

Task Force on Safe Operations and Closure of Coal Mines ***Group of Experts on Coal Mine Methane and Just Transition***

Report on activities by the Task Force



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19.03.2024

Task Force on Safe Operations and Closure of Coal Mines

Areas of Focus

- Degasification
- Risk assessment
- Ventilation
- Methane capture
- Methane content and flow assessment
- Staff training
- Mine closure
- Land reclamation
- Mine repurposing
- etc.



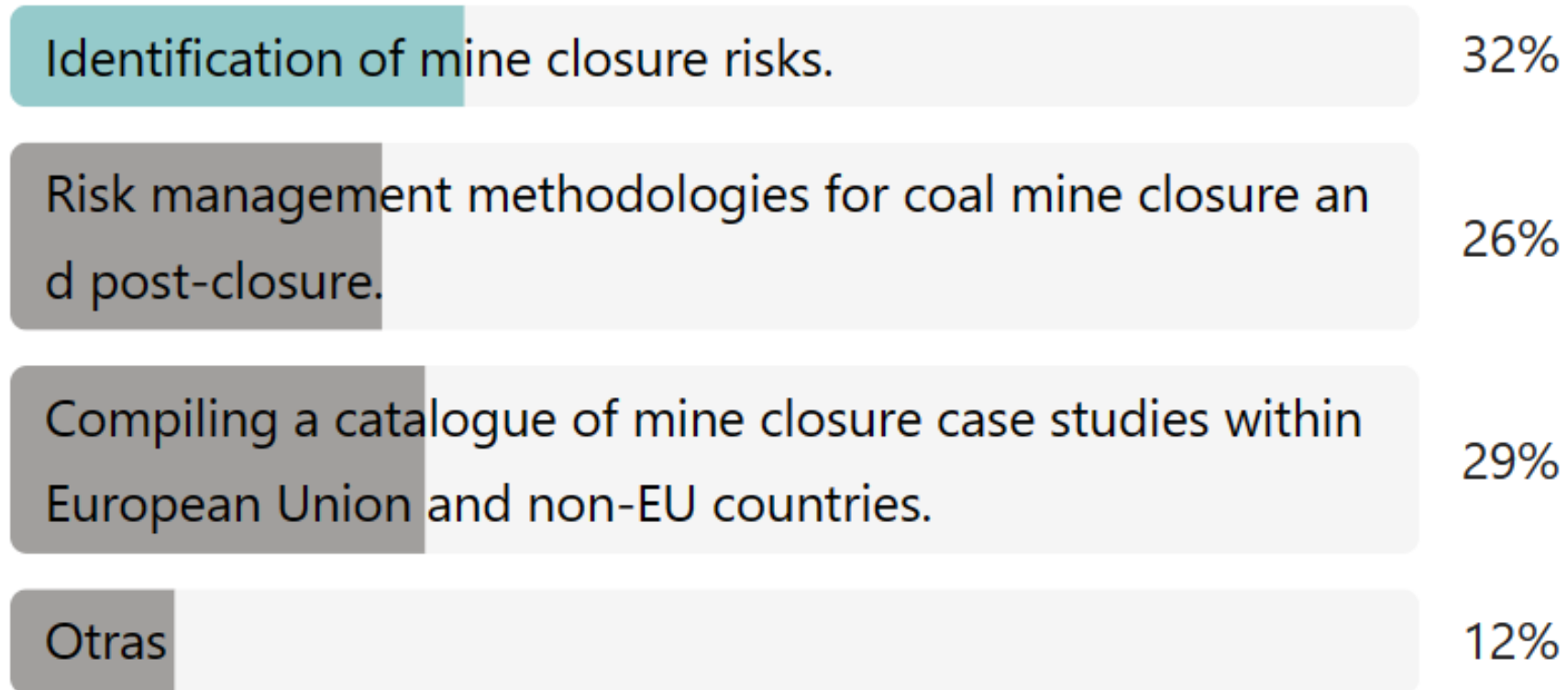
WEB PAGE: <https://unece.org/task-force-safe-operations-and-closure-coal-mines>

Affiliation



Activities decided to be developed in the near time

Activity 1: Compiling a catalogue of mine closure case studies within European Union and non-EU countries focusing on Identification of mine closure risks, and Risk management methodologies.



Activities decided to be developed in the near time

Activity 2: Developing a comprehensive catalogue of business models based on renewable energy on the circular economy or scale energy storage to promote sustainable local economic growth and maximise the number of green, quality jobs.

Developing a comprehensive catalogue of business models based on renewable energy on the circular economy or scale energy storage to promote sustainable local economic growth and maximise the number of green, quality jobs.

20%

Creating a methodology to evaluate and select the most exciting business models for specific regions/countries, including non-European ones.

18%

Template for Mine closures case studies

Mine closure case study

Case study name/name of the mine:

Year/years of the study

Country

Region:

Type of environmental risks

Ground movement	Type	Description
Continuous deformation	Subsidence	
Continuous deformation	Uplift	
Discontinuous deformations	Fractures & cracks	
Discontinuous deformations	Sinkholes	

Water	Type	Description
Groundwater	Pollution of underground aquifers	
Groundwater	Floods	
Groundwater	Pollution	
Surface water	Pollution	

Gas	Type	Description
Emissions	CH ₄	
Emissions	CO ₂	
Emissions	Radon, other	
Explosions		

Applied models

Type of environmental risk	Description of the applied model

Simulation results

Type of environmental risk	Description of the simulation results

Mitigation measures/proposed treatments

Type of environmental risk	Description of the mitigation measures/proposed treatments

Economic valuation results

Type of environmental risk	Description of the economic valuation results

Additional information

Task Force on Safe Operations and Closure of Coal Mines

Page 2

Add any additional information you consider interesting for the case study, such as sources, performance forecasts, etc.

