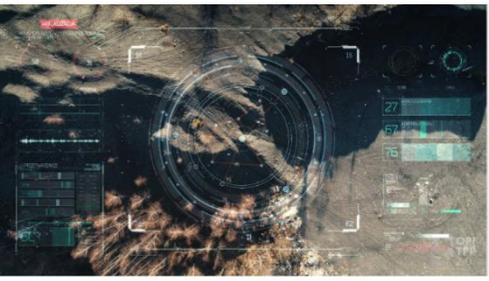


JUST TRANSITION PROCESS IN POLAND – STATUS AND FUTURE CHALLENGES

Jan Bondaruk



BASIC AREAS OF GIG ACTIVITY

MINING AND GEOENGINEERING

ENVIRONMENTAL ENGINEERING

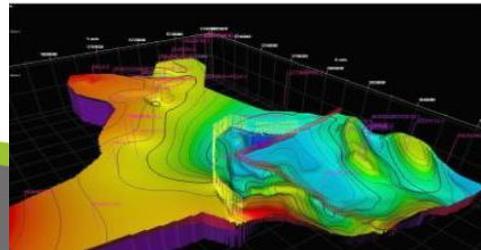
CLEAN COAL TECHNOLOGIES

OCCUPATIONAL SAFETY IN THE INDUSTRY

MATERIAL ENGINEERING

CERTIFICATION AND ATTESTATION

TRAINING AND EDUCATION



2022
facts and figures

3978 
research and contract
works for over **1825** clients

103,2 
million zł
of revenue

12 
applications for an
invention and
2 trademarks

17
accredited
testing
laboratories 

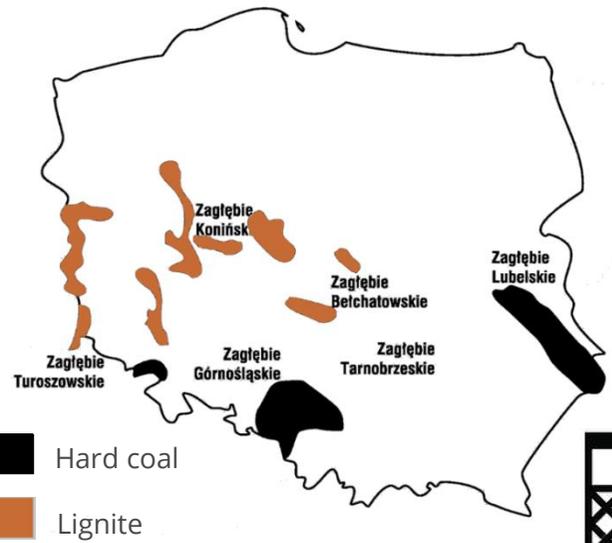
134 
people with academic
degrees and titles among
of about **455** employees

