



3.23 Building global initiative to address soil health and carbon sequestration

Sustainable management of soil health through sequestration and buildup of soil organic carbon content through adoption of regenerative agriculture and rewarding farmers and land managers by payments for ecosystem services, carbon farming and trading carbon credits.

Summary

The solution is to restore soil health, promote adoption of regenerative agriculture, establish a mechanism to incentivize farmers by payments for ecosystem services, build a financeable market for rebuilding soil function and improving livelihoods of farmers through an equitable carbon financing.

Agricultural soils have a large potential to sequester carbon (organic and inorganic), contributing to climate change mitigation, adaptation, resilience, as well as improved livelihoods. Restoring soil function requires a widespread adoption of regenerative agricultural practices (e.g., conservation agriculture based on mulch farming and cover cropping in conjunction with complex rotations and integrated nutrient management, agroforestry and integration of crops and livestock with trees, improved varieties) which create a positive soil/terrestrial carbon budget, strengthen coupled recycling of water with carbon and nitrogen along with other elements, and restore degraded soils and ecosystems for producing more from less, and returning some land and water etc. to nature.

What is the problem we are trying to address and why is it important?

Several obstacles to equitable carbon financing exist. Important among these are:

- 1) Lack of a method of certification based on rate of change in soil carbon stock (Mg C/ha. y.) to a specific depth through adoption of recommended management practices
- 2) No mechanism to compensate farmers for strengthening of specific ecosystem services (e.g., carbon sequestration)
- 3) Absence of a functional market for trading of carbon credits, using just and transparent method of payment based on fair price, and absence of long-term commitment to a functional market
- 4) Lack of financing for procurement of essential inputs needed by farmers for adoption of the regenerative practices

Theory of Change

Re-carbonization of degraded and depleted soils through sequestration and buildup of soil organic carbon to attain a critical level in the rootzone of 1.5 to 2.5% would restore soil health, increase use efficiency of inputs, improve and sustain productivity, and adapt and mitigate the anthropogenic climate change. The strategy is to reconcile the need to enhance and sustain food production for the growing and increasingly affluent world population with the necessity to improve the environment.

How does it align to the criteria

- (1) impact potential at scale¹ (including return on investment): Restoration of soil health is critical to attaining several Sustainable Development Goals of the United Nations including #2 (Zero Hunger), #13 (Climate Action) and #15 (Life on Land).
- (2) actionability (taking into account politics, capacity, costs): The cost of no action on restoring soil health at global scale is much greater than that of a judicious action. However, the lack of political will power to translating science into action is a major obstacle. There is also a need to strengthen human resources to effectively implement the program at local level.

¹ Does not necessarily imply a single large intervention as opposed to enabling multiple small actions



- (3) Synergism : restoration of soil health and carbon sequestration creates numerous co-benefits such as adaptation and mitigation of climate change, increase in water quality and renewability, improvement in above and belowground biodiversity, and creating nutrition-sensitive agriculture that alleviates malnutrition.
- (4) Sustainability (i.e., the ability to keep delivering to 2030 and beyond) : Restoration of soil health through sequestration of soil carbon is critical achieving sustainability and keeping the Agenda 2030 on the track. Because the importance of soil health is not specifically mentioned in any of the seventeen SDGs ,such lack of awareness of the precious and finite resource is hindering the progress in many goals including #3 (Good Health and Well -Being, #5 (Gender Equality),#6(Clean Water and Sanitation),#10(Reduce Inequalities),and #16 (Peace ,Justice and Strong Institutions)

What is the existing evidence supporting the argument that this solution will work, or at least that it will achieve the initial outcomes described above?

Numerous long-term studies throughout the world (developing and developed nations) have indicated that adoption of regenerative agriculture (e.g., conservation agriculture, agroforestry)restores soil health, sequesters atmospheric carbon dioxide as soil humus, increases and sustains productivity, and makes agriculture a solution to restoring the environment. Obstacles to a widespread adoption of regenerative agriculture can be alleviated through payments to farmers for ecosystem services, development of carbon market, and education for enhancing awareness about the importance of these options. Regenerative agriculture is also critical to producing more from less, and saving some land and water for nature.

What is the current and/or likely political support for this idea?

There is a growing awareness among policy makers about the importance of soil carbon sequestration through adoption of regenerative agriculture .Notable examples among these are the“ 4per 1000 “ initiative adopted at COP21 in 2015 in Paris, Adapting African Agriculture at COP 22 in Marrakech in 2016, Platform on Climate Action in Latin America at COP 25 in Madrid/Santiago in 2019, and Living Soil in Latin America in 2020 by IICA in San Jose, Costa Rica. Similar initiatives are being adopted by development organizations (e.g., FAO, World Bank, UNDP)

Are there certain contexts for which this solution is particularly well suited, or, conversely, contexts for which it is not well-suited at all?

The concept of regenerative agriculture ,for sequestration of carbon as soil humus and restoration of soil health, is scale neutral and applicable to large and small scale farmers, climate neutral and applicable in both warm and temperate climates. It is specifically suited to Harsh climate conditions ,and with long-term adoption, can lead to implementation of the concept of land degradation neutrality.

Who are the key stakeholders to be further involved in the process of developing and refining the solution idea?

Key stake holders are national institutions and international development organizations. Important among the national institutions are agricultural research institutions and universities . Also Important are professional societies at national and international levels. Some international organizations include FAO,UNEP, WMO, CGIAR,

We would like to reach out to key stakeholders including:

- <http://www.fao.org/global-soil-partnership/en/>



- <https://africasoilhealth.cabi.org/>
- <https://www.soilhealthpartnership.org/>
- <https://kisstheground.com/>