



## UNFCCC Policy Brief

### Securing Our Future: Making Climate Finance Work for Agricultural Soil

#### Executive Summary

Note: The usage of the term “Regenerative Agroecology” in this brief refers to regenerative agriculture, agroecology, and any sustainable soil management system that increases organic matter and life in agricultural soils, and that also encompasses the principles of Conservation Agriculture as defined by FAO and GSP, namely: no tillage, permanent soil cover, integrating plant and animal litter into soil, and crop diversification. A sustainable soil management system includes the 4 principles of supporting services, provisioning services, regulating services, and cultural services.<sup>1</sup> The effects of such a system include healthy living soils, plant and animal health, human health, improved farmer livelihoods, biodiversity and ecosystem restoration, sustainable economies and food systems.

Healthy soil is crucial for climate resilience, food security and economic growth. However, soil degradation threatens agroecosystem benefits, with 40% of global land already degraded<sup>2</sup> and 90% of Earth's topsoil at risk by 2050.<sup>3</sup>

Agricultural soil can play a significant role in our efforts to adapt to and mitigate the impact of climate change. If regenerative agroecological practices are adopted across the globe, a staggering 27% of the carbon sequestration needed to keep global temperatures below a 2°C rise beyond pre-industrial levels could be realized.<sup>4</sup> However, financial incentives are critical for farmers to transition away from agricultural methods that are harmful to soil health, which have become conventional and resulted in significant greenhouse gas emissions.

For 2019/20, less than 1% of global climate finance was directed toward small-scale agri-food solutions.<sup>5</sup> The small-scale agrifood systems are composed of a complex ecosystem of stakeholders including small-scale producers (typically managing less than 2 ha) and other value chain players (such as cooperatives, agri-micro, small- and medium-scale enterprises, and farmer associations). Despite

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<sup>1</sup> FAO. Voluntary Guidelines for Sustainable Soil Management. (2017). <https://openknowledge.fao.org/server/api/core/bitstreams/9a5b9373-3558-43b3-b732-f69326a7314d/content>

<sup>2</sup> “The State of the World’s Land and Water Resources for Food and Agriculture – Systems at breaking point.” Synthesis report. Rome. FAO, 2021. <https://doi.org/10.4060/cb7654en>

<sup>3</sup> “Land Degradation: Urgent Action Needed to Stop 40 per cent of Land Being Lost by 2050,” *United Nations News*, July 15, 2022, <https://news.un.org/en/story/2022/07/1123462>.

<sup>4</sup> “Achievable Agricultural Soil Carbon Sequestration Across Europe from Country-Specific Estimates.” *Global Change Biology* 27,6363–6380, 2021. Rodrigues, L. and et.al. <https://doi.org/10.1111/gcb.15897>

<sup>5</sup> “The Climate Finance Gap for Small-Scale Agrifood systems: A growing challenge.” Climate Policy Initiative. CPI [Daniela Chiriac, Harsha Vishnumolakala, Paul Rosane], 2023.

forming 27% of the global workforce (873 million),<sup>6</sup> smallholder farmers receive only a fraction of the global climate finance allocated under the small-scale agrifood systems.

Without the necessary financial support, transitioning to agroecology is out of reach for the majority of smallholder farmers. During the transition period, yields may be lower as new practices and crops are brought in. Lacking the financial resources to see them through this phase, many farmers already willing to restore their soils are unable to do so.

The proposed solution is to ease access to, and increase climate finance to support farmers in the transition to regenerative agroecology. This approach will improve soil health, enhance carbon sequestration, and strengthen food security while building climate resilience, supporting biodiversity and providing other ecosystem benefits including flood and drought prevention.

