

Poland Coal Sector Update to the 21st Session of the Global Methane Initiative (GMI) Coal Subcommittee

Bogota, 3 June 2015



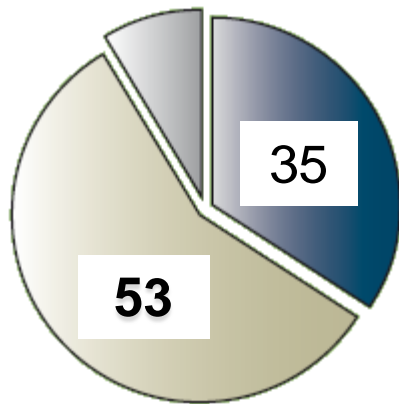
Central Mining Institute, Katowice, Poland
Experimental Mine „Barbara”



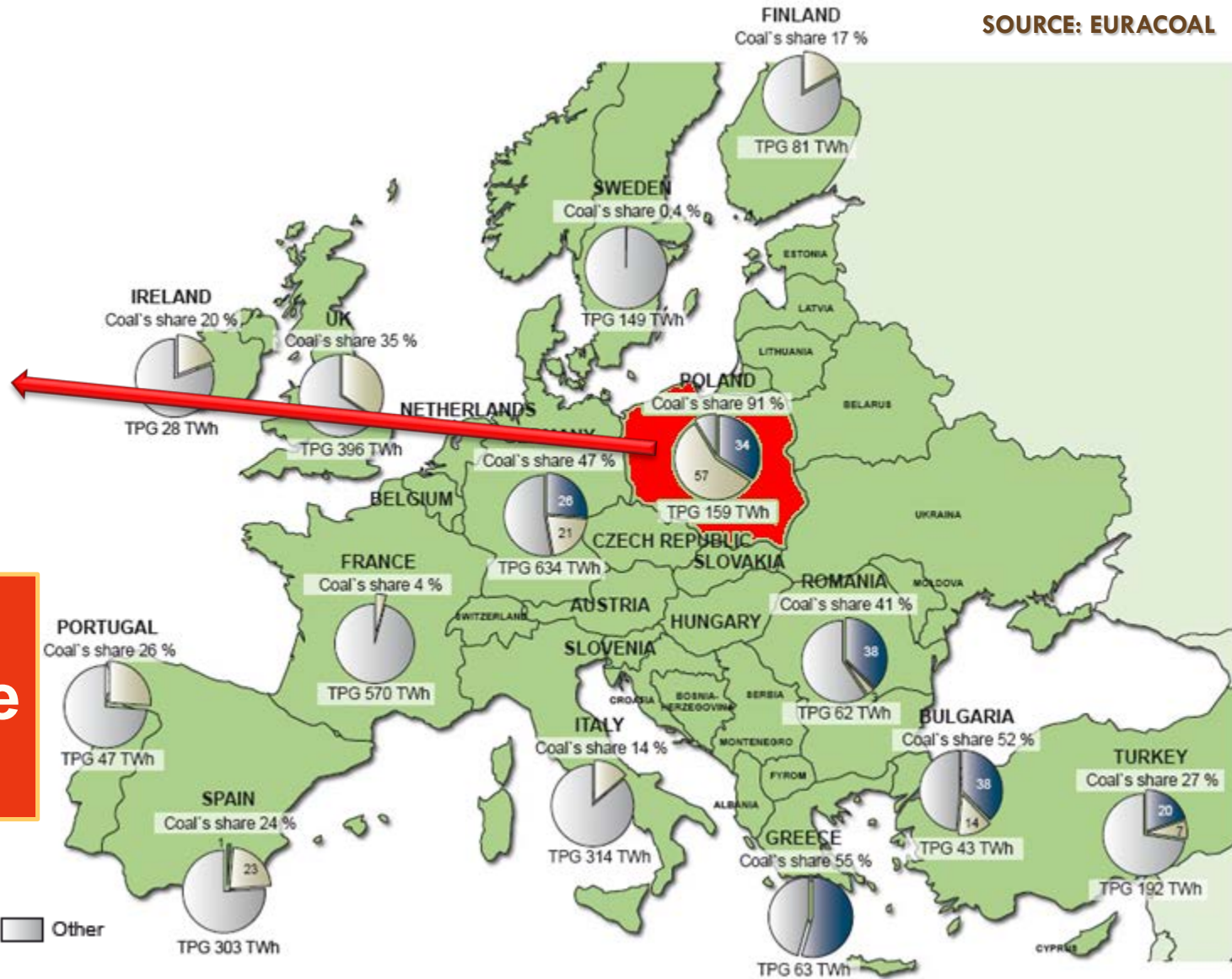
The role of coal in power generation in Poland

