

23rd Meeting of the Heads of European State Mining Authorities
Bratislava, Slovakia, September 2017



METHANE AS AN ACCOMPANYING MINERAL AND ITS ROLE IN THE POLISH HARD COAL MINING INDUSTRY PART 2

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Legal issues



Act of 9th June 2011 - Geological and Mining Law

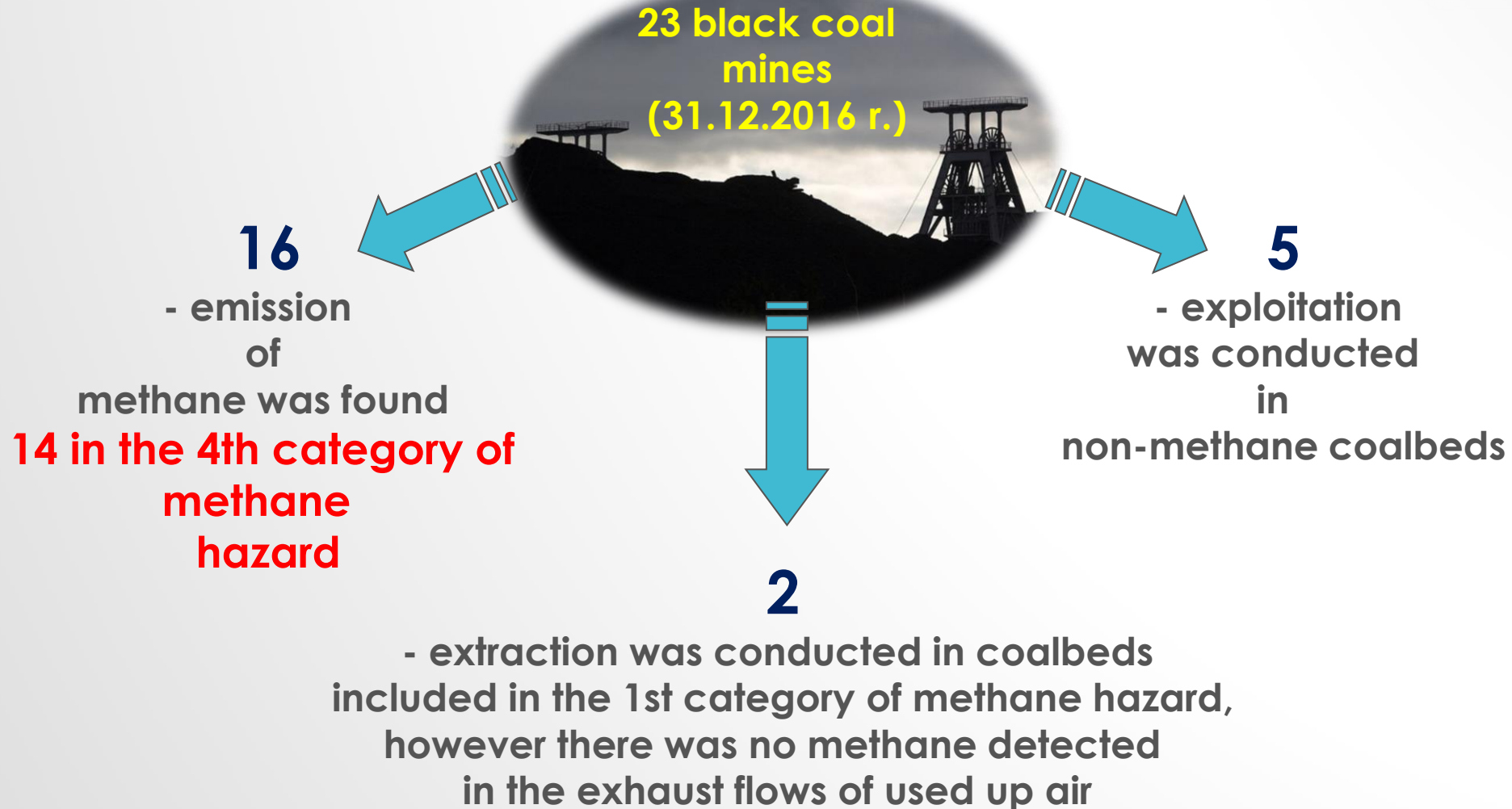
Methane, occurring as an accompanying mineral is mining property to which the State Treasure is entitled.

The license to extract hard coal and methane as an accompanying mineral is granted by the minister responsible for the environment in agreement with the minister responsible for mineral deposit management.

The exploitation charge rate for methane from hard coal is 0.00 zlotys.