Key policy recommendations include:

1. Making climate finance accessible to farmers for adopting regenerative agroecological practices
2. Increasing climate finance allocation to farmers for creating carbon sinks in farmlands
3. Developing supportive policies and infrastructure for adopting sustainable land practices
4. Mobilizing private investment into soil regeneration
5. Integrating soil restoration into climate finance strategies

## Background

Healthy, living soil is the basis of all life-making processes and is critical in sustaining humanity and all other life forms on Earth. Responsible for strengthening food security, securing farmer livelihoods, water resources, biodiversity, air quality, and building climate resilience in the agriculture sector, soil health is the bedrock of societies across the globe.

Organic matter is key to healthy soil, acting as food for the microorganisms necessary to build a robust soil food web that supplies plants with essential nutrients. As 58% of organic matter is organic carbon, soil is therefore the largest terrestrial carbon sink, with the remarkable potential to hold three times more carbon than the atmosphere and all plant and animal life combined.<sup>7</sup>

Agricultural lands occupy about one-third of the world's total land area, comprising agricultural land, forest land, barren and desert areas, and urban land.<sup>8</sup> Agricultural soils therefore are the only soils that are actively managed and maintained, making it compelling to transition them into active carbon sinks. This can be achieved by adopting simple, sustainable soil management practices or regenerative agriculture practices through agroecology, such as cover cropping, crop rotation, and no-tillage. Soils

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<sup>6</sup> "What Is Regenerative Agriculture and How Can It Help Us Get to Net-Zero Food Systems? Three Industry Leaders Explain," UN Climate Change Champions, <https://climatechampions.unfccc.int/what-is-regenerative-agriculture-and-how-can-it-help-us-get-to-net-zero-food-systems-3-industry-leaders-explain/>.

<sup>7</sup> "Financing the Agricultural Transition," *State Street Global Advisors*, <https://www.statstreet.com/web/insights/articles/documents/financing-the-agricultural-transition.pdf>.

<sup>8</sup> FAO, "Global Land Area," accessed September 22, 2024, <https://openknowledge.fao.org/server/api/core/bitstreams/5c8b2707-1bcf-4c29-90e2-3487e583f71e/content#:~:text=Out%20of%20the%20world%20total,covered%204.1%20billion%20ha%20each.&text=the%20global%20land%20area>.

must be alive and healthy to meet a 60% higher global food demand by 2050 and almost 100% higher demand in emerging nations.<sup>9, 10</sup> With agriculture contributing substantially to National GDPs (4% in developed nations to 25% in some of the least developed countries<sup>11</sup>), soil degradation also risks economic development across the globe.

## Problem Statement

With over 40% of the world's land already degraded, soils have become active carbon emitters.<sup>12</sup> The UNFAO has warned that 90% of Earth's topsoil could be at risk by 2050, making agricultural soils one of the most significant carbon emitters globally.<sup>13</sup> This trend of intensifying land degradation affects 3.2 billion people, and is primarily driven by the continued use of conventional agricultural practices (e.g. monocropping, injudicious use of chemicals, deep-plowing) worldwide.<sup>14,15</sup>

Agricultural soils can become carbon sinks if farmers are supported in adopting regenerative agroecological practices. This transition requires supporting farmers through education, access to expertise, hand-holding during the transition, and financial incentivisation for behavior change. In this brief, we will focus specifically on solving the financial incentivisation support farmers need.

By focusing on building health and life into soils, regenerative agricultural practices through agroecology have the potential to contribute around 27% of the global emission cuts needed to keep temperature rise below 2°C. Farmers, especially small-holder farmers who account for 84% of farms<sup>16</sup> and produce around one-third of the world's food (and up to 70% of food in low- and middle-income countries),<sup>17</sup> are central to this effort.<sup>18</sup>

Despite forming 27% of the global workforce, and their crucial role in food production, small-holder farmers could only access a fraction of the 0.8% of total climate finance (USD 660.2 billion) invested in

<sup>9</sup> Jessica Fanzo, et al., "Food Systems for the Future: How Agri-Food Research Will Help Tackle Climate Change," *Nature Food* 2, no. 5 (2021): 317-325, <https://www.nature.com/articles/s43016-021-00322-9#code-availability>.

