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

GŁÓWNY INSTYTUT GÓRNICTWA

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

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**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**

**2016**

**7% share of mining in GDP**

**9,1 thousand of tons/year – emission of dust pollution**

**Mines Restructuring Company**

**12 non-perspective mines or parts of mines**

**2018**

**20 operating coal-mines in Silesia region**

2050?

**Goal: Zero emission economy in Europe in 2050**

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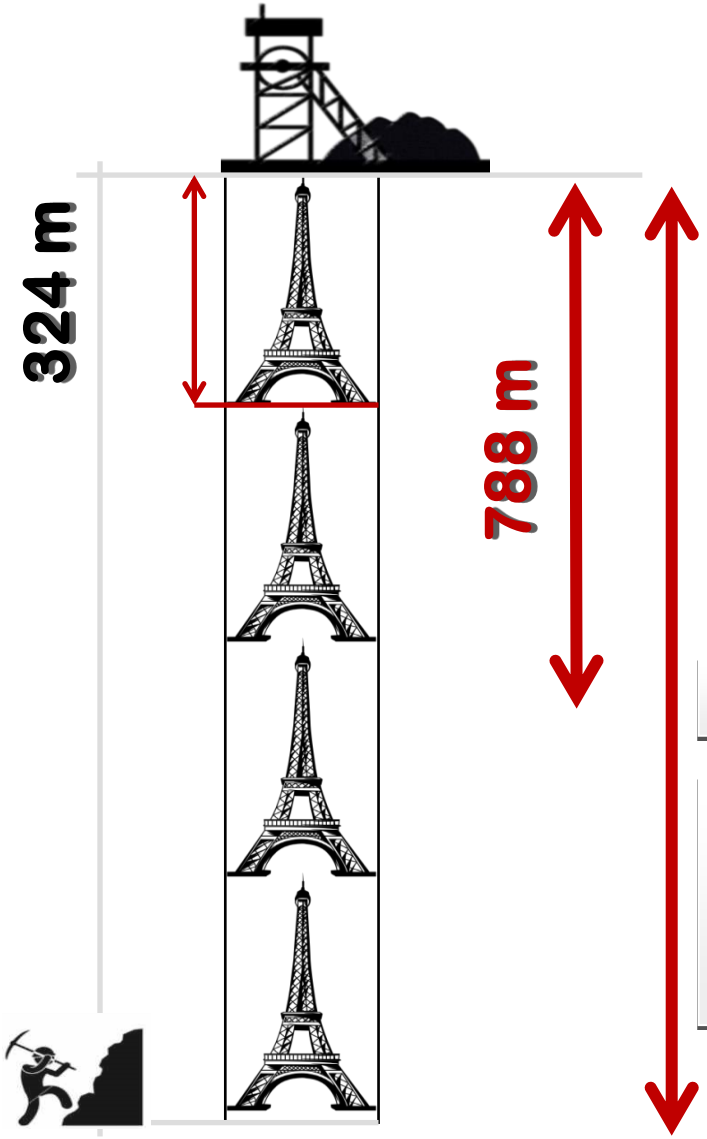
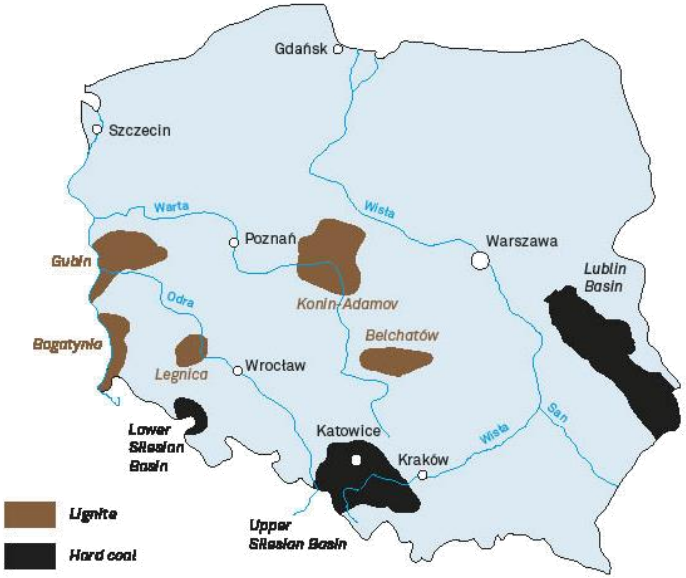
# MINING CONDITIONS IN POLISH HARD COAL MINES IN 2018