60 
projects
19 national ones and
41 international

165 
scientific publications

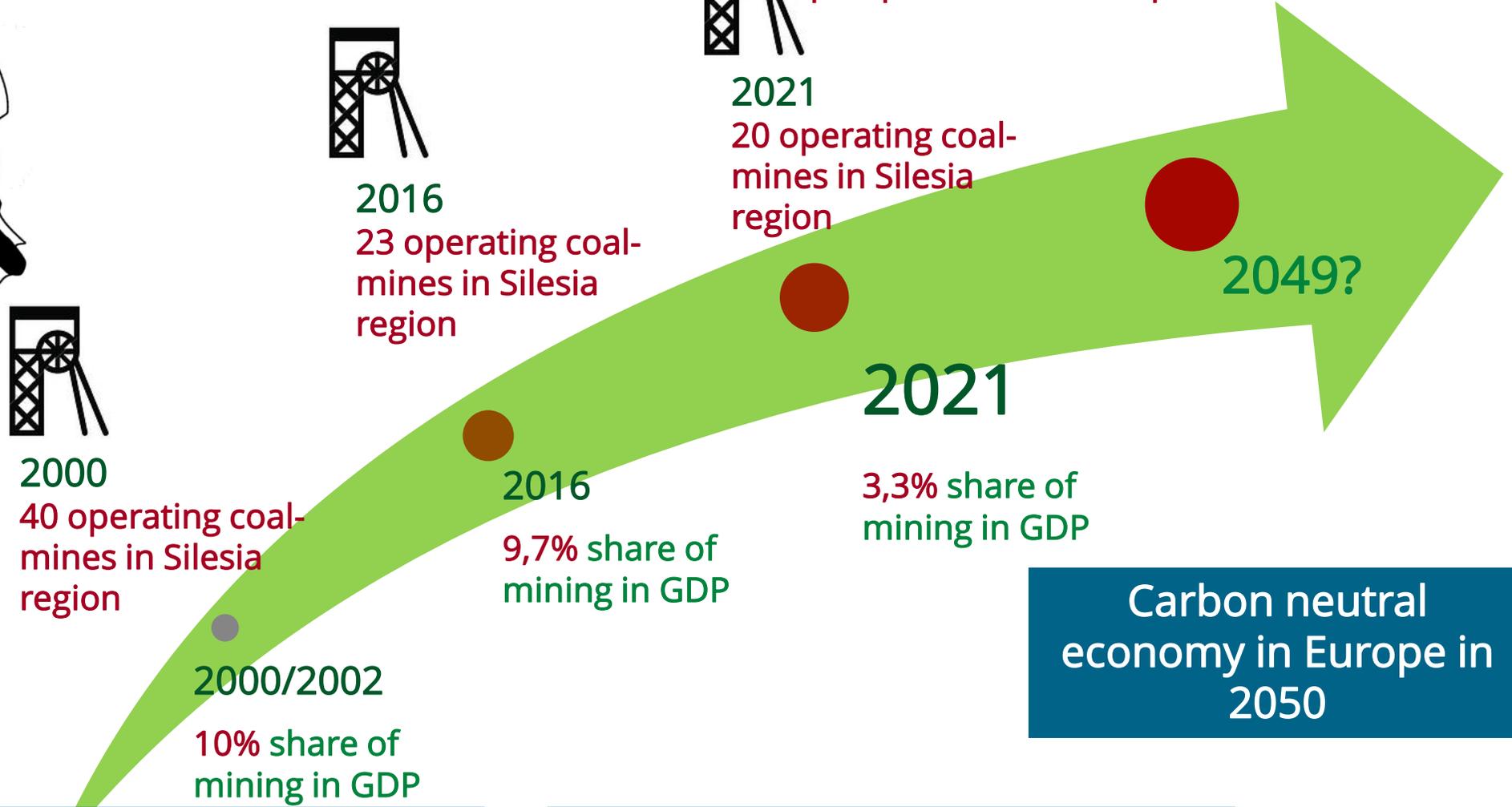
10 
prizes
and awards

TRANSITION PATHWAYS



Silesia region - heart of Polish hard coal mine sector

~78 % of hard coal balance deposits occur in Upper Silesian Coal Basin



Transformation of the sector induced by economic factors

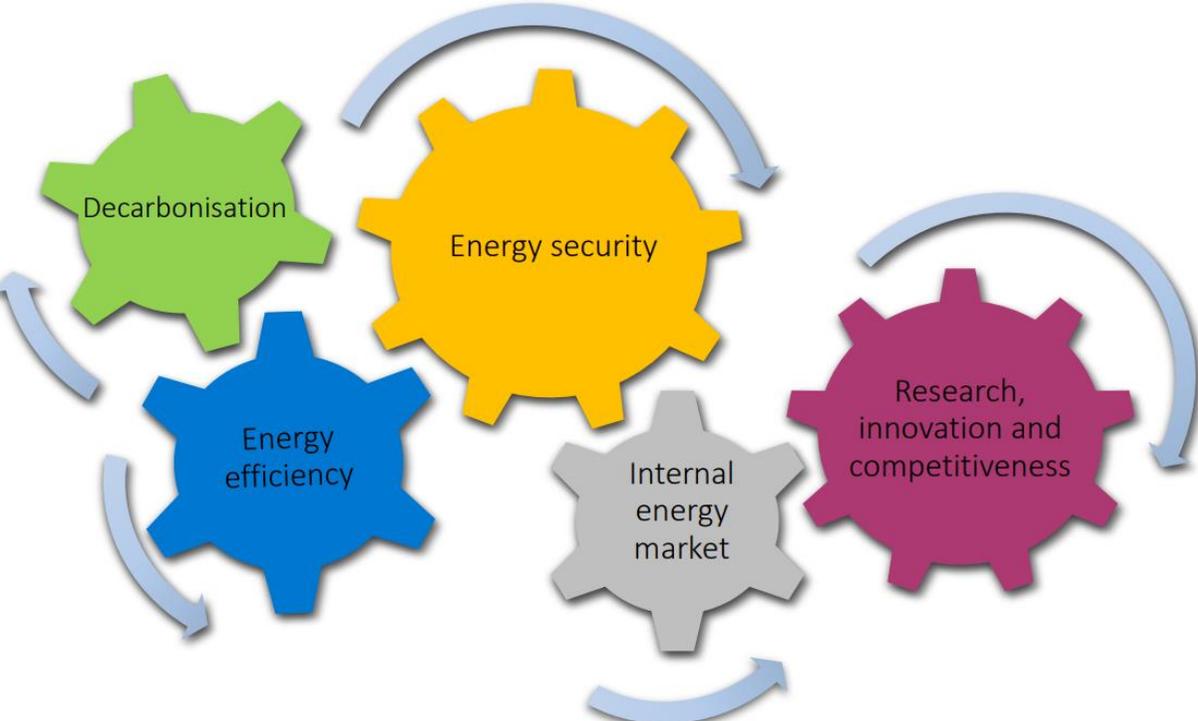
Transition of the economy carried out taking into account climate goals

Carbon neutral economy in Europe in 2050

NECP PL AND ENERGY POLICY OF POLAND UNTIL 2040

POLAND'S NATIONAL ENERGY AND CLIMATE PLAN FOR YEARS 2021-2030 (NECP PL) along with attachments has been developed in fulfilment of the obligation set out in Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action.

Integrated approach to the implementation of the five dimensions.

