UNECE Sustainable Energy Week: Accelerating and Deepening the Transition to Sustainable Energy Systems

Achieving carbon neutrality in the UNECE region – Upper Silesia, Poland

Jan Bondaruk, PhD
Deputy Director for Environmental Engineering

Geneve, 25-27 September 2019
TRANSITION PATHWAY

2000
42 operating coal-mines in Silesia region

2000/2002
10% share of mining in GDP
38,7 thousand of tons/year – emission of dust pollution

Mines Restructuring Company
12 non-perspective mines or parts of mines

2016
7% share of mining in GDP
9,1 thousand of tons/year – emission of dust pollution

2018
20 operating coal-mines in Silesia region

Goal: Zero emission economy in Europe in 2050
Average exploitation depth is approx. 800 m

Deepest hard coal mine operates at the level of 1288 m. Temperature of side wall: exceeds 50 °C.
DEGRADED AND VACANT AREAS

Subsidence and excavation reservoirs

Flotation dumps

Post-mine areas and buildings

Heaps
ADVANTAGES OF THE POST-MINING ASSETS

- **MINE WASTES**
  - circular economy

- **MINE WATER**
  - geothermal energy

- **METHANE**
  - (CBM, AMM, VAM)

- **MINING VOIDs**

- **HEAP & DUMPS**
  - ecosystem services

- **POST-MINING INFRASTRUCTURE**

- **MINING ASSETS**
  - cultural heritage, leisure, education, services

- **RECONVERSION STRATEGIES**

Images:
- „Eminenzgrube” postcard dated 1915
- Silesia City Center

G I G
Low-Carbon After-Life (LoCAL): sustainable use of flooded coal mine voids as a thermal energy source – a baseline activity for minimising post-closure environmental risks

LoCAL project brings together the state-of-the-art in modelling & management of abandoned coal mine workings for use the mine water as a heat source.

Green energy, carbon footprint

Mine water is a valuable and promising thermal energy source
SMART CLOSURE

ABANDON? (IN A SAFE MANNER)

• MERIDA
• MANAGER

RECOVERY

REUSE? (INFRASTRUCTURE AND POST-MINING RESOURCES)

• FLOMINET
• COAL2GAS
• COGAR
• HUGE AND HUGE2

FACTORS:

SOCIAL
ECONOMIC
LEGAL
TECHNOLOGICAL
ENVIRONMENTAL
"BLACK TO GREEN" SUSTAINABLE TRANSITION OF THE SILESIA REGION

REINDUSTRIALISATION AND REVITALISATION OF POST-INDUSTRIAL AREAS

MULTI-LEVEL MANAGEMENT AND PARTNERSHIP

TECHNOLOGICAL & SOCIAL INNOVATIONS

COHERENT DEVELOPMENT STRATEGY

NEW INVESTMENTS

QUALITY OF LIFE IMPROVEMENT

COMPETITIVE, LOW CARBON and SUSTAINABLE ECONOMY

TRADITIONAL INDUSTRY
NEW VALUE CHAIN

Katowice Coal Mine 1823–1999
120 000 000 tons of coal

Katowice Coal Mine brownfield – 2001 demolition works

Culture Zone - new image new functions
POST-INDUSTRIAL AREAS MANAGEMENT IT TOOL

Information Platform "Post-industrial and degraded areas" (OPI-TPP)
innovative tool supporting spatial management
by identification of possible environmental and social conflicts

✓ Public accessible and comprehensive IT tool for acquiring, processing and sharing data on industrial areas
✓ Integration of different data sources in connection with spatial information
✓ Revitalisation scenarios, environmental assessment and conflict identification analysis

Advanced reports and analysis – easy to access easy to generate
Upgraded system has been accepted by Coal Regions in Transition Platform
SCENARIOS OF REVITALISATION

Comparative analysis

New economic functions
New business
New workplaces
New image and perspectives
Sustainability and innovation
ENERGY TRANSITION SUPPORTED BY R&D FOSTER

Building awareness

Trainings, conferences, workshops, publications, participative approach, technology trends observatory

Strategy and planning studies

Regional adaptation strategy, low emission plans, flood protection plans, EIA, cost and risk analysis, DSS

Development and implementation

Piloting, investment, innovation, engineering solutions

Consultancy and R&D activities

Laboratory tests, large laboratory and PDU scale, technology proof
METHANE – SOURCE OF GREEN ENERGY

International Center of Excellence on Coal Mine Methane

Founders of ICE-CMM
Poland:
- Central Mining Institute
- Polish Geological Institute
- Oil and Gas Institute
- Polish Oil and Gas Company

The Center operates in Poland under UNECE (United Nations Economic Commission for Europe) patronage
THANK YOU FOR ATTENTION

Jan BONDARUK
Deputy Director
for Environmental Engineering
Central Mining Institute
Plac Gwarków 1
40-166 Katowice
Poland
t: +48 32 259 24 66
f: +48 32 259 21 54
m: +48 512 293 850
jbondaruk@gig.eu
www.gig.eu