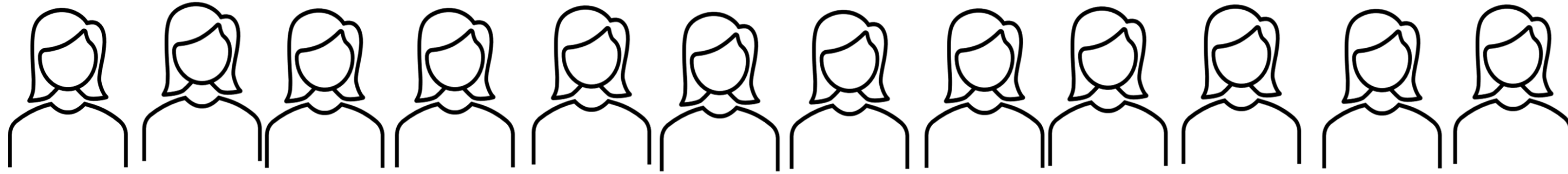




# Education for a sustainable raw materials industry in and for Europe - Raw Materials Value Chain (RaVeN) master engineering programme



Arkadiusz Kustra<sup>1</sup> Marta Podobińska-Staniec<sup>1</sup> Sylwia Lorenc<sup>1\*</sup> Anna Wiktor-Sułkowska<sup>1</sup> Magdalena Jaruga<sup>1</sup>  
Marcio Tameirao Pinto<sup>3</sup> Joanna Kulasa<sup>2</sup> Aleksander Kowalski<sup>2</sup> Małgorzata Krystowska<sup>2</sup> Piotr Madej<sup>2</sup>  
Lucia Domaracká<sup>4</sup> Natalia Kowalska<sup>1</sup>

<sup>1</sup> AGH University of Science and Technology, al. Mickiewicza 30, 30-059 Kraków, Poland

<sup>2</sup> Łukasiewicz Research Network, ul. Sowińskiego 5, 44-100 Gliwice, Poland

<sup>3</sup> LaPalma Research Center, Rue de Pascale 4, 1040 Etterbeek, Bruxelles, Belgium

<sup>4</sup> Technical University of Kosice, Park Komenského 19, 042 00 Košice, Slovakia

\*Corresponding author: slorenc@agh.edu.pl



## RaVeN Master's degree project



RaVeN is a new two-year Master's degree project. Taking into account a wide geographical spectrum, diversification of participants and social inclusion the capacity of higher education in the RIS region including ESEE is being built.

The project fills a gap in the Mining Engineering programme. Its main strength is its innovative approach to teaching through an active learning path. The project achieves this by integrating the knowledge triangle along the value chain through the involvement of experts, non-academic involvement, set-up mobility exchanges, industry and enterprises, including start-ups.

Addressing the challenges of modern economy is forcing diversification of higher education operating models and prioritizing transformation. The project Raw Materials Value Chain (acr. RaVeN) is responding to a portfolio analysis of EIT-Labelled Master Programs in EIT RawMaterials. This one identifies a gap in the Mining Engineering program.

Four university partners, representing a broad geographical as well as cultural spectrum, with the support of the three sides of the knowledge triangle, provide together a combination of expertise and highly entrepreneurial mindsets. The innovation learning objective is the approach to new technologies used on the whole lifecycle value chain which will be implemented by maintaining close links with industry contacts providing non-academic insights that shape graduates and entrepreneurial building. The developed results of this pilot project can be used in other MSc programmes of the EU and non-EU countries. This approach will translate into promoting entrepreneurship and intrapreneurship in situ, while countering the brain drain, especially of the ESEE region in particular and RIS countries at large.

## RaVeN Master's degree project - students

Today's students, faced with global challenges such as climate change, resource scarcity, accelerating technological revolution or energy transition, should be prepared to seek innovative technological solutions that balance economic efficiency, environmental protection and social acceptance, including SLO.