**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.**

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# DEGRADED AND VACANT AREAS

Subsidence and excavation reservoirs

Flotation dumps

Post-mine areas and buildings

Heaps

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# ADVANTAGES OF THE POST-MINING ASSETS

**MINE WASTES**
circular economy

**MINING VOIDS**

**MINE WATER**
geothermal energy

**HEAP & DUMPS**
ecosystem services

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

**POST-MINING INFRASTRUCTURE**

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

**RECONVERSION STRATEGIES**

„Eminenzgrube" postcard dated 1915

Silesia City Center

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# 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.**

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

Green energy, carbon footprint


Mine water pipe outlet

Construction works

**Mine water is a valuable and promising thermal energy source**

# SMART CLOSURE

**FACTORS:**

- SOCIAL
- ECONOMIC
- LEGAL
- TECHNOLOGICAL
- ENVIRONMENTAL

## ABANDON? (IN A SAFE MANNER)

- MERIDA
- MANAGER

## REUSE? (INFRASTRUCTURE AND POST-MINING RESOURCES)

- FLOMINET
- COAL2GAS
- COGAR
- HUGE AND HUGE2
- CERES
- COMEX

➢ RECOVERY

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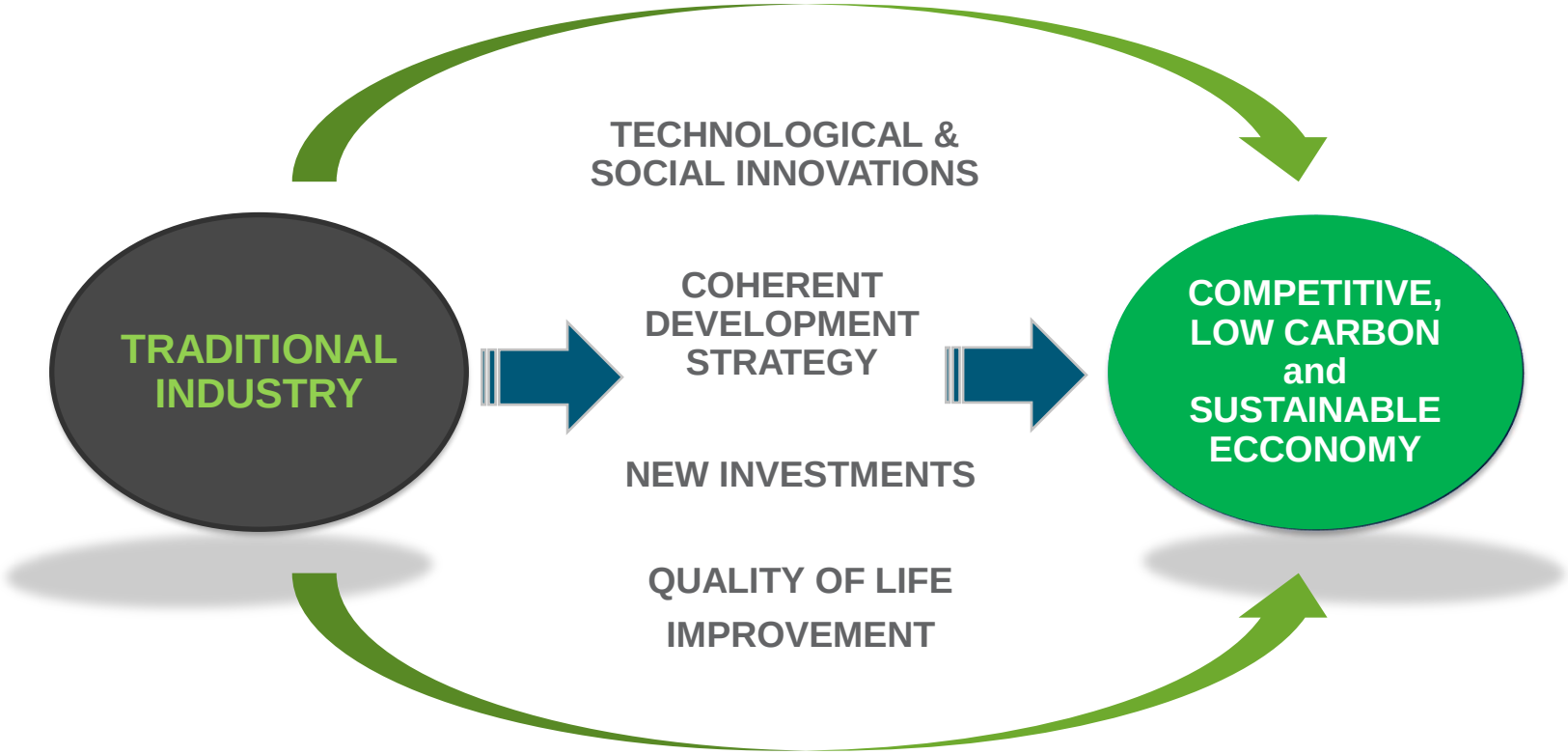
# "BLACK TO GREEN" SUSTAINABLE TRANSITION OF THE SILESIA REGION

