

ROOTING OUT THE PROBLEM: PREVENTING LULUCF FROM UNDERMINING THE EU'S 2030 TARGET

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Executive summary

The European Commission is expected to publish legislation on how to include the land use, land use change and forestry (LULUCF) sector into the EU's 2030 climate framework in the summer of 2016. Three options presented by the Commission on how to do this suggest various levels of integration with other sectors, from keeping LULUCF in a separate pillar, combining the sector with methane (CH₄) and nitrous oxide (N₂O) agriculture emissions, or adding the sector into the Effort Sharing Decision (ESD).

Regardless of what option is chosen, there is a potential risk that the LULUCF sector will be used to reduce the climate efforts of other sectors such as transport or manufacturing. This is because the LULUCF sector is an overall sink, which means that more carbon is removed from the atmosphere than released. Counting the carbon removals from the LULUCF sector towards the same target as other sectors will therefore reduce the effort needed to reach the EU's climate goal and slow decarbonization of the European economy.

There are several characteristics of the LULUCF sector that make it unfit for inclusion in the EU's existing climate instruments:

- 1. Data uncertainty:** Forest inventories are done every 5-10 years and possible technical corrections can lead to significant recalculations. Since the EU's existing climate instruments have an annual compliance cycle, merging the LULUCF sector with the other sectors would disturb national accounting and create a large degree of uncertainty.
- 2. Incomplete accounting:** Forest accounting techniques are highly approximate as they attempt to separate man-made from natural impacts on the land. Methods allow for over-crediting, which represent reductions without real mitigation actions.
- 3. Non-permanence:** While the fossil fuel carbon stock is permanent unless tampered with, forests and soils naturally release carbon on relatively short timescales, through ageing or fires. This makes carbon absorption activities by plants and soils non-permanent and thus unfit to replace the reduction of fossil fuels.
- 4. Removing carbon from the atmosphere:** In light of the Paris agreement and the new goal to limit global warming to below 1.5°C, it has become crucial that carbon removals are promoted in addition to emission reductions, rather than replacing them. If other sectors are allowed to use LULUCF credits to meet their targets, the ambition level of the EU's 2030 climate ambition could be reduced by a massive 5%.

This policy briefing explains the problems of using the emission removals from the LULUCF sector to meet climate targets in other sectors and recommends how the LULUCF sector can be best integrated into the EU's climate framework.

Key recommendations:

- LULUCF should be addressed in a separate pillar so that efforts in the land use sector are done in addition to the efforts to phase out fossil fuels.
- The LULUCF sector should not be used to generate land use offsets that would undermine the mitigation efforts of other sectors.
- Mitigation activities for the land use sector should prioritise preserving biodiversity and supporting the sustainable use of land as a resource above pure mitigation, which alone can have adverse effects.
- Only biomass that adheres to sustainability criteria can be considered carbon neutral in the EU's climate legislation. The greenhouse gas emissions from burning biomass that do not meet these criteria must be accounted for in the ETS or the ESD.

