

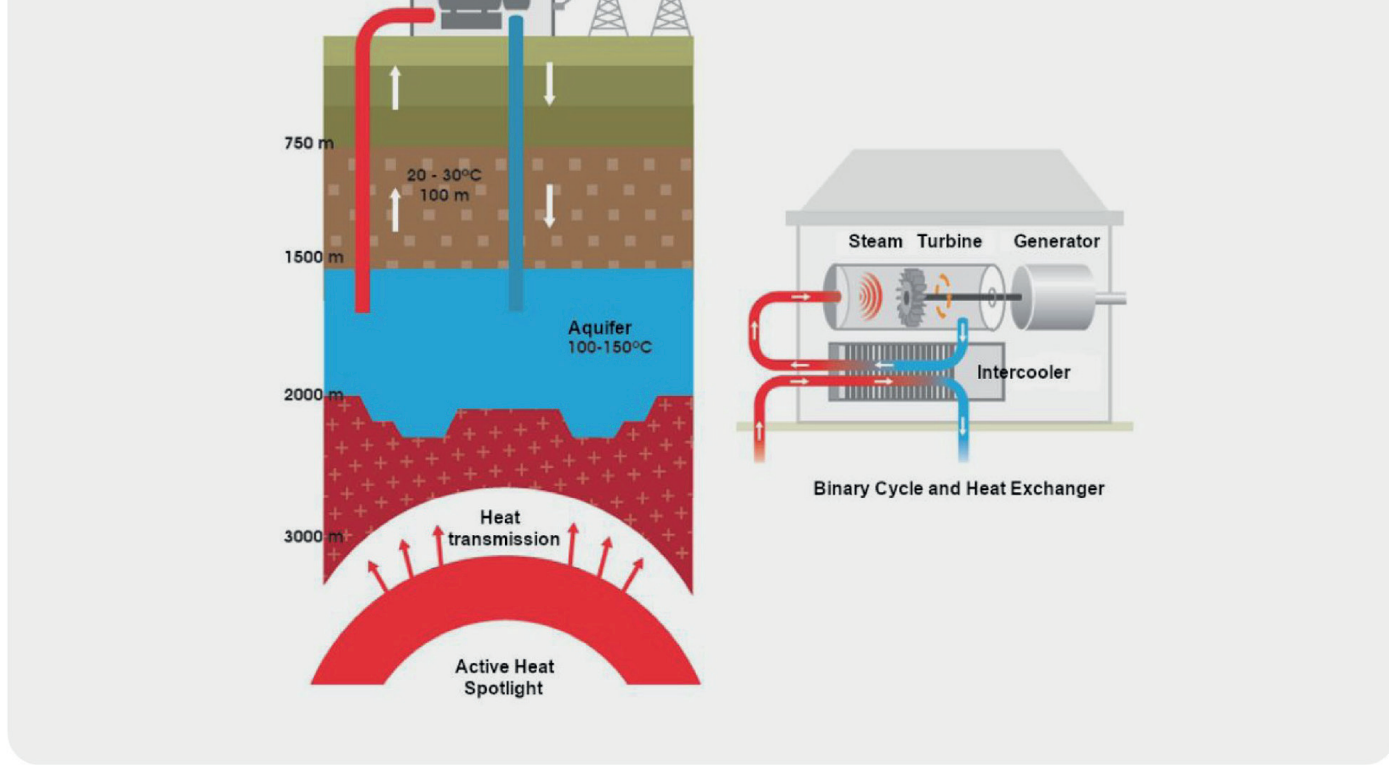


August 2023

The competitive advantage of post-coal mining areas: Mine Water

A VALUABLE RESOURCE FOR GEOTHERMAL ENERGY, GREEN HYDROGEN, AND RARE EARTH PRODUCTION.

Mine water plays a crucial role in sustainable energy production and resource extraction. Mine water that floods mines could be a geothermal energy resource. The constant temperature at depth provides a reliable energy source throughout the year. Geothermal heat pumps convert this energy for heating and cooling. Furthermore, mine water could be used for producing green hydrogen through electrolysis. Additionally, mine water is crucial in the flotation process to extract rare earth concentrate from fine coal waste, which will be sold to hydrometallurgical plants for mixed rare earth precipitate production.



Deliverable 2.1 of the GreenJOBS project provides a more specific deployment. More information through the following link: <https://greenjobsproject.uniovi.es/wp-content/uploads/2023/05/D2.1-Geothermal-energy-deployment.pdf>

Partners

 <p>UNIVERSIDAD DE OVIEDO (UNIOVI)</p>	 <p>GLÓWNY INSTYTUT GÓRNICTWA (GIG)</p>	 <p>FUNDACIÓN ASTURIANA DE LA ENERGÍA (FAEN)</p>	 <p>DMT-GESELLSCHAFT FÜR LEHRE UND BILDUNG mbH (DMT-THGA)</p>
 <p>MAGELLAN & BARENTS (M&B)</p>	 <p>WĘGLOKOKS KRAJ S.A. (WĘGLO)</p>	 <p>HULLERAS DEL NORTE, S.A. (HUNOSA)</p>	 <p>PREMOGOVIK VELENJE d.o.o. (PV)</p>

GreenJOBS progress

After the first 12 months, the GreenJOBS project is progressing according to the program, and the corresponding deliverables for WP2 about emerging renewable energy sources (geothermal, wind, photovoltaic, etc.) have been completed. At the same time, activities for WP3 are also advancing in a good way. The project has continued with its communication campaign. The main communication actions of the last six months are shown below.