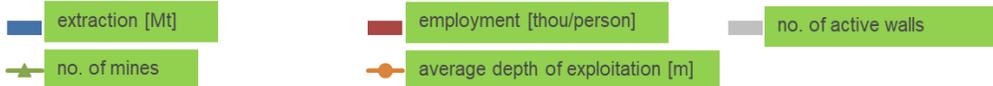
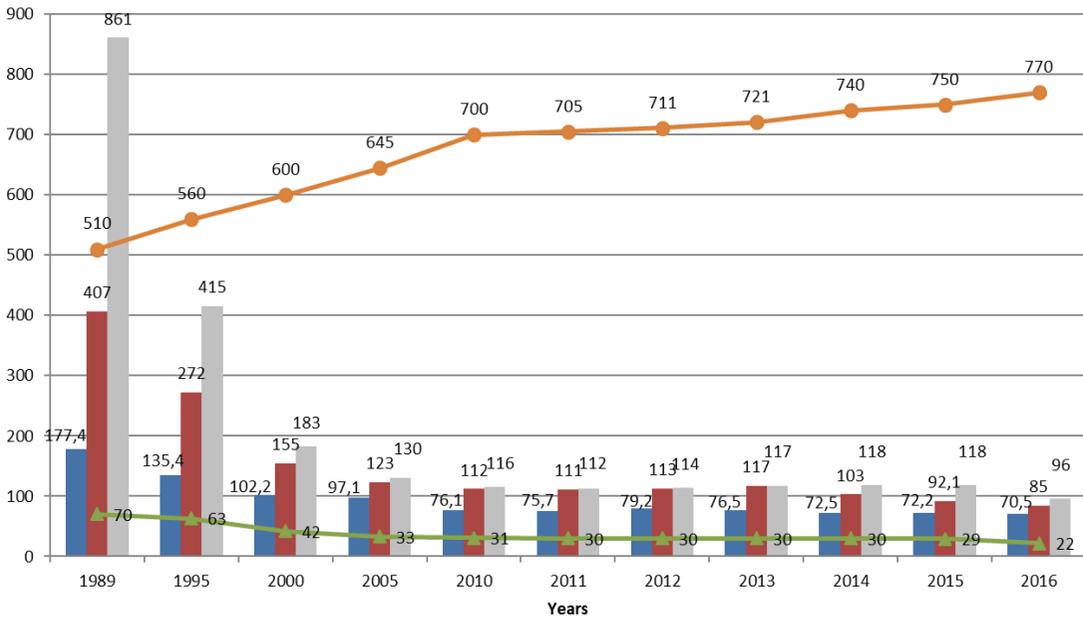


ENERGY POLICY OF POLAND UNTIL 2040 (PEP2040) sets the framework for the energy transition in Poland. It contains strategic decision regarding the selection of technologies used to establish a low-emission energy system. PEP2040 contributes to the implementation of the Paris Agreement concluded in December 2015 at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21), taking into account the need to achieve the transition in a just and solidary manner.

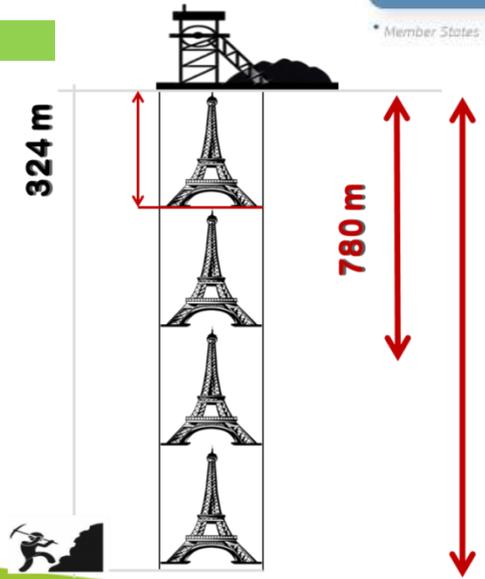
The energy transition will be based on three pillars

		
<p>I pillar Just transition</p>	<p>II pillar Zero-emission energy system</p>	<p>III pillar Good air quality</p>
<p>Transition of coal regions Reduction of energy poverty New industries related to renewable energy and nuclear energy</p>	<p>Offshore wind energy Nuclear energy Local and civic energy</p>	<p>Heating transition Transport electrification Climate-friendly House</p>

TRANSITION SCHEDULE



1990 – 70 operating hard coal mines with the average depth = 510 m



2023 - the deepest hard coal mine operates at the level of 1290 m



* Member States with peat and oil shale in their energy mix.

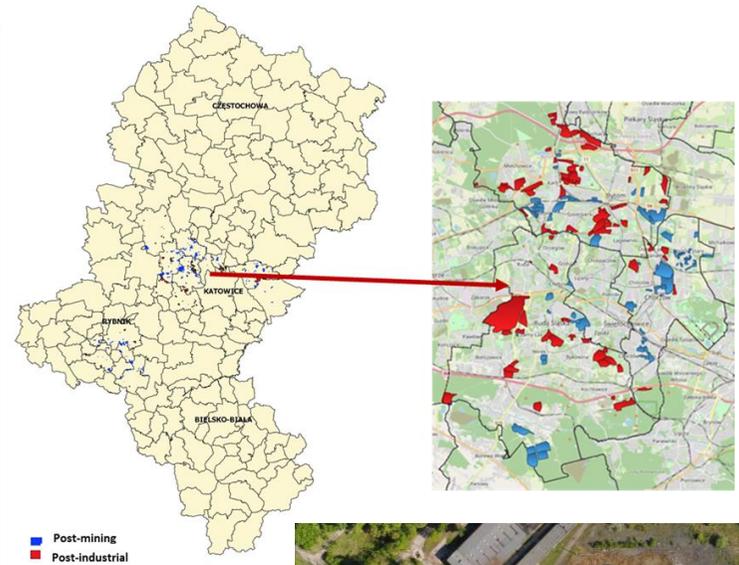
https://energy.ec.europa.eu/topics/oil-gas-and-coal/eu-coal-regions/coal-regions-transition_en