SOURCE: EURACOAL

POLAND



EU 27
Coal's share
29 %



Lignite
 Hard coal
 Other

Location of major Polish hard coal basins



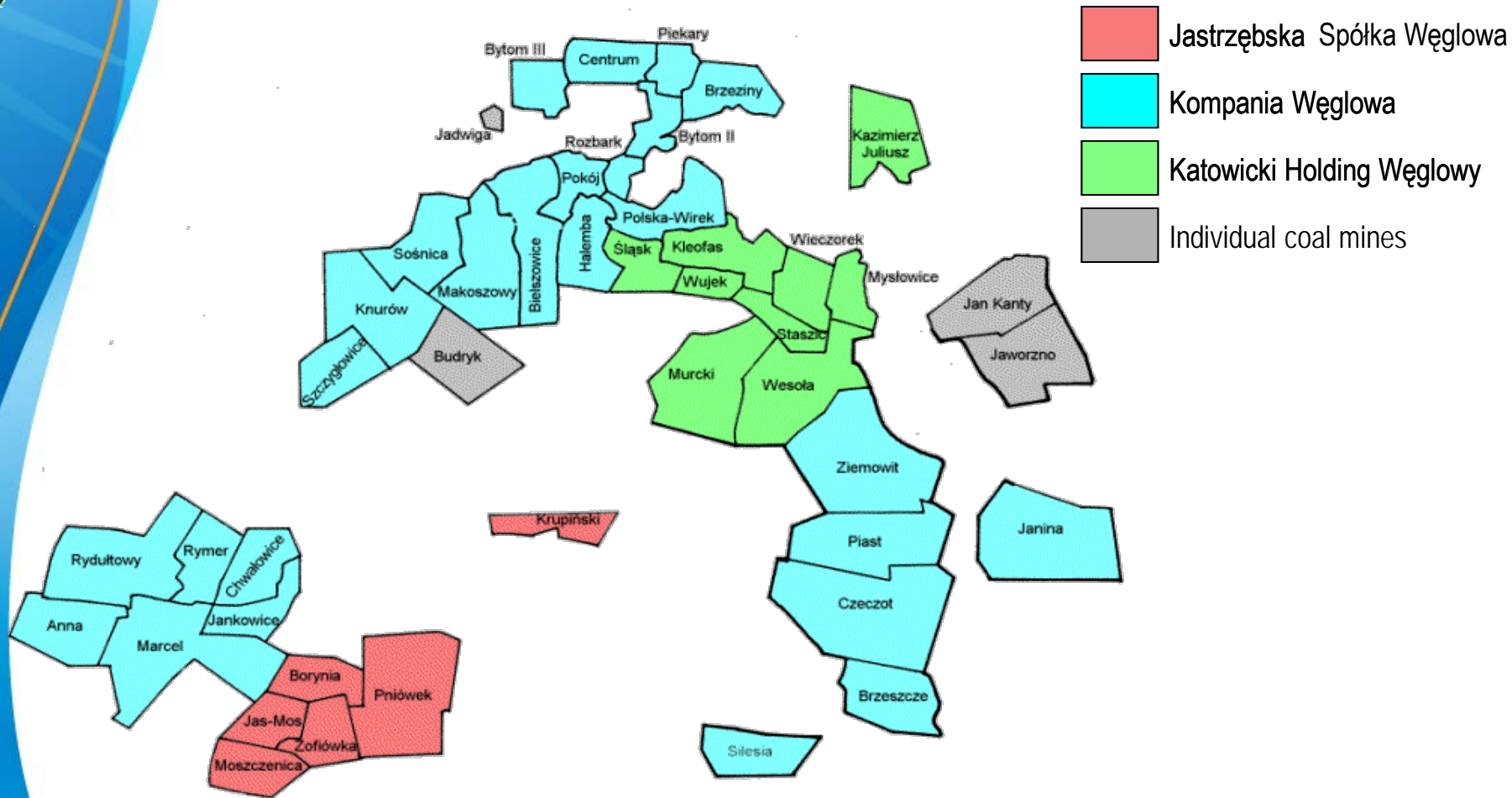
2012 DATA

- ❖ **RESOURCES:**
 - ❖ **67 900 Mt**
- ❖ **BALANCED RESOURCES:**
 - ❖ **43 201 Mt**
- ❖ **COMERCIAL RESOURCES:**
 - ❖ **6,09 Mt**

- ❖ **EMPLOYMENT**
 - ❖ **113 256**
- ❖ **NUMBER OF MINES**
 - ❖ **30**
- ❖ **HARD COAL COMPANIES**
 - ❖ **KOMPANIA WĘGLOWA**
 - ❖ **KATOWICKI HOLDING WĘGLOWY**
 - ❖ **JASTRZĘBSKA SPÓŁKA WĘGLOWA**
 - ❖ **POŁUDNIOWY KONCERN WĘGLOWY**
 - ❖ **LUBELSKI WĘGIEL BOGDANKA**
- ❖ **OUTPUT**
 - ❖ **79.2 mln tones**



LOCATION OF THE HARD COAL MINES IN UPPER SILESIAN COAL BASIN



Upper Silesian Coal Basin

Upper Silesian Coal Basin :