Presentation of methane hazard in hard coal mines (2016)

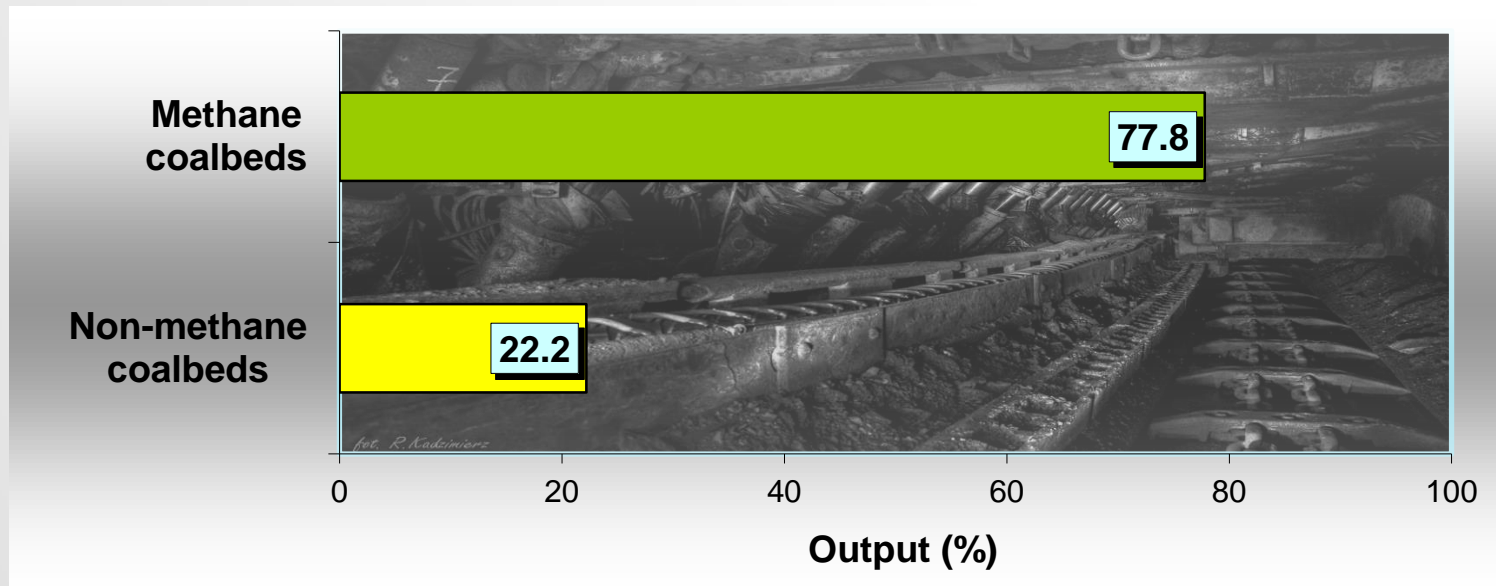


Presentation of methane hazard in hard coal mines (2016)



Black coal production in 2016 equaled approx. 70.4 million tonnes including:

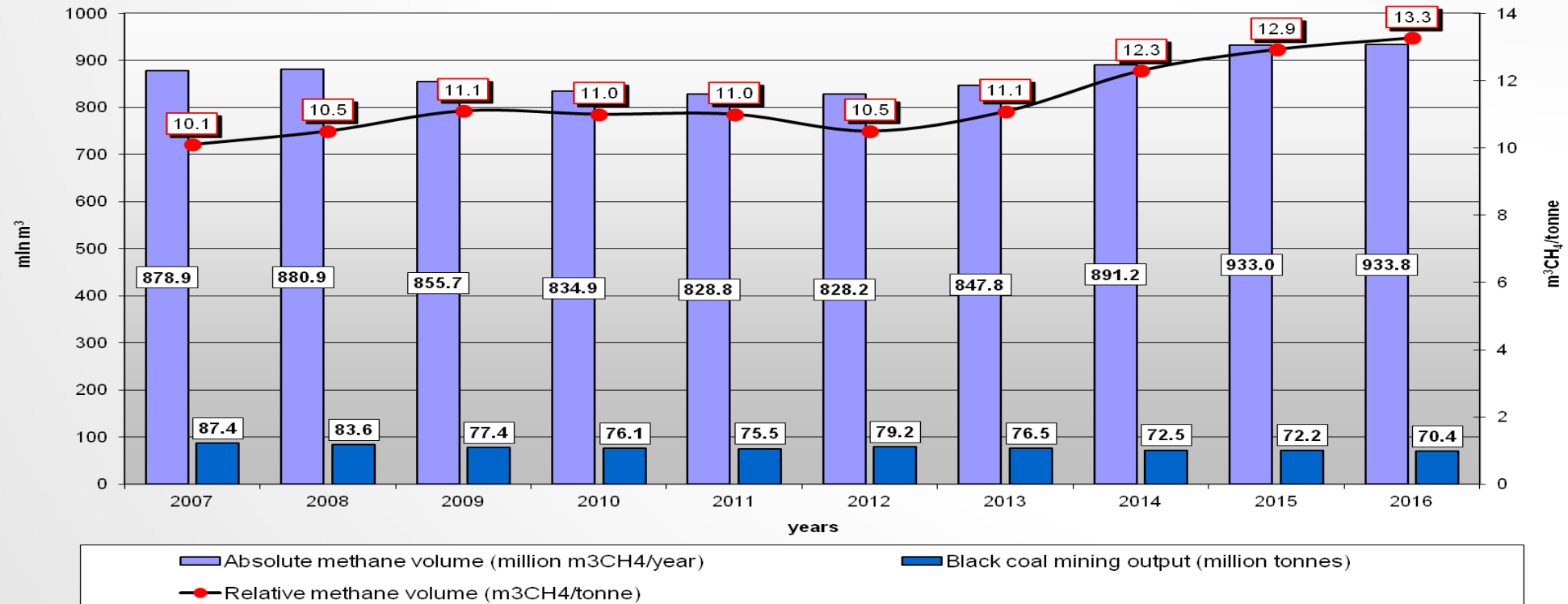
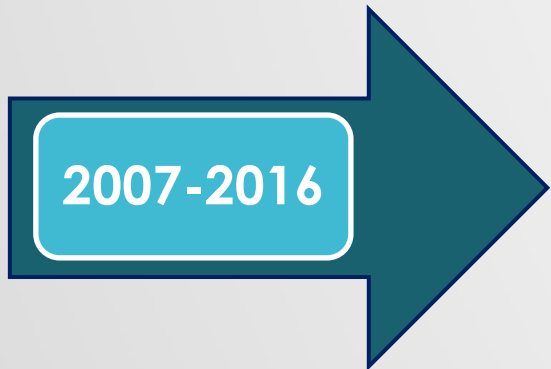
- **methane coalbeds** - 54.8 million tonnes, which constituted **77.8% of the output**,
- non-methane coalbeds - 15.6 million tonnes, which constituted 22.2% of the output.