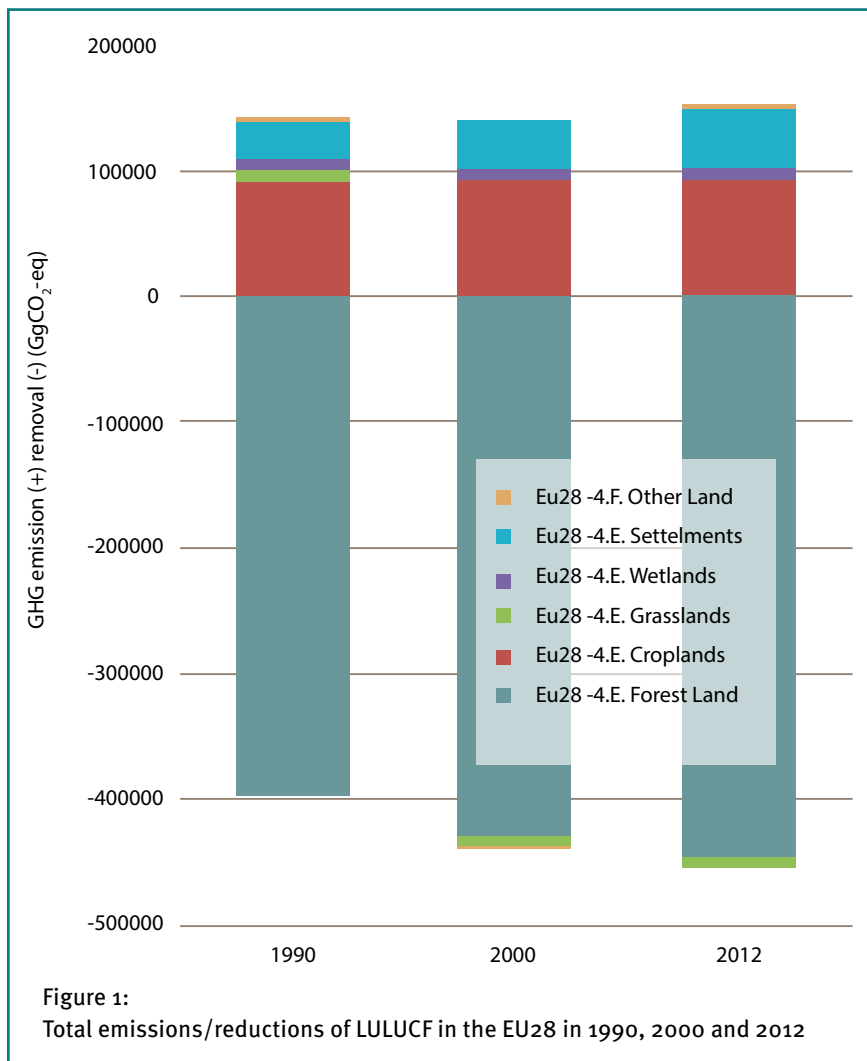
Introduction to LULUCF

The Earth's landscape has undergone many classifications in the climate discussion. To account for human activities on land, managed lands are generally categorized into forests, cropland, grassland, wetlands and settlements and other. Land use, land use change and forestry (LULUCF) account for all activities on these lands with the exception of non-CO₂ agricultural activities on cropland and grassland. Globally, this subset accounted for 10% of total emissions in 2010.

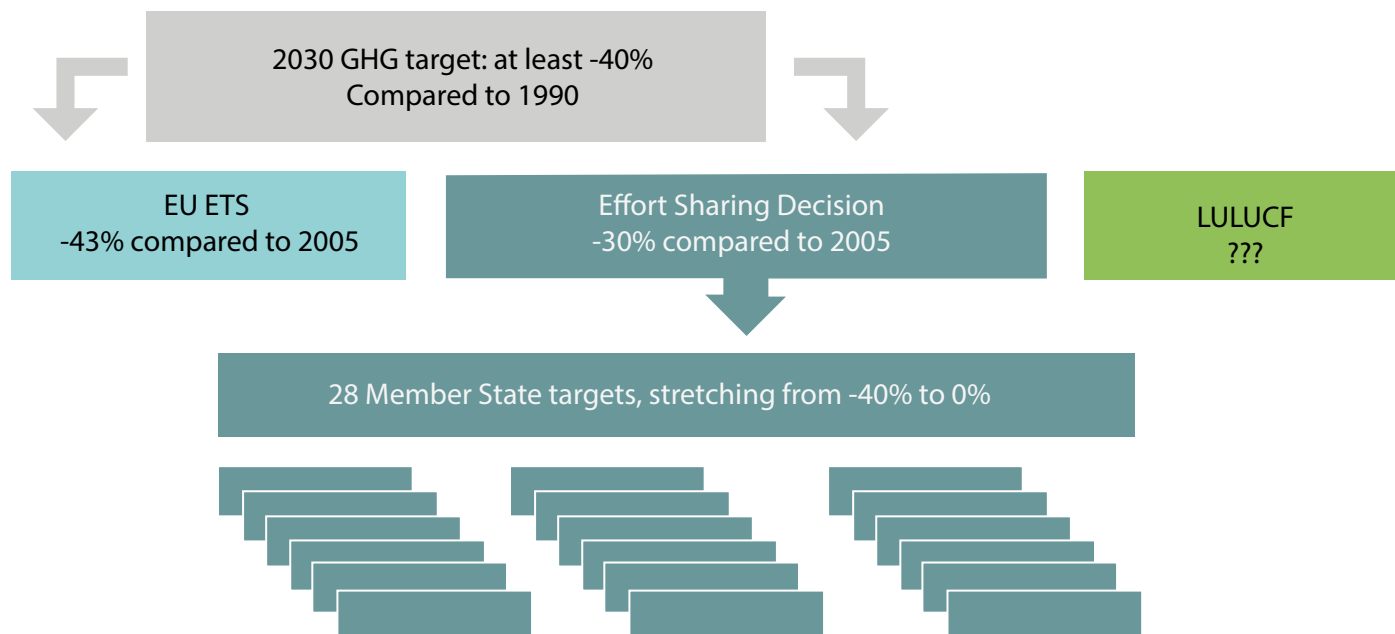
LULUCF within the EU is recorded as a net carbon sink, meaning that on aggregate the sector removes more greenhouse gases (GHG) from the atmosphere than it emits. LULUCF emissions in the EU-28 amounted to approximately 150 Mt CO₂eq in 2012, while absorptions were over 400 Mt CO₂eq (see Figure 1). The majority of GHG removals come from forests absorbing CO₂ while the majority of emissions come from croplands.

