

TFK programme, funded projects 2025

Project title: Building PhD Competencies for Sustainability: Advancing Expertise in Critical Materials Flow Management	
Coordinator Lappeenranta-Lahden teknillinen yliopisto LUT Andrzej Kraslawski, andrzej.kraslawski@lut.fi	The project aims to develop and exchange cutting-edge knowledge on critical materials flow management, a topic of growing importance in light of global sustainability challenges and strategic industrial needs. The increasing dependence on critical materials across various sectors requires interdisciplinary knowledge base to ensure sustainable management practices. PhD students are in a key position to influence sustainable development not only through scientific research but also by integrating innovative thinking into public and private sector applications where critical materials are essential. Critical materials are now necessary across many domains, including strategic sectors such as energy, electronics, and defense. Therefore, expertise in their management is crucial not only for technical specialists but also for future professionals in policy-making, governance, business, and socio-economic domains. In response to this demand, the proposed project will deliver a novel, interdisciplinary course for PhD students in Finland and Ukraine, targeting a wide range of disciplines: engineering, environmental sciences, social and behavioral studies, business and administration, and legal studies.
Partners National University of Water and Environmental Engineering	The project's implementation in both Finland and Ukraine is particularly timely: Finland's commitment to technological innovation and Ukraine's urgent need for sustainable recovery offer complementary perspectives that enrich the educational value of the course. The students will gain skills in technical, social, and governance aspects of critical materials flow, preparing them to contribute to sustainable transitions in their respective countries and globally. Key project activities: 1. Preparatory phase to design and coordinate course content among partner institutions; 2. Development of the interdisciplinary elective course, titled "Management of Critical Materials Flow"; 3. Implementation and piloting of the course with a joint group of Finnish and Ukrainian PhD students; 4. Dissemination of course materials through institutional digital platforms to ensure long-term accessibility and scalability. Anticipated results:

	1. Expertise among PhD students in managing critical materials flows, enabling their active engagement in scientific and policy-oriented work addressing environmental and socio-economic dimensions; 2. Development of intercultural competence through collaborative learning in an international environment; 3. Strengthened academic collaboration and mutual learning between Finnish and Ukrainian educators and researchers; 4. A high-quality, innovative course, accessible on university platforms, that can serve as a model for future interdisciplinary education and informal learning initiatives across Europe.
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