create ownership by different stakeholders involved.

High Level Commitment

By linking SLM and SOC to national development priorities and global commitments (SDG, NDC), it has the potential to raise awareness of its role and importance to reach the national commitments. By helping political leaders to identify the synergies and handle the trade-offs climate policy can be viewed with a more holistic and integrated approach and could create a narrative that works for them politically. Moreover, one could focus on countries that show strong political will for transformation, that will serve as role models (cover different regions).

[6] For more information see GIZ (2018): https://www.adaptation-community.net/wp-content/uploads/2019/05/Sustainable-Land-Management-for-Upscaled-Climate-Action.pdf

Share Evidence

It is important to share evidence of opportunities of linking soil and climate policy, also economically. This includes to showcase benefits of SLM and SOC to reach climate targets as well as emphasizing the potential of climate policy to implement soil practices. Different tools (e.g. EX-ACT tool) show the potential under different scenarios. Moreover, it is important to do a clear stocktaking exercise of what is already existing to avoid reinventing the wheel and learn how to overcome already experienced obstacles.

Peer to Peer Exchange

To increase awareness and human capacities, science-policy-interfaces, peer-to-peer learning and south-to-south-exchange foster learning between countries facing similar problems and with similar socio-economic, biophysical and climatic circumstances.

Using international processes that are already in place

Showcasing international processes and consortia within the climate-soil nexus (e.g. the Koronivia Joint Work on Agriculture) can help to make a stronger case for linking activities and strategies.

Making use of climate mechanism for SOC

[*here a description of integrating soil in carbon markets is still missing*]

5 Actors working on the soil-climate nexus (*to be finalized*)

With the **Koronivia Joint Work on Agriculture**, the topic of agriculture and soil is structurally anchored within the political climate sphere. As an addition to NDCs and National Adaptation Plans they seek to drive transformation within food and agricultural systems. Fostering agriculture as a solution for climate change mitigation and adaptation, they support a sustainable management of soils to help communities to be more resilient and sequester carbon. The subsidiary bodies report on the progress at the upcoming COP26 in 2021 (FAO, 2020a).

The **4p1000 initiative** was launched at COP21 (2015) to demonstrate that agriculture and particularly agricultural soils can play a crucial where food security and climate change are concerned. The initiative invites all stakeholders (public, private sector) to transition towards a productive, resilient agriculture, based on the appropriate management of lands and soils. An annual growth rate of 0.4% in the soil carbon stocks, or 4‰ per year, in the first 30-40 cm of soil, would significantly reduce the CO2 concentration in the atmosphere related to human activities.

The **Global Soil Partnership** (GSP) is a globally recognized mechanism established in 2012. The mission is to position soils in the Global Agenda through collective action. The key objectives care to promote Sustainable Soil Management and improve soil governance to guarantee healthy and productive soils, and support the provision of essential ecosystem services towards food security and improved nutrition, climate change adaptation and mitigation, and sustainable development (FAO, 2020b).

The **National Adaptation Plan (NAP) Global Network** supports developing countries to advance their NAP process to help accelerate climate change adaptation efforts around the world. The Network was established in 2014 at the 20th session of the Conference of the Parties (COP 20) in Lima, Peru, initiated by adaptation practitioners from 11 developing and developed countries.Today, the NAP Global Network connects over 1,200 participants from more than 140 countries working on national adaptation planning and action.

The CGIAR Research Program on Climate Change, Agriculture and Food Security (**CCAFS**) seeks to address the increasing challenge of global warming and declining food security on agricultural practices, policies and measures through strategic, broad-based global partnerships.

6 Glossary (*to be finalized*)

AFOLU (= Agriculture, Forestry and Other Land Use)

Land Degradation: a negative trend in land condition, caused by direct or indirect human induced processes, including anthropogenic climate change, expressed as long-term reduction and as loss of at least one of the following: biological productivity, ecological integrity, or value to humans. (IPCC, 2019)

Land use:

LDN (= Land Degradation Neutrality):

NDC (= Nationally Determined Contribution):

SLM (= Sustainable Land Management): the stewardship and use of land resources, including soils, water, animals and plants, to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions. (IPCC, 2019)

SOC (= Soil Organic Carbon):

UNCBD (= United Nations Convention on Biological Diversity)

UNCCD (= United Nations Convention to Combat Diversification)

UNFCCC (= United Nations Framework Convention on Climate Change)

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