Integrating LULUCF into EU's 2030 climate framework

In contrast to the 2020 climate package where the climate impact of land use was not included, the EU will integrate LULUCF into its 2030 climate target.



The EU has committed to decreasing emissions by at least 40% by 2030 compared to 1990 levels. The target is divided between two instruments to combat climate change in the EU: The EU Emissions Trading System (EU ETS), which covers emissions from the power sector, manufacturing sectors and intra-EU aircraft operators, and the Effort Sharing Decision (ESD), which



currently covers emissions from transport, building, industry, waste and parts of the agricultural sector. Non-CO₂ emissions from agriculture, such as nitrous oxide from fertilizers or methane from cows, are currently addressed under the ESD. The EU ETS must reduce emissions by 43% while the ESD must achieve 30% reduction, both compared to 2005.

While emissions and removals from LULUCF are at the moment not accounted for, there are reporting requirements since 2013. The EU intends to incentivize emission reduction efforts in the sector by promoting the protection of these lands within the EU's 2030 climate and energy policy framework. The way in which LULUCF is included in the EU's overall target can have a large impact on the environmental integrity of the EU's overall climate framework, particularly because of its large forest sinks which could undermine reductions in other sectors.

Many options exist for adding in the new sector, but the impact assessment from the European Commission has proposed three concrete policy options for incorporating LULUCF into the EU's emissions reduction framework:

Option 1- LULUCF in the ESD: Integrating LULUCF sectors into the Effort Sharing Decision

Option 2- Land-use pillar: Including agriculture from ESD with LULUCF sectors

Option 3- LULUCF pillar: Maintaining LULUCF emissions separate from other emissions in its own pillar

The problems with land use offsets

Options to merge LULUCF with other sectors assume that credits from sequestration projects would replace some effort needed from other sectors to achieve the EU target. There are fundamental differences between the LULUCF sectors and other sectors, which prevent generating reliable carbon credits:

1. **Difference between fossil carbon and plant carbon (non-permanence):** The LULUCF sector includes large natural carbon sources (forests, soil, wetlands, etc.) that absorb as well as emit CO₂ found in the atmosphere. Trees and land will eventually release stored carbon through natural ageing or human activity making it a completely different carbon stock than fossil fuel reserves that stay put for hundreds of thousands of years unless disturbed by humans². This is the main contention with the viability of land use offsets as the carbon absorbed by forests and other natural carbon pools, unlike other mitigation measures, are subject to potential reversal. The LULUCF sector is, therefore, very different to other sectors, since there is always a risk that carbon removals are reversed, while the emissions from fossil fuels are permanent.
2. **Measurement difficulties:** Measuring the carbon absorbed or emitted by the forest is an inexact science due to the following obstacles:
 - a. **Data uncertainty:** The data uncertainties associated with the removals and emissions from LULUCF are relatively high (32%) compared to the emissions from fossil fuel combustion (1%)³. Even with advances in proxy measurements, the European Commission's Joint Research Centre (JRC) noted in a November 2015 analysis of the LULUCF sector within the mitigation targets of various countries, "*overall, this analysis highlights a high uncertainty on both the historical levels and the projections of LULUCF emissions and removals.*"⁴ Additionally, projection scenarios and accounting assumptions, such as the accounting methods elaborated on below, contributed in large part to the high uncertainty.
 - b. **Large carbon fluctuations:** Extreme events like wildfires can release massive amounts of CO₂ in a short period of time. Additionally, the constant flux of forest harvests and regrowth is a unique accounting challenge for the sector. These inter-annual variations in the emissions and removals of LULUCF lead to large recalculations after stocks have been determined, which provides a large risk for countries needing to reach a specific reduction target.
 - c. **Separating human from natural impacts:** The emissions and removals from forests and land use are not only the result of human activities, but partly occur naturally. The OECD has noted that separating the human-induced from the natural-based impacts is exceptionally difficult, distinguishing the sector from others such as energy and transport⁵. This results in a particularly difficult and expensive MRV process.

