

# REECOL

Ecological rehabilitation and long term monitoring of post mining areas

## Newsletter No. 3

### WELCOME to the 3<sup>rd</sup> newsletter of the REECOL European project!

Last few months have been quite busy for us. We've worked hard on the development of the project results and had also a lot of meetings to maintain the best cooperation. Additionally, we've carried out a lot of work to reach our target audience. More details you can find on the project social media and website.

REECOL Team

### What's going on in the project?

#### The partners' progress meetings

On 25-27.09.2024 we had a project progress meeting - in Chania, Greece, and online. During two days there were presentations and thorough discussions regarding particular work packages. On the third day, visits in at Chordaki quarry, Chania (in operating and reclaimed sites) and in Archeological Museum of Chania took place.



On 13-15.05.2025, we had another project progress meeting. It was held and hosted by BRGM at their facility, and online. Presentations and follow-up discussions covered completed, current and future activities. Attendees had also exceptional opportunity to visit BRGM's laboratories.



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## What's going on in the project? – cont.

### Work on the results (1)

Our project is on the right track. Study plots for testing the effectiveness of the compost developed in the project have been established in Poland, Slovenia and France. Soil sampling and laboratory testing have started under trial monitoring campaigns. Satellite and UAV based monitoring was undergoing as well. Additionally, the development of non-contact soil remediation system has been carried out. Operational tests of the developed technology have been carried out on a hard coal heap in Poland.

*See a photo galery below and find out more on the project website and social media.*



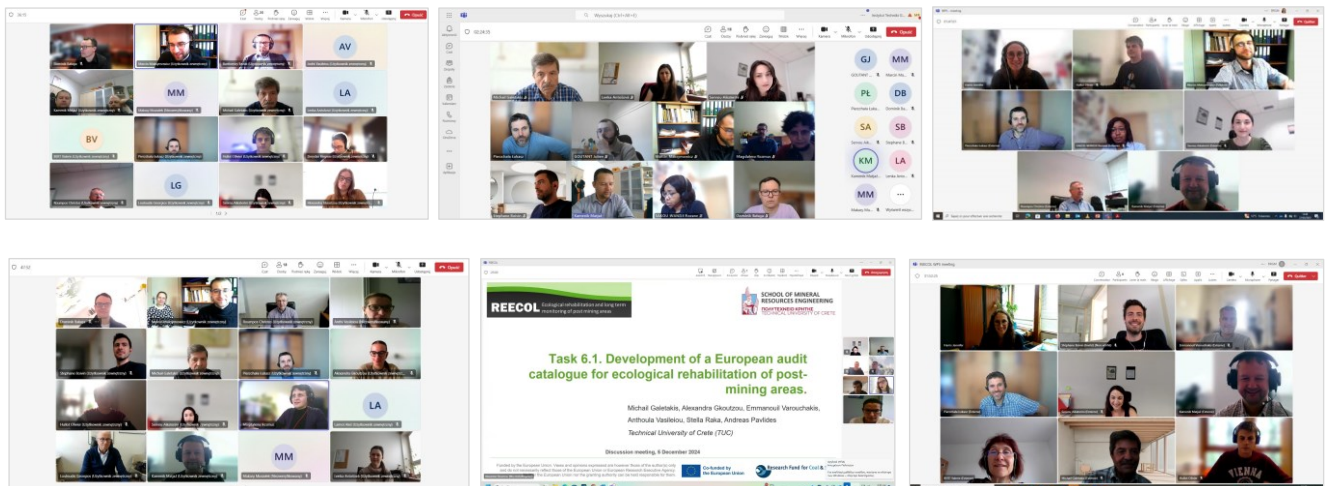


### What's going on in the project? – cont.

### Work on the results (2)

We've elaborated and published several deliverables. We've also regularly organized online meetings to discuss the completed, current and future activities aimed at the development of the project results.

See a photo gallery below and find out more on the project website and social media.



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### Reaching the project target audience

We shared the REECOL ideas and research results at conferences and via papers:

- 1 **IV Climate and Biodiversity Conference**, carried out within the Innovative Green Economy series held on 25.10.2024 held in GIG, under the auspices of the Regional Observatory of the Transformation Process. A presentation entitled 'Reclamation of Post-Mining Areas in the Context of Climate Change Adaptation and Biodiversity Protection in Urbanized Areas' was given.
- 2 **Węgiel Brunatny 4/2024** – the project background, aims, consortium and activities were presented in the article „Ecological rehabilitation and long term monitoring of post-mining areas (REECOL) – research project within Research Fund for Coal and Steel”.
- 3 **Brown Coal 3/2024** – an article „Selection of optimal case areas in the Most Basin for solving of reclamation issues in the European project REECOL” was published.
- 4 **XXVII Annual Seminar Problems of Operation, Maintenance and Repair of Machines Used in Surface Equipment** held on 3.10.2024 in Sloup – presentations regarding REECOL were made.
- 5 **KOMTECH 2024** - International Scientific and Technical Conference held on 04-06.11.2024 in Szczyrk, Poland. The project informative roll-up was displayed.