Presently **30** operating hard coalmines including:

26 gassy coalmines

19 use drainage systems

14 utilise CMM

data for the end of 2012 (since this spring deep restructuring started)

Poland Coal Sector Update

Trends in the coal sector

	Unit of measures		2011		2012		2013		2014	
	mln m ³	%								
Total volume of methane emissions	mln m ³	%	803.0	100%	821.9	100%	838.2	100%	892	100%
Volume of captured methane (drainage)	mln m ³	%	227.6	28.3%	250.9	30.5%	259.7	31%	302	33.8%
Volume of utilized drainage methane	mln m ³	%	167.1	73.4%	180.9	72.1%	187.9	72,3%	210	69,5%

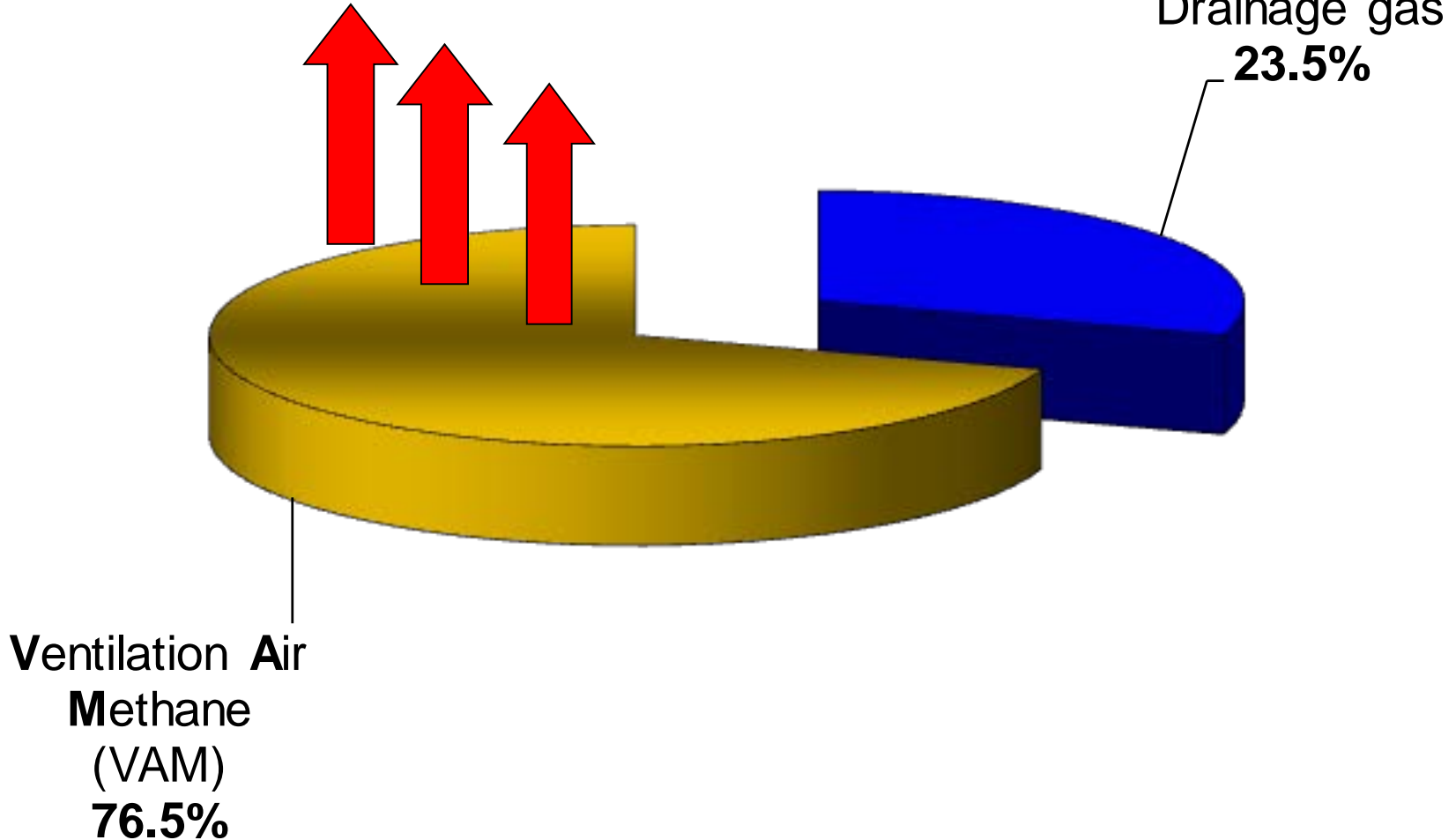


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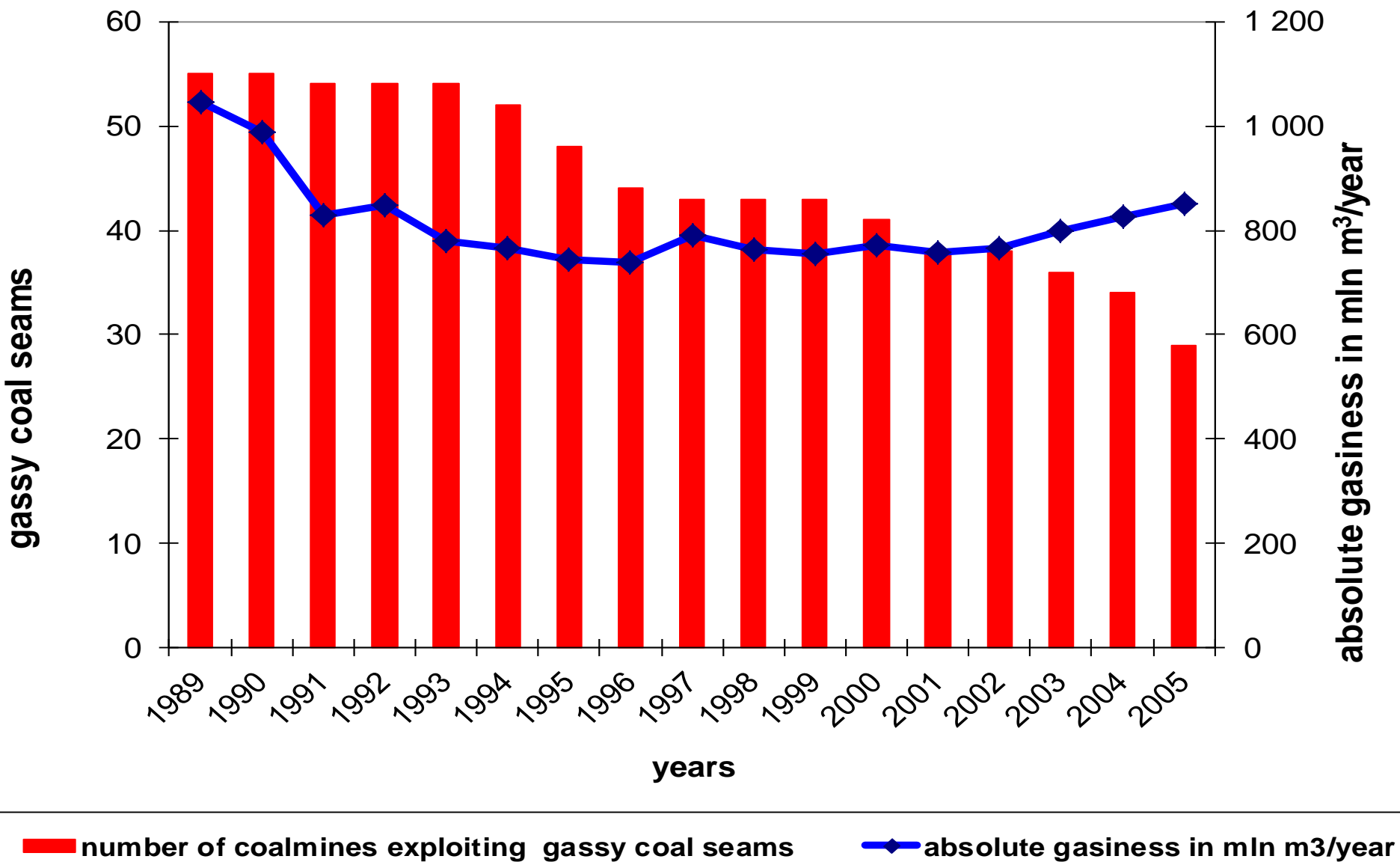


TOTAL GAS RELEASED DURING MINING OPERATIONS (about 892 mln m3)

