RECSOIL: Recarbonization of global soils

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Global Soil Partnership Secretariat

Promoting sustainable soil management for all

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SUSTAINABLE DEVELOPMENT GOALS

Healthy soils can contribute to address these challenges

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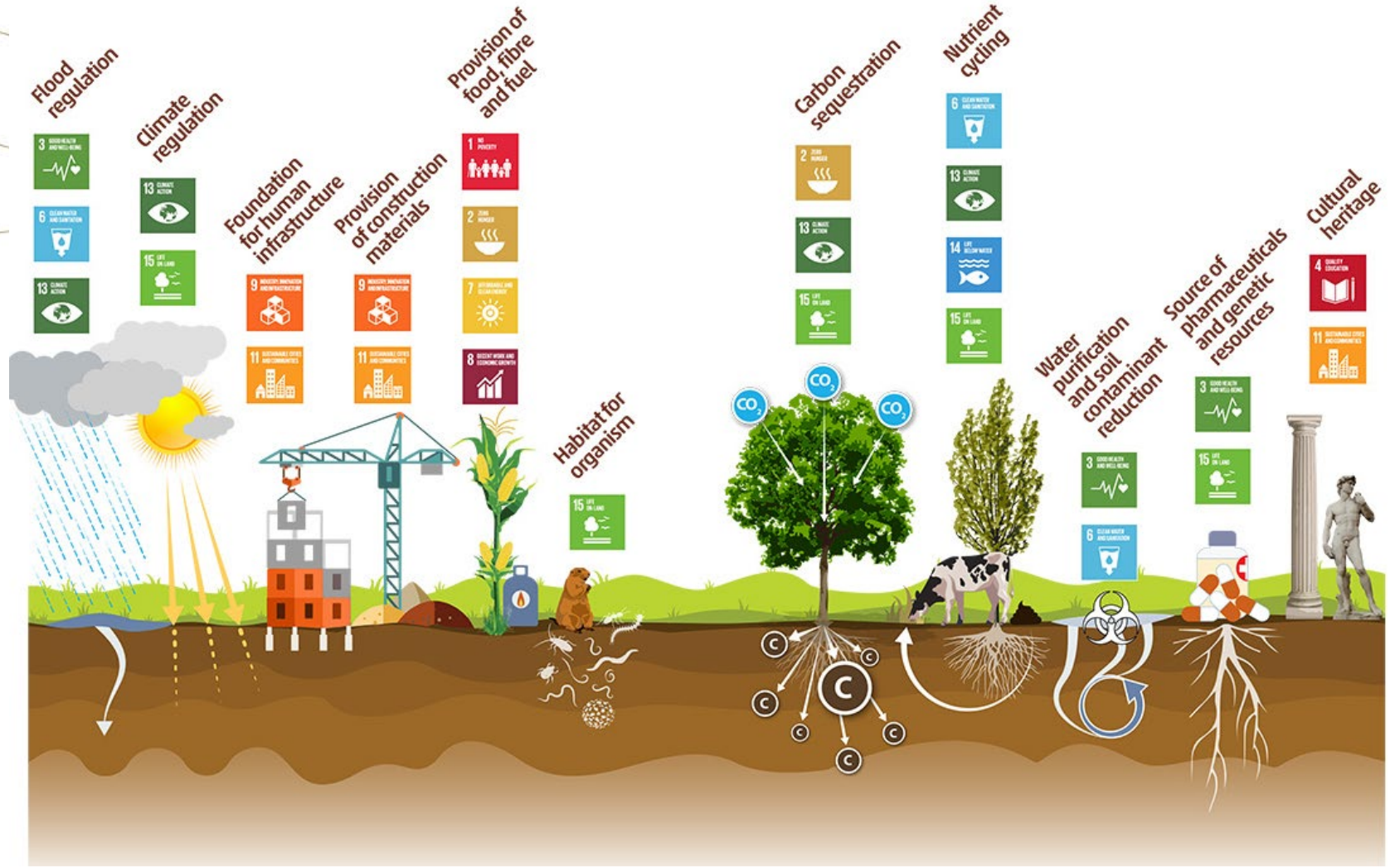

A healthy soil is capable of providing most terrestrial ecosystem services, therefore contributing to achieve the SDGs and human well-being

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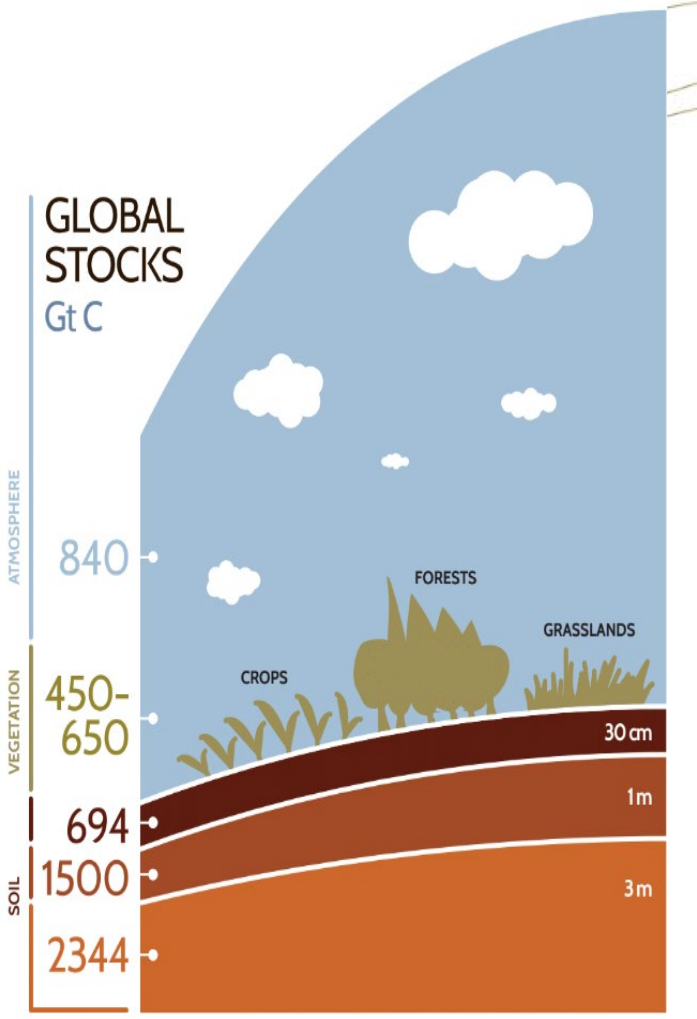
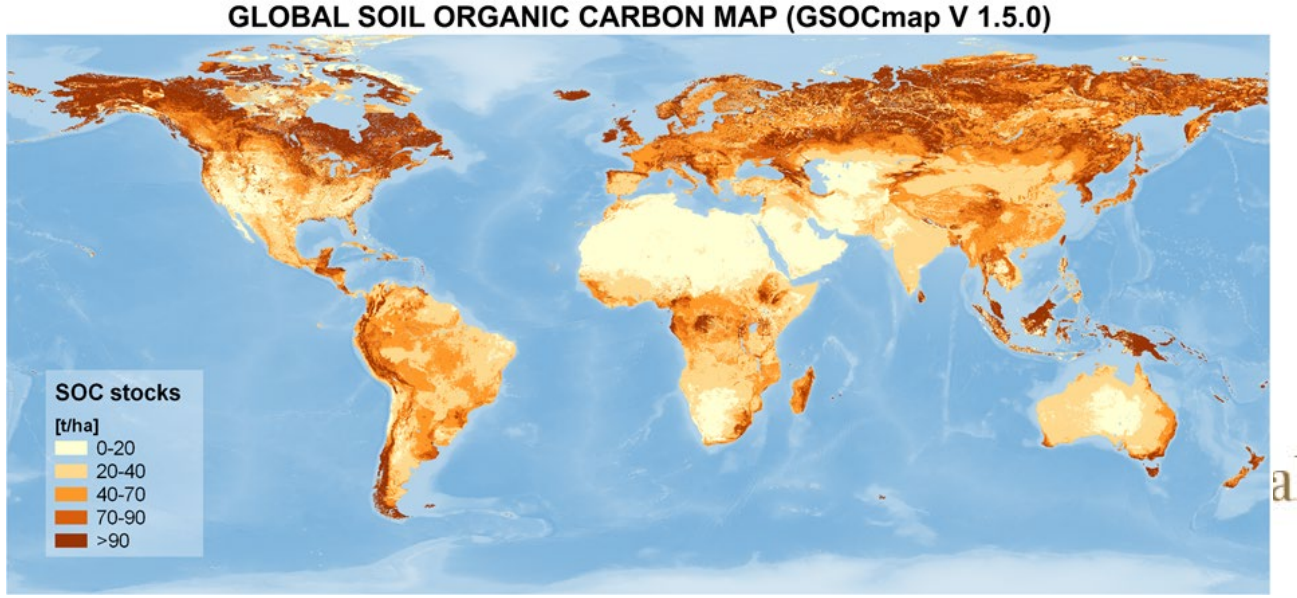
Why soils and Soil organic carbon?