Presentation of methane hazard in hard coal mines (2016)



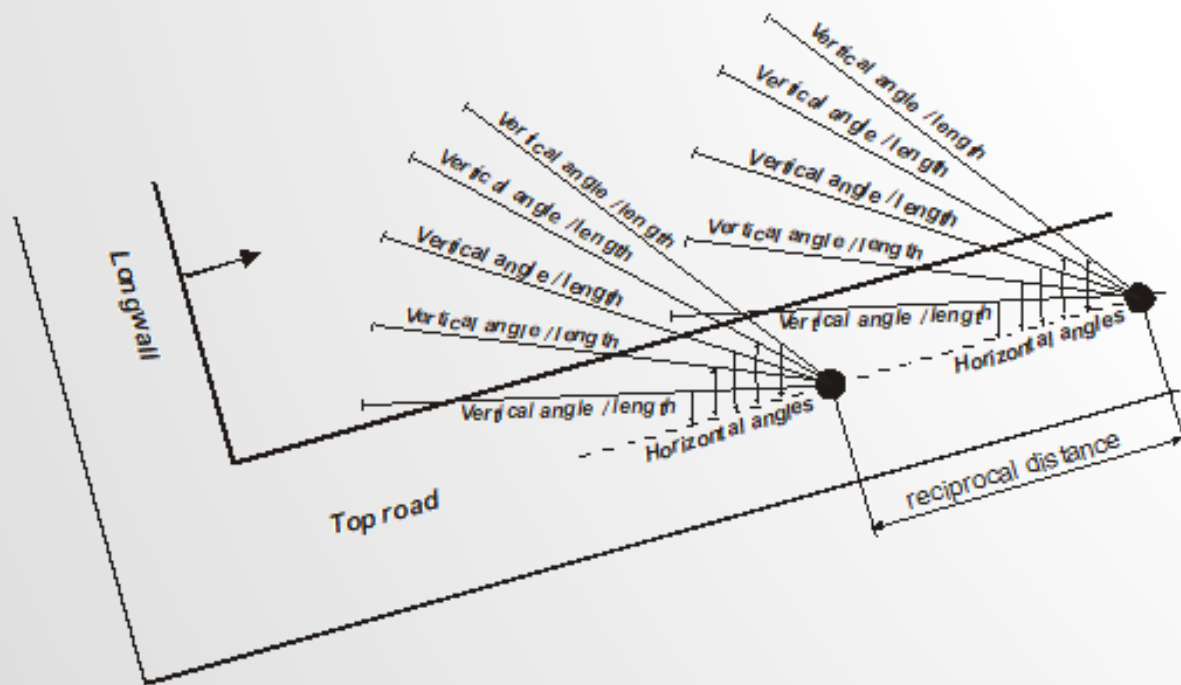
933.76 million m³ of methane was discharged from the exploited rock mass.
The relative methane volume equaled **13.3 m³CH₄/tonne**.



Methane drainage from mining excavations



Methane drainage of longwalls ventilated along the body of coal.



Low manufacturing costs



Low efficiency (20-30%)

