Challenges of soil carbon certification

A number of challenges arise in crediting soil carbon projects that aim to mitigate soil-related GHG emissions or enhance soil carbon removals. These challenges pose a threat to the quality of certificates and the integrity of carbon markets. Since they cannot be fully overcome, soil carbon credits should not be used for offsetting purposes.

CHALLENGE #1

QUANTIFICATION OF EMISSION REDUCTIONS AND REMOVALS

Quantifying reductions and removals from soil carbon measures is challenging and must not result in overestimating mitigation outcomes. If the challenges cannot be met, an activity must be excluded from being credited.

Costs: Soil sampling is cost and labour intensive.

Leakage: Mitigation activities may lead to leakage of emissions to other locations.

Uncertainty: Soils are heterogeneous so that carbon stock measurements can vary significantly.

Baselines: Baseline setting is based on counterfactual assumptions and thus involves uncertainties.

CHALLENGE #2

NON-PERMANENCE

Non-permanence refers to a situation where the emission reductions or removals generated by a mitigation activity are reversed at a later point in time. Non-permanence poses a significant risk for mitigation activities that enhance or preserve terrestrial carbon reservoirs, such as climate-friendly soil management.

Unintentional reversals occur due to natural processes.

Intentional reversals occur due to direct human interference.

CHALLENGE #3

DOUBLE COUNTING

Double counting occurs if a single emission reduction or removal is counted more than once towards the achievement of a mitigation goal.

CHALLENGE #4

ADDITIONALITY

Emission reductions and carbon removals are considered additional if they occur as a result of the incentives created by the funding for climate action.

Causality
Without the economic incentive, the mitigation would not have occurred.

Ensuring ambition
Exclude measures that would have been implemented anyway
- due to legal requirements
- established common practice or
- because they are economically viable in themselves

CHALLENGE #5

SOCIAL AND ENVIRONMENTAL IMPACTS

Mitigation measures can have positive and negative social and environmental impacts. Robust social and environmental safeguard requirements, monitoring of impacts and stakeholder consultations must make sure that mitigation measures deliver co-benefits and avoid or mitigate negative impacts.

Examples:

Enhancing biodiversity

Enhancing soil health

Additional sources of income for local populations

Umwelt Bundesamt

This graphic has been developed by Öko-Institut and Ecologic Institute on behalf of the German Environment Agency. It is based on Siemons et al. (2023): Funding climate-friendly soil management: Risks and key issues. UBA Climate Change 19/2023. Download at: https://www.umweltbundesamt.de/publikationen/funding-climate-friendly-soil-management-risks-key. Design: Erik Tuckow, sichtagitation.de.