3. **A sector with natural and social services.** Forests, wetlands and grasslands have important biodiversity functions and social value. The IPCC acknowledges that climate efforts that only tackle emissions may have harmful side effects in terms of the land's resilience, food sovereignty or farmer benefits⁶. Land remains our source of food, renewable energy, and recreation, but these needs cannot be addressed when the sector is prioritized as a flexibility. While it is important to account for GHG emissions, climate actions regarding land use must take into account more variables than just carbon reductions, such as environmental and social criteria.

Accounting tricks to paint a climate-friendly scenario

The United Nations Framework Convention on Climate Change (UNFCCC) has established rules for accounting emissions and removals in the LULUCF sectors under the Kyoto Protocol. The EU has passed legislation building upon these rules to make reporting for additional areas mandatory. The LULUCF sectors are divided into the following activities for accounting purposes: Revegetation, wetlands, cropland management, grazing land management, afforestation/reforestation, deforestation and forest management.

LULUCF is one of the most complicated sectors to account for, because methods change depending on the land area considered. The risk of certain methods is that they allow countries to paint a prettier picture of land use emissions or removals according to what is more convenient for reaching their climate target.

There are two specific accounting methods dealing with forestry that allow for over-crediting, which could lead to generating fake credits that would undermine real effort to mitigate climate change in other sectors.

Gross-net accounting: Afforestation, reforestation and deforestation

In the EU, the carbon removals from planting trees (afforestation measures) are not compared to a base year. Gross-net accounting credits all the carbon removals of trees planted since 1990. This means that countries can get credits for forests that were planted over 25 years ago. What is not counted is how the size of the forest sink compares to the historical sink. As the majority of states are almost guaranteed to produce a sink, they will thus be credited for the totality of the carbon absorbed by forests, instead of comparing the size of their forest sink to the size of the sink in 1990. States could be heavily credited, while the overall size of the sink, and the benefit to the climate, has declined.

Reference levels: Forest management

Forest management is currently accounted for by comparing the real emissions of forests with an estimated baseline, so-called forest management reference levels (FMRL). Under the FMRL, countries project the future emissions of their forests based on its age and on future harvesting rates. The flaw in this method is that the reference level can be overestimated. Credits can be obtained by emitting less than the projected harvesting rates. This potentially allows Members States to hide emissions by assuming exaggerated harvests in their reference level (easily justified by the increasing demand in the EU for bioenergy), continue business-as-usual harvests and consequently profit from unearned credits underneath it.

These accounting methods were part of long negotiations to please states with different national circumstances under the United Nations Framework Convention on Climate Change (UNFCCC). They are not complete and, as they do not compare emissions to historical data, are not comparable to accounting in other sectors. Both methods remain subject to measurement uncertainties and data variability and thus cannot generate reliable flexibilities, where one credit must beyond doubt represent one ton of emissions reductions.

The relation between bio-energy and LULUCF

Europe is on a trajectory to achieve 20% energy from renewables in 2020. Wood products represent almost 50% of this renewable energy consumption, and its use had increased 110% from 1990 to 2010⁷. Burning wood releases greenhouse gas emissions, similar to burning coal and gas. These emissions are currently not accounted for under the EU ETS or the ESD since it is assumed that replanted trees will replace the carbon that is emitted from harvested trees. In other words, biomass is considered carbon neutral under the EU's 2020 climate framework instead of counting the true emissions. This is faulty accounting, because in reality it can take many decades or even centuries before living biomass can absorb an equivalent amount of carbon that is released during the biomass energy lifecycle (including extraction, storage, processing, transport and combustion)⁸.

Loopholes arise when unsustainable biomass is used or accounting rules hide emissions associated with harvesting biomass, as is the case with forest management reference levels. If emissions go unaccounted for it becomes difficult to know at what point the sustainable limit of our natural resources has been reached until serious damage has been inflicted (as is the case with forest in the southern US due to increased European demand for wood pellets⁹). Imported biomass emissions are often not accounted for anywhere, which can lead to deforestation outside of the EU, in an attempt to exceed renewable energy goals.

While bioenergy can be an option to move away from fossil fuels, if all sources of biomass are not recorded and sustainability criteria are not respected, forest ecosystems could be destroyed, biodiversity heavily reduced throughout Europe and the climate negatively impacted by what should be a renewable energy source.