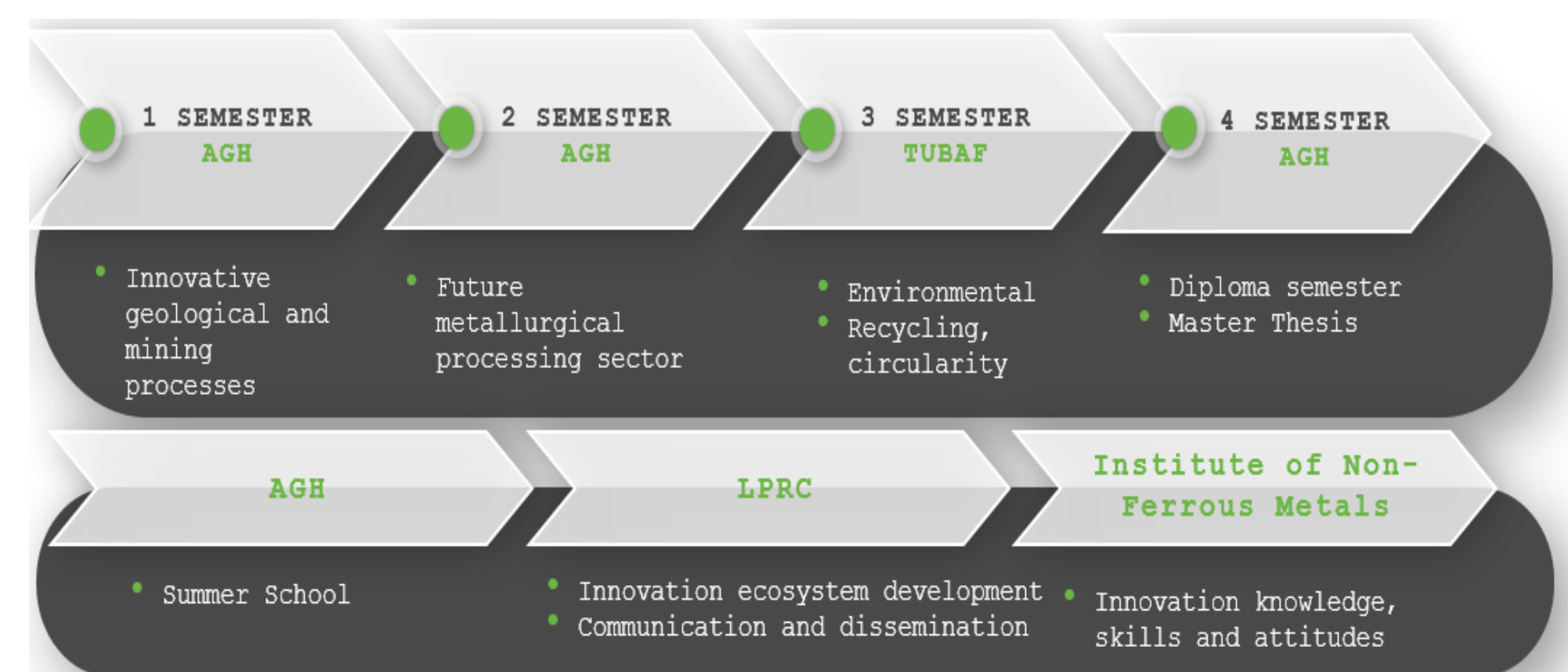
Therefore, the implementation of the Sustainable Development Goals takes on particular importance in curricula, which should provide an active learning path by supporting out-of-the-box, creative and entrepreneurial thinking, proposing innovative solutions. Curricula should support the functioning of interdisciplinary teams, help to understand and manage the importance of social, environmental and economic aspects in order to improve the overall quality of life.

## Non-academic involvement

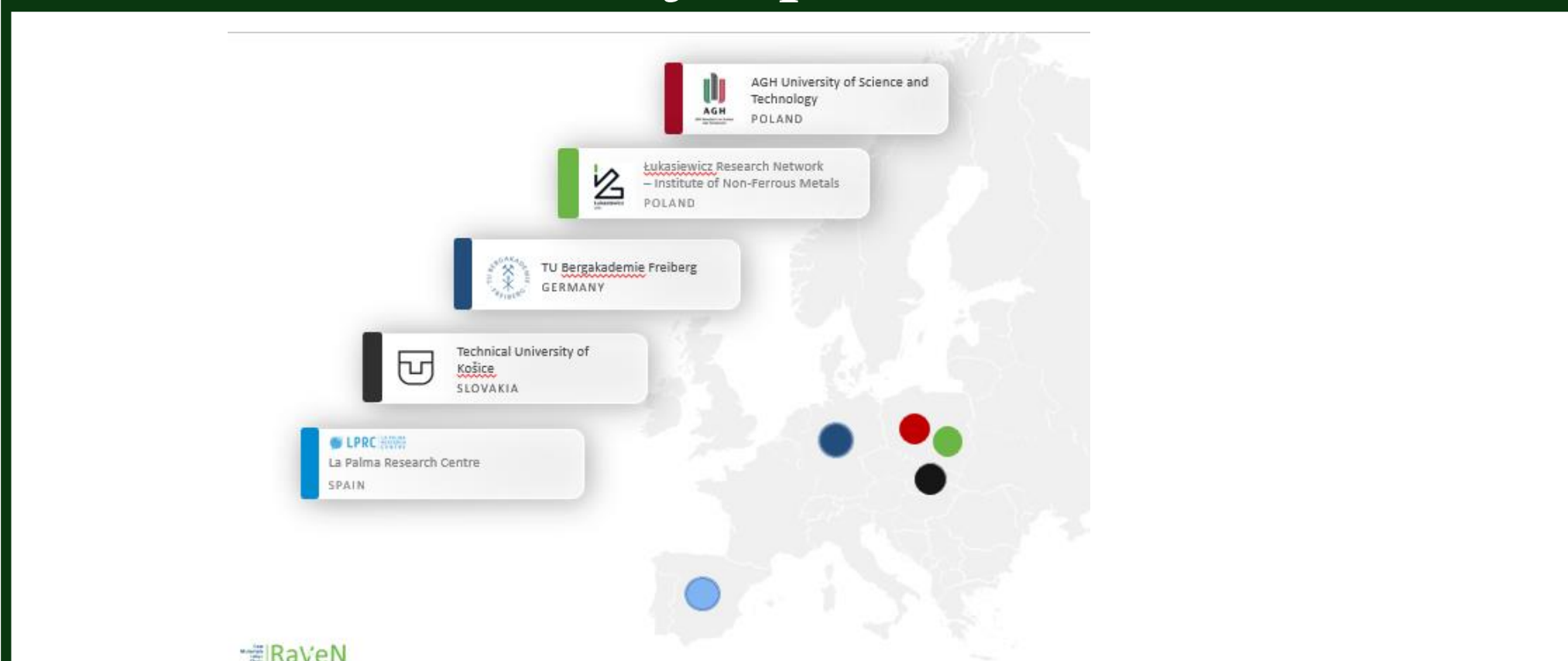
RaVeN master studies is unique due to the connection of studies with practice. This action is possible through classes with non-academic entities that are part of the project.



## Initial schedule – project timeline



## Project partners



## Acknowledgments

Acknowledgements: The RaVeN is implemented within EIT Raw Materials Academy

