



Best Practice Guidance

Available in print and electronically at:
<https://unece.org/sustainable-energy/coal-mine-methane/principal-activities>
<https://unece.org/amm>

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ABANDONED MINE METHANE

Methane emissions do not cease at the time of mine closure. Methane migrates into the abandoned mine from connected coal deposits. If not prevented by an adequate sealing, the liberated gas will migrate to the surface and escape to the atmosphere through natural and mining related fractures and other conduits.

Although after mine closure the gas flow initially declines, it can later stabilize and maintain a near-constant rate for an extended period of time.

Abandoned coal mines continue to emit methane for many years after closure. Concerningly, these emissions remain unchecked and unaccounted for in many coal producing regions.



As many countries shift their energy economies away from coal, tackling abandoned mine methane (AMM) emissions has become an important issue. This phenomenon, however, is observed not only in countries where coal production is declining and mines are closing, it is also found in those countries where coal production continues to play a significant role in the energy mix and closed mines are replaced by new mines.

Methane emissions from closed and closing mines can be substantial and are projected to increase. Estimates of global coal mine methane emissions indicate that AMM represented 17% of the total mine methane emissions in 2010 and forecasts indicate that the proportion may increase to as much as 24% in 2050. To put these numbers in perspective, in 2016, coal mines in the United States alone released 60.5 MtCO₂e of methane.

METHANE FACTS

- Methane (CH₄) is an important and potent greenhouse gas.
- The 100-year global warming potential (GWP) of methane is 25 times higher than that of CO₂.
- Measured over a 20-year period, methane's GWP is 84 times that of CO₂ and on an instantaneous basis this figure increases to 120.
- Atmospheric concentrations of methane are rising.
- Approximately 60% of global methane emissions are a result of human activity. The main sources are the oil and gas industries, agriculture, landfills, wastewater treatment, and coal mines.

COAL MINE METHANE

- Coal and methane are co-located resources in many parts of the world. Coal extraction leads to the release of a substantial amount of methane that is trapped in the coal seam.
- Global emissions of coal mine methane will continue to increase with continued mining. Approximately 8% of global anthropogenic methane emissions come from coal mines.
- Methane is emitted from active and abandoned underground and surface mines.
- Mitigation is possible and the technology is readily available. A number of projects are ongoing around the world to reduce methane emissions at active and abandoned mines.

BEST PRACTICE GUIDANCE

- *UNECE Best Practice Guidance for Effective Methane Recovery and Use from Abandoned Coal Mines* is aimed at raising awareness of AMM opportunities and hazards by providing accessible high-level guidance for senior corporate, government and financial decision-makers – all of whom play an integral role in decisions to implement best practices.
- It does not replace or supersede laws and regulations or other legally binding instruments, whether national or international. The principles outlined in the document are intended to provide guidance to complement existing legal and regulatory frameworks and to support development of post-mining projects to reduce the overall emissions attributable to the coal mining life cycle by optimising recovery and use of methane that would otherwise be released to the atmosphere.