

# Advancing Agricultural Climate Action to Reduce Short-Lived Climate Pollutants

This brief follows on from the Climate and Clean Air Coalition's high-level roundtable at the Global Climate Action Summit in September 2018 and the Intergovernmental Panel on Climate Change's Special Report on 1.5°C. It also derives content from the WRI working paper "Strengthening Nationally Determined Contributions to Catalyze Actions That Reduce Short-Lived Climate Pollutants," available online at [www.wri.org/publications/reducing-SLCPs](http://www.wri.org/publications/reducing-SLCPs). The brief is an input document for the CCAC's Agriculture Initiative, which is working toward increasing the ambition for agricultural climate action to reduce short-lived climate pollutants. It is also a prelude to a more comprehensive analytical paper that is being prepared during 2019 for delivery at the 2019 UN Secretary General's Climate Summit.

## Agriculture and Climate Change

The recent IPCC 1.5°C report makes the case for climate action more starkly than ever: The world is off track for limiting global warming to 1.5°C, the cap necessary for staving off the worst impacts of climate change. We need to change course rapidly to phase out coal, replace fossil fuels with renewables, improve energy efficiency and revolutionize the way we produce food—all while growing sustainably, improving air quality and providing a better life for people.

In agriculture, the IPCC 1.5°C report recognizes that keeping global temperatures to 1.5°C *can* improve efforts to address global hunger; however, some mitigation pathways are likely to mean difficult trade-offs between the sustainable development goal of ending hunger and the climate goal of limiting temperature rise to 1.5°C (e.g., for energy supply and land use competition between food and energy crops) (IPCC, 2018). Thus, it is important to identify pathways for ambitious climate mitigation that minimise these trade-offs and maximise synergies between food security and climate-resilient development.

Food systems and agriculture are highly vulnerable to climate change, while at the same time being contributors to climate change. The agriculture sector contributes around 10-12 percent of total global anthropogenic greenhouse gas (GHG) emissions (Smith, et al., 2014), and the entire food production system contributes up to 29 percent of total global GHG emissions (including indirect emissions associated with land-use change) (Vermeulen 2012)).

As we look to the future, the world must be able to produce the necessary level of food and nutrition for its citizens, and to do so with reduced GHG emissions and environmental impact. Alongside reductions from other sectors, we must reduce GHG emissions from agriculture, in particular methane but also carbon dioxide and nitrous oxide—if not, we are missing a significant source of emissions.

At the same time, improvements in agricultural production methods should help local populations—especially vulnerable populations and women—escape poverty and develop sustainable livelihoods. We must ensure that agricultural systems are more productive and sufficiently resilient to thrive in a climate-changed world.

This will require improved food production practices **with a focus on resource efficiency**, investment in research and innovation, appropriate regulations, effective infrastructure, education and farmer support systems, and reduced farming subsidies that support unsustainable farming systems. Fortunately, many of these are actions that make sense economically and can result in more ambitious climate action.

## Agriculture and Short-Lived Climate Pollutants

The agriculture sector is one of the largest sources of short-lived climate pollutants (SLCPs), including methane, black carbon, and tropospheric ozone. SLCPs have a powerful impact on global temperature and the climate system, particularly over short time horizons. Livestock and paddy rice production are significant sources of methane emissions, while the use of fire in the agro-forestry sector is a significant source of black carbon.

Taking ambitious action (i.e. in the next 10 years) to reduce SLCPs is essential for limiting global temperature rise to well below 2°C—an ambition that all countries signed on to as part of the Paris Agreement and an essential goal for ensuring all communities especially poor and vulnerable communities, including small-holder farmers, are spared from climate catastrophes associated with higher levels of warming.

Reducing SLCPs can deliver multiple benefits for sustainable development. For example, limiting open biomass burning can support human health, as it is a major cause of respiratory illness globally (and negatively affects water supplies through greater erosion). Cutting methane emissions reduces levels of tropospheric ozone, which is a health hazard and harms crop yields in some locations (CCAC 2018). The health and agriculture gains from reducing SLCP emissions are closely aligned with achieving the 2030 sustainable development goals (Haines et al. 2017) and efforts to reduce poverty (Hottle and Damassa 2018).

## Enhancing Nationally Determined Contributions

In the first round of nationally determined contributions (NDCs) submitted under the Paris Agreement, more than 90 percent of countries have included agriculture, for either mitigation and adaptation; however, only a few countries have outlined how the agriculture sector will cope with the twin challenges of mitigation and adaptation.

As countries look toward submitting updated NDCs by 2020, there is an opportunity to incorporate and strengthen actions that foster productive, resilient and resource efficient farming practices, and highlight the important role that food systems and agriculture will continue to play in keeping global temperatures to 1.5°C, including the links with SLCP mitigation. This includes through targets, policies, and actions aimed at improving resource efficiency and reducing waste, and behavioural consumer choices.

