The role of European agriculture and forestry in climate change mitigation

Questions and answers

What does LULUCF mean?

LULUCF stands for LAND USE, LAND USE CHANGE, AND FORESTRY
For the purpose of keeping stock of greenhouse gases in the context of the UNFCCC and the Kyoto Protocol, LULUCF is an accounting sector that includes all human management of vegetation and soils in Annex 1 countries to the Kyoto Protocol.

What carbon pools does LULUCF concern?

- aboveground biomass and timber
- belowground biomass
- deadwood and litter
- soil organic and inorganic carbon

What sectors and activities does LULUCF account for?

It concerns emissions and removals from management of land, except for livestock or biofuels
***Concerned management activities*:**
- Forest Management
- Afforestation, Deforestation, Reforestation
- Re-vegetation
- Cropland and Grazing Land Management
- Wetland Rewetting and Drainage

How do current climate policies cover LULUCF?

International level:
- 1st Kyoto Protocol Commitment Period excluded LULUCF
- 2nd Kyoto Protocol Commitment Period for 2013-2020 includes forestry but agriculture is voluntary
- New post-2020 framework will include decisions on LULUCF, adoption is expected in 2015

EU level:
- Climate and Energy Package of the EU: no LULUCF commitment
- Effort Sharing Decision for non-ETS sectors: agriculture included but only non-CO_2 GHG, i.e. Methane and N_2O
- European Commission published a proposal in 2012 to establish common accounting rules for LULUCF
- Mitigation target is not yet included, this will be the second step

What is expected from EU Member States?

With the Commission's proposal comes the obligation for each Member State to adopt action plans on how they will increase removals of carbon and decrease emissions of greenhouse gases in forests and soils throughout the EU. The proposal does not yet include a commitment for national emission reduction targets for these sectors but aims to make mitigation action and best practice in the sector more visible.

Photo by Sallai R. Benedek

Why are soils important?

Soils are active carbon sinks with significant uptake and long-term storage of carbon.
Land use changes such as intensification of agriculture or converting grasslands into plough lands can turn soils into carbon sources, releasing huge amount of carbon into the atmosphere.

The amount of carbon stored in European agricultural soils only, is approximately 4 times as much as the EU's annual GHG emission. (Lugato et al 2013, EEA 2013).

Peat lands are especially important, considering that together with permafrost they store 50% of soil carbon globally, in spite of their relatively small cover of 16% of terrestrial land (European Commission, 2008). Restored peat lands act as climate coolers. Due to land use change and warming climate, peat lands are also potentially the most significant terrestrial GHG emitters beside tropical deforestation.

Why are soils threatened?

Currently, soils throughout the EU are facing severe erosion and consequently there is a risk of European soils turning from carbon sinks to carbon sources. In many parts of Europe soils are threatened by urban sprawl, land sealing and intensification of land use, erosion and degradation of ecosystem services. Soil quality is decreasing due to salinization, compaction and contamination, decrease of soil organic matter and loss of soil structure. These can result in losing carbon capture and storage capacity of the soil or even in emission of huge amounts of soil C to the atmosphere (JRC, 2008).

What are CEEweb's recommendations to inhance the mitigation potential of LULUCF?

CEEweb for Biodiversity highly welcomes the adoption of EU-wide rules for LULUCF accounting and the EC's proposal for the adoption of forestry and agriculture-specific targets at EU level. In CEEweb's view, these initiatives need to be supported by a holistic environmental policy framework and a new, more sustainable socio-economic framework involving various sectors on board, such as spatial planning, land use, agriculture, forestry and water management as well. Integrated solutions applying the ecosystem-approach are inevitable in agriculture and forestry. Convergence of interests between soil conservation, climate change mitigation and adaptation, water management, food production, disaster mitigation and biodiversity conservation needs to be found.

Sustainable management techniques in both agriculture and forestry enhance soil organic carbon content, increase carbon sequestration, water and nutrient retention and decrease the risk of erosion, therefore contribute to climate change mitigation and adaptation as well as to long-term food and resource security. Therefore, the future Common Agricultural Policy needs to mainstream sustainable techniques through financially rewarding them. These techniques include diversification of agricultural system both in terms of spatial structure and species and breeds, organic farming, as well as application of techniques which enhance the soil's natural productivity through increasing its SOC.
Sustainable forest management practices (e.g. shelterwood) need to be mainstreamed and widely supported by the future CAP. Specific attention should be payed to avoid emission of high amount of carbon stored by European old-growth, close-to-nature forests by maintaining their natural status. Forest soils, as important but sometimes underestimated contributors of forest carbon storage, must be protected. Biological diversity (i.e. diversity of micro-habitats, species and genetic variables within species) and structural diversity (i.e. age distribution of trees as well as mosaic structures with large trees, openings, young groups, deadwood and in certain habitat types, patches of grasslands and wetlands) of forests need to be enhanced, thus strenghtening resilience of forest ecosystem services (including carbon sequestration and storage) under growing climatic stress and additional anthropogenic pressures. Intensive forest management should be restricted to plantations, clearly distinguished from natural forests.

Sources

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