Gt = gigatonne = 10^{15} g C = billion tonnes



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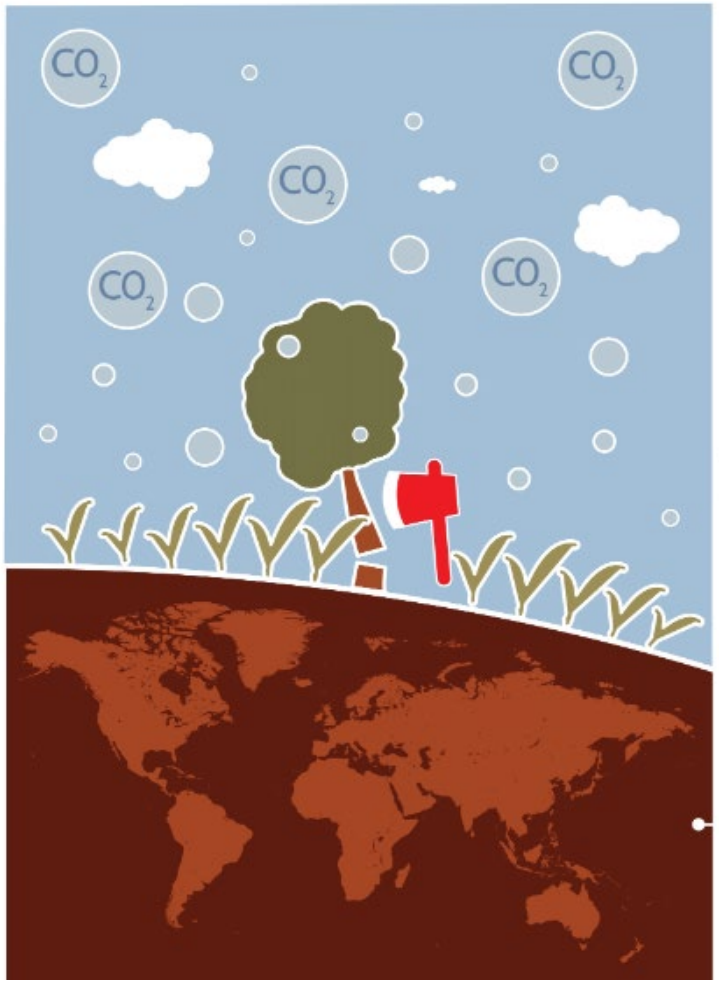
Soil degradation has negative impact son the provission of ecosystem services but also contributes with GHG emissions (CO_2, N_2O y CH_4)



DEPLETION OF SOC IN WORLD SOILS

135 Gt C

Gt = gigatonne = 10^{15} g C = billion tonnes

Agriculture/AFOLU: 30% of total global emissions

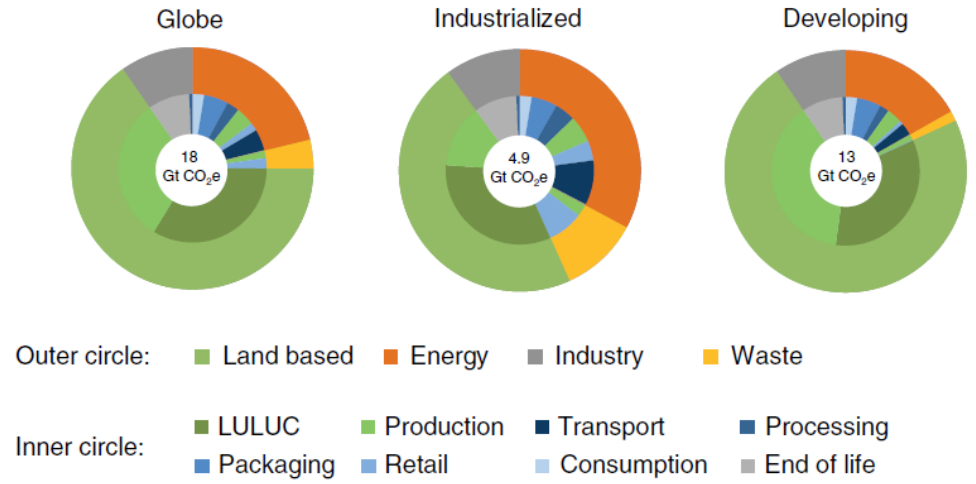


Fig. 1 | GHG emissions from the food system in different sectors in 2015. Total GHG emissions (including CO_2, CH_4, N_2O and F-gases) are expressed as CO_2e calculated using the GWP100 values used in the IPCC AR5, with a value of 28 for CH_4 and 265 for N_2O.