<sup>10</sup> Jonathan Foley, et al., "Solutions for a Cultivated Planet," *Proceedings of the National Academy of Sciences* 108, no. 50 (2011): 20260–20265, <https://www.pnas.org/doi/full/10.1073/pnas.1116437108>.

<sup>11</sup> "Agriculture and Food Security," *World Bank*, <https://www.worldbank.org/en/topic/agriculture/overview>.

<sup>12</sup> "Land Degradation: Urgent Action Needed to Stop 40 per cent of Land Being Lost by 2050," *United Nations News*, July 15, 2022, <https://news.un.org/en/story/2022/07/1123462>.

<sup>13</sup> "Land Degradation: Urgent Action Needed to Stop 40 per cent of Land Being Lost by 2050," *United Nations News*, July 15, 2022, <https://news.un.org/en/story/2022/07/1123462>.

<sup>14</sup> Worsening land degradation impacts 3.2 billion people worldwide. UNESCO.org. (2023).

<https://www.unesco.org/en/articles/worsening-land-degradation-impacts-32-billion-people-worldwide>

<sup>15</sup> *Sustainable Food Trust*, "The Hidden Cost of UK Food: Soil Degradation," accessed September 22, 2024, <https://sustainablefoodtrust.org/news-views/the-hidden-cost-of-uk-food-soil-degradation/>.

<sup>16</sup> Arild Angelsen and David Kaimowitz, "Rethinking the Causes of Deforestation: Lessons from Economic Models," *World Development* 29, no. 6 (2001): 1033-1051, <https://www.sciencedirect.com/science/article/pii/S0305750X15002703>.

<sup>17</sup> "IFAD13: Thirteenth Replenishment of IFAD's Resources," *International Fund for Agricultural Development*, <https://www.ifad.org/en/ifad13/>.

<sup>18</sup> *World Economic Forum*, "Smallholder Farmers: Key to Achieving Food Security," September 2, 2022, <https://www.weforum.org/agenda/2022/09/smallholder-farmers-key-achieving-food-security/>.

small-scale agrifood systems (2019/2020),<sup>19</sup> impeding their transition to regenerative agroecological practices.

In contrast, 89% of global climate finance (on average between 2017 and 2020)<sup>20</sup> was invested in mitigation actions driven by technological innovation in the production sector and in clean and renewable energy solutions.

Compounding this issue, nature-negative financial flows (those leading to environmental degradation, biodiversity loss, and ecosystem destruction) outpace nature-positive investments that promote a stable climate, and healthy land and nature, by a factor of 30 as of 2022.<sup>21</sup> This imbalance accelerates climate change and ecological breakdown, making it even more critical to invest in soil health.

### **Solution: Climate Finance for Farmers**

Redirecting financial flows towards developing healthy living soils through regenerative agroecological practices is imperative to realizing their carbon sink potential, strengthening food security, and providing other ecosystem benefits. Due to resource constraints, farmer adoption of regenerative practices, and therefore the realization of these benefits, is limited.

We call for immediate action to revitalize soil ecosystems by easing climate finance mechanisms that support smallholder farmers. Investing in agricultural soils means incentivising farmers to adopt regenerative practices through agroecology, including cover cropping, crop rotation, integrating plant and animal litter into the land, rotational grazing, agroforestry, and reduced usage of chemical inputs like fertilizers and pesticides.

Across the globe, many initiatives support farmers to realize the benefits of adopting such practices. These efforts have been fueled by individual small grants and crowdfunding from citizens and institutions. To scale up such interventions and make them available to all farmers worldwide, we will need to make climate finance more accessible. The following are policy recommendations to realize this.