Photographs

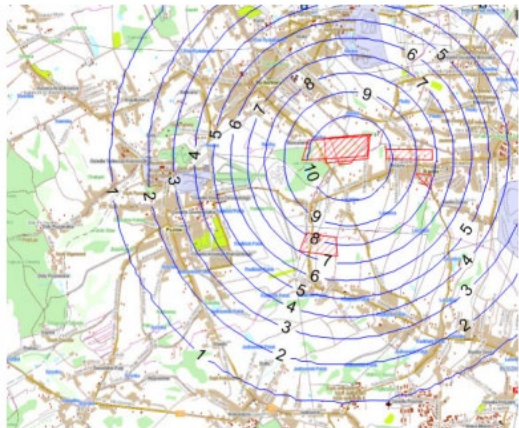
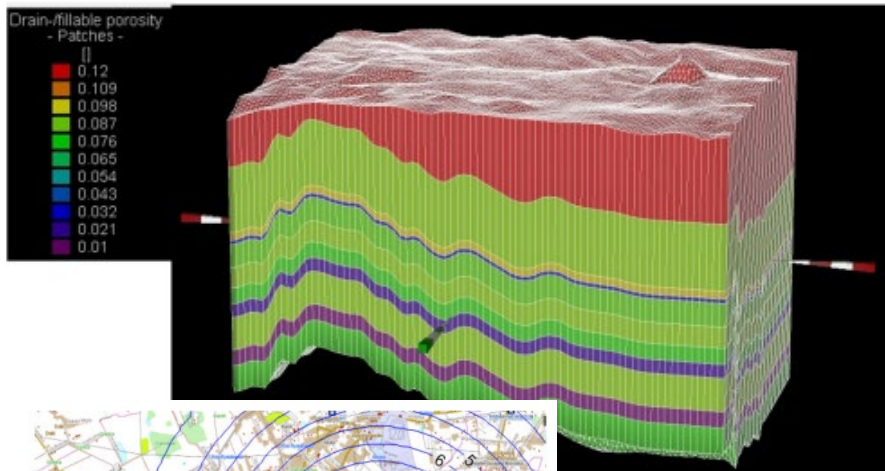
Please add, if possible, photographs of the area, models, etc.

