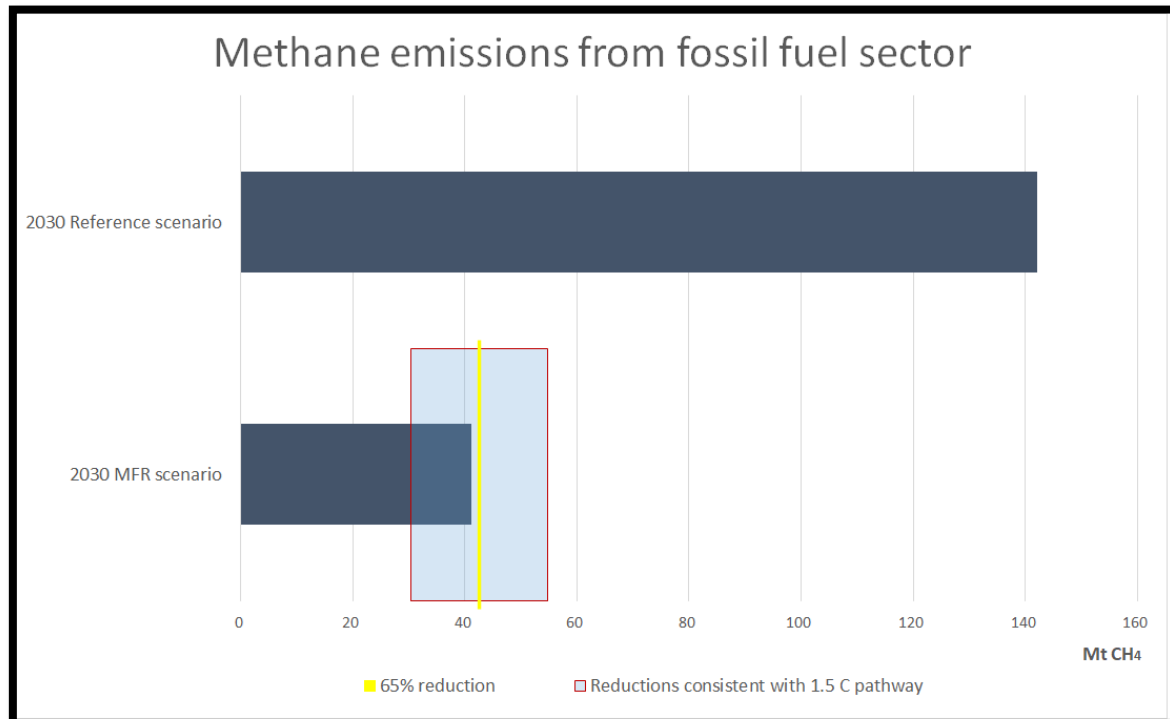


## OPPORTUNITIES FOR 1.5°C CONSISTENT METHANE MITIGATION: FOSSIL FUEL SECTOR

### (Key Messages)

- Fossil fuel sector methane emissions in 2010 were 122 Mt, approximately 37% of total anthropogenic methane emissions.
- Fossil fuel sector methane emissions are expected to increase to 142Mt by 2030 without additional controls
- 2030 methane emissions could decrease by 101 Mt (-71%) under a maximum technically feasible scenario. -39 Mt from oil production; -21 Mt from coal mines, and -13 Mt from gas distribution systems.
- To be consistent with 1.5°C scenarios, by 2030 methane from the fossil fuel sector should be reduced by **65% (55% - 75%)** compared to 2010 levels.
- Maximum technically feasible mitigation could achieve a **66% reduction** compared to 2010 emissions by 2030. Many of the measures necessary to achieve these reductions come at a low or net negative societal cost.
- Maximum technically feasible reductions will result in multiple-benefits for climate, air quality and public health. By 2030 reductions from the fossil fuel sector could **avoid 0.14°C** of additional warming and **prevent 151,460 premature deaths** due to reduced exposure to tropospheric ozone (benefits calculated based on unpublished results from the forthcoming CCAC Global Methane Assessment).
- The main co-pollutants from the fossil fuel sector are: NO<sub>x</sub>, CO, NMVOC, SO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, BC, CO<sub>2</sub>, N<sub>2</sub>O



**Figure 1:** The upper bar shows projected 2030 methane emissions without additional mitigation. The lower bar shows projected 2030 methane emissions after maximum technically feasible reductions. The yellow line illustrates the average 2030 methane reduction in 1.5°C consistent scenarios reported in the IPCC 1.5°C Special Report (2018). (Reference and MTF scenarios provided by IIASA GAINS)

**Table 1 - Key Fossil Fuel Methane Sources, Mitigation Potentials and Multiple-Benefits**

Sources	Emissions in 2030 (Mt)	MTF abatement in 2030 (Mt)	Warming Avoided (10-40 yr) (C)	Avoided Premature Deaths (annual)	Key Co-Pollutants	% reduction in 2030 compared to 2010
<b>Fossil fuels (All)</b>	<b>142</b>	<b>101</b>	<b>0.136</b>	<b>151460</b>		<b>-66%</b>
<b>Combustion - fossil fuel</b>	4	0	0	0	NO <sub>x</sub> , CO, NMVOC, SO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , BC, CO <sub>2</sub> , N <sub>2</sub> O	19%
<b>Coal mining</b>	37	21	0.028	31,120	PM <sub>2.5</sub> , PM <sub>10</sub> , NMVOC	-53%
<b>Abandoned coal mines</b>	4	3	0.005	5,170		-89%
<b>Oil production</b>	45	39	0.053	58,280	NO <sub>x</sub> , CO, NMVOC, SO <sub>x</sub> , PM <sub>2.5</sub> , PM <sub>10</sub> , BC, CO <sub>2</sub>	-85%
<b>Oil refining</b>	0.2	0	0	170	NO <sub>x</sub> , CO, NMVOC, SO <sub>x</sub> , PM <sub>2.5</sub> , PM <sub>10</sub> , BC	-65%
<b>Natural gas production</b>	11	9	0.012	13,600	NO <sub>x</sub> , CO, NMVOC, SO <sub>x</sub> , PM <sub>2.5</sub> , PM <sub>10</sub> , BC, CO <sub>2</sub>	-77%
<b>Unconventional gas production</b>	17	10	0.013	14,740	NO <sub>x</sub> , CO, NMVOC, SO <sub>x</sub> , PM <sub>2.5</sub> , PM <sub>10</sub> , BC	24%
<b>Long-distance gas transmission</b>	10	5	0.007	8,210		-53%
<b>Gas distribution networks</b>	14	14	0.018	20,170		-96%

(Source: emissions and mitigation potentials calculated from IIASA GAINS scenarios. Benefits calculated based on unpublished results from the forthcoming CCAC Global Methane Assessment)