

Paris climate agreement cannot be met without emissions reduction target for agriculture

May 17 2016



In Vietnam, alternate wetting and drying in irrigated rice is helping farmers use less water, and lower emissions, without compromising yields. Credit: G. Smith (CIAT)

Scientists have calculated, for the first time, the extent to which agricultural emissions must be reduced to meet the new climate agreement's plan to limit warming to 2°C in 2100.

Scientists from the the University of Vermont, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), and partner institutions estimate that the [agriculture](#) sector must reduce non-CO2 [emissions](#) by 1 gigaton per year in 2030. Yet in-depth analysis also revealed a major gap between the existing mitigation options for the [agriculture sector](#) and the reductions needed: current interventions would only deliver between 21-40% of mitigation required.

The authors warn that emission reductions in other sectors such as energy and transport will be insufficient to meet the new climate agreement. They argue that agriculture must also play its part, proposing that the global institutions concerned with agriculture and food security set a sectoral target linked to the 2°C warming limit to guide more ambitious mitigation and track progress toward goals.

"This research is a reality check," comments Lini Wollenberg, leader of the CCAFS Low Emissions Development research program, based at the University of Vermont's Gund Institute for Ecological Economics.

"Countries want to take action on agriculture, but the options currently on offer won't make the dent in emissions needed to meet the global targets agreed to in Paris. We need a much bigger menu of technical and policy solutions, with major investment to bring them to scale."

119 nations included mitigation in agriculture in their Intended Nationally Determined Contributions submitted to the UNFCCC. However, no work has been carried out to determine how these pledges will be accomplished.

Agriculture (not including land use change) contributes an average of

35% of emissions in developing countries and 12% in developed countries today. Yet authors warn that efforts to mitigate emissions levels must be balanced with countries' need to produce enough food, particularly in poorer nations.

"We need to help farmers play their part in reaching global climate goals while still feeding the world," comments Professor Pete Smith, Theme Leader for Environment & Food Security at the University of Aberdeen and co-author of the paper. "Reducing emissions in agriculture without compromising [food security](#) is something we know how to do. A lot can already be done with existing best management practices in agriculture. The tough part is how to reduce emissions by a further two to five times and support large numbers of farmers to change their practices in the next 10 to 20 years."

To realize the 1 gigaton per year mitigation target for non-CO₂ emissions in agriculture set out in the paper, 21-40% of mitigation could be achieved with known practices, such as:

- Sustainable intensification of cattle
- Efficient use of water through alternate wetting and drying in irrigated rice
- Nutrient management for annual crops, including efficient use of nitrogen and manure
- Relocating production to increase input efficiency

However, implementation would require massive investment, information sharing and technical support to enable a global-scale transition.

Even this effort will not be enough, according to the study. Much higher impact technologies and policies will be needed. Promising technical innovations on the horizon include recently developed methane

inhibitors that reduce dairy cow emissions by 30% without affecting milk yields, breeds of cattle that produce lower methane, and varieties of cereal crops that release less nitrous oxide.

Policies that support more ambitious mitigation include introducing more rigorous carbon pricing, taxes and subsidies; governments and the private sector adopting sustainability standards that include reduced emissions in agriculture; and improving the reach of technical assistance for farmers on locally relevant mitigation options, for example through cell-phone and web-based information portals.

Focusing more attention to sequestering soil carbon, increasing agroforestry, decreasing food loss and waste and shifting dietary patterns could all contribute significantly to reducing emissions from agriculture, according to the authors. However, much less work has been done on mitigation of emissions from these sources, so action is needed now to identify options and their impacts.

More information: E. Wollenberg et al, Reducing emissions from agriculture to meet the 2°C target, *Global Change Biology* (2016). [DOI: 10.1111/gcb.13340](https://doi.org/10.1111/gcb.13340)

Provided by University of Vermont

Citation: Paris climate agreement cannot be met without emissions reduction target for agriculture (2016, May 17) retrieved 6 May 2024 from <https://phys.org/news/2016-05-paris-climate-agreement-met-emissions.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.