Task Force on Safe Operations and Closure of Coal Mines

Page 3

Presented Mine closure case studies

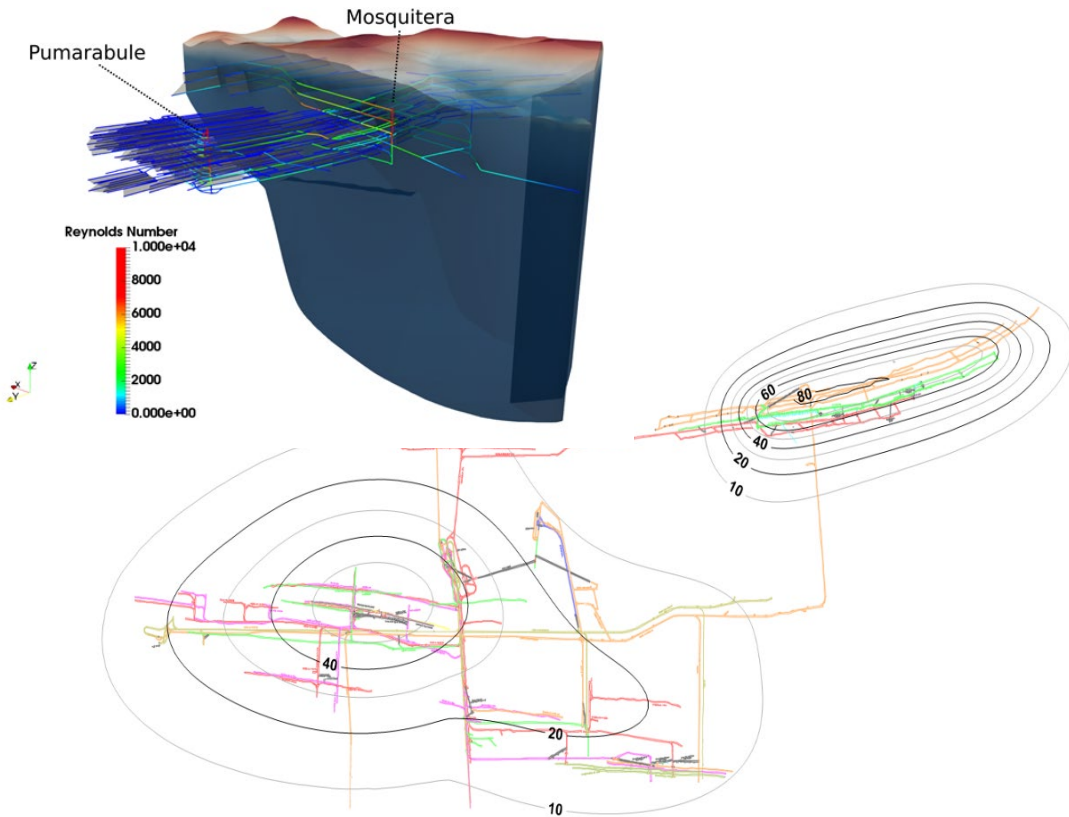
Rydułtowy - Anna Mining Complex Poland



Cardinal Teck Western Canada

Presented Mine closure case studies

Mosquitera and Pumarabule mines Spain



North Derbyshire coalfield United Kingdom

Presented Mine closure case studies

