Recovery of degraded and transformed ecosystems in coal mining-affected areas

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RECOVERY - INDIVIDUAL PARTNERS OF THE CONSORTIUM

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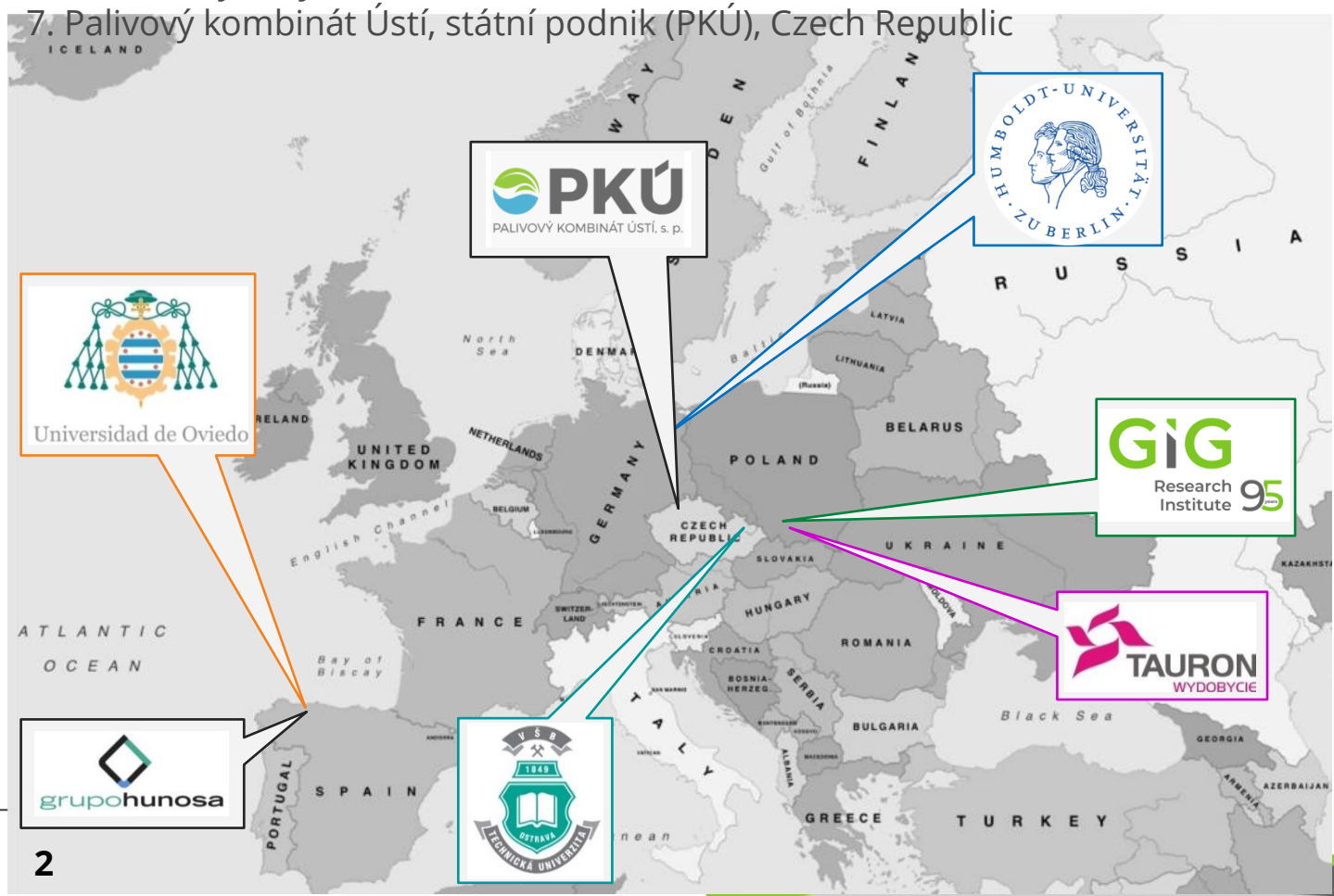
2. Universidad de Oviedo (UNIOVI), Spain
3. Humboldt Universität zu Berlin (UBER), Germany
4. Vysoka Skola Banska-Technicka Univerzita Ostrava (VSB), Czech Republic
5. Hulleras Del Norte SA (HUNOSA), Spain
6. Tauron Wydobycie SA (TWD), Poland
7. Palivový kombinát Ústí, státní podnik (PKÚ), Czech Republic