838.2 mln m3 in 2013



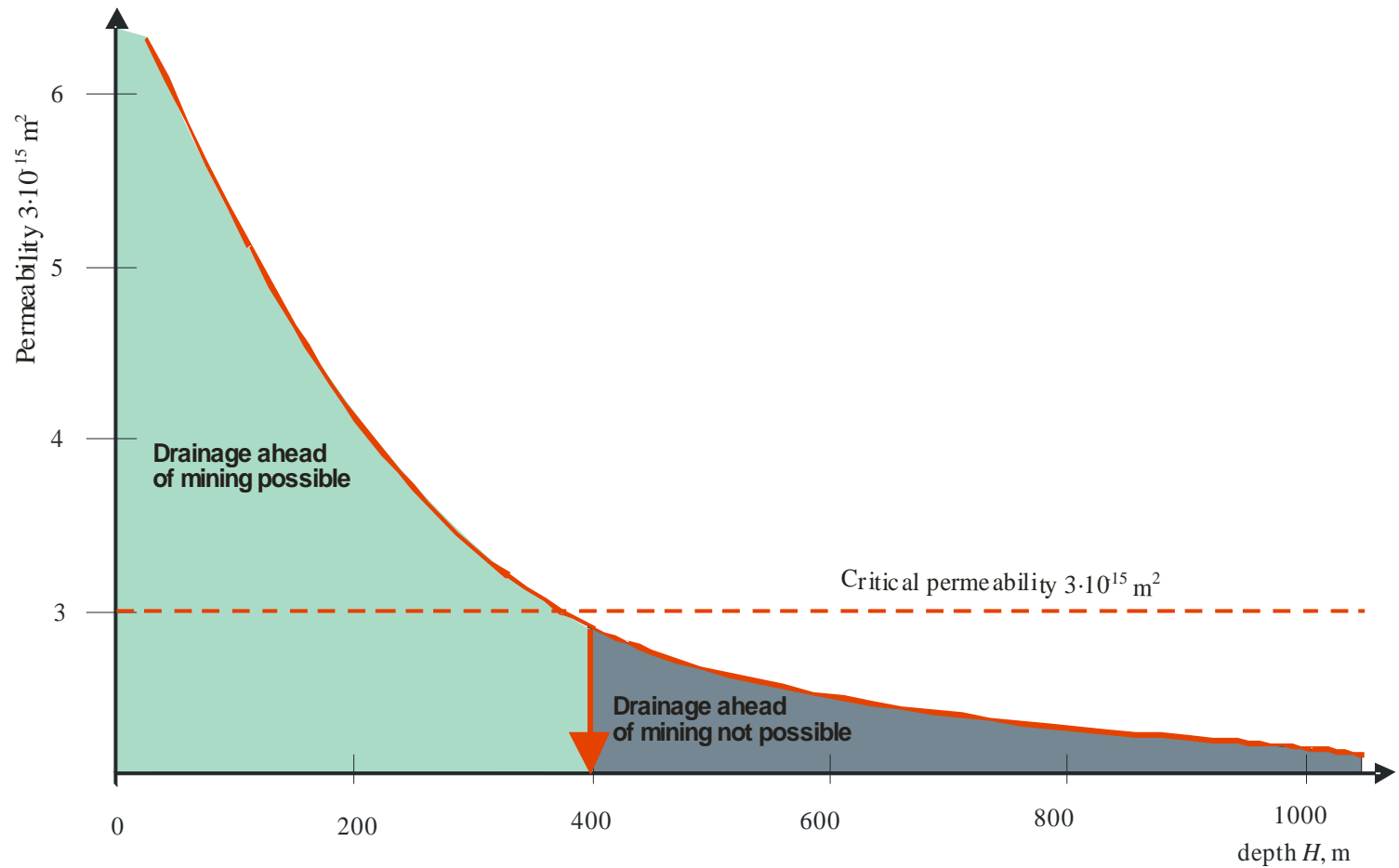
Changes of absolute gasiness versus decrease of active gassy coalmines' number