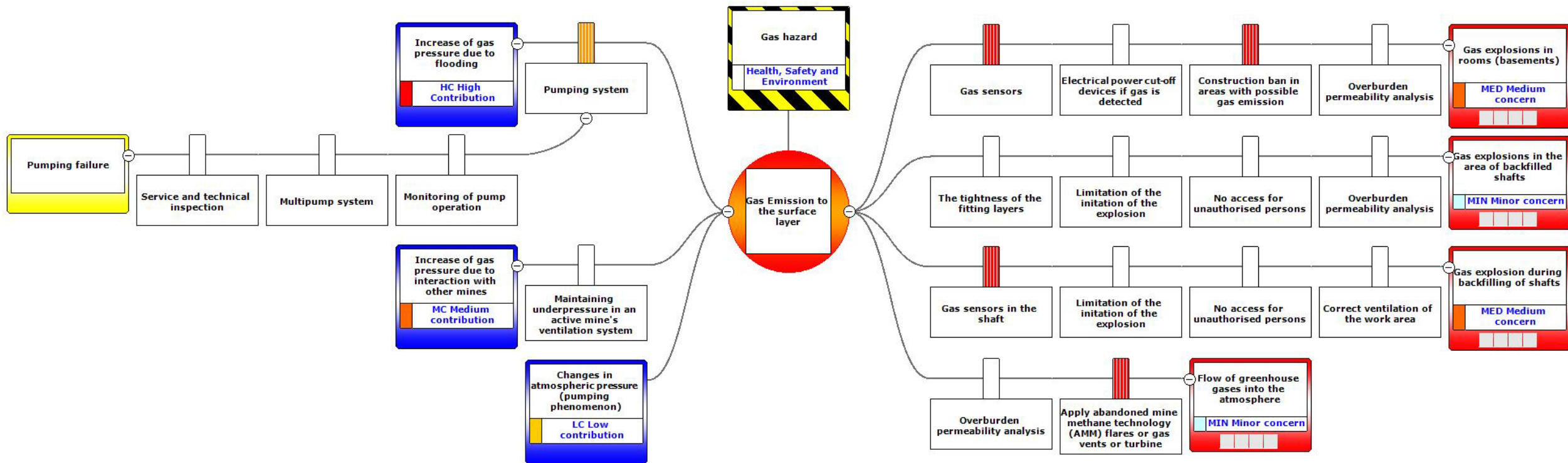
Mushqeta & Krraba Coal Mine Albania



Bolesław Śmiały Coal Mine Poland

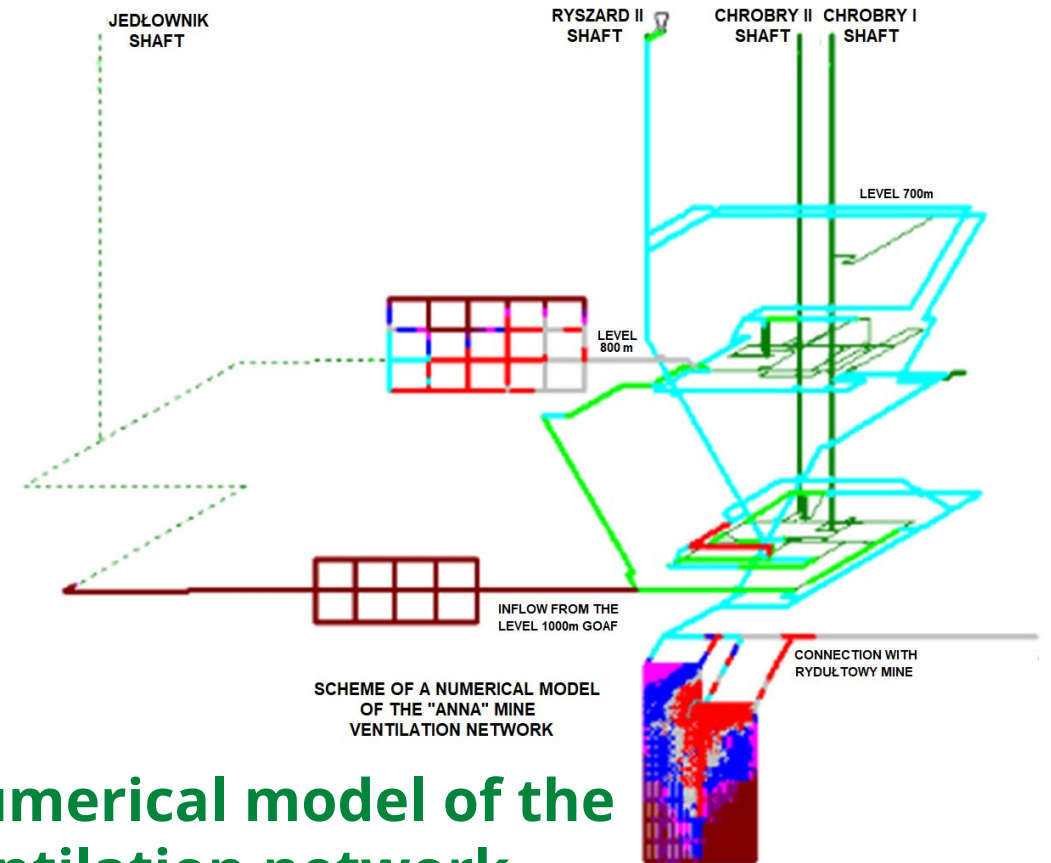
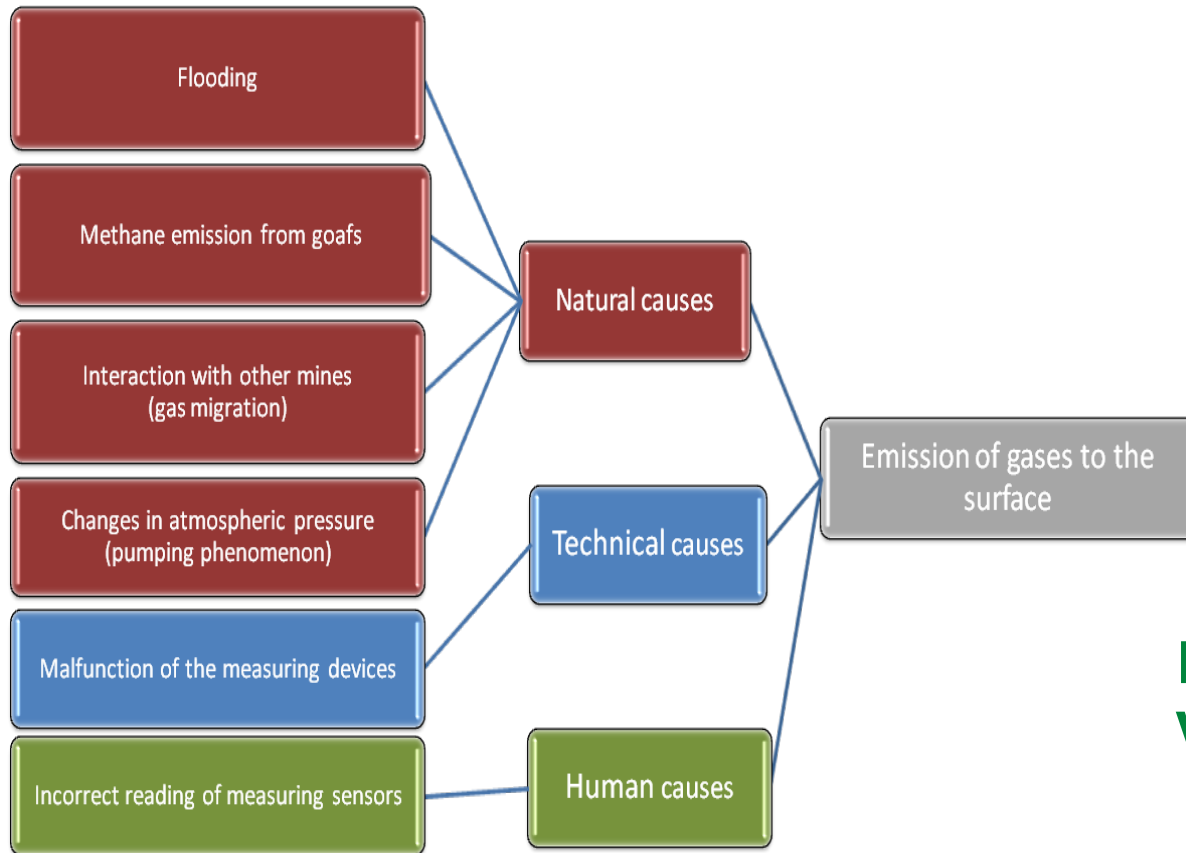
An example on methane emissions analysis in “Anna” mine (Poland)

Gas hazard Bowtie diagram



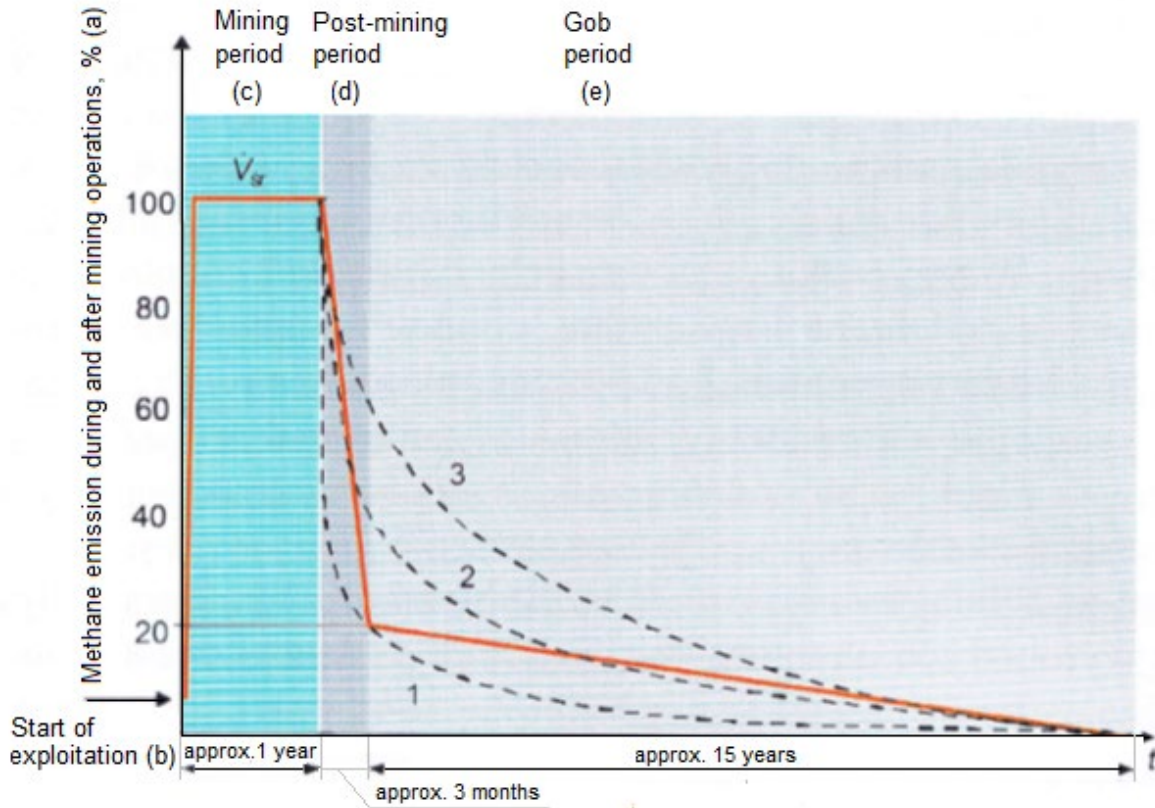
An example on methane emissions analysis in "Anna" mine (Poland)