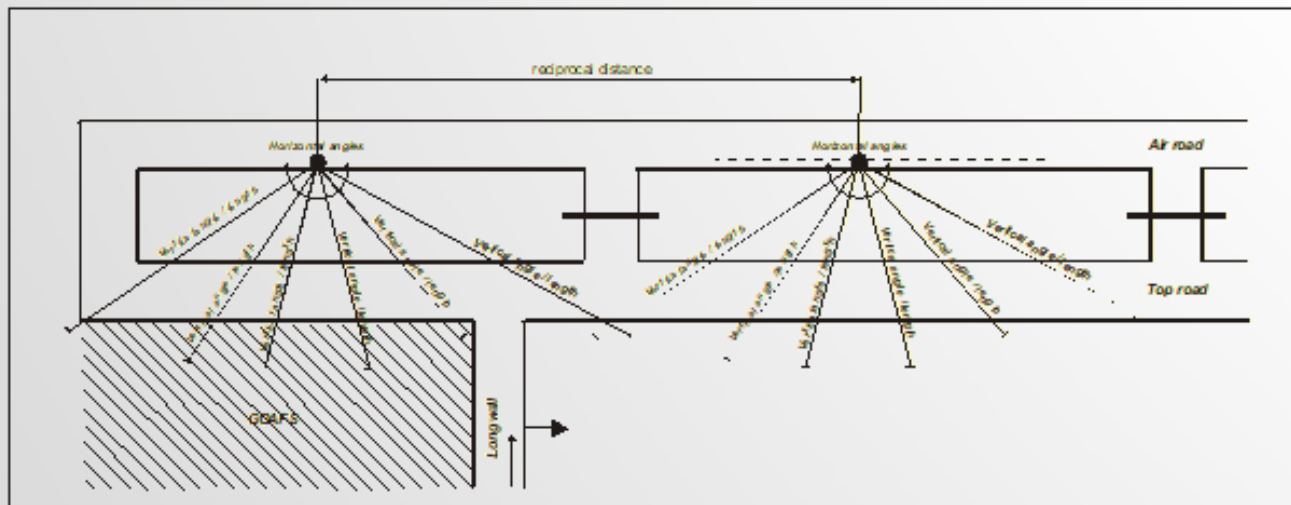
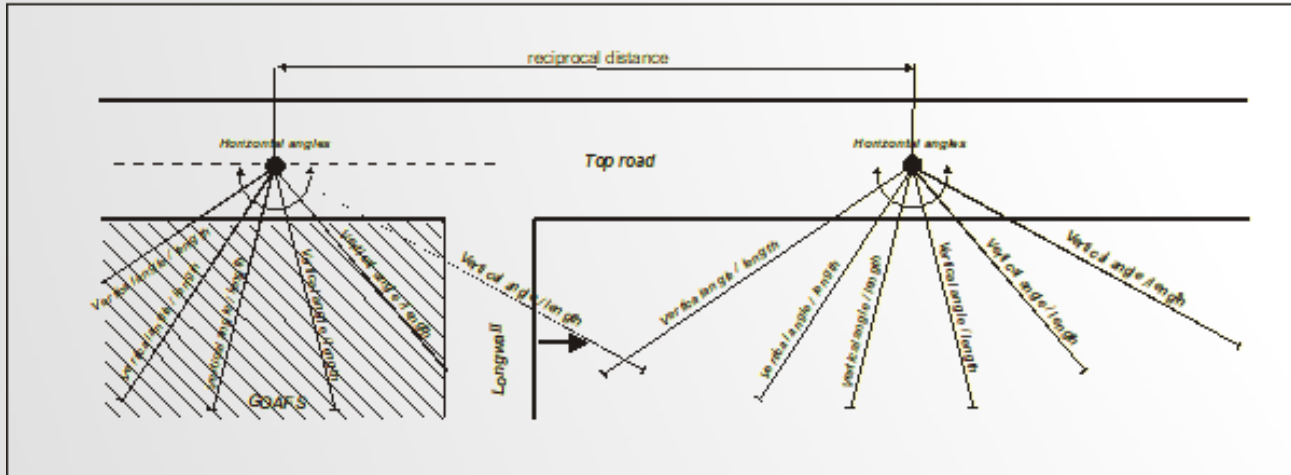


A short period of full capacity of the holes

Methane drainage from mining excavations



Methane drainage of longwalls ventilated along goafs



High effectiveness
(50-60%)



Long service life of holes



The need to maintain
the workings behind the
longwall (discipline)

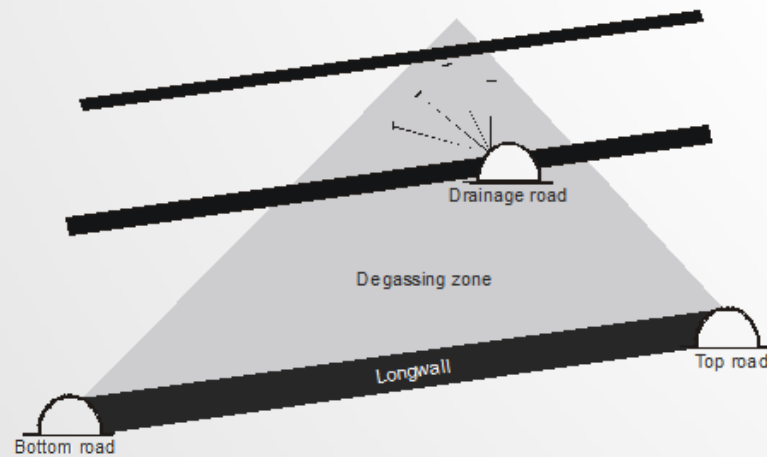
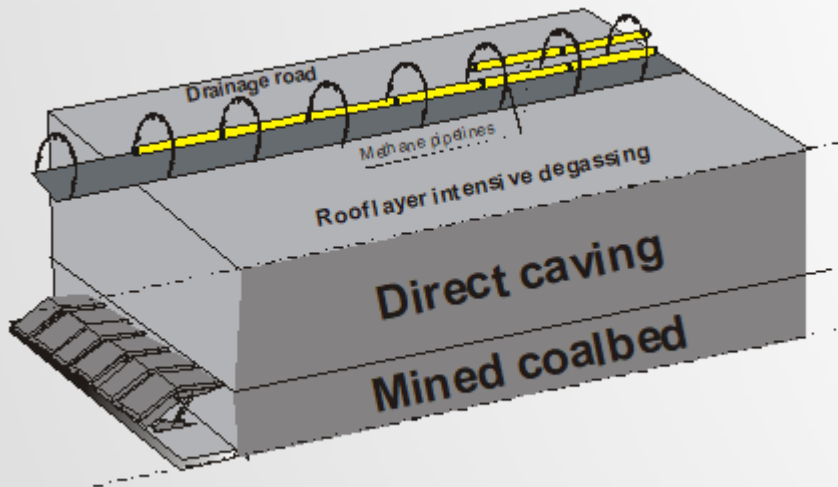


