



Energy Department
Ministry of Economy
The Republic of Poland



Methane to Markets in Poland

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Steering Committee

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Challenges for Poland

- Utilization of the entire coal mine methane (CMM) released during coal extraction,
- The ventilation air methane (VAM) recovery – providing conditions for utilization,
- Possibly largest recovery and utilization ratio of the landfill gas,
- Significant methane emission reduction from the gas systems.

Utilization of the entire coal mine methane (CMM) released during coal extraction

Coal mines (2007)

31 coal mines in operation, among them:

- 27 gassy coal mines,
- 21 have methane drainage installations,
- 14 utilize methane.

Coal mines

Methane from coal mines is used in small scale units for:

- CHP,
- electricity generation,
- heating and cooling generation.

Annual methane's capture from coal mines (2007)

Total amount of 879 mln m³ methane is released, this includes:

- 610 mln m³ methane through ventilation systems,
- 269 mln m³ methane through drainage systems, which cover:
 - 103 mln m³ methane released to atmosphere,
 - 166 mln m³ methane utilized.

CMM supplies and possible energy output

The total amount of CMM captured and forecasted to be captured (mln of m³):

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
221,4	269	287,4	286,4	316,7	319,3	314,7	306,0	321,5	320,5

Achieved and forecasted utilization of CMM amounts introduced above (GWh):

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
738	897	958	955	1 056	1 064	1 049	1 020	1 072	1 068

U.S. E.P.A. award to mitigate CMM emissions

Abandoned mine feasibility study and coal mine methane to liquefied natural gas assessment ("Zory" Coal Mine) performed by Institute for Ecology of Industrial Areas.

The main goal of the research is to stress the necessity of obtaining CMM from abandoned mines and economic assessment of potential possibilities of using it in Polish conditions.

U.S. E.P.A. award to mitigate CMM emissions (2)

Partial goals:

- obtaining the CMM from abandoned mine "Zory" and economic as well as environmental assessment of the process,
- economic and environmental estimation of the process of condensing methane to liquefied natural gas (LNG) so that it can be used as an alternative fuel,
- economic and environmental assessment of using LNG (obtained from coal mines) in Polish conditions,
- case study on realisation of LNG practical approach with the investment opportunities analysis.

The ventilation air methane (VAM) recovery – providing conditions for utilization

Providing conditions for VAM utilization

- Introducing the technology allowing to utilize methane from the ventilation air from Polish coal mines,
- Creating economic conditions for utilizing the amount of VAM from Polish coal mines.

U.S. E.P.A. award to VAM utilization

Detailed Characteristics of the Ventilation Air Methane Emissions from Ten Gassiest Underground Coal Mines in Poland performed by The Central Mining Institute of Katowice.

The main task of the project is to quantify present and forecast future ventilation air methane emissions, including individual shaft flows/fluctuations and possible end uses.

U.S. E.P.A. award to VAM research (2)

Partial goals:

- characterization of variations of methane concentrations,
- individual shafts life prediction assessment and ventilation air production amounts based on the future coal extraction plans and gassiness of individual shafts,
- creation of the database meant for better understanding of VAM problem,
- attraction of the scientific institutions and investors to join their efforts in elaborating the technology capable to convert low concentration methane into electricity or heat.

Possibly largest recovery and utilization ratio of the landfill gas

Landfills (2006)

There are approximately 1008 landfills among them:

262 landfills with degasification systems:

- 216 release methane to the atmosphere,
- 62 make methane harmless:
 - 36 electricity generation,
 - 8 heat generation,
 - 18 firing in burners.

The main goal for Polish landfills

Short-term target – to fit all landfills with the degasification systems.

The main goal for Polish landfills (2)

Partial targets for Poland:

- Decreasing the amount of the waste destined to landfills,
- Decreasing the amount of municipal, biodegradable waste destined to landfills, to store not more than:
 - 75% in 2010
 - 50% in 2013
 - 35% in 2020 } of the mass of waste generated in 1995,
- Decreasing the amount of landfills, of other types than hazardous and neutral, where municipal waste are stored, to maximum 200 until 2014.

U.S. E.P.A. award to landfills methane research

Study of the capabilities of landfill gas as a potential energy source performed by The Oil and Gas Institute

The main task of the project is to assess the capabilities of landfill gas energy projects in selected landfills in Poland.

U.S. E.P.A. award to landfills methane research (2)

Partial goals:

- increase of the use of bioresidues collected from biomass,
- energy efficiency increase by polygeneration,
- energy security increase by substitution of a part of imported natural gas,
- lightening the dangerously growing financial and budgetary burden of exploding prices for fossil energy carriers.

Significant methane emission reduction from the gas systems

Natural gas transmission system in Poland

Poland natural gas consumption in 2007: 14 bln m³



The main goals for Polish gas systems

Methane emission reduction in order to:

- protect the environment,
- decrease the industrial losses.

The main goals for Polish gas systems (2)

Partial targets:

- Yearly methane emission decrease (from transmission, distribution and storage) by 200 000 m³ mainly by sealing and partially by capturing,
- Gas receiving and compressing technologies applied when gas systems are installed or modernized,
- Emission reduction technologies development:
 - methane leakage detection technologies,
 - measurement technologies allowing for emission scale affirmation,
 - health hazard prevention technologies,
- Pipelines manufacturing technologies development.

Support scheme for using methane

For methane from coal mines:

- new support for CHP units through "CHP certificates" mechanism,
- excise tax exemption for electricity generation.

Thank you for your attention

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