Factors influencing risk associated with the emission of gases to the surface



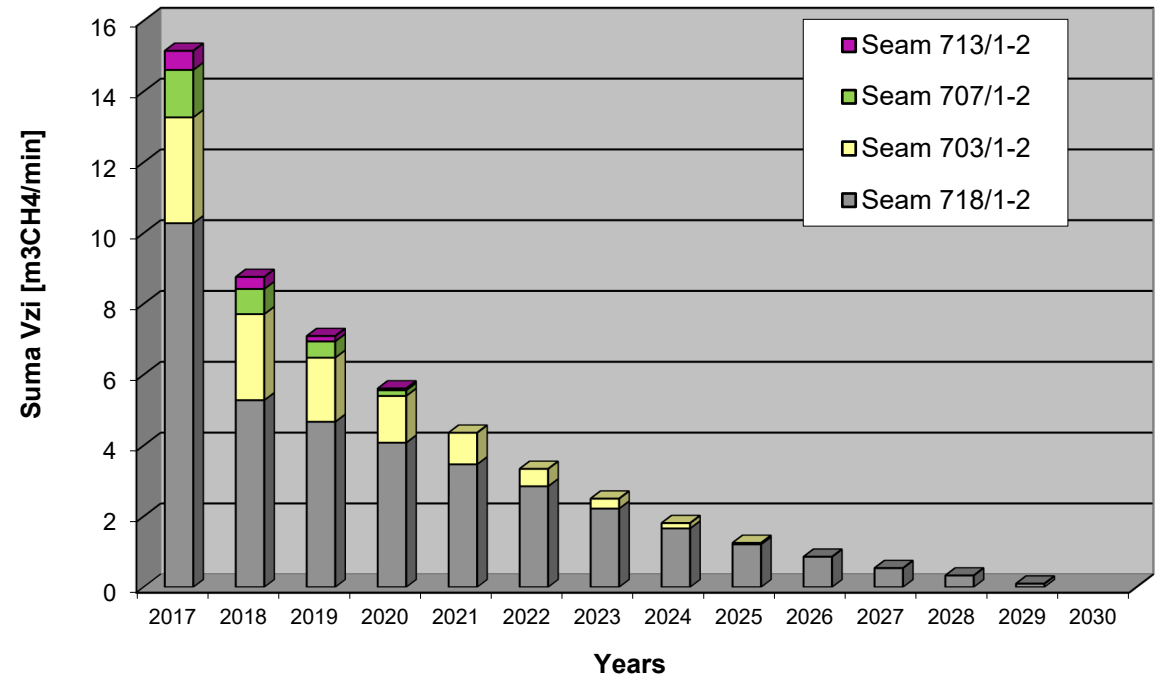
Numerical model of the Ventilation network

An example on methane emissions analysis in “Anna” mine (Poland)