JUST TRANSITION FUND IN POLAND

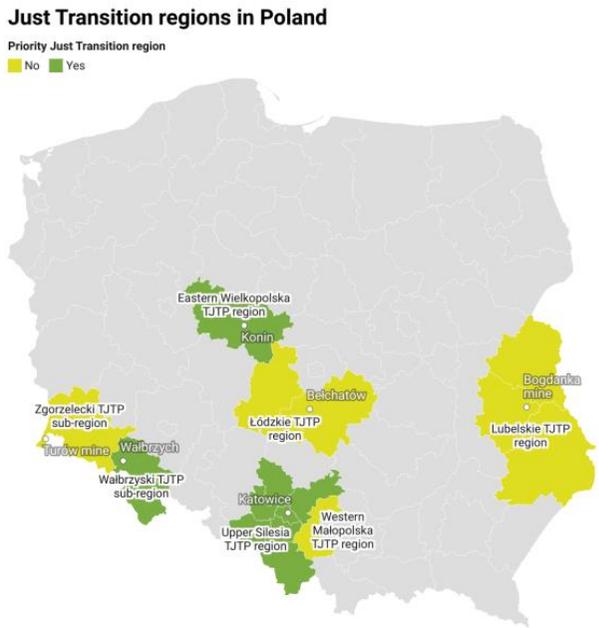
TERYTORIALNY PLAN SPRAWIEDLIWEJ TRANSFORMACJI WIELKOPOLSKI WSCHODNIEJ
WIELKOPOLSKA DOLINA ENERGII
siła Wielkopolski Wschodniej
PROJEKT
Konin, marzec 2021 r.

TERYTORIALNY PLAN SPRAWIEDLIWEJ TRANSFORMACJI DLA WOJEWÓDZTWA DOLNOŚLĄSKIEGO 2021-2030 SUBREGION WAŁBRZYSKI
DOLNY ŚLĄSK
URZĄD MARSZAŁKOWSKI WOJEWÓDZTWA DOLNOŚLĄSKIEGO
MARZEC 2021

TERYTORIALNY PLAN SPRAWIEDLIWEJ TRANSFORMACJI WOJEWÓDZTWA ŚLĄSKIEGO 2030
Województwo Śląskie
projekt – v. 02
marzec 2021
Urząd Marszałkowski Województwa Śląskiego
Śląskie.



More than 6 400 hectares of post-industrial and post-mining areas to redevelopment in Silesia Region



JUST TRANSITION FUND IN POLAND

€ 3.85 billion for a just climate transition in Poland

#EUinmyregion #CohesionPolicy

- € 2.4 billion for Silesia and Western Małopolska
- € 415 million for Wielkopolska
- € 581.5 million for Lower Silesia
- € 369.5 million for Łódzkie



TERRITORIAL JUST TRANSITION PLAN OF THE SILESIA VOIVODESHIP

Coal mining employment in 2022 in Silesia region
(hard coal + coking coal mines)
62 000 miners (76 000 in total Poland)



Reduction of employment
up to 2030 - **12 400 miners**
up to 2049 - **49 000 miners**



Estimated decrease in the number of jobs in
mining-related companies (value chain)
up to 2030 - **24 500 employees**
up to 2049 - **96 000 employees**



<25 000 hectares of post-industrial and post-
mining areas

The main objective of the TJTP is assumed to be:

- Equitable and efficient transformation of mining subregions towards a green, digital economy, ensuring a high quality of life for residents in a clean environment.

Operational objectives of 7 mining subregions embrace:

- Innovative and diversified economy
- Resource and energy efficient economy
- Strong entrepreneurship
- Balanced distribution of energy
- Repurpose of post-industrial areas for economic, environmental and social purposes
- Socially responsible transition management system
- Attractive and effective education
- Labour market support system and skills upgrading mechanism
- Comprehensive social support system to activate residents

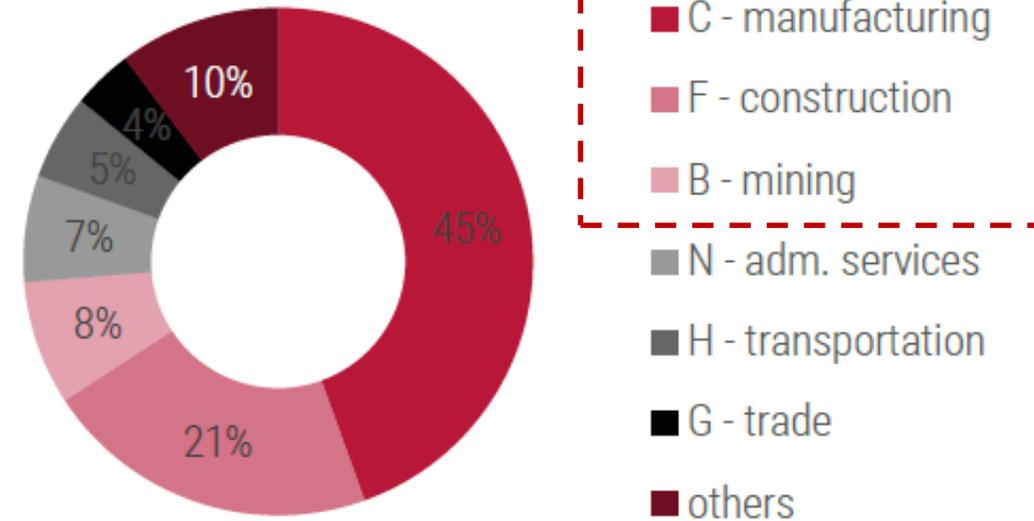
Identification of stakeholders and
stronger partnerships