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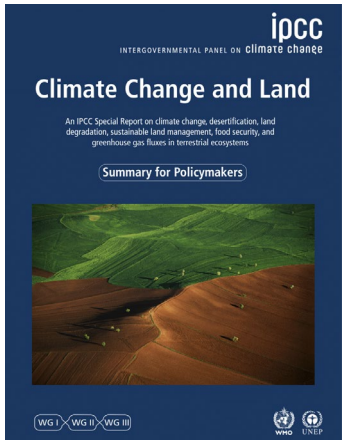
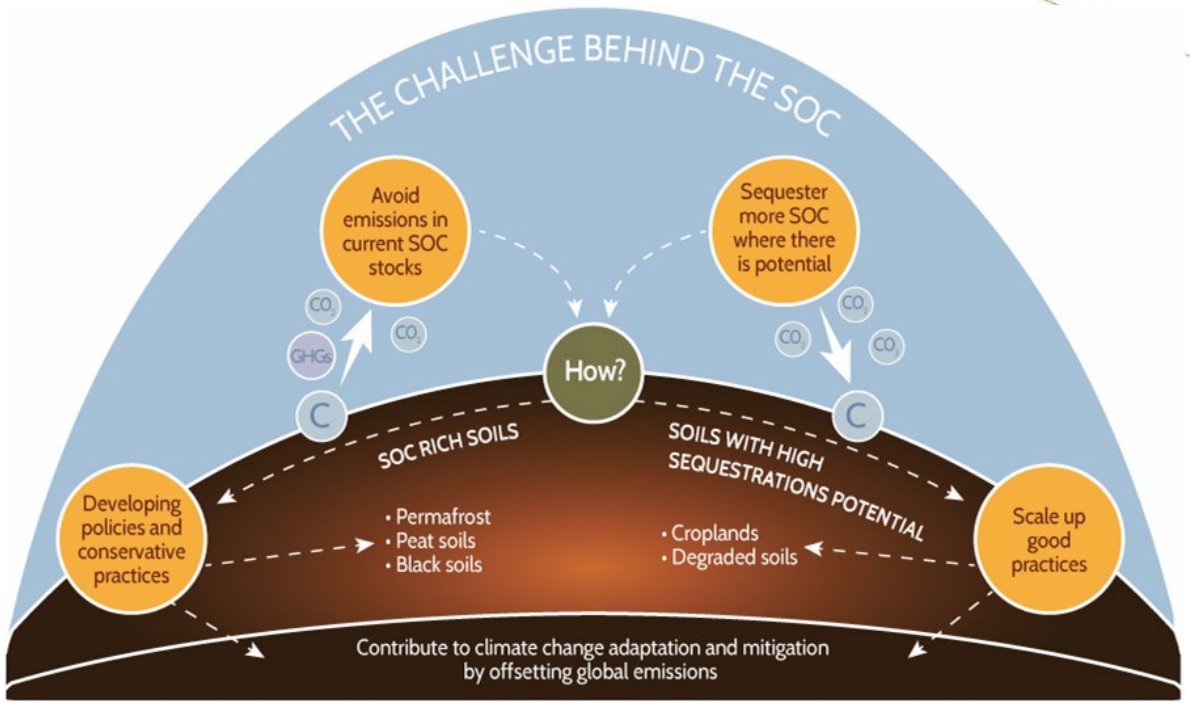
SOIL: our hidden ally, particularly for climate change!

"The increase of soil organic carbon (SOC) stocks is one of the most cost-effective options for the implementation of climate change adaptation and mitigation strategies at National level" (IPCC Special Report 2019).





When adopting Sustainable Soil Management Practices, we provide multiple benefits including: reducing GHG emissions, maintaining and enhancing carbon sinks and building resilience.

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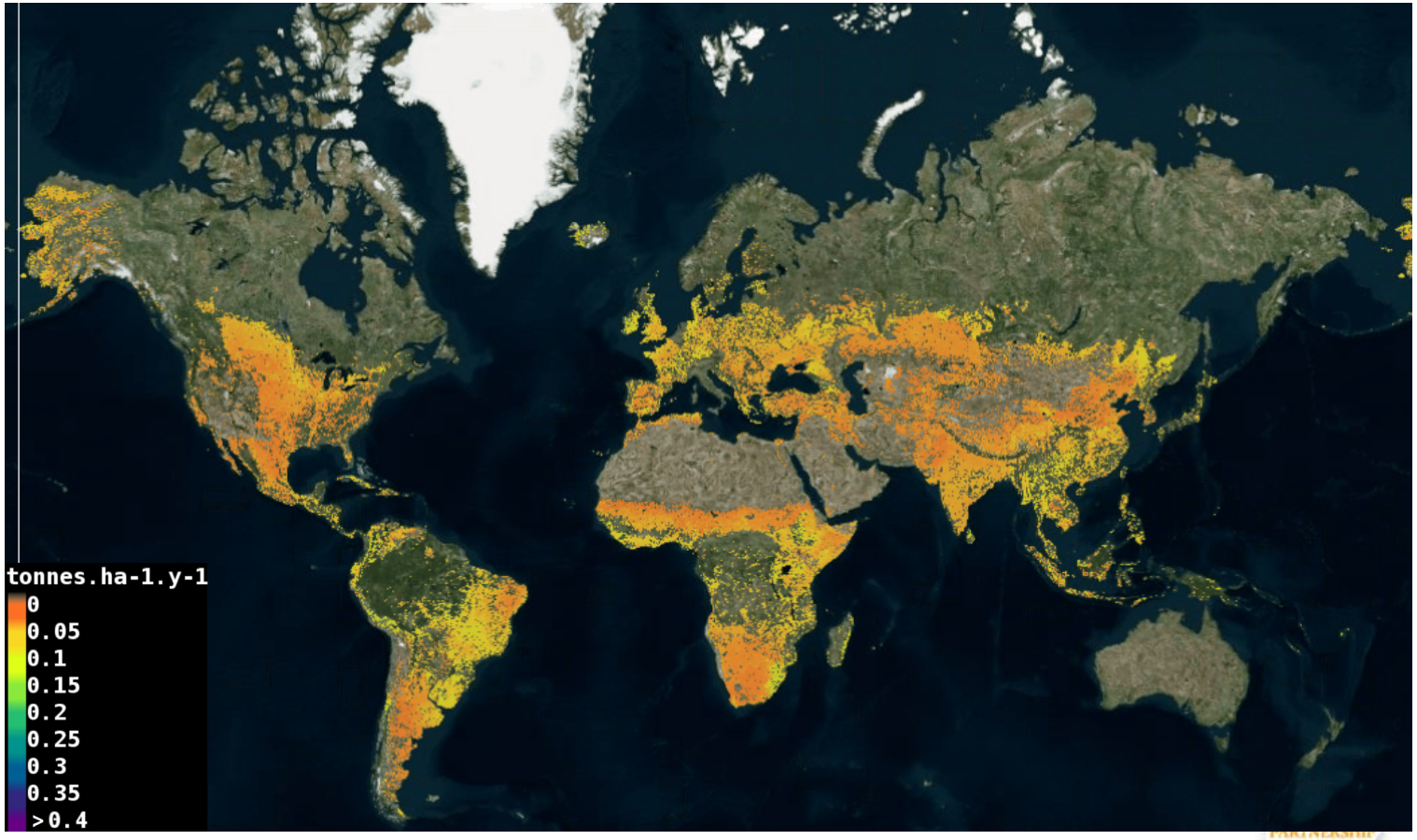
Global Soil Organic Carbon Sequestration map (GSOCseq map)