The need to perform
double workings

Methane drainage from mining excavations



Methane drainage using overlaying drainage



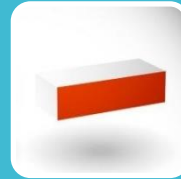
The highest efficiency (up to 80%)



The most effective method for longwalls ventilated using the "U" system



Optimum conditions required for the performance of an overlaying drift

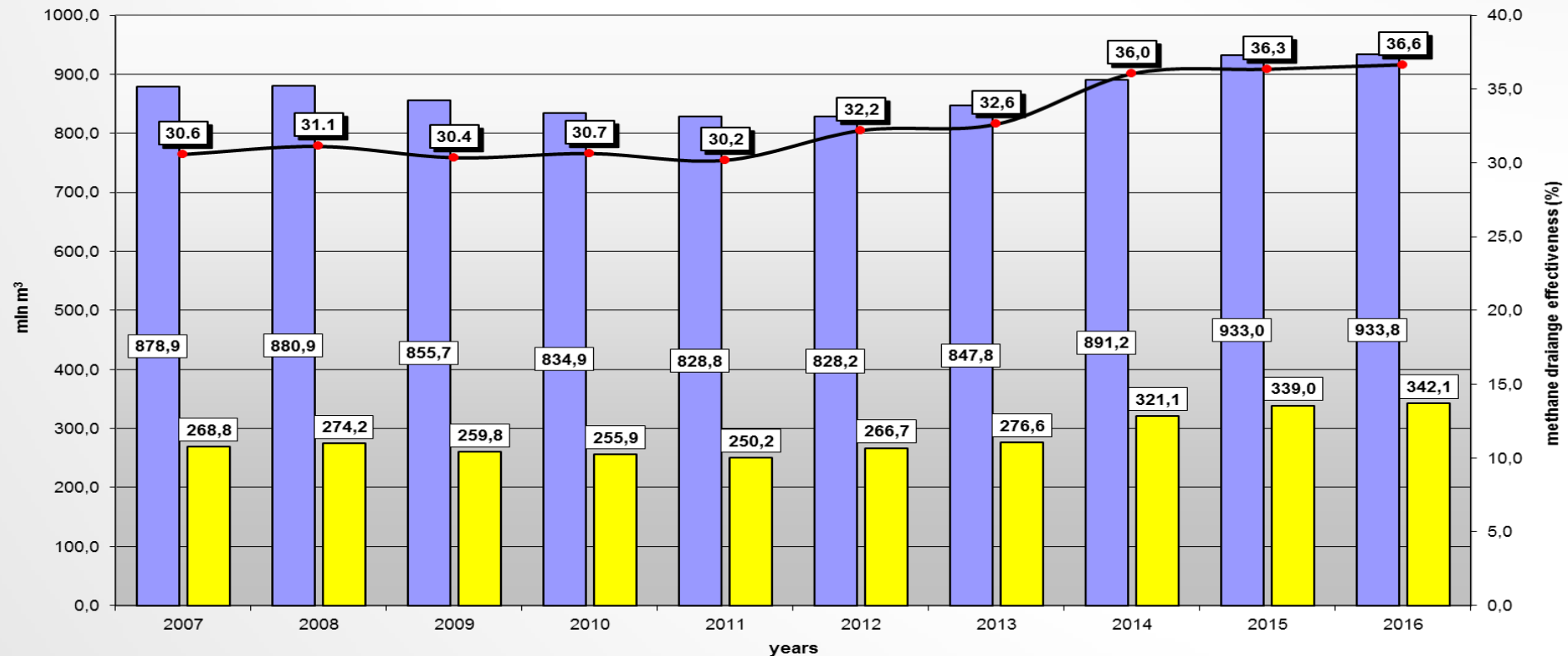


High capital expenditure

Methane drainage in the Polish mining industry (2016)



Volume of methane included in methane drainage – **342.08 million m³**.
Methane drainage effectiveness – **36.63%**.



