THE 4 PER 1000 INITIATIVE

UNEARTHING THE FORGOTTEN SOLUTION

Global soils contain up to three times more carbon than the atmosphere. If this carbon level increased by 0.4% per year in the top 30-40 cm of soil, it could stop the annual increase of carbon dioxide in the atmosphere. And do much, much more. Yes, it is high time we stopped treating soil like dirt.

Signed now by more than 400 partners, '4 per 1000' is raising the profile of something that has been stuck underground for far too long. As it stands, only eight governments include soil management programs in their NDCs. Yet managing soil better could sequester around 20 billion tones of carbon in the next 25 years, equivalent to more than 10% of human CO_2 emissions. It could restore agricultural soil quality, increase yields and ensure food security for a soon-to-be 10 billion person planet. It could also let us do more with what we've already got; that is, better utilise existing agricultural land in order to decouple food production from deforestation.

Politically, the goal of 4 per 1000 is aspirational and consciousness raising. But that does not preclude it from being physically possible: we could increase carbon by 0.4% per year in soils to compensate for all of our GHG emissions. Reported soil organic carbon (SOC) sequestration rates show that under best management practices, 4 per 1000 sequestration rates, or higher, can be achieved and sustained.

In practical terms, however, policies that scale ecological and regenerative agricultural practices that boost SOC are needed across the approximately 570 million farms in the world that could implement them. The good news is that implementing techniques such as agroforestry, legume cover crops, compost, crop rotation and reduced tillage (conservation agriculture and regenerative agriculture) is profitable, and brings with it a mountain of co-benefits. With global implementation, SOC sequestration would restore soil quality, advance food and nutritional security and help water retention. The 4 per 1000 initiative estimates that restoring agricultural soils would cost from tens of dollars per hectare, and the potential is massive. For example, Australian soils offer enormous potential, as do vast swaths of land in China, Africa, North America and India.

Soil management is tricky though. Best management practices vary regionally, they depend on other inputs (namely nitrogen and water) and are notoriously difficult to deploy at scale. Accurately measuring and monitoring performance also represents a big challenge, especially across smallholder farms. Technologies are emerging to help. The Global Soil Map and FAO/UNESCO Soil Map both aim to provide fine-resolution global grids of soil composition, including estimates of SOC content via remote sensing and soil surveys. Measurement, mapping, and auditing soil to verify SOC sequestration can empower farmers and policy makers alike, and is expected to eventually facilitate market-based approaches.

The benefits of increasing soil carbon go far beyond climate change mitigation potential. Better soil health and resilience, through the widespread adoption of better agronomic practices is a win-win for climate change

and the economy. Soil is returning to the surface where it belongs. In the US, Democratic presidential front-runner Joe Biden has put soil on the policy front lines for reinvigorating rural America and tackling climate change. Why? Because 'soil is the next frontier for storing carbon' and literally holds the key to increasing farm productivity and rural employment.

NATURE'S CLIMATE STATISTICS

Since the dawn of farming, most agricultural soils have lost from 30 to 75% of their original soil organic carbon, or about 116 billion tonnes – equivalent to more than a decade of the present annual rates of human emissions. Another recent analysis has shown that over the next 20 years, with the full adaptation of best practices, 18 to 37 billion tonnes of carbon could technically be sequestered. The implementation of economically viable and environmentally sound agronomic practices globally could remove 6 billion tonnes of CO_2 from the atmosphere, which would offset two-thirds of annual anthropogenic CO_2 emissions. But because not all global soils are managed, or likely to be managed, a more achievable potential is considered to be around one billion tonnes per year. Still, that figure would be enough to offset the fossil-fuel emissions of the EU. As a strategy for climate change mitigation, soil carbon sequestration could also buy us time over the next ten to twenty years while other effective sequestration and low carbon technologies become viable.

We know one thing for sure – restoring degraded soils would increase yields and the resilience of agricultural and grazing systems in developing countries, helping to reduce poverty and improve food security in the face of a changing climate. In practice, better soil health and resilience means the widespread adoption, and maintenance, of more sustainable agronomic and regenerative agricultural practices. Scaling up both would be a win-win for the climate and the economy. Project Drawdown ranks regenerative and conservation agriculture as among its most cost effective climate solutions. Regenerative agriculture, by itself, could provide a $1.9 trillion financial return by 2050 on an investment of just $57 billion. The US state of California has to date invested over $700 million in climate solutions for agriculture, which include on-farm strategies for soil carbon sequestration. Of that, the state has committed $22.5 million for soil health – the first climate commitment for soils in the US.

KEY FIGURES

Soil globally contains more carbon than the atmosphere, about

1.5 BILLION TONNES

Nearly 10,000 years of cultivated agriculture has reduced global soil carbon by

~116 Gt

359 PARTNERS

- **42** Countries and regions
- **12** International organizations
- **110** NGOs
- **80** Indigenous groups
- **14** Foundations and development banks
- **40** Farmers' organizations
- **61** Private companies

Overall mitigation potential of existing (and potential future) soil management practices could be as high as

~8 GIGATONNES

of CO_2e per year.

It is estimated that soils can sequester around

20 GIGATONNES OF CARBON IN THE NEXT 25 YEARS

more than 10% of anthropogenic emissions.

Estimated that at least

50% OF CARBON

in Earth's soils has been released into the atmosphere over the past few centuries.

PROJECT BACKGROUND

Launched at the same time as the Paris Agreement at COP21 in 2015, the initiative is part of the Lima-Paris Action Agenda and is supported by the UN Food and Agriculture Organization and the World bank.

SDGs

VIDEOS & STORIES

https://youtu.be/_ua1QyvrQss

https://youtu.be/ORncZnlKOZg

EXECUTING ENTITY

The '4 per 1000' Executive Secretariat, hosted by the CGIAR System Organization, supports three other bodies: the Forum of Partners (consultative body); the Consortium of members (decision making body); and the Scientific and Technical Committee, which is made up of 14 scientific experts.

FUNDING

Sponsored and initiated by the French Ministry of Agriculture and Food, the French Research Institute for Development (IRD), the French Development Agency (AFD), Germany, Spain, CIRAD and CGIAR.

CONTACT

Dr Paul Luu, Executive Secretary:
paul.luu@4p1000.org
secretariat@4p1000.org
communication@4p1000.org