EU RFCS transformational projects for a new era (EURACOAL)



The GreenJOBS project was presented at the Workshop EU Research Fund for Coal and Steel Transformational Projects for a New Era organized by EURACOAL at the European Parliament (Brussels, Belgium, 23 May 2023).

Prof. Alicja Krzemień presented two RFCS-funded projects, POTENTIALS and GreenJOBS, which show how accompanying measures and research projects can support green business development models for the coal regions.

GreenJOBS at the 26th World Mining Congress in Brisbane, Australia



Presentation of GreenJOBS at the 26th World Mining Congress, titled *Repurposing of Coal Mines and Coal-fired Power plants in low-carbon energy transformation process*, within the session, **Advances in best practice for closure and transition** (Brisbane, Australia, 26-29 June 2023) by Prof. Stanisław Prusek from the Central Mining Institute in Katowice, Poland.

Example of energy transition in Slovenia. The case of Velenje Coal Mine



Premogovnik Velenje (the Velenje Coal Mine) is a technologically advanced company with lignite mining as its primary activity. Together with the Šoštanj Thermal Power Plant, it obtains one-third (in dry conditions even more) of the electricity consumed in Slovenia, which is why the coal mine is one of the essential pillars of Slovenian energy. Till today, the coal mine has extracted more than 250 million tons of coal and employs together with affiliated companies 2000 people.

The lignite layer extends below the entire Šaleška Valley up to a depth of 500 meters below the surface. The thickness of the lignite layer ranges from 20 to 160 meters mined by the Velenje method.

For almost 150 years, the Velenje Coal Mine has played a crucial role in the region's socio-economic development, creating numerous jobs and contributing to the city's growth. However, it has also led to adverse effects such as land degradation, house demolitions, and displacement of people, transforming a once green valley into an "industrial miracle" dotted with artificial lakes.

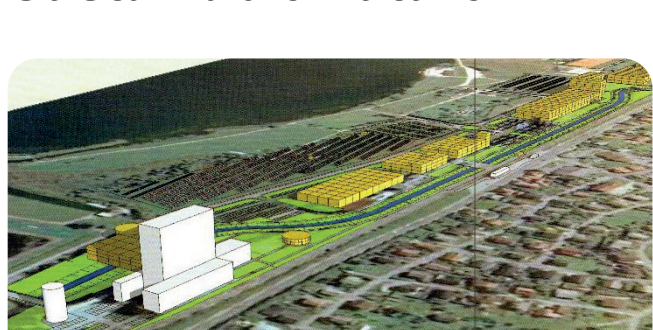
Slovenia's National Strategy: Phasing Out Coal and Transitioning to a Green, Digital, and Resilient Society

Slovenia's National Strategy aims to transition from coal-based energy to a green, digital, and resilient society by 2033. The plan faces challenges in managing redundancy and achieving economic diversification, where active stakeholder involvement is crucial to ensure a fair and equitable transition. Additionally, maintaining electricity security and competitiveness while implementing the changes poses significant hurdles. The successful rehabilitation and closure of coal mines are projected to take 15-20 years and will employ 400-500 workers.



The remaining mining infrastructure offers potential for new installations and activities explored through co-funded development projects. For instance, one shaft could be repurposed for energy, industrial facilities for tourism or new ventures, and degraded areas for renewable energy sources (RES). With coal use ending at TEŠ, alternative heating methods for Šoštanj and Velenje must be found, presenting opportunities for synergies.

Exploring Opportunities in Repurposing Mining Infrastructure: New Installations and Activities for a Sustainable Future



The Velenje Coal Mine area offers potential for energy projects like solar power plants and gravity batteries for energy storage.

Utilizing constant-temperature mine water with large heat pumps can integrate renewable sources into the energy supply.

Therefore, despite the end of such a long and historically rich period, we have to see the closure of the coal mine as an opportunity to change the economy's structure and speed up the economic and social development of the region.

Sustainable Job Preservation and Market Adaptation: The Company's Key Priorities for a Successful Transition



During the transition, careful market planning, exploring potentials, and seeking partnerships with local businesses are essential. Upgrading the Wood Processing Center will benefit SMEs in the wood industry. A circular economy is promoted through a special-purpose vehicle for plastic processing and alternative fuel production, enhancing sustainability and innovation in the region's transition.

