

FAO SOILS PORTAL

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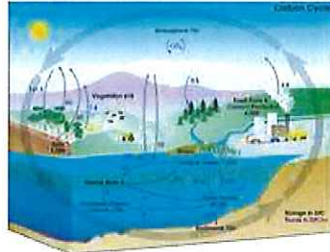
Management of some problem soils

Soil Carbon Sequestration

Soil Conservation

Other SLM tools

What is Soil Carbon Sequestration?



Major carbon pools and fluxes of the global carbon balance - Carbon sequestration in dryland soils, WSRR 102

through restoration of degraded soils and widespread adoption of soil conservation practices.

FAO is concerned with the **effect of agriculture on climate change**, the impact of climate change on agriculture and with the role that agriculture can play in mitigating climate change. Historically, land-use conversion and soil cultivation have been an important source of greenhouse gases (GHGs) to the atmosphere. It is estimated that they are still **responsible for about one-third of GHG emissions**.

However, **improved agricultural practices** can help mitigate climate change by reducing emissions from agriculture and other sources and by storing carbon in plant biomass and soils. The work of FAO aims to **identify, develop and promote cultural practices that reduce agricultural emissions and sequester carbon** while helping to **improve the livelihoods of farmers**, especially in developing countries, through increased production and additional incomes from carbon credits under the mechanisms that have emerged since the Kyoto Protocol.

The **objective** is to **reverse land degradation** due to deforestation and inadequate land use/management in the tropics and sub-tropics through the promotion of improved land use systems and land management practices which provide win-win effects in terms of **economic gains** and **environmental benefits**, a greater agro-biodiversity, and improved conservation and environmental management and increased carbon sequestration.

The development of agriculture during the past centuries and particularly in last decades has entailed **depletion of substantive soil carbon stocks**. Agricultural soils are among the planet's largest reservoirs of carbon and hold potential for expanded carbon sequestration (CS), and thus provide a prospective way of mitigating the increasing atmospheric concentration of CO₂. It is **estimated that soils can sequester around 20 Pg C in 25 years, more than 10 % of the anthropogenic emissions**.

At the same time, this process provides other important benefits for soil, crop and environment quality, prevention of erosion and desertification and for the enhancement of bio-diversity. **Land degradation, does not only reduce crop yields but often reduces the carbon content of agro-ecosystems, and may reduce biodiversity**. It is therefore important to

Atmospheric concentrations of carbon dioxide can be lowered either by reducing emissions or by taking carbon dioxide out of the atmosphere and storing in terrestrial, oceanic, or freshwater aquatic ecosystems. **A sink is defined as a process or an activity that removes greenhouse gas from the atmosphere**. The long-term conversion of grassland and forestland to cropland (and grazing lands) has resulted in historic losses of soil carbon worldwide but there is a major potential for increasing soil carbon

See also

[Mitigation of Climate Change in Agriculture \(MICCA\) Programme](#)

[Grasslands, Rangelands and Forage Crops](#)

[The Ex Ante Carbon-balance Tool](#)

[Climate-smart agriculture for development](#)

Videos



[Soil Carbon and Climate Change : Soil carbon monitoring in Tanzania](#)

External links

Carbon sequestration publications [List I](#) | [List II](#)

Publications



[Review of evidence on drylands pastoral systems and climate change - Land and Water Discussion Paper #8](#)



[Climate Smart Agriculture Sourcebook](#)



[Carbon Sequestration in Dryland Soils - WSRR #102](#)
[English](#) | [Español](#)



[Report on The State of agriculture resources for food and agriculture \(SOLAW\) - Section on Soil Carbon Sequestration](#)

identify what important synergies can be found in the area of soil carbon sequestration between the three **UN conventions**: [UNFCC](#), [UNCCD](#) and [UNCBD](#).

Carbon sequestration activities have been supported through the CDM (Clean Development Mechanism) under the Kyoto protocol with a focus on afforestation and reforestation, seen as being the most effective and readily measurable means to sequester carbon as biomass both above and below ground. In the post-Kyoto negotiations efforts are being made to give due attention to the huge carbon sequestration potentials in rangelands.



[Assessing carbon stocks and modelling win-win scenarios of carbon sequestration through land-use changes](#)



[Grassland carbon sequestration: management, policy and economics](#)



[Challenges and opportunities for carbon sequestration in grassland systems](#)



[Soil carbon sequestration for improved land management - WSRR #96](#)



[A review of carbon sequestration projects](#)



[Biophysical Aspects of Carbon Sequestration in Drylands](#)



[Poverty, Risk and the Adoption of Soil Carbon Sequestration](#)



[Soil Carbon Sequestration in U.S. Rangelands](#)

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