

**UNECE**

# **Best Practice Guidance for Effective Management of Coal Mine Methane at National Level: Monitoring, Reporting, Verification and Mitigation**



**UNITED NATIONS**



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**Best Practice Guidance for Effective Management  
of Coal Mine Methane at National Level:  
Monitoring, Reporting, Verification and Mitigation**

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## Foreword

The current state of the natural environment is worrisome. According to International Energy Agency outlooks, if annual global greenhouse gas (GHG) emissions continue at today's rates, by 2100 the average temperature on Earth will rise by approximately 2.6°C compared to pre-industrial times. However, emissions of methane (CH<sub>4</sub>) have not stabilized and, if they keep growing at the current rates, the planet faces a climate disaster unprecedented in human history - the earth's atmosphere will warm by approximately 4°C by the end of the century. This human-induced change in atmospheric conditions will wreak havoc, imperilling water supplies, food production and potentially causing mass migration and social destabilization.

About a quarter of today's climate change is caused by anthropogenic methane emissions. Methane is an important and potent GHG. Its 100-year global warming potential is 28 times higher than that of carbon dioxide (CO<sub>2</sub>). Measured over a 20-year period that factor rises to 84, and on an instantaneous basis to as much as 120. About 60% of global methane emissions are a result of human activity. Eight percent of this powerful climate pollutant comes from coal mines.

Reducing methane emissions is one of the most cost-effective options for limiting the impact of the energy sector on climate. However, it is impossible to design and implement effective methane policies without access to detailed and reliable data on the scale and sources of the emissions. There is an immediate need for national emissions monitoring and reporting schemes that are effective and based on comparable methodologies. Countries that are party to the United Nations Framework Convention on Climate Change (UNFCCC) and are committed to achieving targets set out in the Paris Agreement are subject to a carbon accounting process. Under this framework they are obliged to monitor, collate, and report emissions from all major anthropogenic sources.

In most developed mining countries, emissions from working coal mines are included in domestic inventories. Inventories play an essential role in determining the scale of emissions, planning mitigation policies, and implementing effective actions. Monitoring, reporting and verification (MRV) programmes at local level helps governments not only better understand the local coal mining industry's contribution to the overall methane and other GHG emissions of the country, but also helps to identify the most promising mitigation opportunities. Unfortunately, only a handful of local entities have established such programmes.

UNECE is committed to helping countries to mitigate climate change and it collaborates with other organizations to maximize the effectiveness of its efforts in that field. I am therefore pleased to present this document, developed in partnership with GMI, which is a practical guide for designing national systems to quantify and report methane emissions from coal mines.



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### Sponsoring Organizations

The **United Nations Economic Commission for Europe** (UNECE) is one of the five UN Regional Commissions that provides a forum through which 56 countries of North America and Western, Central, and Eastern Europe as well as Central Asia come together to forge the tools of their economic cooperation. The main areas of UNECE's activity are: economic cooperation and integration, environment policy, forests, housing and land, population, statistics, sustainable energy, trade, and transport. UNECE pursues its goals through policy analysis, the development of conventions, regulations and standards, and the provision of technical assistance. Energy related topics such as coal mining and coal mine methane are discussed by the member states in the Committee on Sustainable Energy. The Group of Experts on Coal Mine Methane and Just Transition convenes as a subsidiary body of the Committee, meeting regularly to discuss issues and promote best practices for management, capture and use of the CH<sub>4</sub> gas liberated during the coal mining life cycle ([www.unece.org/energy/se/cmm.html](http://www.unece.org/energy/se/cmm.html)).

The **Global Methane Initiative** (GMI) is an international public-private partnership that works with government agencies around the world to facilitate project development in five key methane-producing sectors: agricultural operations, coal mines, municipal solid waste, oil and gas systems, and wastewater. Launched in 2004, GMI works in concert with other international agreements, including the United Nations' Framework Convention on Climate Change (UNFCCC), to reduce greenhouse gas (GHG) emissions. Unlike other GHGs, CH<sub>4</sub> is the primary component of natural gas and can be converted to usable energy. The reduction of CH<sub>4</sub> emissions, therefore, serves as a cost-effective method to reduce GHGs and increase energy security, enhance economic growth, improve air quality and improve worker safety. The Global Methane Initiative is comprised of 44 partner countries and the European Commission, representing about 70 percent of the world's anthropogenic CH<sub>4</sub> emissions. With respect to coal mine methane, GMI's Coal Subcommittee brings together key experts in coal mine CH<sub>4</sub> recovery and utilisation to share information about state-of-the-art technologies and practices through a number of workshops, trainings, study tours, and capacity-building initiatives ([www.globalmethane.org](http://www.globalmethane.org)).

### Structure

The drafting work was assisted by the financial, technical and administrative support of the United States Environmental Protection Agency through GMI.

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## Contents

Foreword.....	iii
ACKNOWLEDGEMENTS .....	iv
Acronyms .....	x
Glossary of terms .....	xii
Executive summary .....	xiv
1. Introduction .....	1
1.1 Global coal mine methane emissions and information sources .....	3
1.2 Bottom-up national MRV.....	5
1.3 MRV and mitigation.....	6
2. Sources of coal mine methane emissions.....	9
2.1 Variability in methane flows.....	9
2.2 Working underground mines.....	11
2.3 Abandoned mines.....	12
2.4 Surface mines .....	14
3. Monitoring, reporting and verification of methane emissions from coal mine sources .....	15
3.1 Monitoring and measurement of methane emissions from coal mines .....	15
3.1.1 Emission factors applied to coal production at working mines .....	15
3.1.2 Use of decline curves to measure emissions from abandoned mines.....	17
3.1.3 Measurements using handheld instruments .....	18
3.1.4 Measurements using continuous emissions monitoring systems (CEMS).....	20
3.1.5 Monitoring frequency .....	23
3.1.6 Other considerations for emission monitoring .....	24
3.2 Reporting of emissions from coal mines .....	25
3.3 Verification of emissions data .....	29
3.3.1 Advances in verification using remote sensing methods.....	30
4. How MRV supports mitigation of coal mine methane emissions .....	36

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