Model of methane emission from longwall goafs after concluding mining operations

Forecasted methane emission into goafs in seams of Anna coal mine, 2017-2031

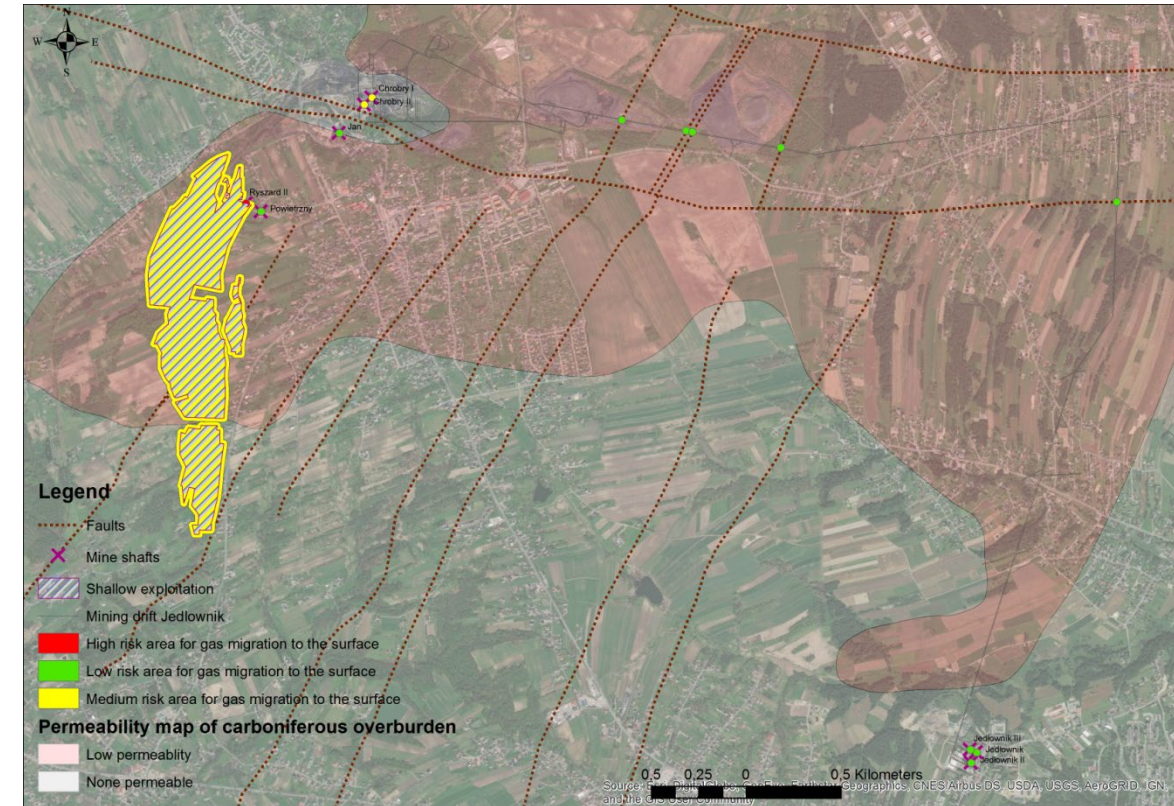


An example on methane emissions analysis in “Anna” mine (Poland)

Risk matrix for emission of gases to the surface

Likelihood rating	E	IV	III	II	I	I	I
	D	IV	III	III	II	I	I
	C	V	IV	III	II	II	I
	B	V	IV	II	III	II	I
	A	V	V	IV	III	II	II
			1	2	3	4	5
		Consequence rating					

- C** POSSIBLE: May occur at some time
- 3** MODERATE: Significant impact; loss between 60,000 and 300,000 €
- III** MEDIUM: Specific measures should be adopted and implemented in a short period of time