Including stronger and better quantified agricultural mitigation targets in new or updated NDCs can:

- help bring countries' actions in line with the Paris Agreement's goals for addressing climate change in the context of sustainable development and efforts to eradicate poverty, while delivering on local development objectives;
- direct finance toward the agriculture sector and mobilize funding for more sustainable and climate-resilient approaches to food systems, including for small-scale farmers;
- support technological, social, and behavioral improvements in the agriculture sector; and
- bring together climate with other development issues, such as food security, improved livelihoods, and poverty reduction, which helps to make addressing climate change more local and resonant for politicians, farmers, and citizens.

Table 1 presents illustrative options for enhanced commitments in the agriculture sector that can be included in updated NDCs by 2020. These enhanced commitments that focus on reducing SLCPs will complement reductions in longer-lived gases like carbon dioxide and nitrous oxide. In all cases, meeting these commitments will likely lead to development gains. These include improved food production efficiencies, greater food security, more nutritious food, greater rural prosperity and more equitable growth, strengthened resilience, and valuable ecosystem services.

The options presented are not exhaustive, nor are they ranked. The choice of options and their scale of adoption will depend on national and local circumstances, domestic priorities, respective capabilities, and international support, including financing. Comprehensive stakeholder involvement is a key step in the prioritization and assessment process and is essential for the achievement of climate adaptation, climate mitigation and sustainable development objectives.

**Table 1 | Illustrative Agricultural Climate Commitments for New/Updated NDCs, adapted from NCE (2018) and Ross et al (2018)**

ACTIONS TO REDUCE METHANE EMISSIONS	
<b>Energy production</b>	<ul style="list-style-type: none"> <li>Support farmers to implement livestock anaerobic digestion projects to capture and utilize methane as an energy source</li> </ul>
<b>Rice production</b>	<ul style="list-style-type: none"> <li>Promote the intermittent aeration of continuously flooded rice paddies and provide sufficient support for farmers—particularly, smallholder and women farmers—to adopt locally relevant best practices</li> </ul>
<b>Food loss and waste</b>	<ul style="list-style-type: none"> <li>Reduce food loss and waste across all aspects of the supply chain</li> </ul>
ACTIONS TO REDUCE BLACK CARBON EMISSIONS	
<b>Open biomass burning</b>	<ul style="list-style-type: none"> <li>Ensure sufficient support for farmers—particularly smallholder and women farmers—to transition to no-burn and sustainable growing practices</li> <li>Promote cropping systems that increase soil carbon</li> </ul>
ACTIONS TO IMPROVE PRODUCTIVITY AND REDUCE GHG EMISSIONS	
<b>Subsidies</b>	<ul style="list-style-type: none"> <li>Phase out subsidies that support the continuance of unsustainable and environmentally harmful farming practices</li> </ul>
<b>Feeding practices</b>	<ul style="list-style-type: none"> <li>Improve feeding practices to improve individual animal performance, which will reduce emissions for a given amount of produce, with sufficient support for farmers, pastoralists, and herders, particularly those in poor and vulnerable communities</li> </ul>
<b>Animal health/ genetics</b>	<ul style="list-style-type: none"> <li>Improved use and development of genetic resources best adapted to local needs</li> <li>Increased productivity and reduced mortality through improved access to veterinary services and the identification and treatment of animal diseases</li> </ul>
<b>Land use</b>	<ul style="list-style-type: none"> <li>Promote intercropping and integrated crop-livestock management</li> <li>Promote crop diversification, agroforestry, and soil and water conservation practices</li> <li>Promote the use of animal manure as a fertilizer</li> </ul>
<b>Trade</b>	<ul style="list-style-type: none"> <li>Ensure trade in food that is produced in a resource-efficient manner (i.e. improved animal performance with reduced emissions per unit of produce) can be undertaken in an open, rules-based environment</li> </ul>
MEASUREMENT, REPORTING AND VERIFICATION (MRV)	
<b>MRV</b>	<ul style="list-style-type: none"> <li>Continue to build capacity in measuring and understanding sources of greenhouse gas emissions as the basis for developing policies and research objectives</li> </ul>

## Looking Ahead

The next year is an important time to increase ambition. Next September, the UN Secretary General will convene a Climate Summit with world leaders. Secretary General Guterres has called on all leaders to come to the Summit prepared to report **not only** on what they are doing, but, more importantly, to articulate **what more they intend to do**. Presenting concrete climate solutions focused on the agriculture sector must be central to this agenda. The Summit will come exactly one year before countries update their nationally determined contributions under the Paris Agreement and submit long-term strategies. Taken together, this series of international moments paves the way for more ambitious commitments to mitigate climate change while improving food production practices and outcomes.

Coalitions and research institutions are coming together to support countries in raising ambition. The Climate and Clean Air Coalition (CCAC), for example, is driving partners and other actors toward presenting concrete results and commitments to reduce emissions of SLCPs for the Climate Summit. In complement, the CCAC's Agriculture Initiative—led by the Global Research Alliance, FAO, and CCAFS—is launching a new program of work to help countries update their NDCs by 2020 to include ambitious climate actions in the agriculture sector. Research institutions, such as the World Resources Institute, are providing analytical support to identify the opportunities available to raise ambition. Working together, we can provide analytical and political support to buttress strong actions that benefit farmers, citizens, and the environment.

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