CLIMATE & CLEAN AIR COALITION
TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

Short-Lived Climate Pollutants and The Agriculture Sector

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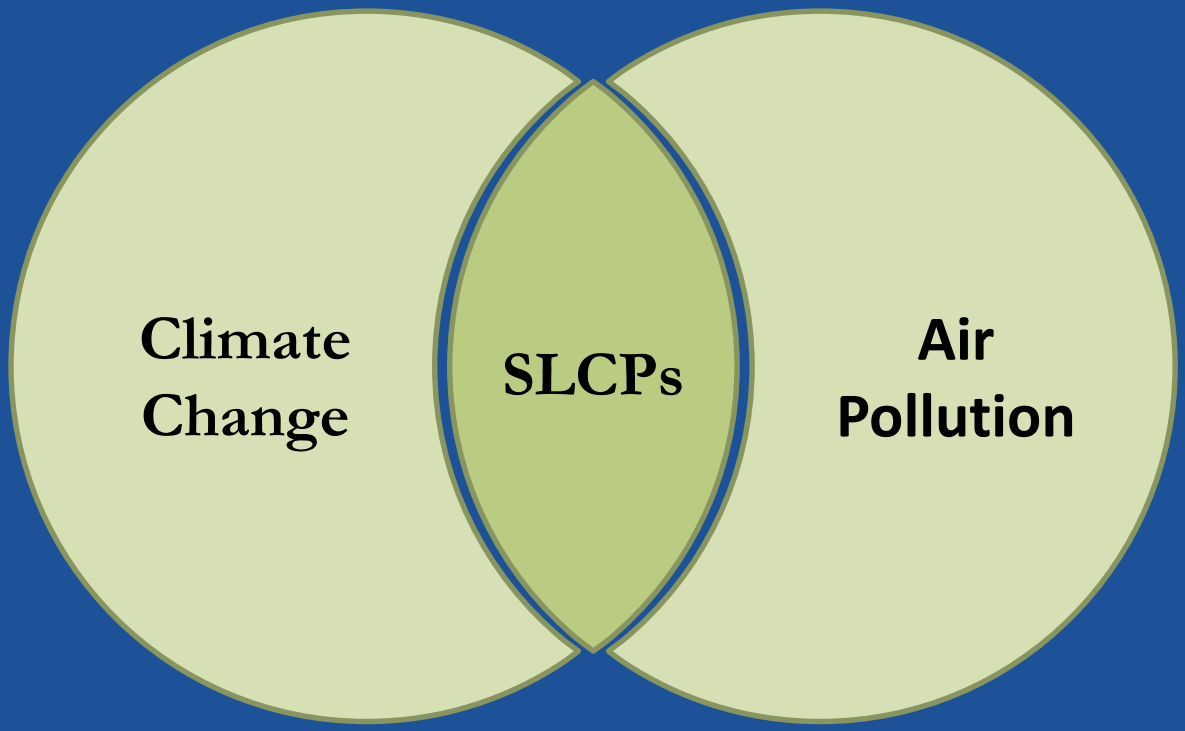
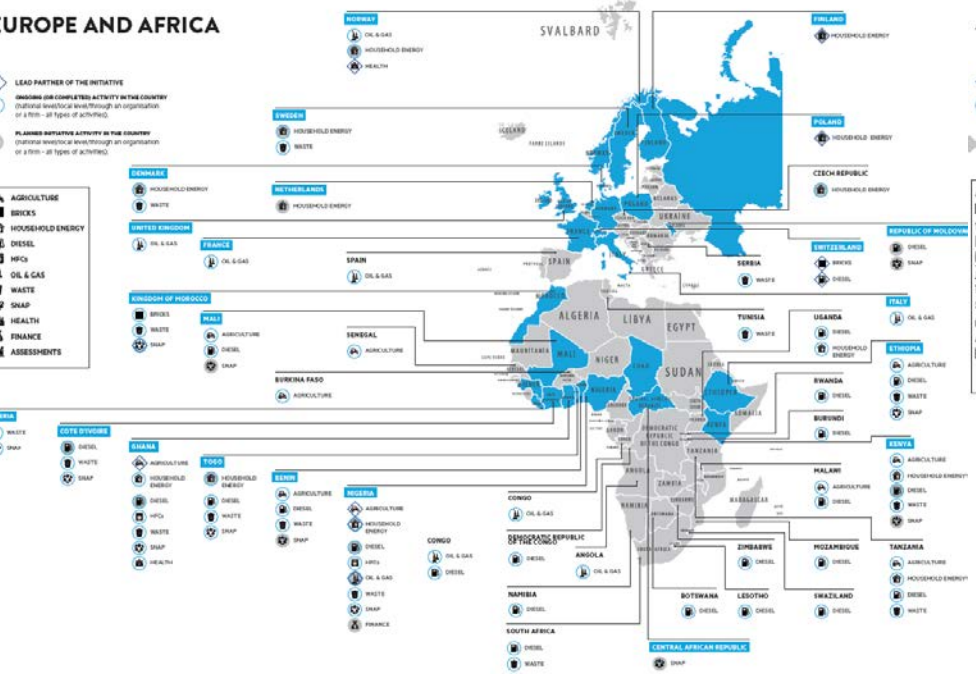
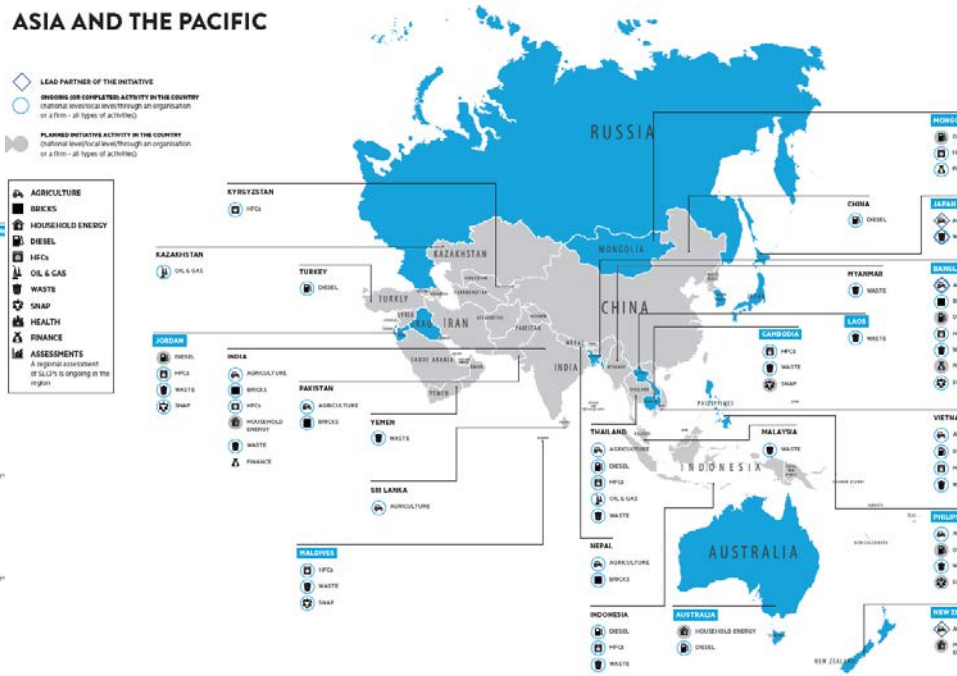
The Focus of the Coalition