## REINDUSTRIALISATION AND REVITALISATION OF POST-INDUSTRIAL AREAS




## MULTI-LEVEL MANAGEMENT AND PARTNERSHIP

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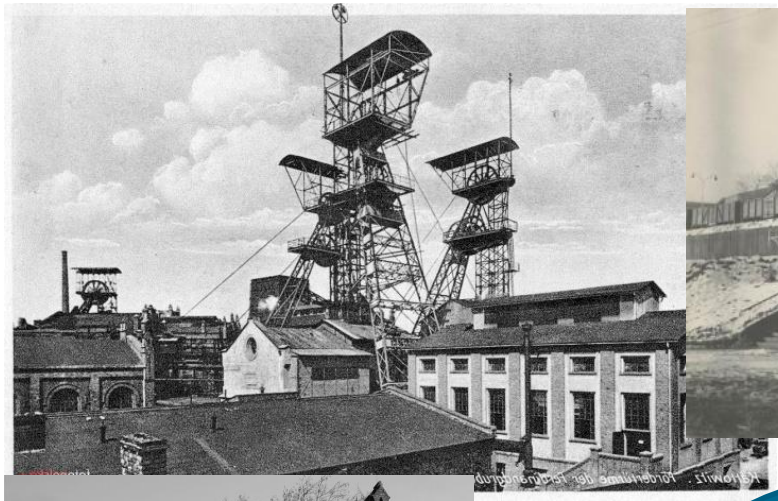
# NEW VALUE CHAIN

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



**Katowice Coal Mine brownfield – 2001 demolition works**

**Culture Zone - new image new functions**

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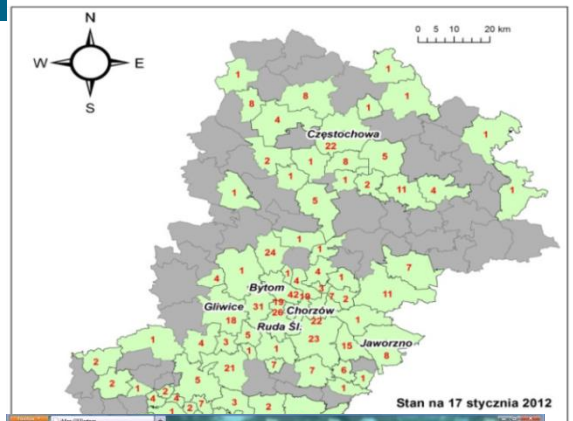
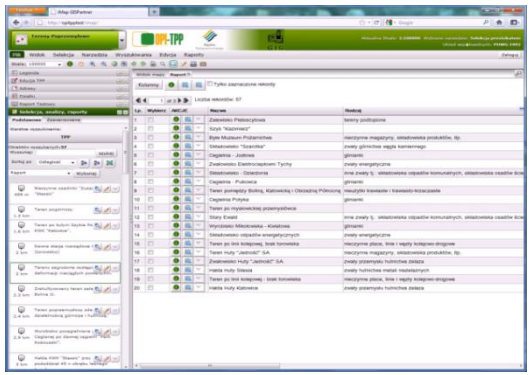
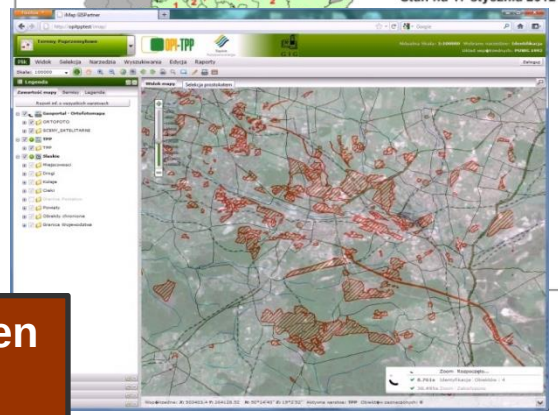
# POST-INDUSTRIAL AREAS MANAGEMENT IT TOOL