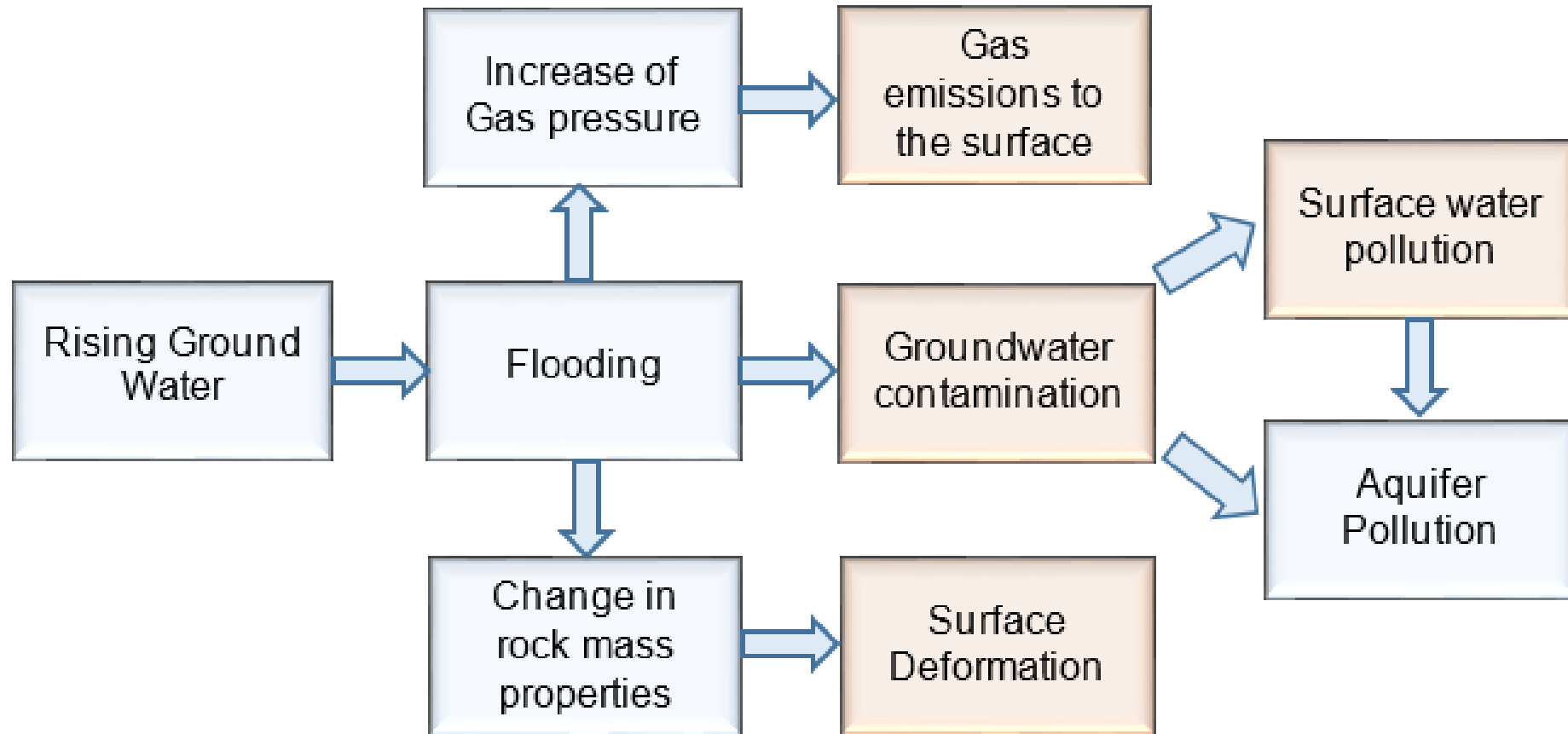
Map of gas risk areas

An example on methane emissions analysis in “Anna” mine (Poland)

**Proposed treatment:
Destruction or energy
production depending on
the methane amount and
concentration**



An example on methane emissions analysis in “Anna” mine (Poland)



Interrelationship of the Risk Components

Template for Business models catalogue

Business models catalogue

Business model name

Description

Technical requirements needed for its implementation

To be developed alone, complementing other technologies or both:

Business model basis

Basis	Yes/No	Description
Renewable energy		
Circular economy		
Energy storage		

Evaluation of main criteria

Criteria	Evaluation 0 (Low)-10 (High)	Description if needed
Contribution to energy security		
Use of renewable resources		
Low investment barriers		
Generation of economic growth		
Contribution to regional development		
Contribution to job creation		
Total evaluation value (0-60)		

Evaluation of other criteria

Criteria	Evaluation 0 (Low)-10 (High)	Description if needed
Technology Readiness Level (TRL)		
Environmental sustainability		
Synergistic potential		
Sector coupling		
Total evaluation value (0-40)		

Result indicators

Indicator	Evaluation 0 (Low)-10 (High)	Description if needed
Full-Time new researchers		
Companies introducing process/product innovations		
Patent applications submitted to EPO		
Energy users connected to smart grids		
Capacity of renewable energy production		
Energy efficiency (support for the smart grid)		
Estimated low GHG emissions during the lifetime of the technology		
"Tons" of recycled waste (more waste, lower value)		
Space required to develop the option (more space, lower value)		
Potential to stimulate other business activities		
Total evaluation value (0-100)		

Global evaluation	Main criteria + Other criteria:	Indicators:

Task Force on Safe Operations and Closure of Coal Mines

Page 2

Additional information

Add any additional information you consider interesting for the business model, such as sources, performance forecasts, etc.

Places where it was developed

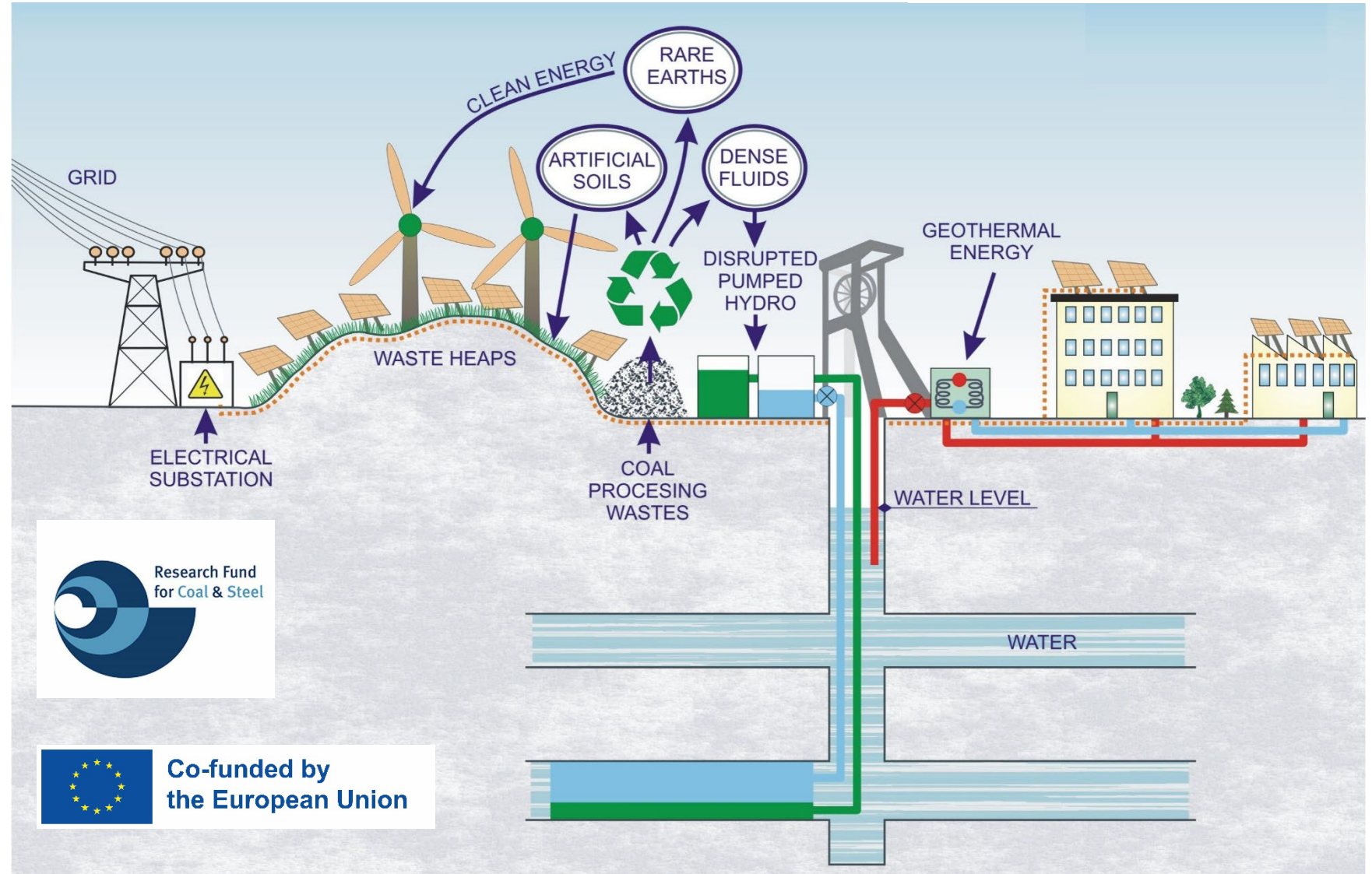
Please indicate the name, region and country of any coal mining area where you know it was implemented or are developing its implementation.