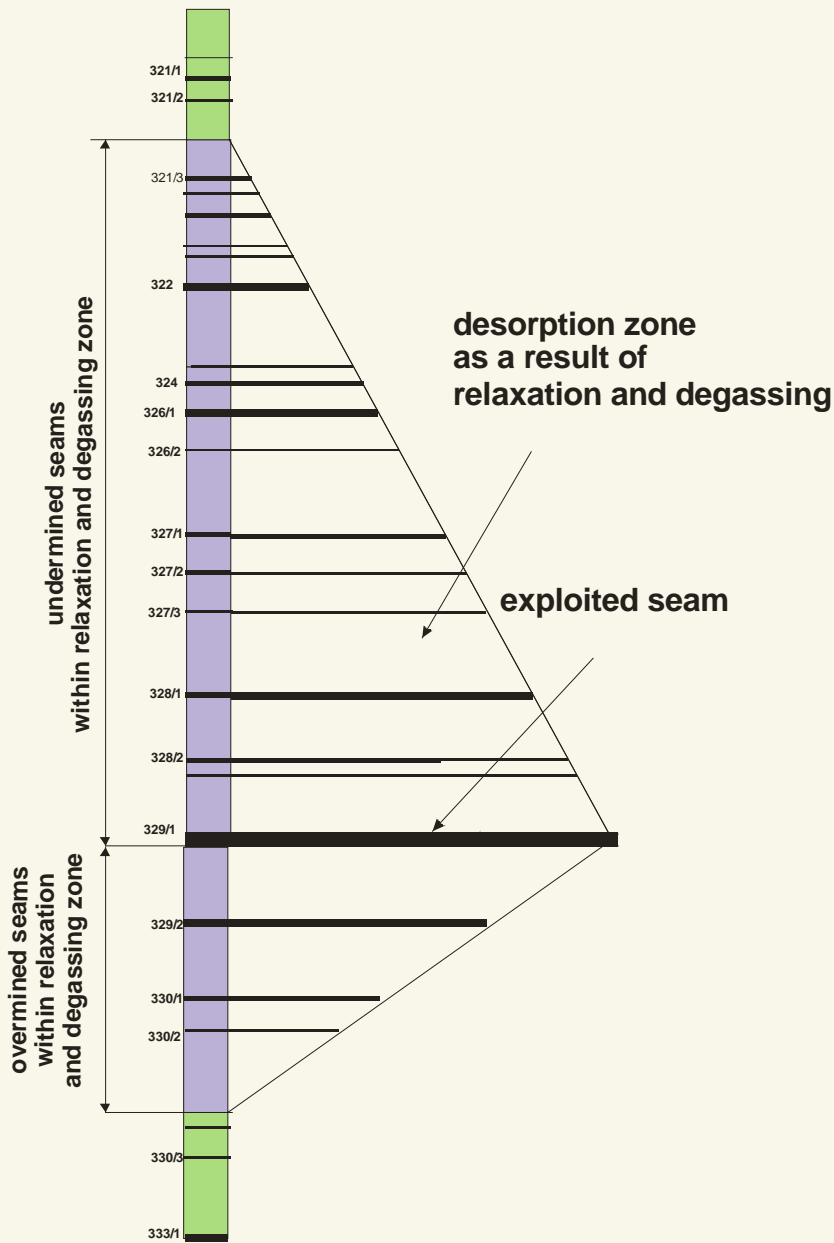


Methods of methane drainage in Poland:

- drainage of the coal seams ahead of mining (before exploitation),
 - drainage during coal exploitation,
 - drainage of goaves

Changes of coal seams' permeability with the depth



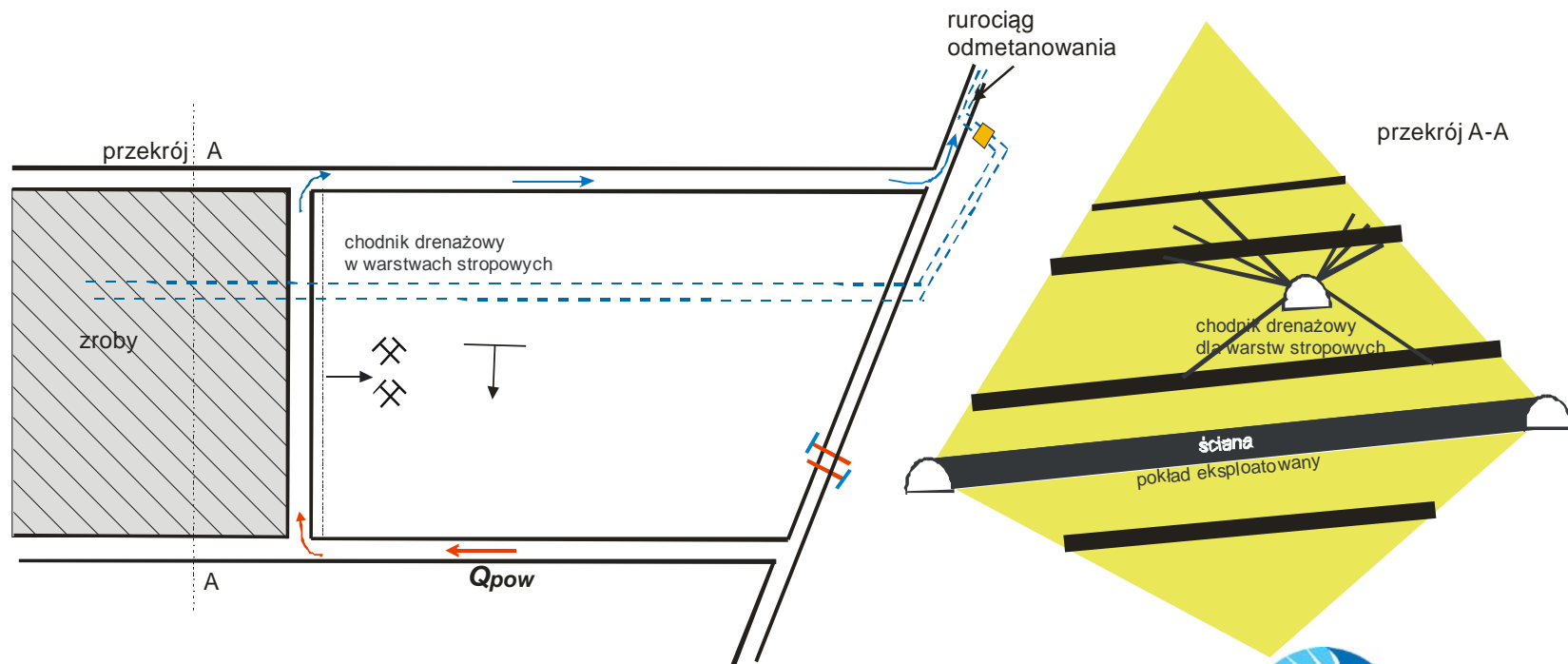


Share of methane from the exploited seams constitutes about 20-40% of total released methane

Zone of relaxation and degassing of coal seams undermined and overmined by minig exploitation

Degassing of the longwall by the mean of drainage gallery located in the roof layers

In favorable conditions effectiveness even up to 70%-90%



Consequences

Increased gas hazard

**Drasitcally growing statistics of
stopping coal exploitation**

**In more and more cases it is not
coal mine management**

but... methane

**which is the critical factor
determining coal output !**

Poland Coal Sector Update

- New trends in the energy sector

Support system for CBM & CMM in Poland

Since March 11th, 2010 there is a support system for electricity produced from **high efficiency cogeneration** (Primary Energy Saving > 10%) from CBM and CMM.