AIM OF THE RECOVERY PROJECT

RECOVERY project focuses on land rehabilitation and ecological restoration of coal mining-affected areas, aiming to accelerate the recovery of degraded and transformed ecosystems to a good ecosystem status.

LAND REHABILITATION

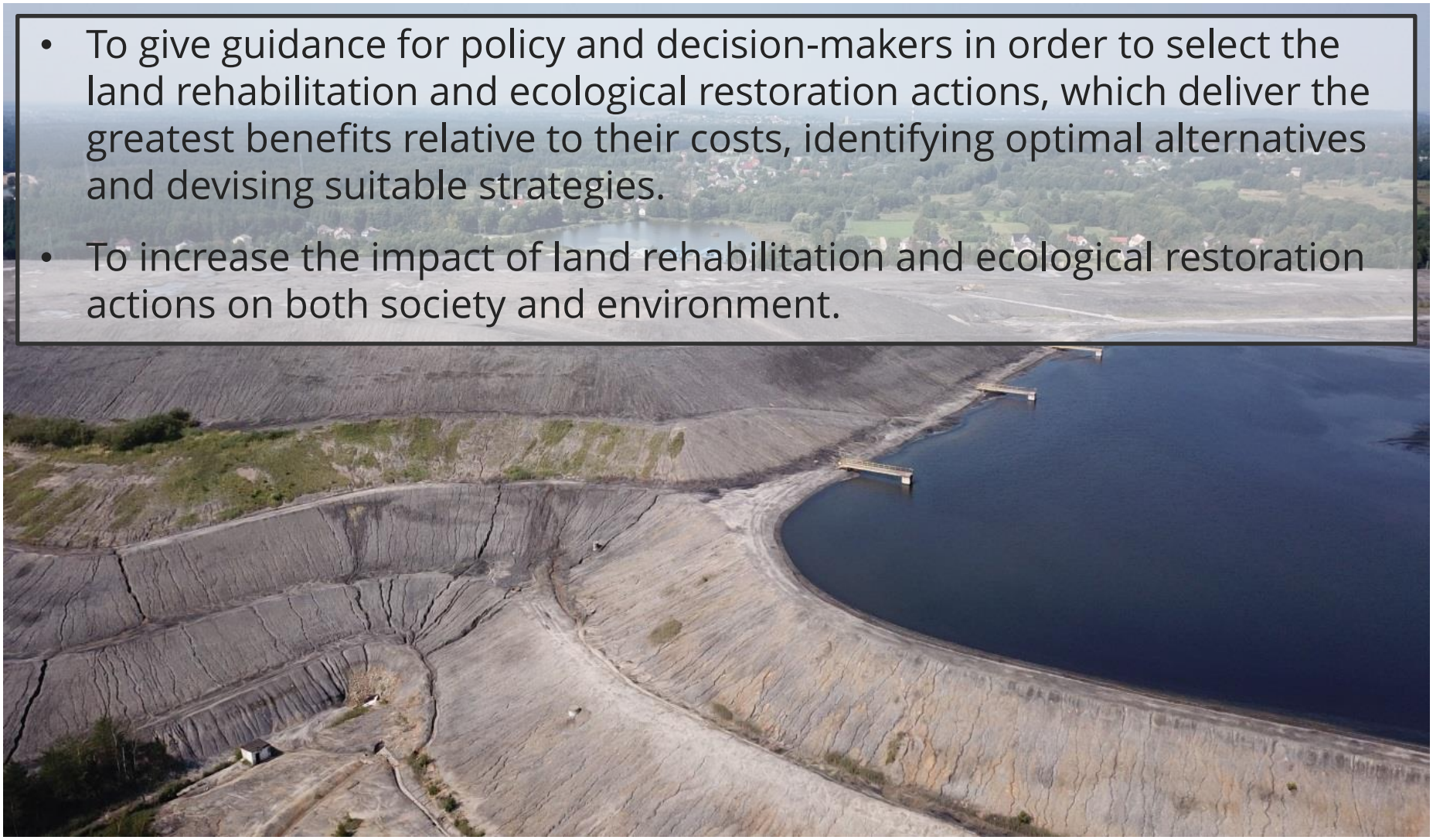
mapping, quantifying and valuating the ecosystem services provision