MINING WORKFORCES AND VALUE CHAIN

The socio-economic contribution of mining in terms of employment can be measured on three levels:

- **direct employment** – the workforce employed by coal enterprises themselves,
- **indirect employment** – those employed at companies that produce goods or deliver services directly to coal enterprises,
- **induced employment** – those employed to provide goods and services to meet the consumption demand of directly and indirectly employed workers (Bacon and Kojima, 2011).

Employment structure in mining-dependent companies by NACE sections and dependence on coal mining contracts

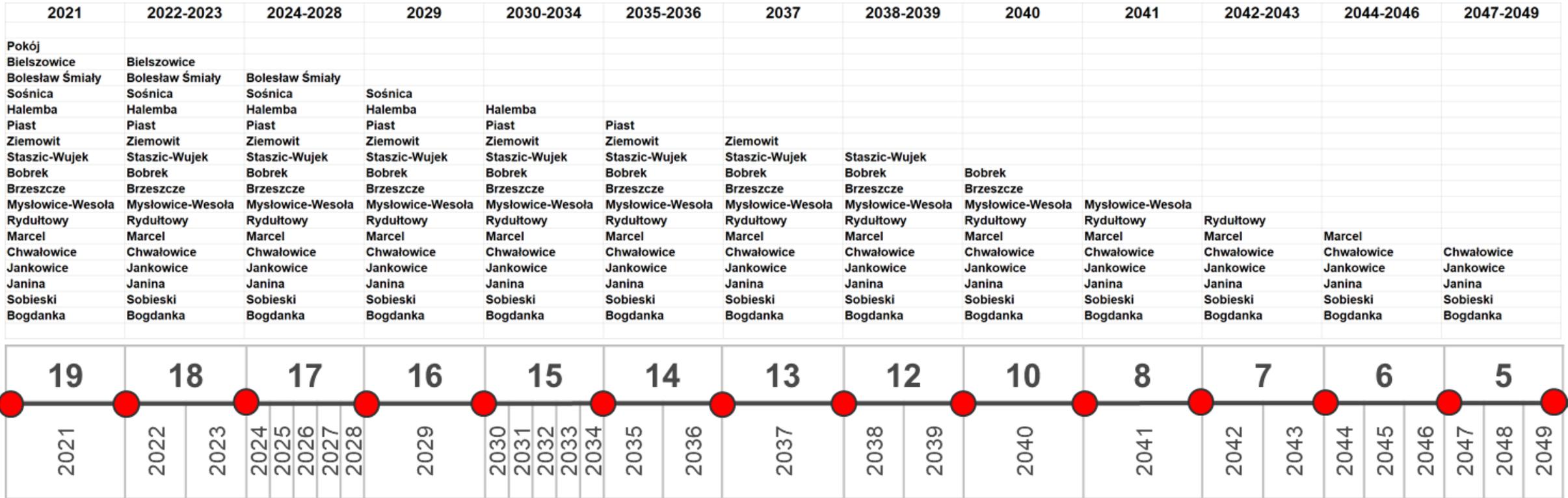


Estimates of mining-dependent workplaces broken down by nationwide and regional impact

Mining-dependent workplaces	Total (in Upper Silesia)	associated workplaces	mining-dependent workplaces (Upper Silesia)		mining-dependent workplaces (Poland)	
			first affected	vulnerable	first affected	vulnerable
Upper Silesia	51,167	3,684	17,273	30,210	19,487	44,785

SOCIAL AGREEMENT OF 28 MAY 2021 => MINE CLOSURE SCHEDULE

GOVERNMENT - TRADE UNIONS - MINING MUNICIPALITIES - MINING COMPANIES



=> mine closure schedule

OBJECTIVES OF SOCIAL AGREEMENT

mechanism for financing coal mining companies in the transition process

- covering extraordinary costs
- subsidies for **capacity reduction costs**

indexation of salaries

- inclusion of the salary costs of the companies' employees with the **indexation mechanism of average monthly salaries from the previous year**

rules for the construction and implementation of clean coal installations

- support for investments using available resources
- industrial-scale (TRL8/9) investments:
 - coal gasification plant (GCC+CCS)
 - production of low-carbon fuel,
 - hydrogen generation,
 - CO₂ storage in the rock mass.