This system is a real financial support for the efficient utilisation of CBM and CMM.

According to the energy law records, this system, will be valid until the year 2018



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CMM Project Outlook

- Challenges to emission reduction projects in Poland
 - Lack of clear incentives for methane capture and utilisation **e.g. production of electricity from VAM, CMM, CBM which could be easily utilised by the coal mines**
 - Concern that it could have impact on renewable energy prices (analysis needed ?)



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CMM Project Outlook (2)

- Approaches to overcoming challenges
 - Legislation and regulation
 - Policies and incentives
 - Energy pricing reform
 - Capacity building
 - **2020 EU Regulations (drastic increase of penalties !)**
 - **Technology transfer (need for effective surface and underground directional drilling technology)**
 - **Training and workshops (surface and underground directional drilling technology)**
 - **Polish Geological Law (after latest modifications) classifies CBM exploratory works similar like shale gas operations....**
 - Agreements and/or partnerships
- Polish Mining is open for cooperation and investors**



CMM Project Outlook (3)

- Anticipated or planned projects

Ministry of Environment Project (CBM):

methane drainage ahead of mining using surface directional drilling well at „Wesola Mine”

poor permeability,

high strength of coal,

poor recovery of methane

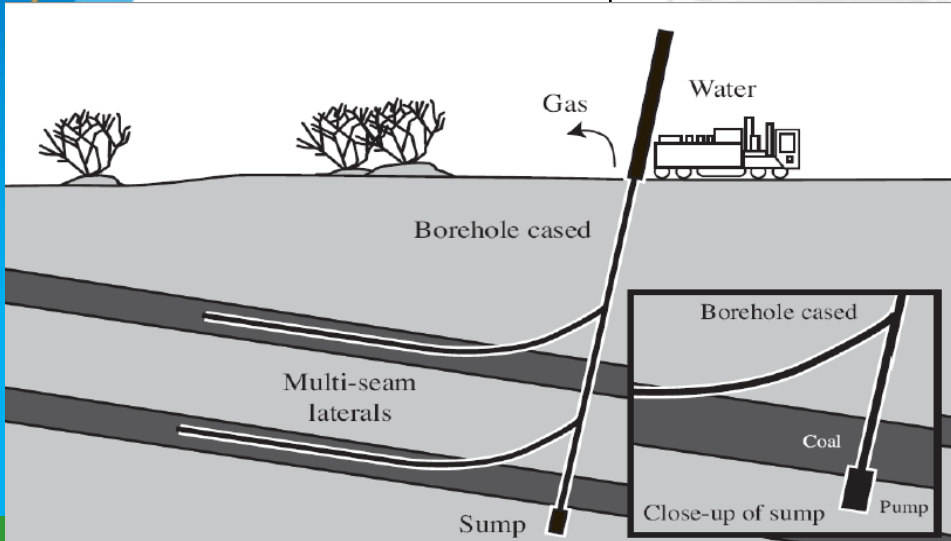
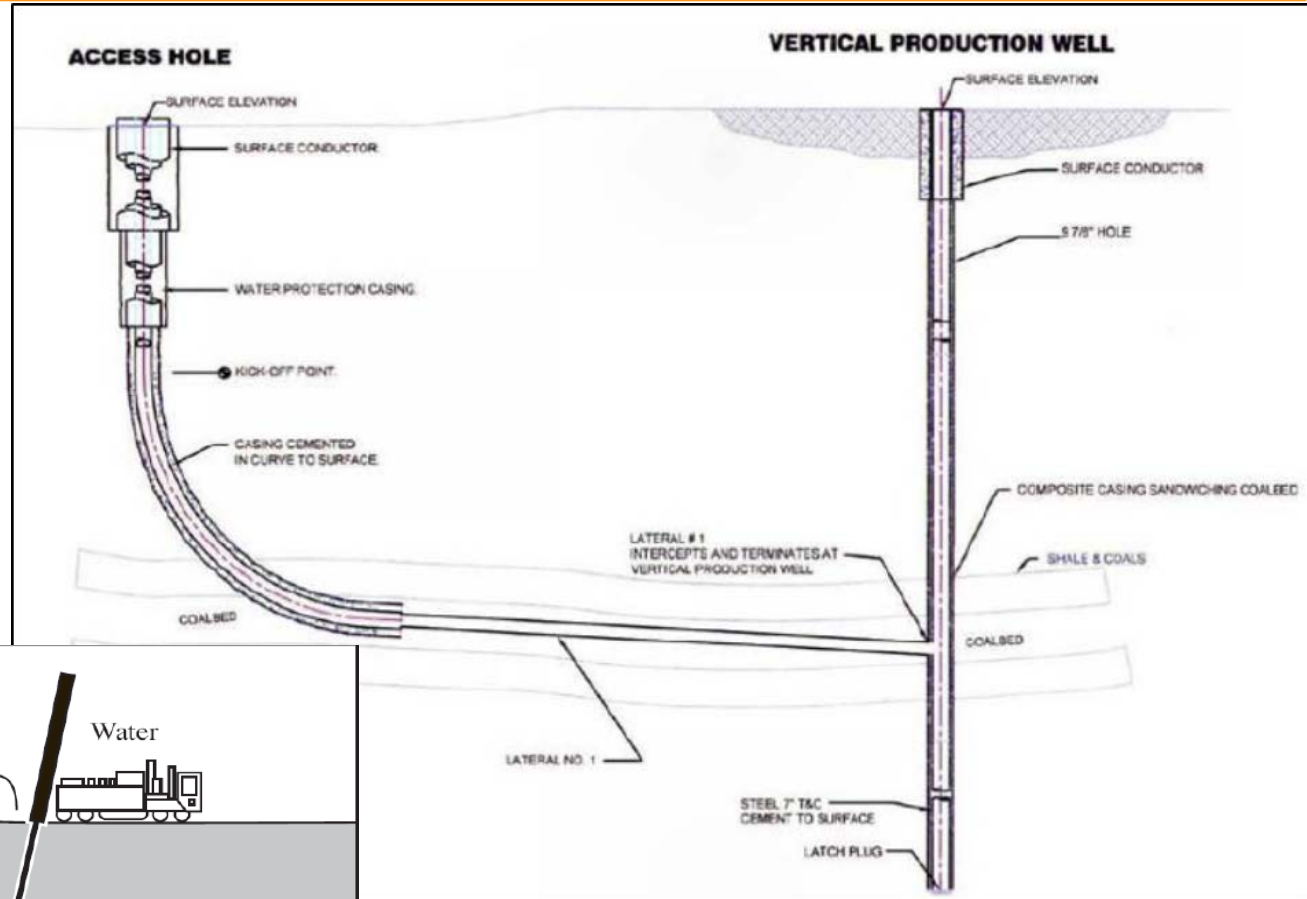
fracturing is essential !