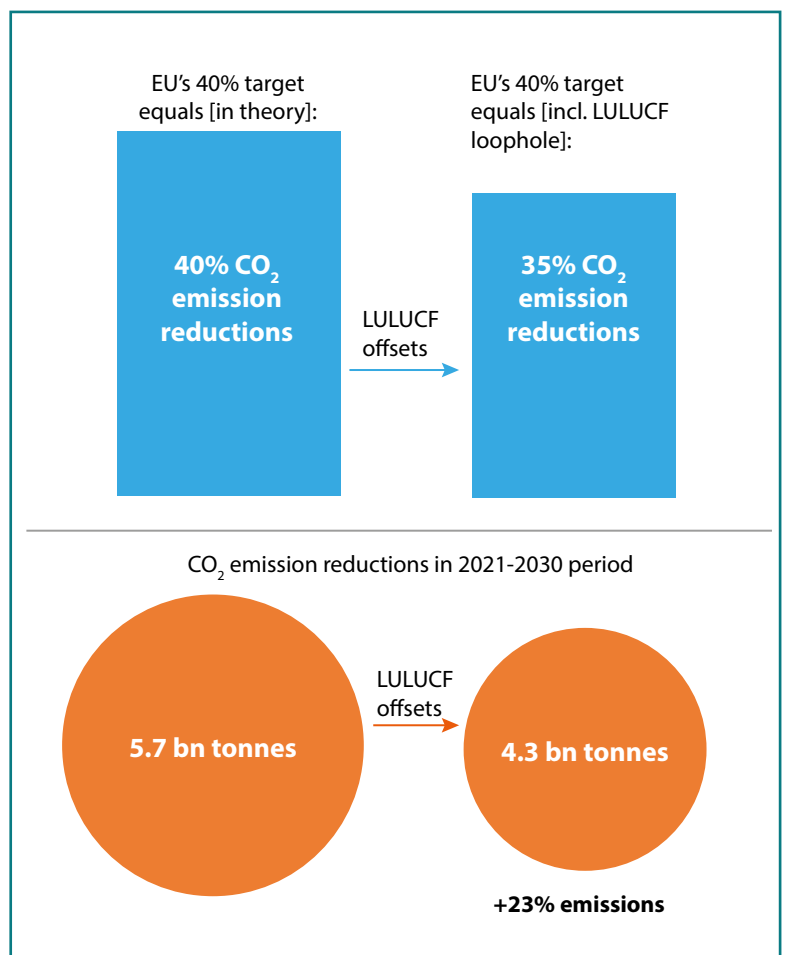
Protecting the environmental integrity of the 2030 climate framework

If the EU continues with the current accounting rules, including LULUCF into the current EU climate legislation would reduce efforts needed in other sectors, lowering the at least 40% target by a staggering 5%¹⁰. Isolating LULUCF efforts from the decarbonization efforts of the other sectors is the best means to protect the environmental integrity of the overall target.

Create separate climate measures for LULUCF

The Impact Assessment carried out by the Commission¹¹ has highlighted that a separate LULUCF framework is the most suitable option due to the inherent particularities of the sector. A separate LULUCF pillar would not allow for flexibilities with other fossil fuel-based sectors.

Accounting rules, compliance cycles and the nature of the carbon stores being considered (fossil and terrestrial carbon) are not conducive to bridging LULUCF with any other sector. Fossil fuel stocks are naturally permanent if left in the ground and take up to millions of years to replace, whereas carbon absorption from sequestration activities, are naturally reversible meaning the climate trade-off is not equal. As land is limited and constantly being depleted and replaced, land-use offsets cannot be considered a legitimate substitution for continued fossil fuel use.



Recommendations for the contribution of the land use sector to achieving EU climate targets

To ensure environmental security and the overall integrity of the EU 2030 target, LULUCF measures should prohibit flexibilities that would undermine the decarbonization of the European economy needed to stay on a pathway under 1.5 degrees.

- **LULUCF should be treated separately and in parallel to other sectors** to respect the environmental integrity of the EU's target. So as not to impact the overall target, improvement in the LULUCF sink capacity should be counted as going beyond 40%.
- **Flexibility should not be allowed between the LULUCF pillar and other climate policies.** High measurement uncertainty, data fluctuations, incomplete accounting methods and potential reversibility of carbon storage all underline why carbon sequestration activities do not produce reliable credits.
- **The LULUCF pillar should prioritise the sustainable use of the land over mitigation.** Mitigation efforts in the sector should be aligned with existing laws and initiatives such as the EU Nature Directives (e.g. the Habitats Directive) and the Commission feasibility study of sustainably using land as a resource¹² so as to avoid adverse side effects of mitigation actions that would outweigh needed co-benefits.
- **All sources of woody biomass, both imported and European-sourced must be tracked and meet sustainability criteria.** The emissions from biomass that do not meet minimum sustainability criteria should be automatically accounted for at their end use point in the EU ETS or ESD.



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