



Examining treatment of the LULUCF sector in the NDCs

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In their Nationally Determined Contributions (NDCs), countries have stated their contributions to reducing emissions from fossil fuel, agriculture and land sources. However, the current total effort yielded by these NDCs falls short of what is required to meet the Paris Agreement's temperature limits. Therefore, it is essential that countries can track collective progress in raising ambition, including action in the Land-Use, Land-Use Change and Forestry (LULUCF) sector. Existing estimates suggest that about a quarter of mitigation under the NDCs would involve LULUCF; however, the uncertainties in this contribution are substantial because there is no agreed method for including the LULUCF sector in mitigation targets under the Paris Agreement, which makes quantification of the LULUCF contribution challenging. Existing NDCs vary substantially in how they incorporate LULUCF; for example, some NDCs include LULUCF under one umbrella mitigation target for all sectors, others have a separate target for LULUCF (based on emissions reductions, land area change or another metric), and others simply list policies and measures for the LULUCF sector. Particularly concerning is the effect that including the LULUCF sector has on mitigation targets in other sectors (i.e. whether or not emissions reductions can be exchanged with other sectors), and thus the degree of transparency and verifiability.

To better understand these uncertainties and identify opportunities for improvement, we assess the treatment of the LULUCF sector in all 164 NDCs to show that most existing LULUCF targets are poorly quantified and will need to be adjusted to meet the Paris Agreement's principles of transparency, comparability, completeness and environmental integrity. For each NDC we estimate the quantitative impact of effort in the LULUCF sector on the mitigation implied by the NDC. For some NDCs this is well constrained, but for the majority we find a range of estimates because of ambiguity in how the sector is to contribute. Summing these uncertainty ranges across all countries, we find an aggregate uncertainty of ~ 1.2 GtCO₂eq. We also show that very few countries include quantitative information on the contribution of the LULUCF sector, even when national data is available, and we find that ambiguity in the relevance of such national data to the mitigation components of NDCs leads to an uncertainty of ~ 0.9 GtCO₂eq. Thus, in total, ambiguity in how countries incorporate LULUCF into their NDC leads to an uncertainty of more than 2 GtCO₂eq. This uncertainty is distinct from LULUCF carbon flux measurement uncertainties, and illustrates the importance of clear and robust accounting rules for land sector action, as well as improved availability of reliable data. To prevent the particularly high uncertainties in the LULUCF sector from affecting fossil fuel emissions reductions, LULUCF targets should be kept separate from efforts in other sectors. Our analysis also illustrates the importance of reliable carbon measurements and modelling for improving independent assessments of the NDCs and for tracking progress in LULUCF mitigation efforts.