**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 raports and analysis – easy to access easy to generate**

**Upgrade of the system has been accepted by Coal Regions in Transition Platform**

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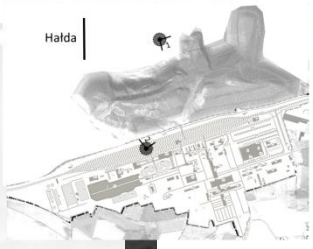
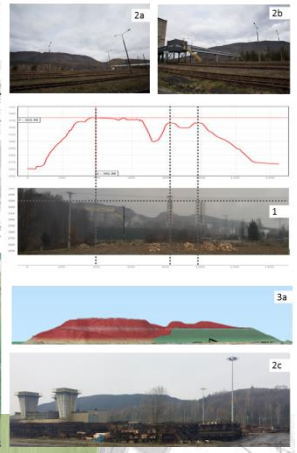
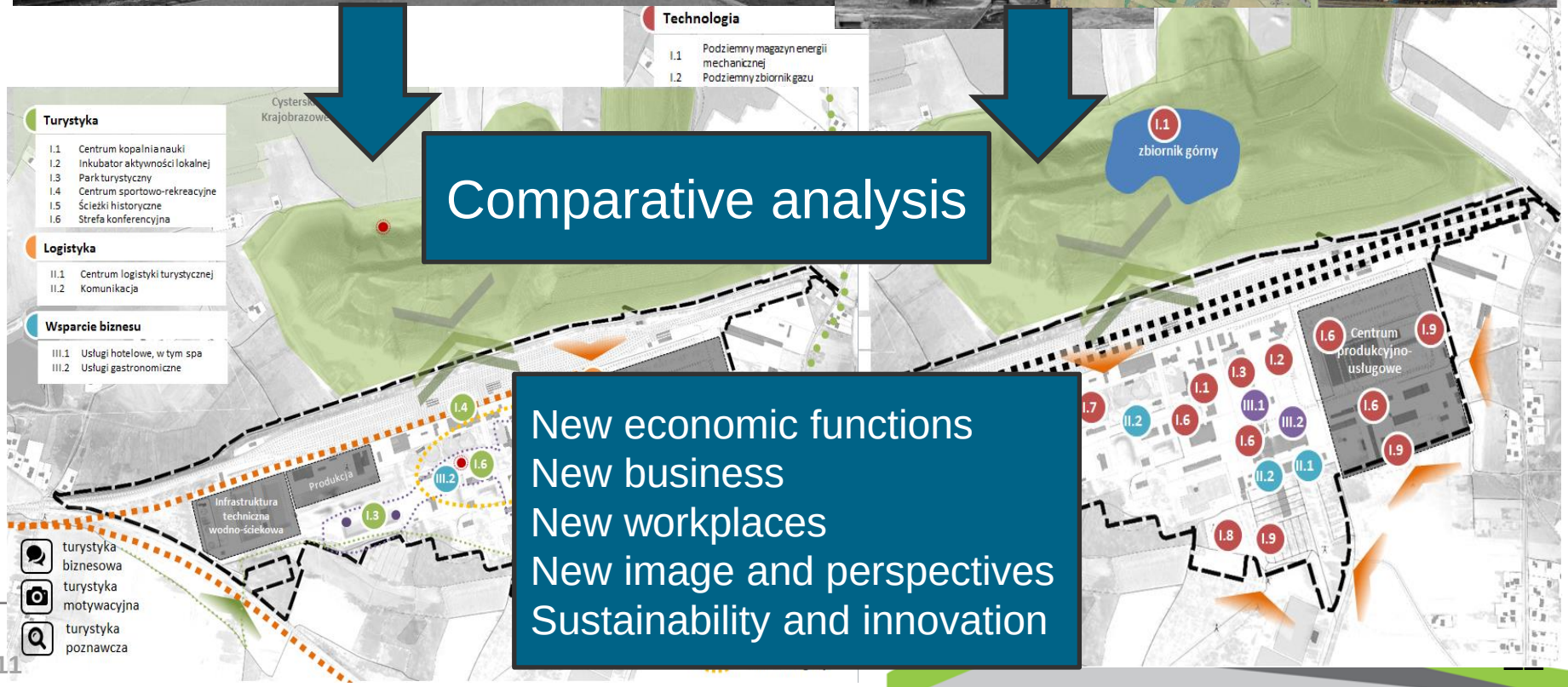
# SCENARIOS OF REVITALISATION