If managed sustainably - can sequester up to 0.56 petagrams of carbon - or 2.05 gigatonnes of CO2 equivalent -- per year, having the potential to offset yearly as much as 34 percent of agricultural global greenhouse gas emissions.

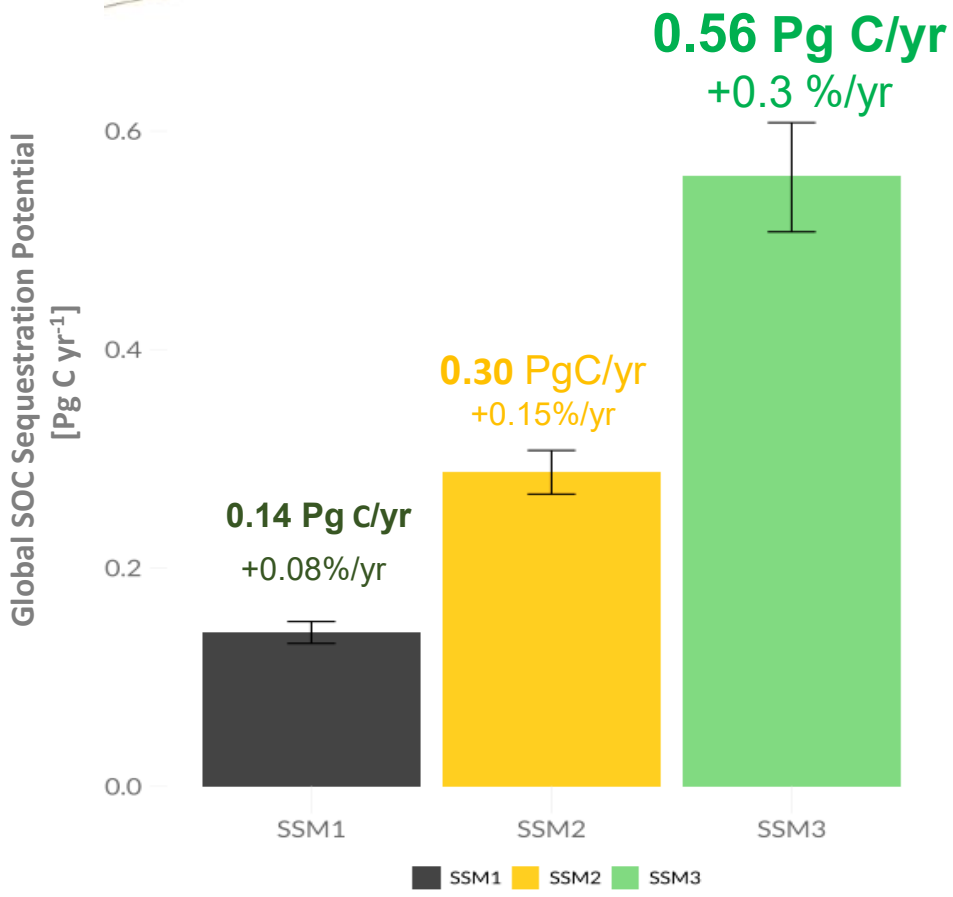
GSOCseq V1.0.0

- SOC Sequestration Potential (tC/ha/yr) SSM 1-3 (vs BAU)
- 20-year period (2020-2040)
- Depth: 0-30 cm
- 1 x 1 km resolution
- Current Agricultural Lands (Croplands + grazing lands) under management



First results - Annual SOC Sequestration*

*Excluding blank countries



Previous Estimates

Source	Seq.rate Pg C.year^{-1}
Paustian et al (2004)	**0.44 - 0.88**
Smith et al (2008)	**0.44 - 1.15**
Sommer and Bossio (2014) (Croplands+grasslands)	**0.37 - 0.74**
Batjes et al (2019)	**0.32 - 1.01**
Lal et al (2018) (Croplands+grasslands/shrublands)	**0.48 – 1.93**
Fuss et al (2018)	**0.54 – 1.36**