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### Reaching the project target audience cont.

The REECOL ideas and research results were shared at conferences and via papers (cont.):

- 6 **13th professional conference on the topic of Cleanup of Contaminated Soil and Greening of Degraded Areas** held on 20.11.2024 – a presentation was made and a follow-up paper was published.
- 7 **Brown Coal 1/2025** – an article „Initiation of monitoring of case study areas within the project REECOL - input data” was published.
- 8 **KOMEKO 2025** - International Scientific and Technical Conference held on 24-26.03.2025 in Szczyrk, Poland. A presentation in which the technology for non-contact soil reclamation being under development was given. It was also streamed on KOMAG's YouTube channel. The project roll-up was also displayed.
- 9 **Consultation with international participation "on the 49th leap over the skin** held on 11.04.2025 – a presentation was made and a follow-up paper was published.
- 10 **The annual meeting of the Experts group TGK1 & TGK2 and the coordinators of the research projects funded by the Research Fund for Coal and Steel** held on 21-22.05.2025 in Chania, Greece. There REECOL coordinator gave a presentation regarding the project.



#### ČIŠČENJE ONESNAŽENIH TAL IN OZELENJEVANJE DEGRADIRANIH POVRŠIN

Celje, 20. november 2024



#### Archiv - ročník 2025

1/2025

2/2025

**ZPRÁVODAJ**

RNDr. Michal Řehoř, Ph.D.:  
Zahájení monitoringu případových oblastí v rámci řešení projektu REECOL – vstupní data

RNDr. Jan Burda, Ph.D.:  
VUHU a metan na mezinárodní scéně: Příspěvek českého výzkumu k efektivnímu řízení emisí CMM

Ing. Lukáš Anděl:  
Problematika stanovení emisního faktoru metanu z hnědých uhlí

RNDr. Michal Řehoř, Ph.D., Ing. Lukáš Žižka, Ph.D.:  
Nový výskyt cordieritu v oblasti Mostecké pánve

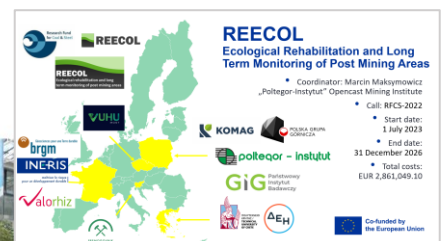
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## Get some knowledge...

The **Normalized Difference Vegetation Index (NDVI)** is a widely used spectral index for **assessing vegetation greenness, vigor, and biomass** using **remotely sensed data**. NDVI is derived from reflectance measurements in the **red (RED)** and **near-infrared (NIR)** portions of the **electromagnetic spectrum**, based on the **formula**:

$$NDVI = \frac{NIR - RED}{NIR + RED}$$

**Healthy green vegetation** strongly **absorbs red light** (due to chlorophyll) and **reflects near-infrared light** (due to internal leaf structure). As a result, areas with **dense and healthy vegetation** typically exhibit **high NDVI** values, while barren surfaces, urban areas, or water bodies show low or negative NDVI values. **Typical NDVI ranges** are as follows:

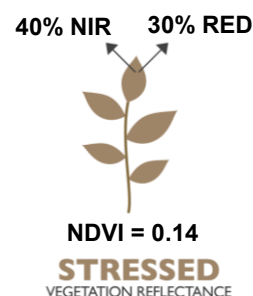
- ~0.6 to 0.9: dense, healthy vegetation (e.g., tropical forests, croplands in peak season)
- ~0.2 to 0.5: sparse vegetation, grasslands, shrubs
- ~0 to 0.2: bare soil, rocks, built-up areas
- < 0: water bodies, snow, clouds, or other non-vegetated surfaces

NDVI is favored in **environmental sciences, agriculture, and land management** due to its:

- **relative simplicity**: it uses only two spectral bands;
- **wide applicability**: it is available from many satellite sensors (e.g., MODIS, Sentinel-2, Landsat);
- **strong correlation with vegetation parameters** such as Leaf Area Index (LAI), biomass, and productivity — though it may saturate in areas of very dense vegetation and can be influenced by soil background or atmospheric effects.

While NDVI is **not a direct measure of vegetation health**, it serves as a **robust proxy for photosynthetically active vegetation** and enables **consistent monitoring over large areas and time periods**. It **allows also to detect anomalies** and undertake a **mitigation action**.

<https://www.earthdata.nasa.gov/> <https://custom-scripts.sentinel-hub.com/>



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