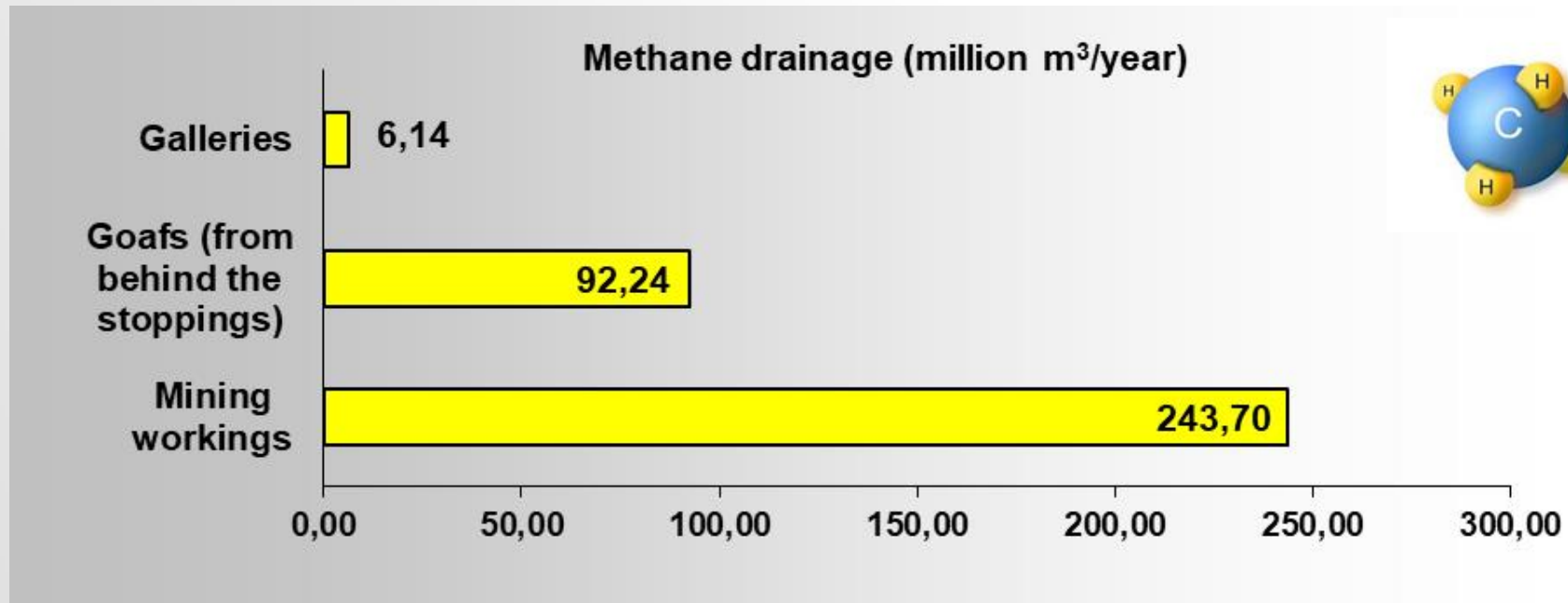
Legend:
■ Absolute methane volume (mln m³/year)
■ Captured methane volume (million m³/year)
● Methane drainage effectiveness (%)

Methane drainage in the Polish mining industry (2016)



According to the adopted division of places where methane drainage took place, the volume of methane captured last year was as follows:

- from mining excavation areas - **243.70** million m³ CH₄ (approx. 71.24%),
- from goafs (behind isolation stoppings) - 92.24 million m³ CH₄ (approx. 26.96%),
- from galleries - 6.14 million m³ CH₄ (approx. 1.79%).



Methane drainage in the Polish mining industry (2016)



Of the 178 longwalls **143** (80.34%) were exploited in methane **coalbeds**

Of the 143 longwalls methane drainage **was conducted** in **57** (39.86%)

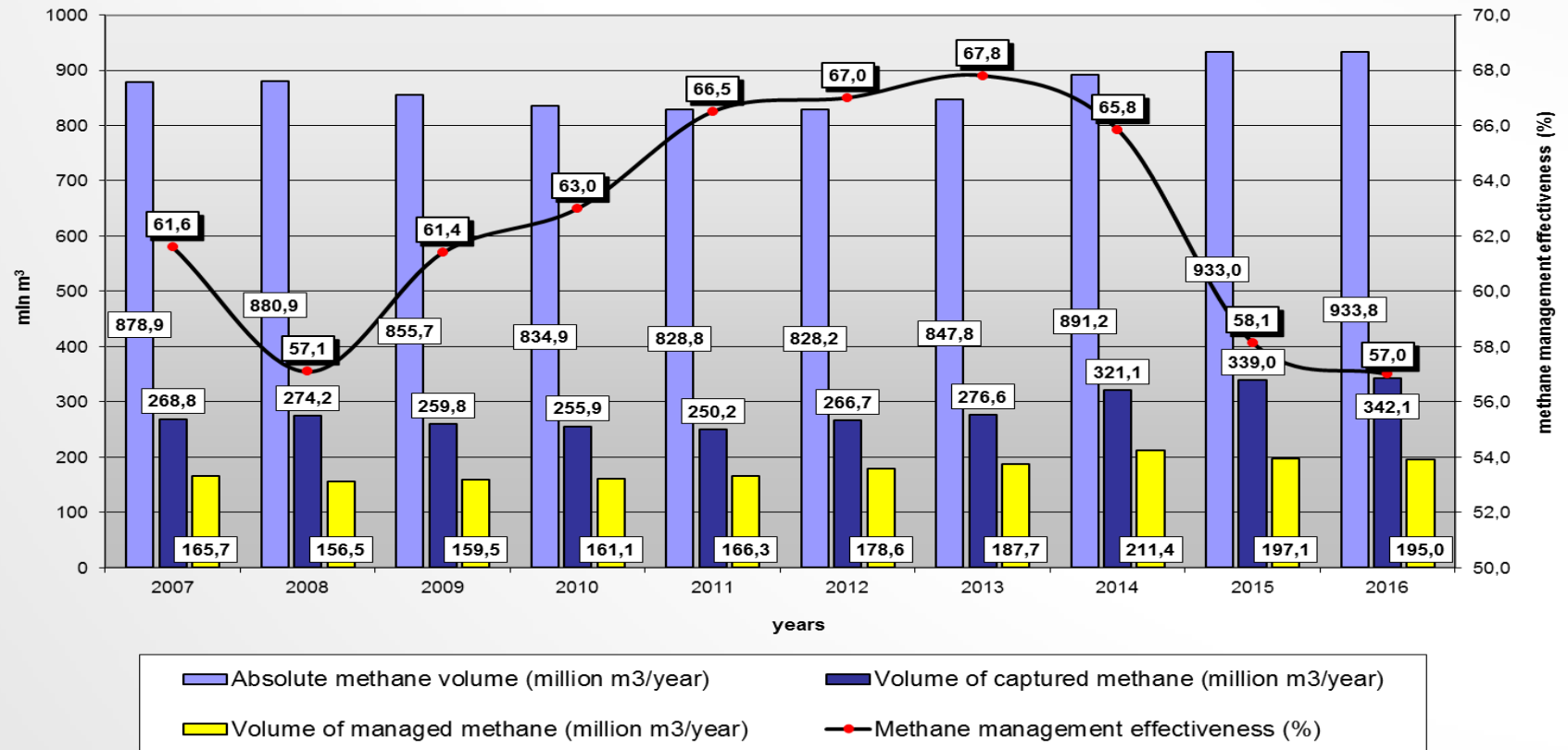
Methane drainage was conducted using **20** surface and **4** underground methane drainage stations