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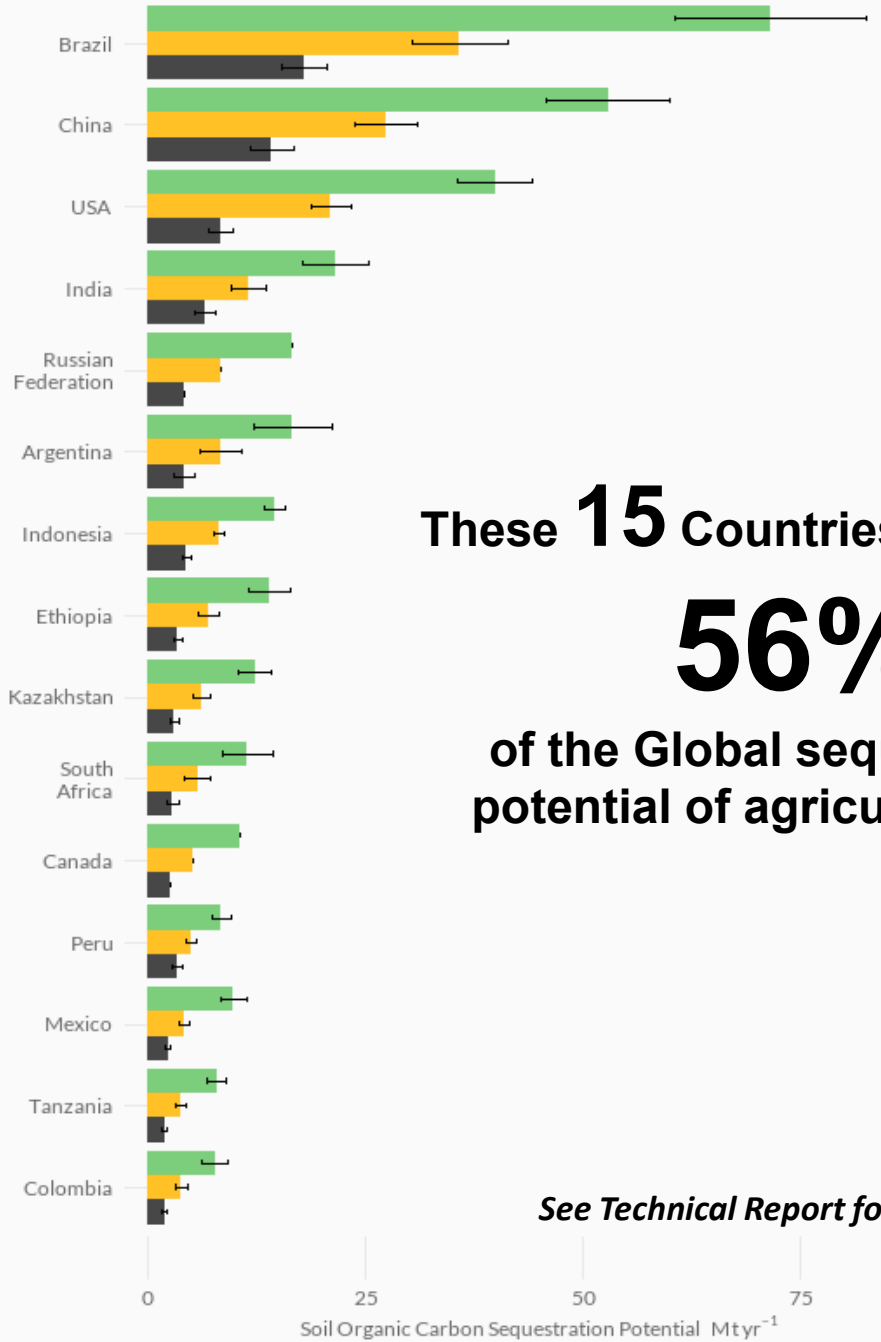
Countries with higher SOC sequestration potential

Turkmenistan did not prepare the national map, but the GSP Secretariat filled it in based on globally available data.
The estimated SOC sequestration potential in the country is 0,09 t/ha/yr, but could be higher if local data is used.



These 15 Countries account for

56%

of the Global sequestration potential of agricultural soils

See Technical Report for details

ment for all

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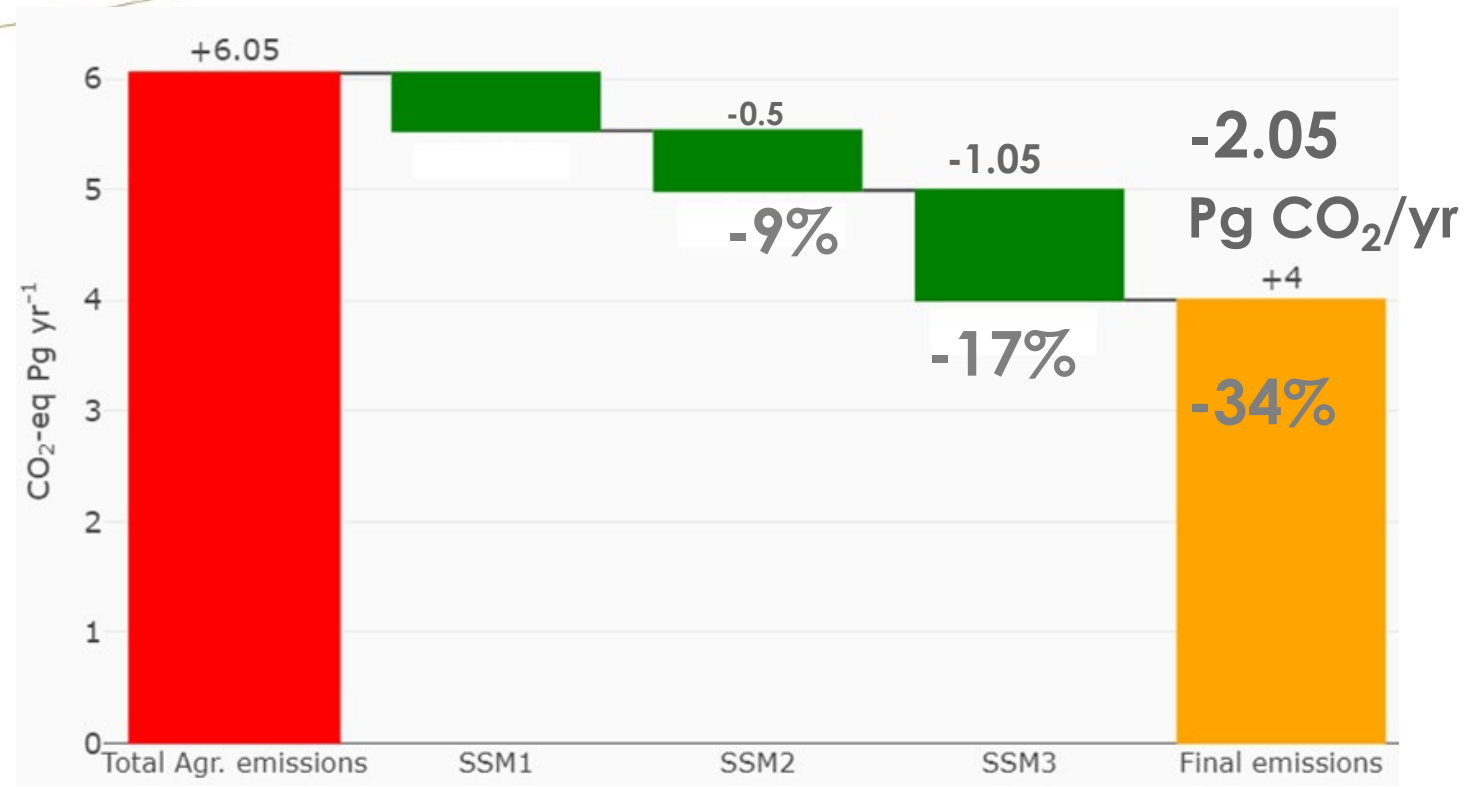
Mitigation Potential*

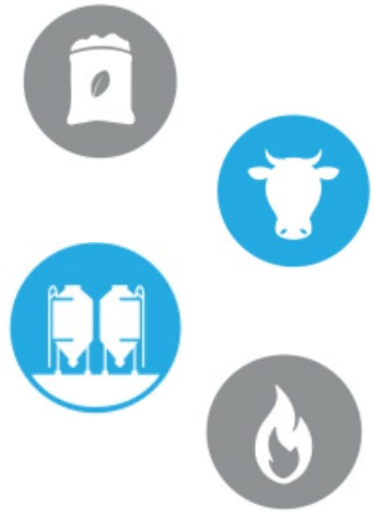
*Excluding blank countries

Agricultural soils play an important role in mitigating GHG emissions:
yearly agricultural global emissions could be cut by 34 %



