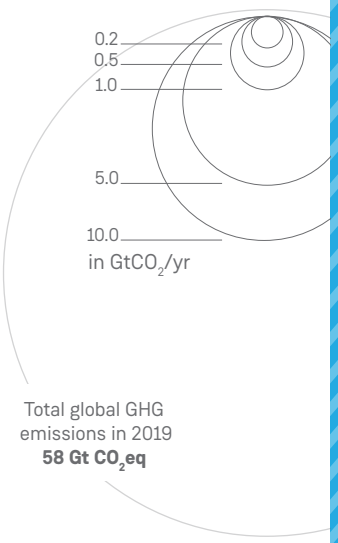
Nature-based Solutions and global climate protection

Nature-based Solutions imply significant potentials to reduce, avoid or remove greenhouse gas emissions. This figure illustrates the total global mitigation potential of different types of Nature-based Solutions shown by ecosystem. The scale of the total potential varies significantly for different ecosystems, i.a. because the total global area of the ecosystems is different.



Forest

Protection of remaining forests is key for climate mitigation and biodiversity protection. Natural non-forested ecosystems must be respected and should not be afforested.

Croplands

Agroforestry can deliver significant co-benefits, e.g. for biodiversity, soil health, flood protection; organic farming implements measures that enhances soil organic carbon and improves soil quality.

Grasslands

Avoid degradation and conversion to e.g. cropland in order to secure and protect high soil carbon stocks in existing natural and semi-natural grasslands.

Terrestrial wetlands

Protecting intact terrestrial wetlands is key; degraded wetlands can be rewetted by restoring landscape water regimes and help water retention and flood protection.

Coastal wetlands

Essential to restore degraded coastal wetlands and abandon harmful fishing methods that destroy coastal and ocean sediments.

Settlements

Establishing green infrastructure with trees is also important for climate change adaptation.

General uncertainties for realising potentials

Local context
Specific priorities and preconditions for NbS implementation differ.

Pressures on ecosystems
Unsustainable management, consumption patterns and pollution weaken ecosystem resilience and capacity for carbon sequestration.

Climate change impacts
Changing climate affects ecosystem capacity for carbon sequestration.

Law enforcement
How is right implementation secured?

Tenure ship
Who owns the land?

Lack of data
Knowledge and monitoring capacities are missing.

Finance
Where does the money come from?

Umwelt Bundesamt

References for the mitigation potentials indicated in the graphic: Forests: Jia et al. 2019; IPCC 2019; croplands: Griscom et al. 2017; Jia et al. 2019; Shukla et al. 2019; grasslands: Bossio et al. 2020; Griscom et al. 2017; Henderson et al. 2015; Smith et al. 2008; terrestrial wetlands: Griscom et al. 2017; Leifeld and Menichetti 2018; coastal wetlands: Griscom et al. 2017; settlements: Lal et al. 2018.
This graphic has been developed by Öko-Institut and Ecologic Institut on behalf of the German Environment Agency. It is based on Reise et al. (2022): Nature-based Solutions and global climate protection. Climate Change 01/2022. Dessau-Roßlau. Download at: https://www.umweltbundesamt.de/publikationen/nature-based-solutions-global-climate-protection. Design: Erik Tuckow, sichtagitation.de.