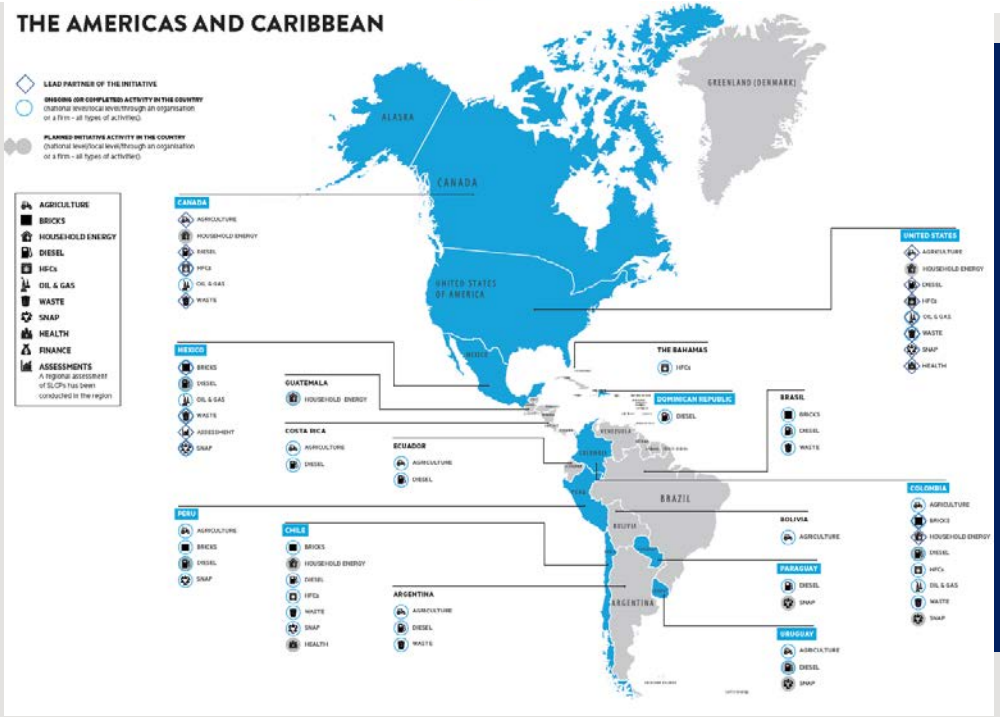


- Multiple-Benefits
  - Climate, health, agriculture
- Near-term
  - Existing scalable measures
  - Benefits in a few years to decades

- Black Carbon and co-pollutants
- Methane
- Tropospheric Ozone
- Hydrofluorocarbons