*Total Agricultural Emissions from FAOSTAT (2019)

Also work on other
Mitigation strategies:



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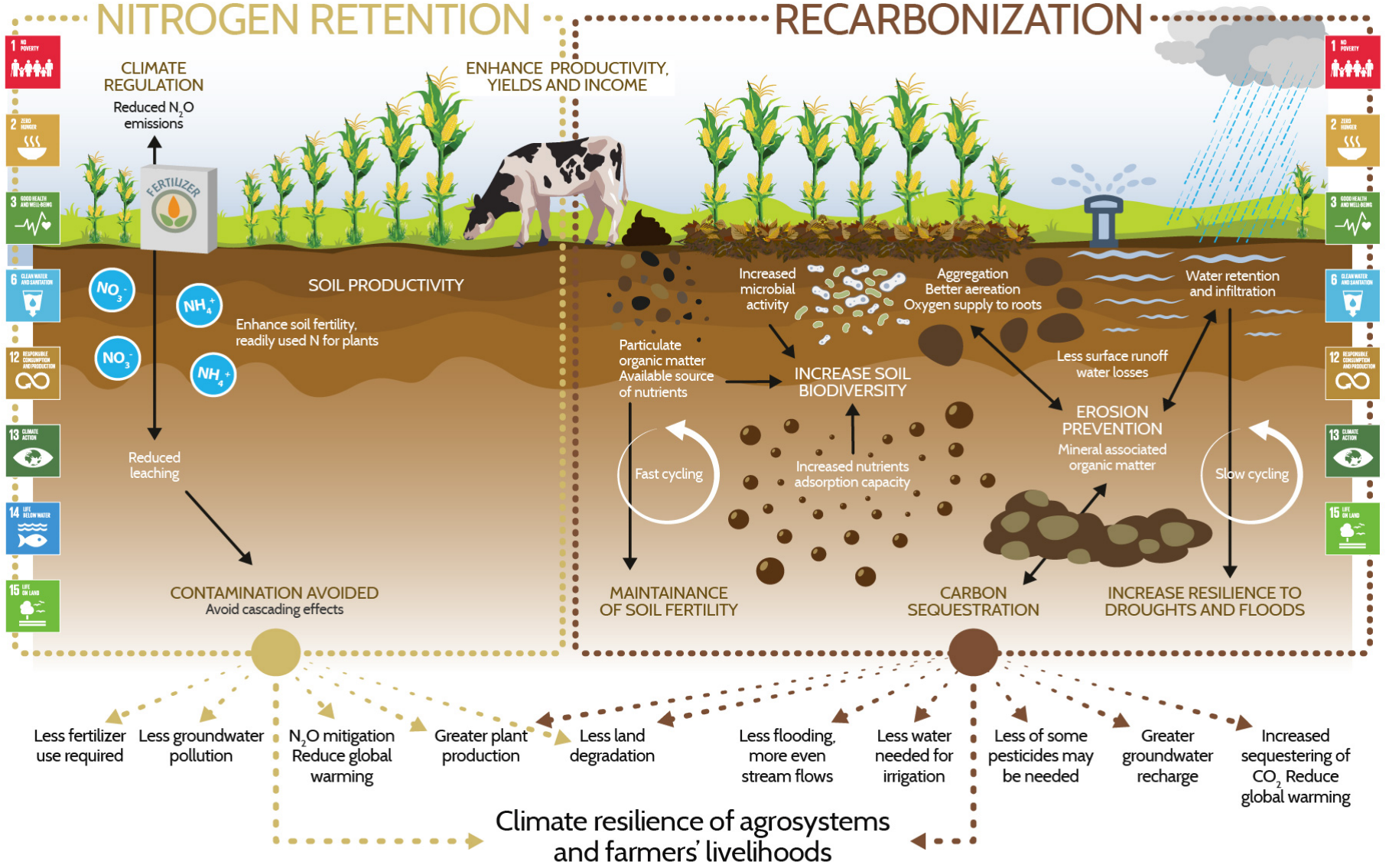
Nitrous Oxide (N_2O) has a warming potential almost 300 times greater than CO_2! Adoption of Sustainable Soil Management Practices can reduce N_2O emissions and help mitigate climate change even further