Task Force on Safe Operations and Closure of Coal Mines

Page 3

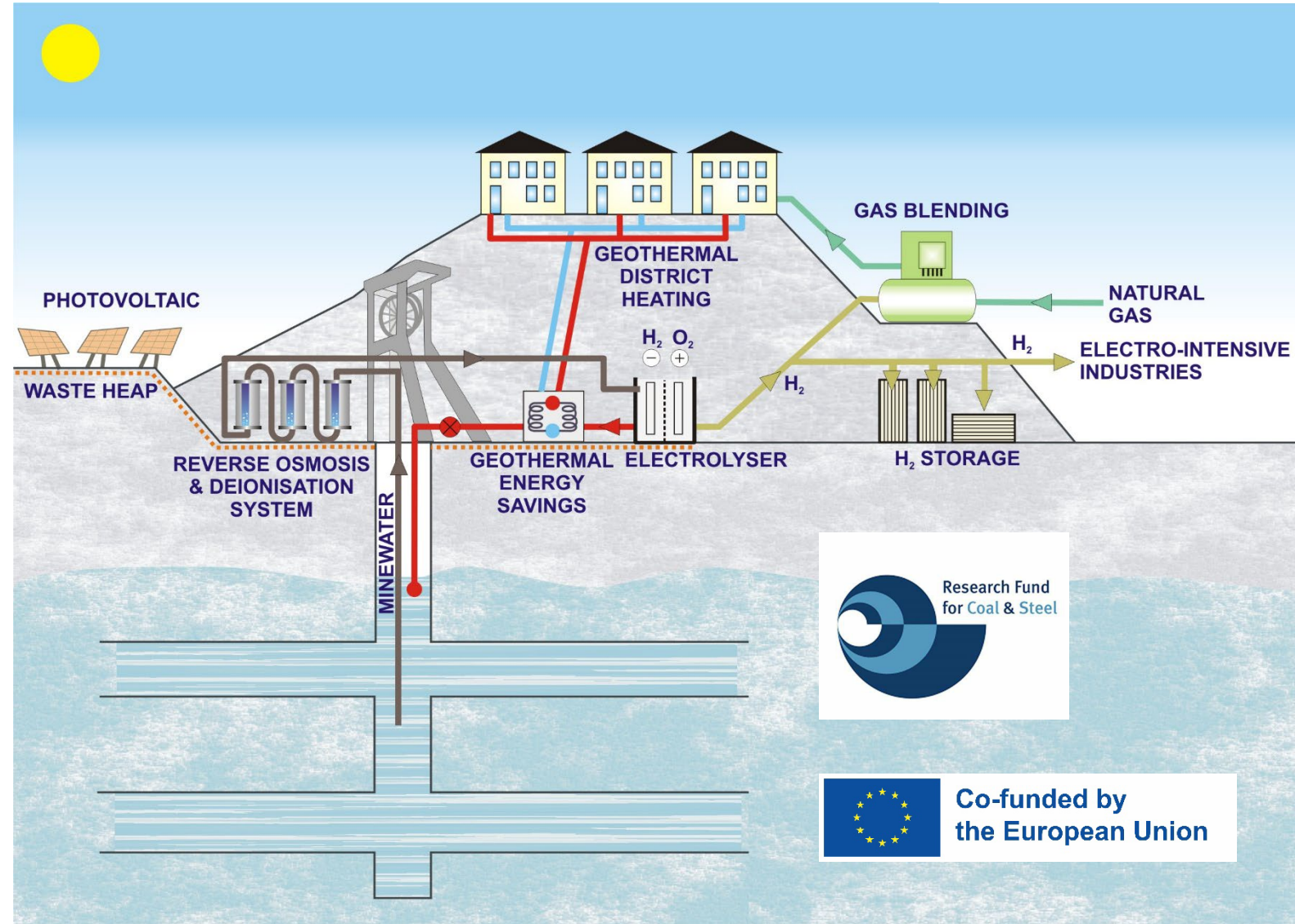
Business models within the GreenJOBS project

Virtual Power Plant



Business models within the GreenJOBS project

Green H₂ Plant



THANK YOU FOR ATTENTION

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