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Methane Emissions Reduction | International policy and technology insights for the Australian fossil fuel sector

Executive Summary – August 2023

Methane emissions are a significant contributor to global greenhouse gas emissions, and have a high global warming potential. Action on reducing methane emissions in this decade is a crucial and cost-effective pathway to limiting global warming to 1.5°C.

The fossil fuel sector is responsible for approximately 35-40% of global methane emissions. Coordinated action with government and industry buy-in is required to ensure the sector contributes to global methane targets (such as the Global Methane Pledge).

Australia has made a commitment under the Global Methane Pledge to reduce global methane emissions but has not set a national or sectoral target.

Australia can do more to reduce methane emissions in the fossil fuel sector

Australia's fossil fuel sector contributes up to 26% of national methane emissions, and Australia is lagging other developed economies in terms of fossil fuel methane action.

- Australia has not yet set a country specific (or industry specific) target for methane reduction, despite having signed the Global Methane Pledge (which is aligned to a 1.5°C pathway).
- There is a mix of state-based and federal policies governing the fossil fuel sector, with very few that are legislated or specifically address methane, along with few pricing signals to encourage industry buy-in.
- Other countries and sub-national governments with heavy sectoral involvement have made targeted actions to address methane intensity in the sector, with noteworthy emissions reductions.

Global action on methane emissions to achieve a short-term impact on greenhouse gas emissions is needed to remain within the global carbon budget.

- According to the IPCC's AR 6, more rapid and deep reductions in methane emissions are essential to achieve net-zero by 2050, given the strong influence that methane has on short-term climate change.
- Under the IEA's global Net Zero Emissions by 2050 scenario, methane emissions would need to fall by around 75% by 2030.
- These required methane emission reductions in the coal mining and oil & gas sectors have been classified as technically viable and cost-effective by the IEA.

Sources: DCCEEW – National Greenhouse Accounts, National Inventory by Economic Sector 2021 (2023); IPCC – Sixth Assessment Report (2023); IEA – Tracking Methane Emissions from Oil and Gas Operations (2023); IEA – Curtailing Methane Emissions from Fossil Fuel Operations (2021)

Other fossil fuel-based economies have successfully made progress

Progress internationally is being driven by a range of direct and indirect policies…

- Fossil fuel dominated Alberta and British Columbia (in Canada) have implemented strong emissions standards on equipment and processes through legislated regulations, and similar mechanisms to Australia's Safeguard Mechanism and Emissions Reduction Fund, but with methane specific requirements.
- While the UK has declining upstream production (especially in coal), it has implemented targets on flaring and venting rates and public disclosure requirements, to drive performance in the oil and gas sector. The country has also focused on reducing mid-stream emissions through a significant pipeline replacement scheme, with added health and safety benefits.
- Amidst the backdrop of the recent federal *Inflation Reduction Act* (which includes a price on methane), individual US states have strengthened their prescriptive emissions standards across the oil & gas value chain. Long-term industry partnerships have also driven significant, cost-effective emissions reductions.
- China has focused on the extraction and utilisation of coal mine methane, partly driven by air pollution concerns, using extraction and utilisation targets, and flaring and venting restrictions.

… that have been most successfully implemented when combined, rather than standalone.

- Global experience shows there is no 'one size fits all' policy solution – a mix of prescriptive, economic, informative, and performance-based policies drives industry action and technology uptake.
- Successful implementation is underpinned by accurate, consistent and transparent emissions measurement and reporting using best practice methodologies. Increasing stipulations on Leak Detection and Repair frequency and reporting are now in place in other jurisdictions, as well as more widespread 'top down' monitoring of site emissions (through satellite or other measures).

Global jurisdictions that have successfully reduced methane emissions in the fossil fuel industry have done so through a mix of measures that have driven improvements in technologies, practices, monitoring and reporting.

International experience shows that uncoordinated or voluntary schemes alone are unlikely to lead to significant reductions.

Australia has considerable untapped potential for methane emissions reductions.

A mix of prescriptive policy and regulation coupled with appropriately considered price signals and collaborative partnerships could drive real progress towards Australia's methane reduction commitments.

Australia should leverage international experience to strengthen its approach to fossil methane emissions reduction

Australia should consider three key actions together, to drive industry action.