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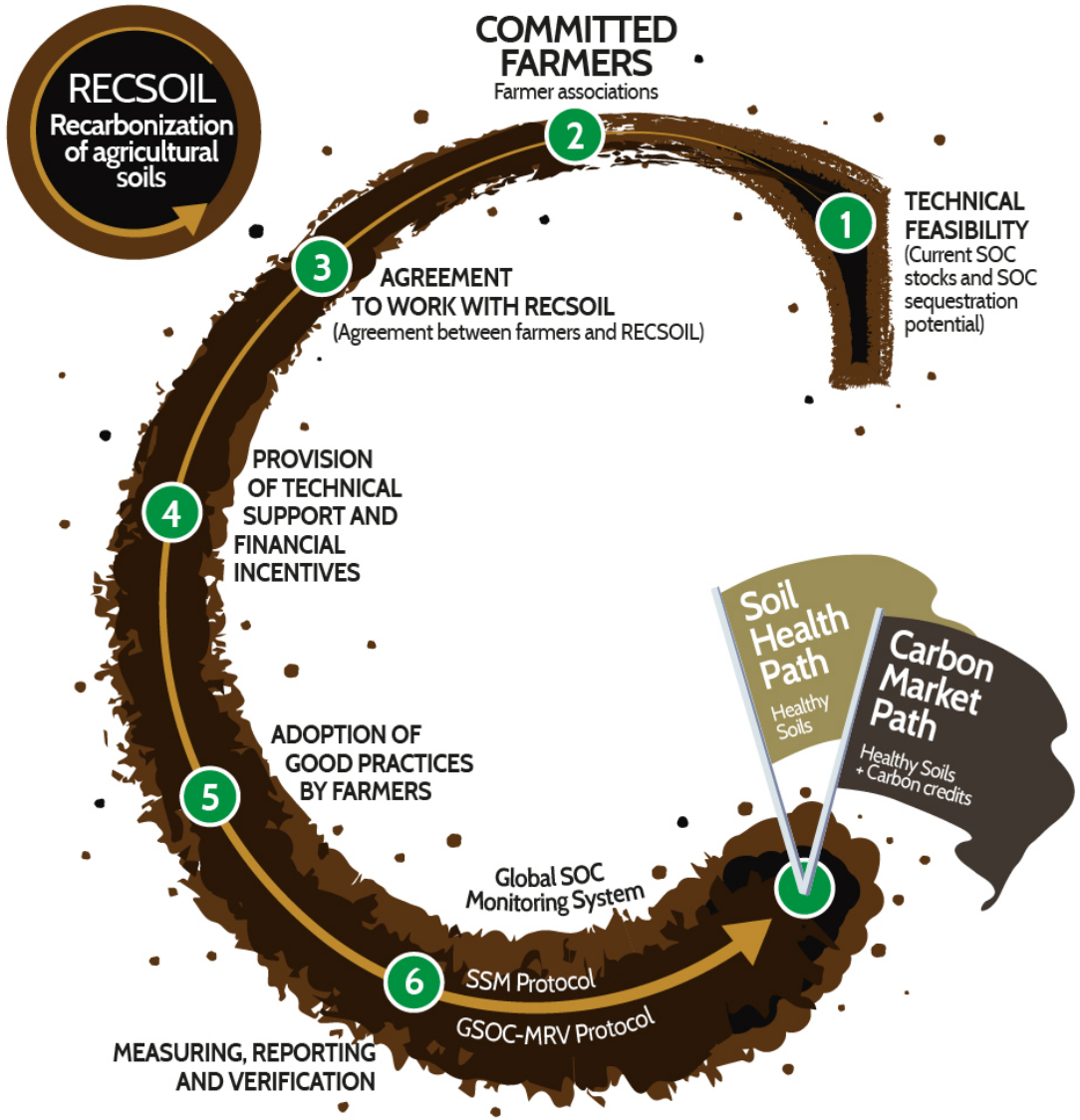
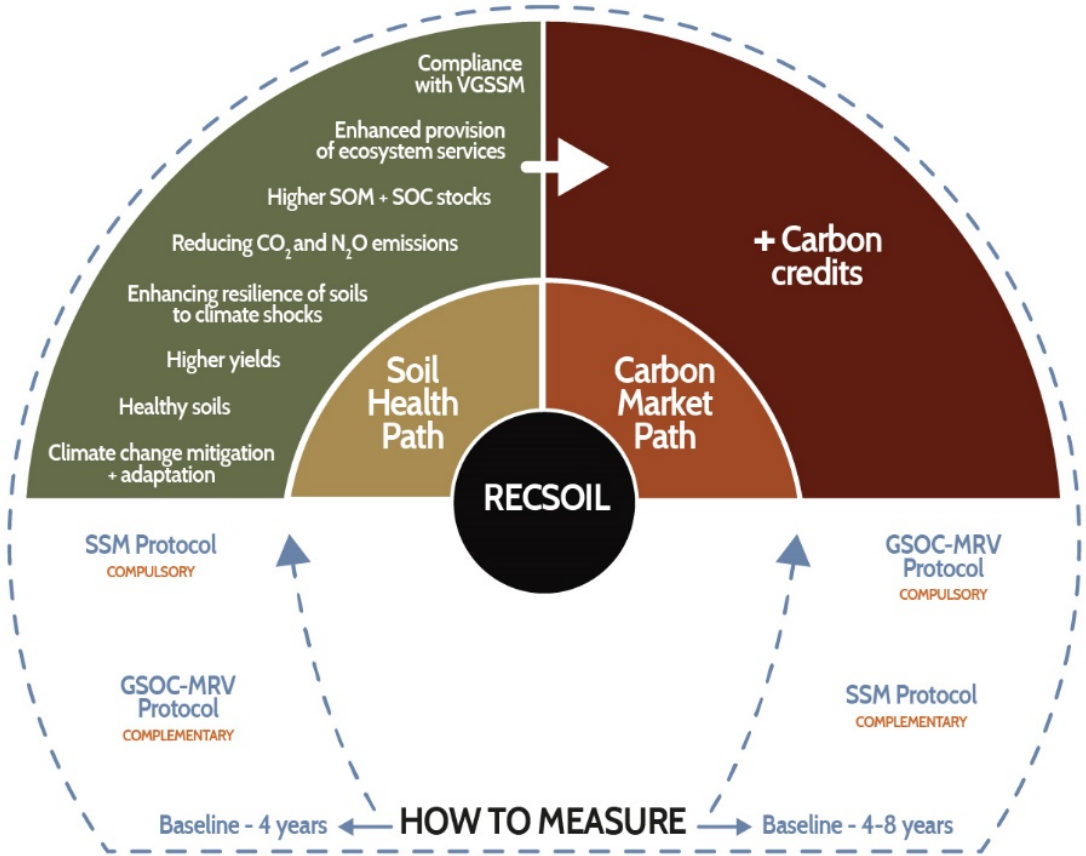
Adoption of good practices by farmers for maintaining and enhancing SOC stocks and reducing GHG, and boosting soil health and co-benefits (ecosystem services).





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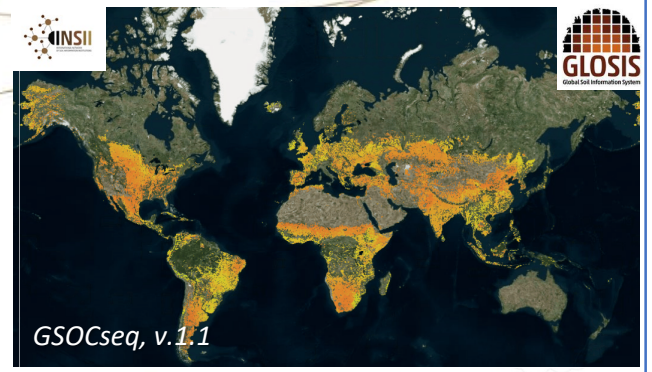
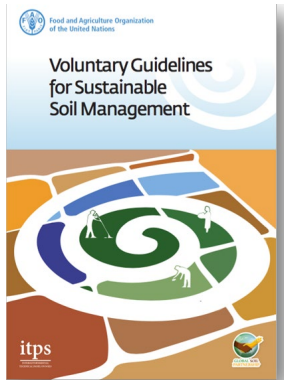
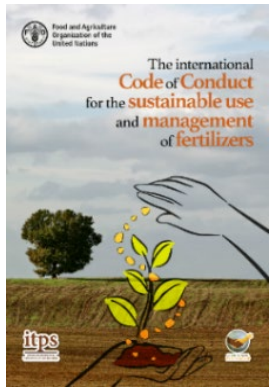
RECSOIL Toolbox