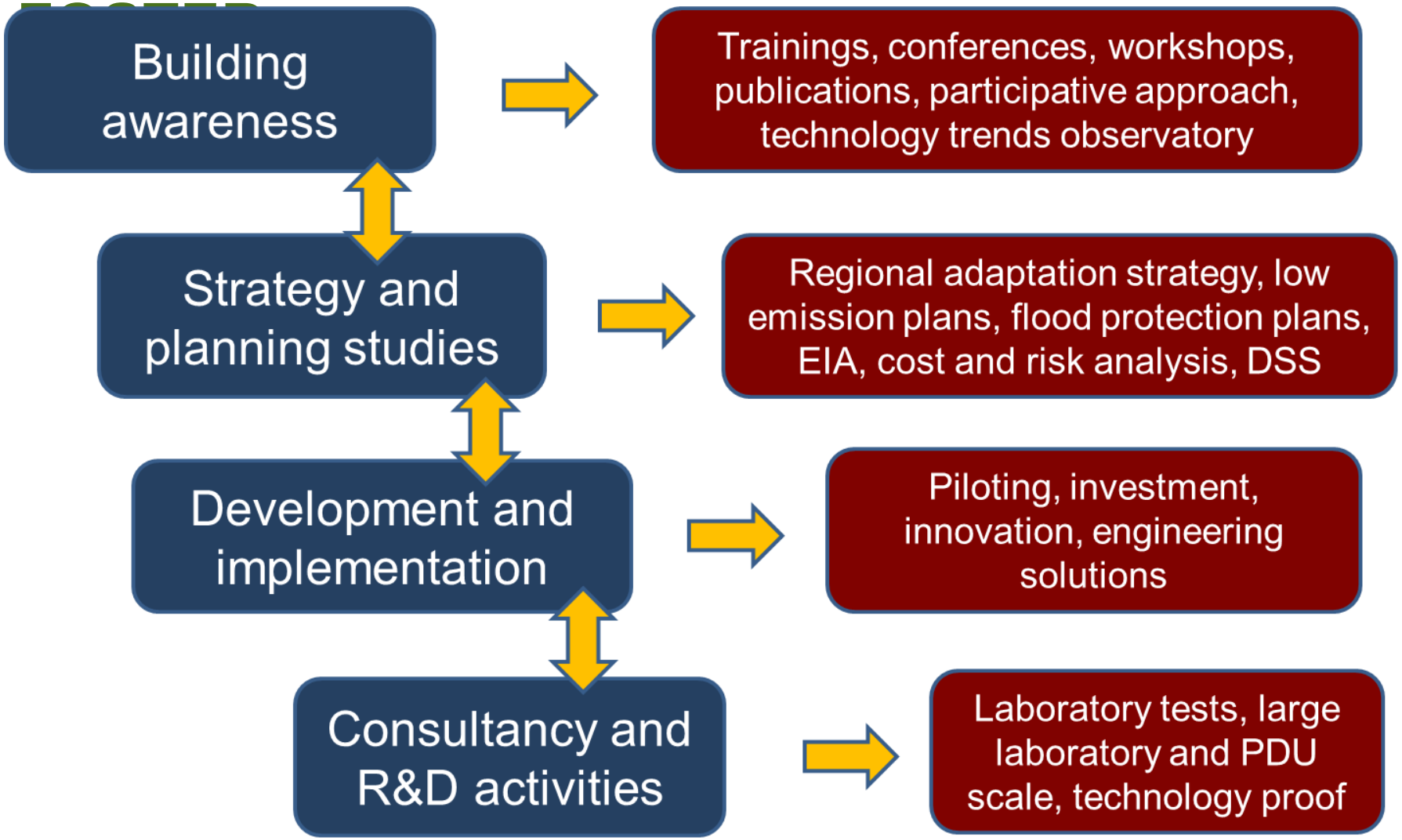




## Comparative analysis

New economic functions
New business
New workplaces
New image and perspectives
Sustainability and innovation

# ENERGY TRANSITION SUPPORTED BY R&D

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# METHANE – SOURCE OF GREEN ENERGY

## International Center of Excellence on Coal Mine Methane

Poland ICE-CMM

Operating under auspices of the UNECE Group of Experts 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**

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POLISH GEOLOGICAL INSTITUTE MENTE ET MALLEO 1919 NATIONAL RESEARCH INSTITUTE

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# THANK YOU FOR ATTENTION

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