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How to Cut Methane Emissions

IMF Staff Climate Note 2022/008

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Abstract

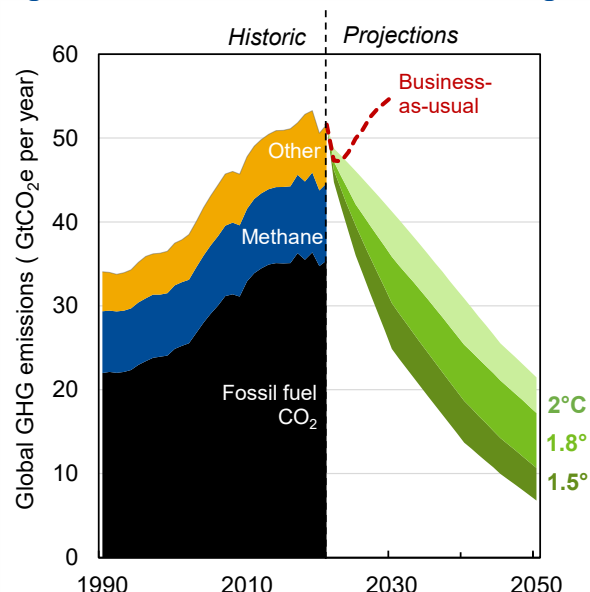
Limiting global warming to 1.5 to 2°C above preindustrial levels requires rapid cuts in greenhouse gas emissions. This includes methane, which has an outsized impact on temperatures. To date, 125 countries have pledged to cut global methane emissions by 30 percent by 2030. This Note provides background on methane emission sources, presents practical fiscal policy options to cut emissions, and assesses impacts. Putting a price on methane, ideally through a fee, would reduce emissions efficiently, and can be administratively straightforward for extractives industries and, in some cases, agriculture. Policies could also include revenue-neutral ‘feebates’ that use fees on dirtier polluters to subsidize cleaner producers. A \$70 methane fee among large economies would align 2030 emissions with 2°C. Most cuts would be in extractives and abatement costs would be equivalent to just 0.1 percent of GDP. Costs are larger in certain developing countries, implying climate finance could be a key element of a global agreement on a minimum methane price.

Introduction

To stabilize the climate, emissions of greenhouse gases (GHGs) including methane must be cut dramatically in this decade. In a business-as-usual (BAU) scenario without additional mitigation measures, global GHGs are expected to grow to 53 billion tonnes of carbon dioxide equivalent (CO₂e) in 2030. Fossil fuel CO₂ emissions account for most emissions (65 percent), but methane (CH₄, 20 percent), and other GHGs (15 percent) remain important. Limiting global warming to ‘well below 2°C’ and ideally 1.5°C (the mitigation goal of the 2015 Paris Agreement) requires that global GHG emissions be cut 25 to 50 percent below 2019 levels by 2030 (see Figure 1).¹ Most attention has been rightly focused on CO₂, given its central role in long-term warming and long life in the atmosphere. But cutting methane emissions is also paramount, not least because of its disproportionate impact on near-term temperatures. Simply put, given a lack of progress on CO₂ abatement, if methane emissions are not cut rapidly and soon there are substantive risks of irreversibly destabilizing the global climate.²

Most countries have pledged to cut GHGs and 125 countries have signed the Global Methane Pledge (GMP) to cut global methane emissions by 30 percent by 2030 but commitments and policies fall well short of what is needed. To date 139 countries, responsible for 83 percent of global GHGs, have proposed or set a net zero target for *total* GHGs sometime in the middle of this century.³ Signatories to the GMP committed to taking actions to reduce global methane emissions at least 30

Figure 1. Global GHG Emissions and Targets



Source: IMF staff calculations.

Note: Excludes land use, land-use change and forestry (LULUCF) emissions. BAU = business as usual; GHG = greenhouse gas; GtCO₂e = gigatonnes of CO₂ equivalent.

¹ As part of Nationally Determined Contributions (NDCs) under the Paris Agreement - see Black and others (2021); UNEP (2021).

² Armstrong McKay and others (2022).

³ See <https://zerotracker.net>.