Relocations to other mines
up to 2030
2 500 miners

guarantee of employment

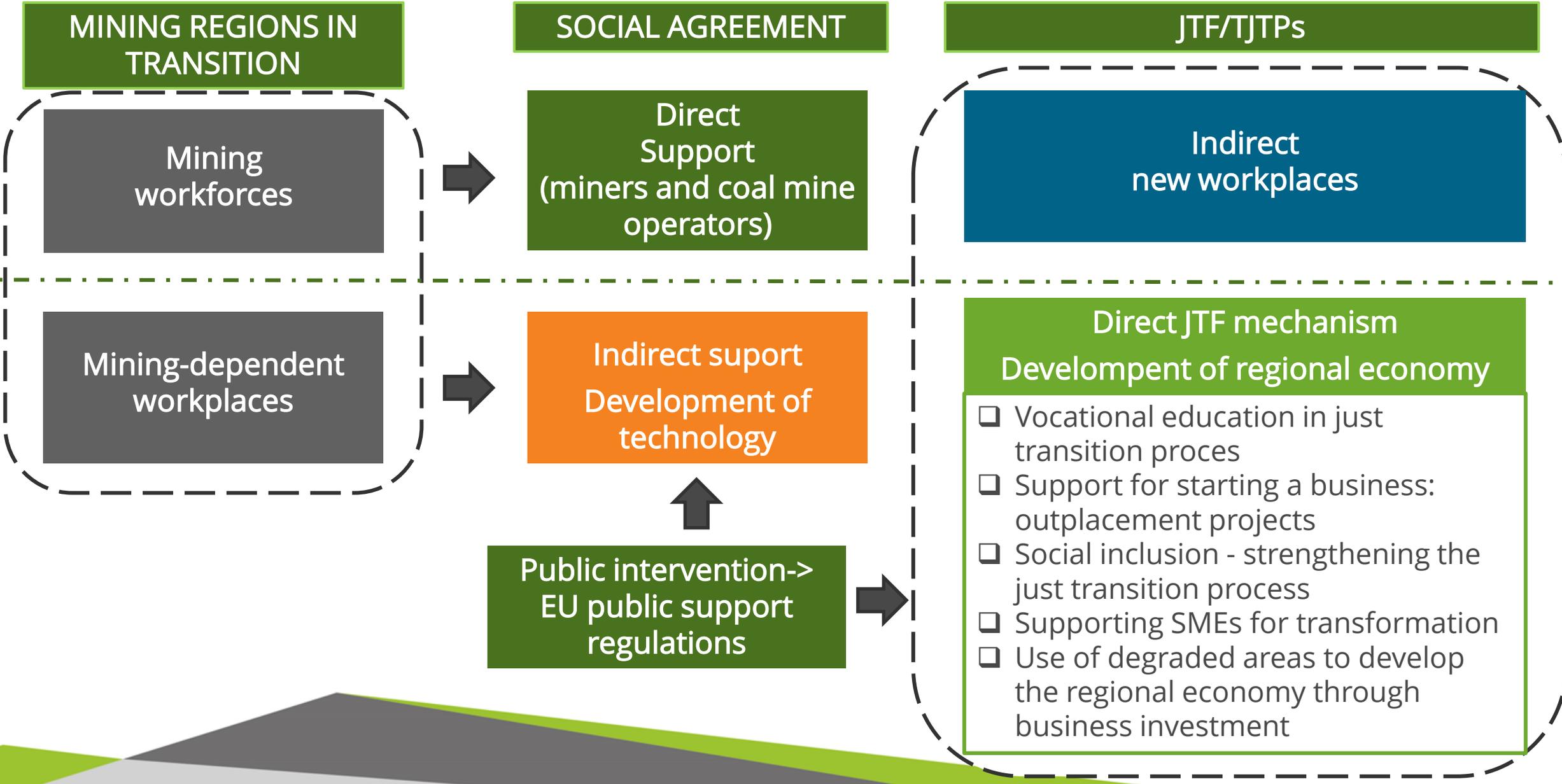
- employee reallocation mechanism -> mainly to other mines
- trainings and courses within the sector