1. **Methane reduction targets** – specific to the gas and coal industries (supporting a national methane target), considering both input and output targets, aligned to a 1.5°C pathway.
2. **Methane emissions regulations and price signals** – a national combination of prescriptive emissions standards for equipment and practices (including monitoring, reporting and verification), and clear price signals that drive additional industry investment beyond what is mandatory. These could be delivered through the augmentation of legislated environmental protection and fossil fuel industry regulations, and the specific inclusion of methane in policies such as the Safeguard Mechanism.
3. **Collaboration** – government and industry partnerships, both nationally and internationally building upon the Global Methane Pledge, to support innovative and efficient solutions.

Emissions intensity measures should be delivered alongside the phase down of fossil fuel production to meet net-zero targets.

- According to the IEA, a global reduction in coal and gas production within this decade is required to meet international net-zero goals and limit global warming to 1.5°C.
- Methane intensity reductions alone in these sectors will be insufficient. Support needs to be provided to users of fossil fuels, domestically and internationally, to reduce the demand for fossil fuels.
- Future policy attention will be required to emissions from abandoned and decommissioned sites, which may continue to emit methane beyond their operational lifetime (beyond scope of this report).

Key actions – summary on a page

Key actions for Australia to address current gaps

1 Sector specific methane targets

"A common, 1.5C aligned goal"

Specific methane emissions reductions targets for the gas and coal industries, considering both input and output targets, aligned to a 1.5C pathway

- Sector specific targets should align to the Global Methane Pledge and IPCC goals and focus first on easy to abate parts of the coal and gas value chain.
- Sector specific targets could be a mix of input based (e.g., utilisation rate of CMM in coal mine projects) and output based (e.g., total methane emissions from coal operations), informed by scientific research and expert recommendations.
- There are currently no specific methane emissions targets for the coal and gas industries in Australia – this makes it difficult to separately focus on, and deal with, methane emissions from the fossil fuel industries as distinct from methane emissions from other sectors, such as the waste and agriculture sectors.

2 Emissions regulations and price signals

"Kickstarting industry to make changes"

National prescriptive emissions standards for equipment and practices, including measurement, reporting & verification

- Standardised and more specific emissions standards (e.g. bleed rate requirements, pre-drainage and utilisation in all coal mines) could be applied to both new and existing wells, mines and other infrastructure.
- Non-routine flaring and venting targets and regulations would align to other jurisdictions.
- A requirement to produce methane emissions baselines and report publicly on methane emissions would help to encourage methane specific emissions reductions.
- Bottom up (through LDAR), and top-down site level measurement requirements using modern best-practice methods would also provide a more accurate assessment of methane emissions, which is critical to measuring success.

Clear, methane specific price signals through the Safeguard Mechanism, Emissions Reduction Fund (ERF)

- A financial incentive through avoided Safeguard Mechanism compliance costs (ACCU and/or Safeguard Mechanism Credit purchases, fines) would encourage emissions reductions beyond those mandated through prescriptive emissions standards.
- Further financial incentives for additional abatement through the ERF would further drive voluntary reductions. Clearer guidance on the availability of existing emissions reduction programs could be developed to encourage use of existing incentive programs (e.g., 'stacking' of existing relevant ERF project methodologies).
- A price on methane (per the US IRA developments) would also promote and accelerate business cases for methane emissions reductions.

3 Collaboration

"Efficiency through working together"

Industry partnerships and collaboration, both nationally and internationally, to support innovative efficient solutions

- Industry partnerships (including with Government) could support the sharing of learnings and provide the scale to implement emerging R&D or widespread monitoring programs.
- The Natural Gas STAR program was a highly successful initiative in the US that could be implemented in Australia – particularly given that many multi-national industry participants may have been historically involved.
- Government-industry partnerships could support the widespread implementation and commercialisation of coal mine methane abatement technologies (such CSIRO's technologies) to mutual benefit.
- The recent signing of the *Joint Statement on Accelerating Methane Mitigation from the LNG Value Chain* is a positive start in this direction.

Evidence from other jurisdictions show that the most successful outcomes tend to be associated with a holistic package of policies and measures. One measure or policy alone will likely not achieve the desired results in the most efficient manner – a combination of targets, economic signals and emissions regulations appears to drive the greatest industry action.

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