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Toe intersection



Dart Energy project (CBM):

methane drainage ahead of mining using surface directional drilling well in Gilowice (virgin coal seams) – effects similar like above...

Individual talks of Drilling Companies with mining operators ...purchase of new underground drilling equipment (directional)

-
- R&D in Central Mining Institute in Katowice to assist CMM recovery

Tests to increase permeability of hard coals:

- Hydro fracturing & new blasting materials
- Borehole mining

Conclusions – potential

- **23.5%** of total methane released during mining is being utilized
- Drop in drainage methane utilization: **72.3%** (in 2013) **down to 69.5%** (in 2014)
- Still venting to the atmosphere drainage gas - last year: **92 mln m³ – ready resource to utilize !**
- **682 mln m³ VAM (including a.m. 92mln m³ is ready to manage (subject study ?)**



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Conclusions – potential

- **Shale gas (long way ahead ... ???) – vs CMM – resource ready to utilize !**
- **Smaller depth and strength**
- **Easier fracturing...**
- **Smaller investment**
- **Guaranty of local utilization (gas, el. & thermal energy)**
- **New jobs !**



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Poland Coal Sector Methane Action Plan

- Status of Coal Sector Methane Action Plan development

Long term vision of CMM national politics under construction



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GIG Cooperation with UNECE and US EPA

- 10 years' effective cooperation with UNECE group of experts GMI and US EPA
- US EPA grant to establish Polish VAM resources
- US EPA grants to define Drainage ahead of mining using surface directional drilling
- International Center of Excellence on CMM effect of above effective cooperation



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ICE-CMM Tasks

- Solicit and collect relevant case studies and best practices in sustainable CMM management, provide as needed technical guidance for their development, and serve as a depository of such cases and practices;
- Organise on-site training and visits to ICE-CMM (on a non-profit basis, using as needed cost-sharing mechanisms) by CMM practitioners from interested UN Member States. Such training would help disseminate best practices through concrete hands-on experience;



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ICE-CMM Tasks

- In collaboration with the UNECE secretariat and members of the Group of Experts on CMM, organise off-site training activities on the application of best practices in various coal mining regions;
- Conduct research in its domain of work, as requested by UNECE member States, under auspices of the Group of Experts on CMM, and in collaboration with relevant intergovernmental and non-governmental organizations, industry and other stakeholders in the CMM field;

ICE-CMM Tasks

- Engage with a wider coal mining community, including the civil society, mining associations, and decision-makers through the use of electronic and social media in order to raise awareness of the challenges and opportunities in the CMM sector.

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