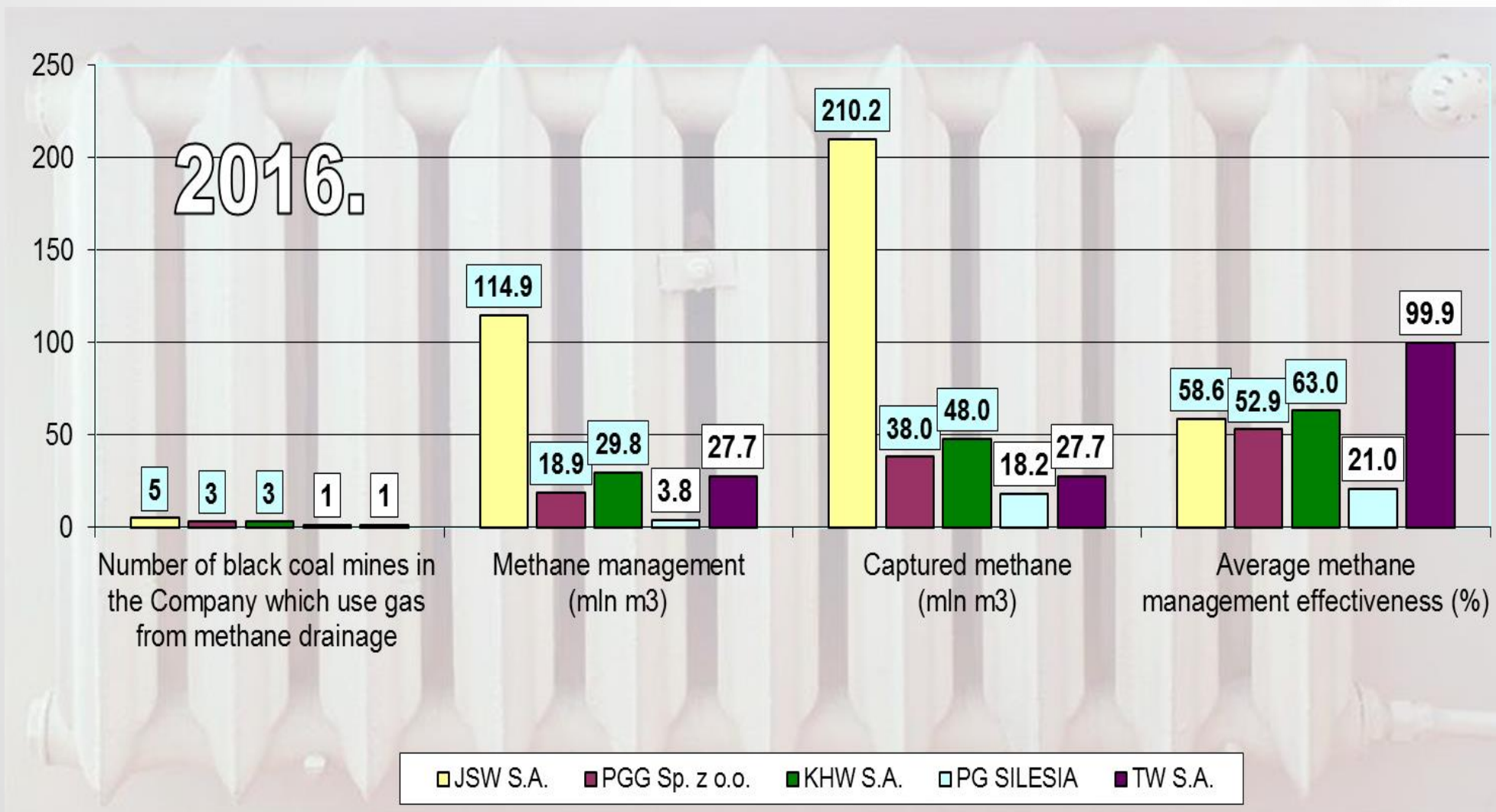
Management of captured methane (2016)



Management of captured methane – **195.0 million m³**.
 The effectiveness of the use of captured methane – **57.0%**.