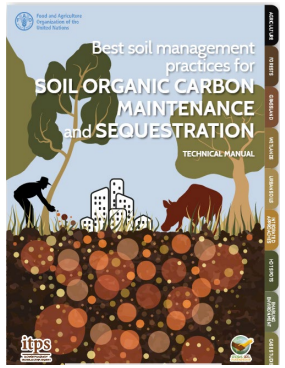
Feasibility Assessment

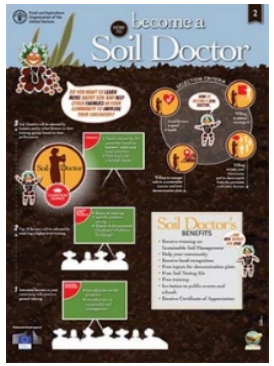


Planning & Implementing Interventions



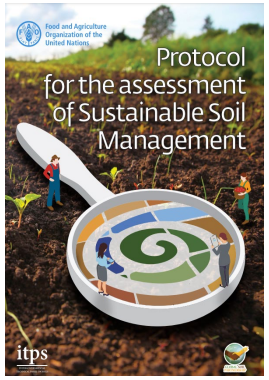


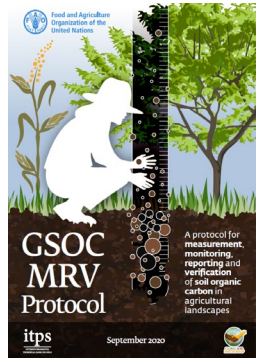


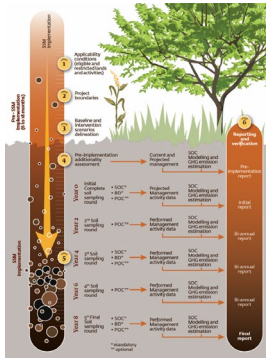


Supporting Materials

Monitoring, Reporting & Verifying







Capacity building: soil data and mapping

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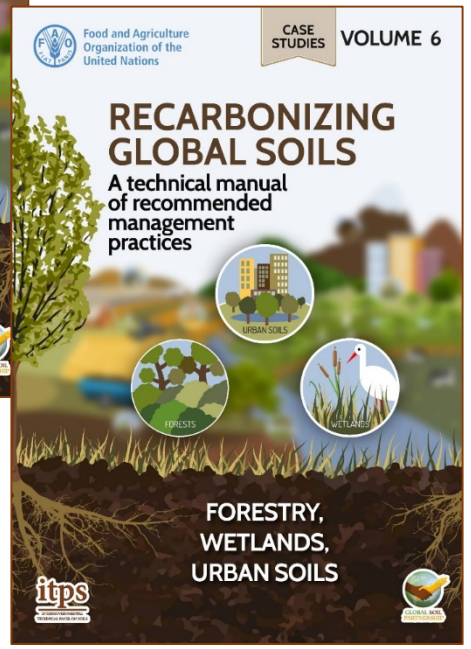
Good practices are there!

Farmers need to adopt them, but they need Technical support and financial means/incentives



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No regret option, as many benefits with one investment!

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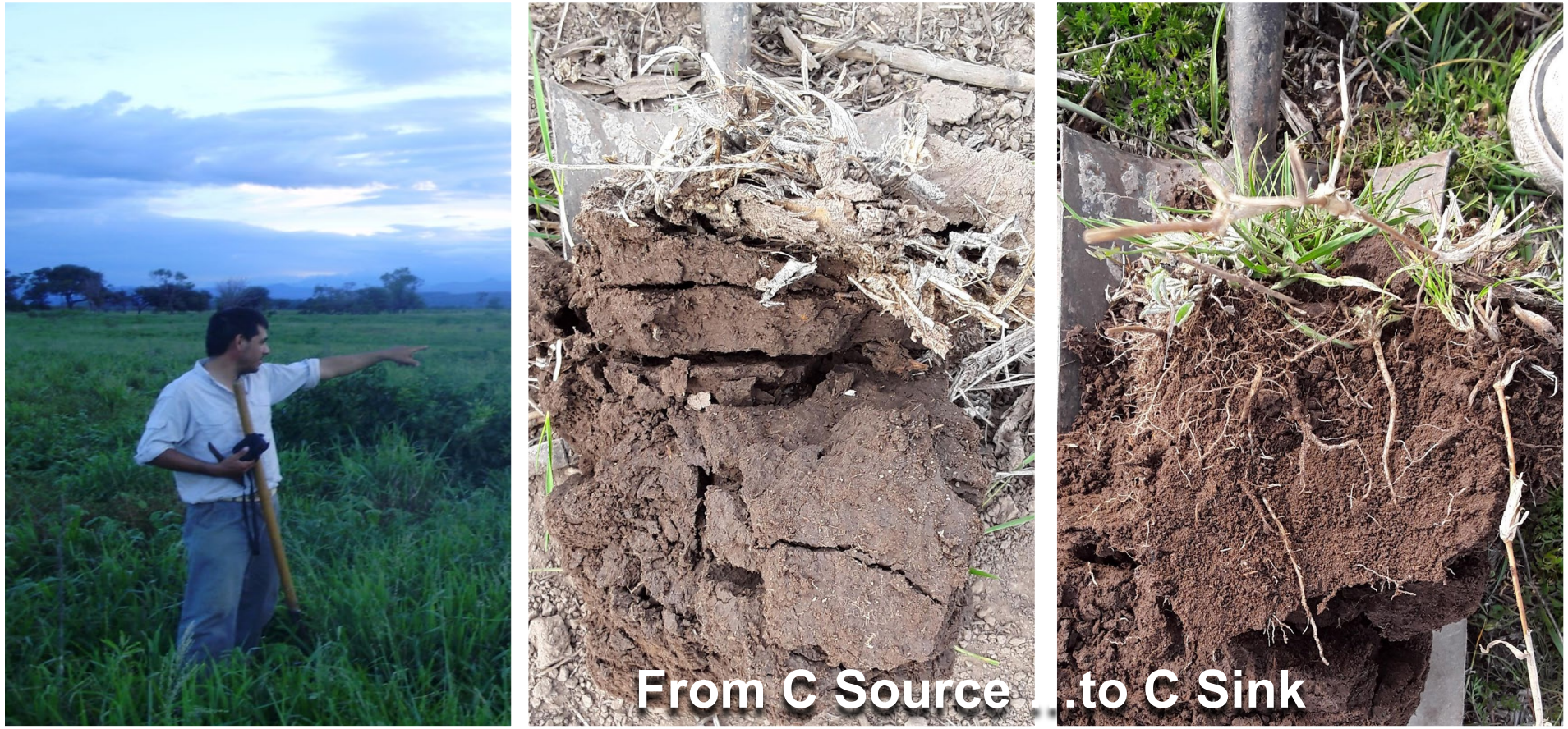
Challenges and opportunities

- Recognizing farmers as the main vehicle of change and support them through incentives;
- Uncertainty about additionally and permanence (de-risking options);
- Medium-term investment;
- Focus is shifting towards soil health and the co-benefits associated with one single investment (SOC the vehicle).
- Carbon credits are highly demanded by private sector. However, absence of Article VI and ethics issue about it;
- Urgent need to INVEST beyond the offsetting emissions only (ethics, environmental and social responsibility).



Food and Agriculture Organization of the United Nations

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