PROBLEM

There is almost no information available on the environmental and social cost-effectiveness of land rehabilitation and ecological restoration of coal mining-affected areas.

OBJECTIVES

- To give guidance for policy and decision-makers in order to select the land rehabilitation and ecological restoration actions, which deliver the greatest benefits relative to their costs, identifying optimal alternatives and devising suitable strategies.
- To increase the impact of land rehabilitation and ecological restoration actions on both society and environment.



OBJECTIVES

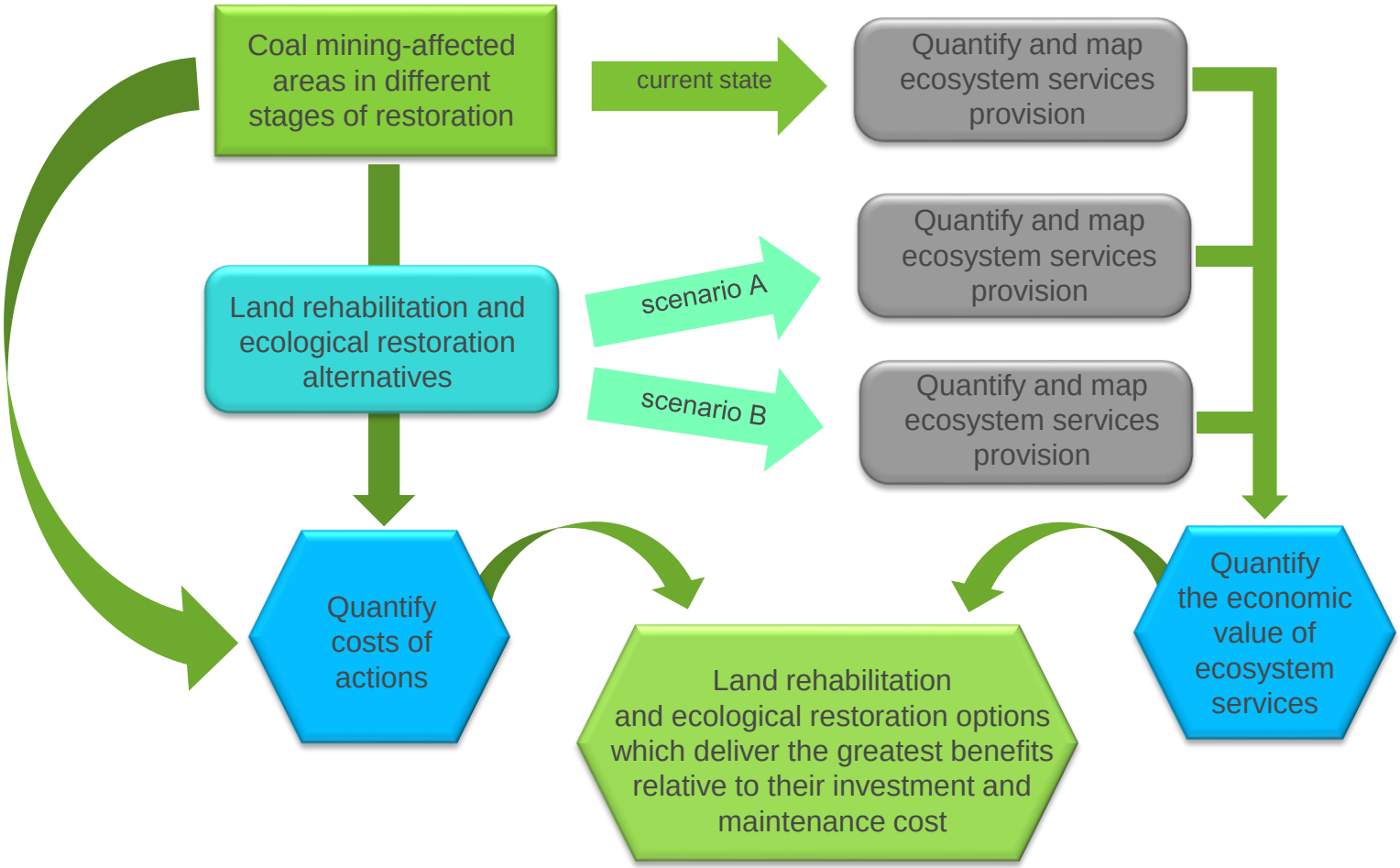
- To deliver, addressing specifically coal mining-affected areas: (a) detailed costs of land rehabilitation and benefits in the provision of ecosystem services; (b) suitable indicators for these ecosystem services; (c) feasible valuation techniques and optimal discount rates.
- To deliver and innovative framework for land rehabilitation and ecological restoration of coal mining-affected areas, conceived as “Best practice guidelines”.