### **Policy Recommendations**

1. **Increase climate finance allocation to support farmers' shift to sustainable agriculture:** Prioritize grants, subsidies, and low-interest loans that enable them to adopt sustainable land management practices.
2. **Make climate finance accessible to farmers through process-level monitoring rather than outcome-based monitoring.** Since carbon sequestration in living agricultural soils happens at a prolonged rate, farmers should be incentivised to continuously manage their land sustainably. In the short term, monitoring systems used by crop insurance companies can be deployed to assess land management change. GIS-based imaging to track land-use changes and the effects of

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<sup>19</sup> CPI [Daniela Chiriac, Harsha Vishnumolakala, Paul Rosane], 2023. The Climate Finance Gap for Small-Scale Agrifood systems: A growing challenge. Climate Policy Initiative.

<sup>20</sup> Climate Policy Initiative, "Global Landscape of Climate Finance: A Decade of Data," accessed September 22, 2024, <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-a-decade-of-data/>.

<sup>21</sup> UNEP, "State of Finance for Nature," accessed September 22, 2024, <https://www.unep.org/resources/report/state-finance-nature>.

practices like cover cropping and tree-based farming can help monitor medium- and long-term progress.

3. **Develop supportive policies and infrastructure for the transition to regenerative agroecological practices.** This could include providing technical training, market access, and incentives for adopting regenerative practices that sequester carbon.
4. **Mobilize private investment into nature-positive agriculture.** The financial industry must take the lead in developing innovative instruments such as impact funds (designed to pass on a percentage of profits for large-scale adoption of regenerative practices), as well as debt instruments that recognise the outcomes (i.e. trees on land) as assets, comparable to a home that can be mortgaged.
5. **Integrate soil restoration and other Nature-Based Solutions (NbS) into climate finance strategies,** recognising their potential to sequester carbon and support ecosystem services.

There is no dearth of solutions and means to accomplish the needed soil carbon sequestration for climate mitigation and adaptation, there is only a dearth of time for the rapidly degrading soils, for the farmers who depend on it for their livelihoods, and for the global citizenry that depends on both. The urgency of allocating accessible and sufficient climate funding for farmers to adopt regenerative agroecological practices forms a big part of the puzzle to ameliorate the effects of climate change already disrupting lives, agri-food systems, socio-economic systems and natural ecosystems. As a group of UNFCCC-accredited NGOs that acknowledges the vital role agricultural soils and farmers play in climate change mitigation and adaptation, we encourage all NGOs that resonate with the policy recommendations put forth in this document to contribute their voices to realizing this cause.

## About the authors

### The International "4 per 1000" Initiative

Launched at UNFCCC CoP 21 in December 2015, [the international "4 per 1000 Initiative: Soils for Food Security and Climate"](https://4p1000.org/?lang=en) aims to show that agriculture, and in particular agricultural soils through natural carbon sequestration, can provide concrete solutions to the challenge of climate change while at the same time meeting the challenge of food security by implementing agricultural practices adapted to local conditions. Based on solid scientific documentation, the international "4 per 1000" Initiative encourages all voluntary actors around the world to engage in a transition towards a regenerative, productive, highly resilient agriculture, based on appropriate management of land and soil such as agroecology. More information on <https://4p1000.org/?lang=en>, and by email at: [secretariat@4p1000.org](mailto:secretariat@4p1000.org)

### Save Soil Movement

Save Soil (backed by the UNCCD, UNEP, WFP, UNFAO, IUCN amongst others) is a global people's movement to address the soil degradation crisis, and support governments in implementing soil health policies to establish a minimum 3-6% organic matter in agricultural soil (subject to regional conditions.)

The Save Soil movement's 'Cauvery Calling' initiative has helped farmers multiply their income 3 to 5 times by helping over 220,000 farmers transition to tree-based agriculture and training over 27,000 farmers in regenerative agriculture practices.

### SEKEM

SEKEM has made significant strides in supporting small-scale farmers and sustainable farming practices. Since its inception, SEKEM has reclaimed and developed over 830 hectares of land. They have trained 11780 farmers in biodynamic agriculture methods, which are now applied to 51,036 feddans (about 21,435 hectares). SEKEM's network includes more than 13,342



farmers who produce for the SEKEM group. This holistic approach has not only restored barren land but also created numerous job opportunities, employing over 2,000 people.