TODAY

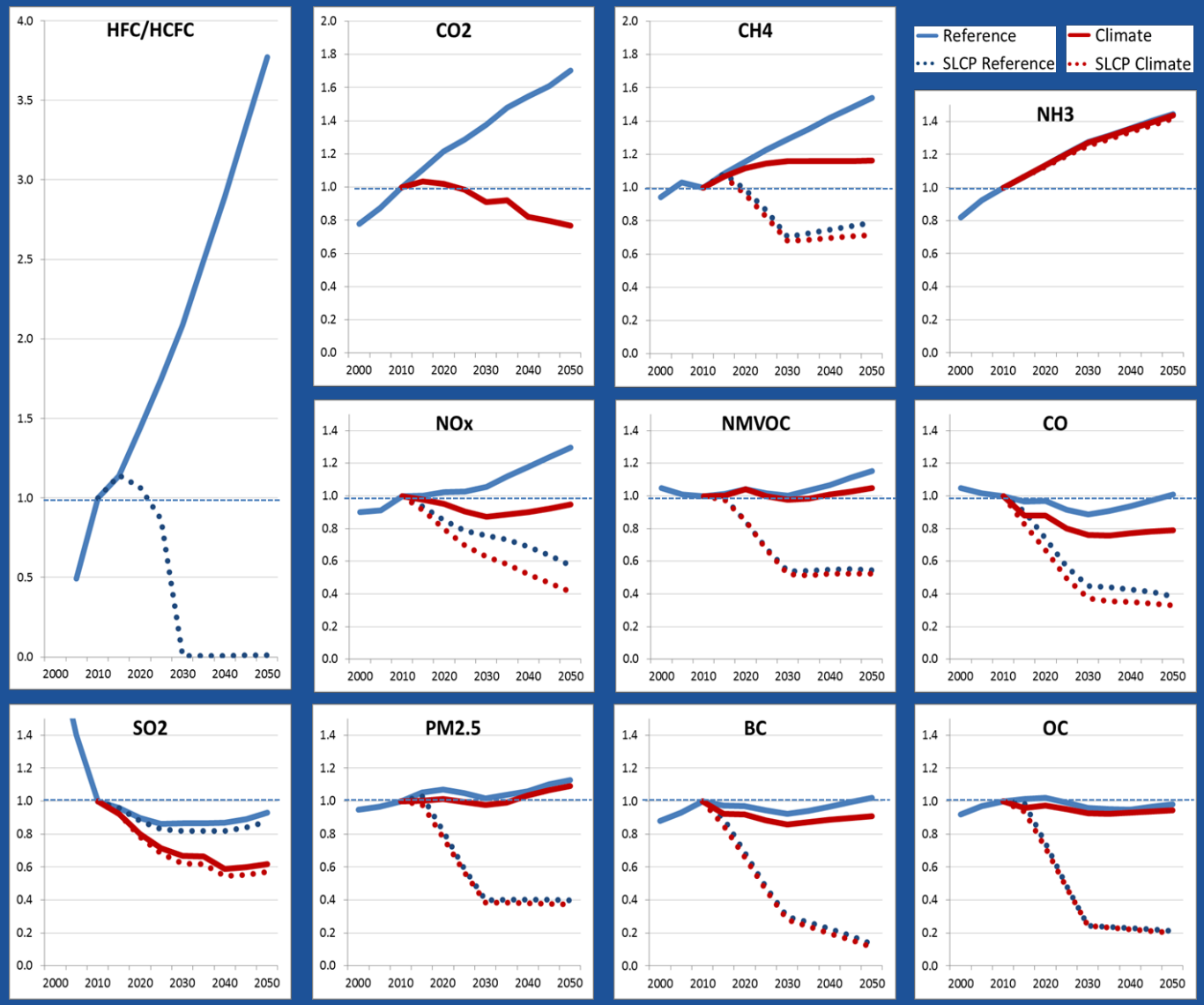
11 Initiatives

114 Partners

52 countries

17 IGOs

45 NGOs



Source: CCAC & UNEP. Assessment of SLCPs in Latin America & the Caribbean (forthcoming in 2017)

SLCPs and Agriculture

Factor	Response to CO2	Response to CH4
Heat	↓	↓
Drought	↓	↓
Fertilization	↑	–
Ozone	–	↓

- Agriculture sector responsible for ~55% of all anthropogenic non-CO_2 GHG emissions (5.4-5.8 $GtCO_2eq/yr$)
- Agriculture and forestry sectors contribute ~40% of global black carbon emissions
- Methane's contribution to O_3 formation magnifies the impact on agriculture and ecosystems.
- Impact on crop losses vary 5-15% in regions with elevated ozone

Source: CCAC (2017) Annual SLCP Science Update 2016

SLCP Measures in the Agriculture Sector

Measure	Emission reduction potential in 2030	Non-climate benefits of measures
Farm-scale anaerobic digestion on large farms with liquid manure management	2.2 Mt CH_4	Energy efficiency, crop protection
Feed changes for dairy and non-dairy cattle	3.9 Mt CH_4	Improved meat quality
Intermittent aeration of continuously flooded rice paddies	9.1 Mt CH_4	Crop protection
Ban of field burning of agricultural waste.	0.4 Mt BC	Health protection, crop protection, improved visibility

Source: UNEP & WMO (2011) Assessment of Black Carbon and Tropospheric Ozone; UNEP (2011) Near-term Climate Protection and Clean Air Benefits; Shindell et al. (2012) Simultaneously Mitigating Near-Term Climate Change and Improving Human Health and Food Security, Science 335(6065):183-189.

Enteric Fermentation

1) Supply-Side Mitigation Measures – Increasing Efficiency

Methane		18 Mt methane emissions					
Impact	Unit	OECD90	REF	MAF	LAM	ASIA	GLOBAL
Change in ozone concentration (characterised as the highest 6 month mean max hourly ozone)	ppbv	-0.4	-0.3	-0.4	-0.3	-0.3	
Change in premature mortality	#/year	-359	-105	-89	-86	-965	-1,605
Change in crop yield loss (for 4 staple crops)	metric Tonnes	-790,000	-360,000	-110,000	-21,000	-600,000	-1,900,000

2) Demand-Side Measures – Changing Consumption
3) Emissions Reduction Technologies

Concentrate feeding; Increasing the concentration of oils in ruminant diets; Tannin containing forages; Nitrate supplementation; Plant derived bioactives e.g. garlic, essential oils Direct fed microbials e.g. yeasts

Source: CCAC (2017) Science Advisory Panel Briefing: Addressing Methane in Agriculture and Livestock

1) Livestock & manure management
2) Open agricultural burning
3) Paddy rice cultivation
4) Enteric fermentation

METHANE & BLACK CARBON EMISSIONS FROM AGRICULTURE

Thank you!

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