social protection package for employees from liquidated coal mines

- mining leave
- severance pay

Retirement up to 2030
1 800 miners

MINING WORKFORCES AND VALUE CHAIN TRANSITION



STRATEGIC CHALLENGES

Reindustrialisation and
revitalisation

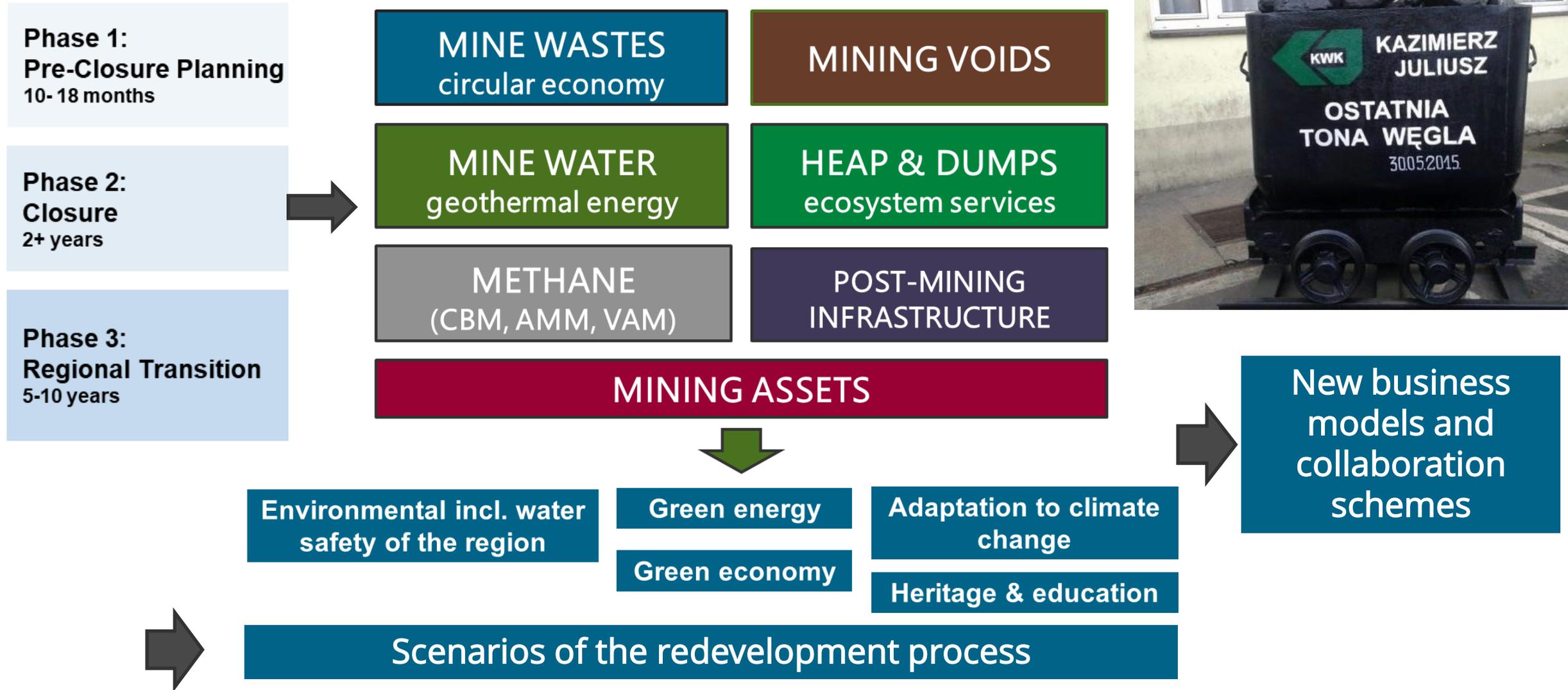
Cooperation between the
administration - industry -
science

"Black to Green" sustainable
transformation of the Silesia region

Finance and new business
models

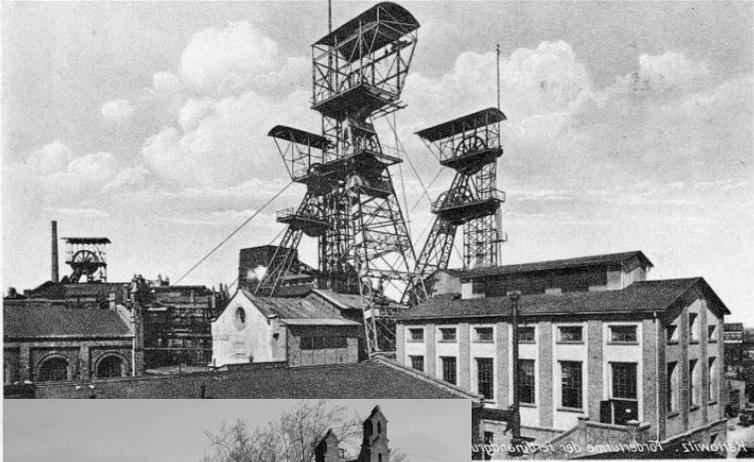
Innovation and integration of
knowledge

ADVANTAGES OF THE POST-MINING ASSETS



NEW VALUE CHAIN & SUCCESS STORIES

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



Katowice Coal Mine brownfield
– 2001 demolition works



Szombierki Coal Mine - Bytom

The Golf Club Armada



Culture Zone - new image
and functions



R&D PROJECTS – STATUS AND PERSPECTIVES



ROPT REGIONAL OBSERVATORY OF THE TRANSFORMATION PROCESS



The aim of the project was to provide insight into perceptions of various aspects of the transformation process.

The aim of the project was to collect and disseminate knowledge:

- on the socio-economic processes taking place in the region,
- effective transformation activities and tools,
- innovative technologies supporting the process of diversification towards a green digital economy,
- promoting framework directions for professional reorientation in the areas of regional smart specializations by initiating cooperation of local partners from areas undergoing socio-economic transformation and R&D with business entities.

ROPT supports the implementation of the objectives of the regional transformation plan and the regional development strategy in the social and economic dimension





The project consortium:

- UNIVERSIDAD DE OVIEDO, Spain
- GLOWNY INSTYTUT GORNICTWA, Poland
- FUNDACION ASTURIANA DE LA ENERGIA, Spain
- DMT-GESELLSCHAFT FUR LEHRE UND BILDUNG MBH, Germany
- MAGELLAN & BARENTS SL, Spain
- WEGLOKOKS KRAJ SPOLKA AKCYJNA, Poland,
- HULLERAS DEL NORTE SA, Spain,
- PREMGOVNIK VELENJE, Slovenia.