How to tackle the environmental and social costs and benefits of restoration?

A valuation of the ecosystem services provided by different land rehabilitation and ecological restoration scenarios must be undertaken in order to:

- ❑ **assess their contribution to human well-being,**
- ❑ **understand the incentives that individual decision-makers face in managing ecosystems in different ways,**
- ❑ **evaluate the consequences of alternative courses of action.**

PROJECT'S METHODOLOGY



OUTCOME

RECOVERY will demonstrate approaches and best practices for analyzing land rehabilitation and ecological restoration actions.
RECOVERY will assess the contribution of selected ecosystems to human wellbeing by means of the innovative 'ecosystem-services' concept, evaluating the consequences of alternative courses of action so that their capacity to provide benefits to society will not be diminished but, if possible, improved.

- The first comprehensive attempt at an European/worldwide scale to link the fields of land rehabilitation and ecological restoration with the ecosystem services concept in underground and opencast coal mining-affected areas.

Artificial substitutes for soils in difficult terrains

Environmental impact of Janina Waste Heap include:

- Air quality deteriation–spreading of suspended dust during dry and wind periods.
- Biodiversity loss - acid properity of gangue is inconvenient as habitat for plant and animal = lost of areas with regulation (i.e. local climat regulation, and cultural function (interactions with living system).
- Surface and groundwater pollution – acid rock drainage is observed in the water runoff process during precipitation.
- The wastes stored on the heap cover an area of 80 hectares, reaching the height of 35 metres

Artificial substitutes for soils in difficult terrains

TESTED WASTE MATERIALS

Coal combustion by-products +

- **Fly ashes and slags** *Power plant Jaworzno 3*
- **Energetic slags** *Power plant Łaziska*
- **Biomass combustion ashes** *Power plant Jaworzno 3*

Sludges +

- **Sealing material** *Sobieski coal mine*
- **Decarbonisation lime** *Power plant Łaziska*

Agregate +

- **Mine wastes** (0-2 mm) *Sobieski coal mine*

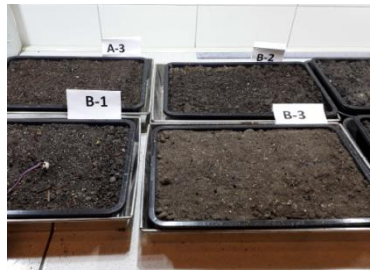
Organic matter

- **Sewage sludge** *Waste water treatment plant*
- **Spent mushroom compost** *agricultural sector*

ROCK WASTE

waste heap in JANINA coal mine

Artificial soil substitutes



Phytotests with **white mustard**

Recovery
RFCS RESEARCH PROJECT

GIG Instytut Badawczy 95 lat

THANK YOU FOR YOUR ATTENTION!

WWW.RECOVERYPROJECT.EU

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