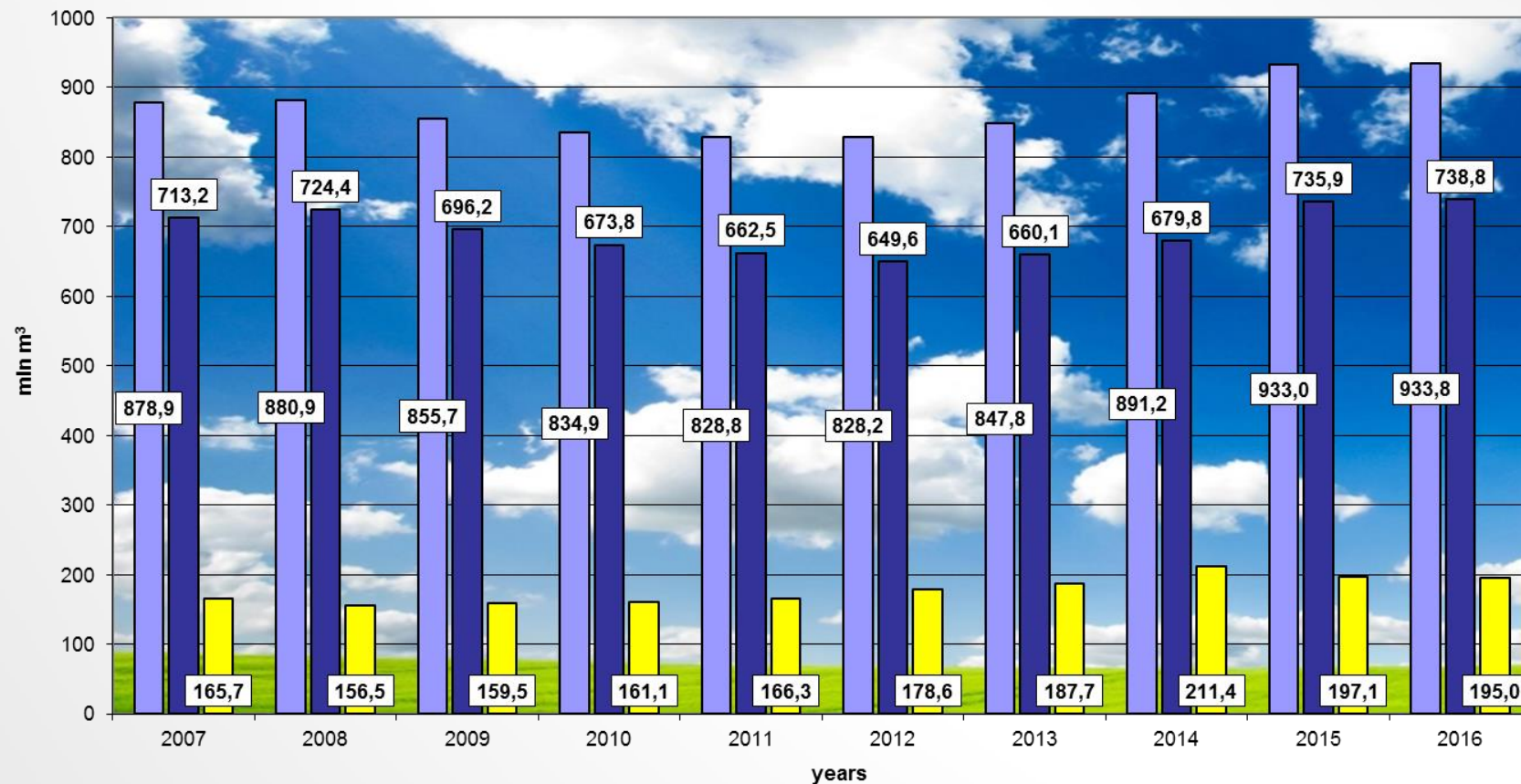
Management of captured methane (2016)



Methane emission into the atmosphere (2016)



The unit rate of the charge for methane input into the air is **0.29 zlotys/Mg**



■ Absolute methane volume (million m³/year)

■ Methane emission into the atmosphere (million m³/year)

■ Volume of managed methane (million m³/year)



Summary

Mining coal from methane coalbeds in the last decade falls in the range of **70-80%**.

In the last 24 years, in 2016 the biggest values were recorded:

- Methane emission as a result of mining activity - **933.8 million m³**;
- relative methane volume – **13.3 m³CH₄/tonne**;
- captured methane – **342.1 million m³**;
- methane drainage effectiveness – **36.63%**.

The activity of mining entrepreneurs aimed at using the captured methane for economic purposes, which requires engagement of capital to modernise and build modern methane drainage stations has received positive opinions.

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THANK YOU FOR YOUR ATTENTION

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