PILOT ACTIONS

Bobrek-Piekary Coal Mine, POLAND

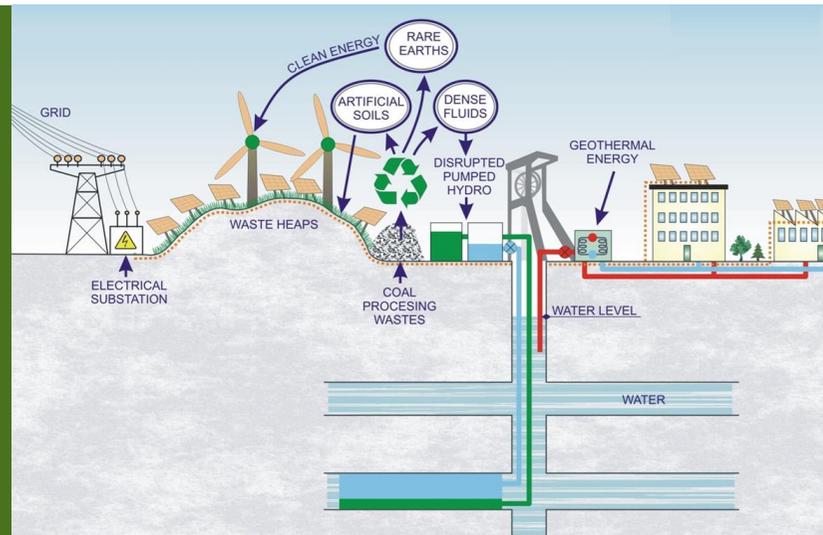


Premogovnik Velenje, SLOVENIA



GreenJ^oBS focuses on repurposing end-of-life underground coal mines by deploying emerging renewable energy and circular economy technologies to promote sustainable local economic growth and maximise the number of green, quality jobs.

2 business plans (Virtual Power Plant and a Green Hydrogen Plant).



POTENTIALS

RFCS AM PROJECT

No.	Action
1	Virtual power plant
2	Green hydrogen plant
3	Eco-industrial park
4	Cultural heritage and sports/recreations areas using green energy
5	Floating PV panels at flooded open-pit coal mine
6	Pumped hydroelectric storage (PHS) at former open-pit coal mines
7	Fisheries in flooded open-pit coal mines
8	Combined-cycle gas turbine (CCGT) power plant powered by natural gas
9	Mine gas utilization for gas-powered CHP power units
10	Small modular reactors (SMRs)
11	Biofuels combustion energy plant
12	Molten salt plant
13	Agrophotovoltaics (APV) at former open-pit coal mine areas



No.	Mikro-action
1	Ancillary services provided by batteries
2	Recovery of resources from coal mining waste heaps
3	Usage of methane from degasification units on closed coal mines
4	Circular mining technologies for pumped water material recovery.
5	Forest restoration at former open-pit coal mines
6	Large scale IT infrastructure - power plant
7	Geothermal energy
8	Gravitricity
9	Dense fluids
10	Underground hydropumping



EXTENSION OF THE POST-MINING LAND MANAGEMENT SYSTEM IN THE SILESIA VOIVODESHIP

Supportive tool for management of transition proces.



new public e-service

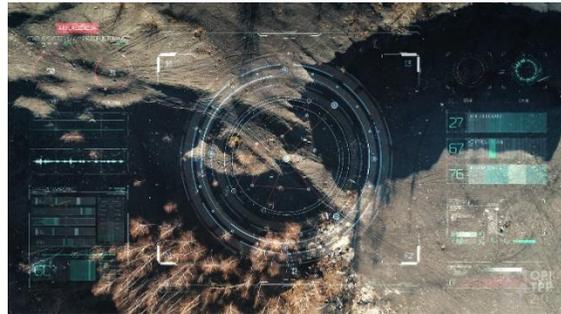


database of post-mining areas

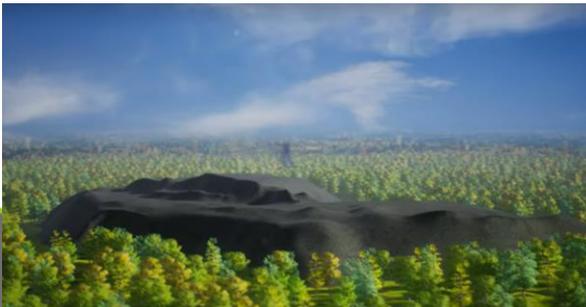
tool for the valorisation of post-mining areas

Make it easier for investors to get information about post-mining areas and help them assess their economic attractiveness.

digital repository of documents including plans, maps, photographs of post-mining areas



<https://www.youtube.com/watch?v=0AjJbo560JE>



TRANSITION PROCESS IN POLAND

- ❑ Along with the phase-out plan, the expected outcome of the transition process is to ensure the security of the national energy system combined with climate neutrality goals
- ❑ Silesia region, due to concentration of different type of challenges is perceived as the reference laboratory and source of good practices of the just transition process in Europe
- ❑ Post-mining period creates new models of collaboration between industry, researchers and administration
- ❑ Reskilling mining workforce and employees of mining-dependent enterprises (value chain) is a key challenge for the well-embedded just transition
- ❑ Just transition process is implemented through an extensive support program that includes, among others:
 - ❑ Regeneration, decontamination and restoration of post-mining assets
 - ❑ Raising and changing the qualifications of employees and jobseekers
 - ❑ Investment in SMEs, including start-ups, leading to economic diversification and economic restructuring
 - ❑ Business creation through business incubators and consulting services
 - ❑ Research and innovation activities and supporting the transfer of advanced technologies

WE INVITE YOU TO COLLABORATE

Jan BONDARUK
Deputy Director
for Environmental Engineering

Central Mining Institute –
National Research 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

