



SEMΔCRET project and UNFC resource mapping of selected CRM in Europe

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SEMACRET Project



- Sustainable exploration for orthomagmatic (critical) raw materials in the EU:
Charting the road to the green energy transition
- **HORIZON CL4 2021 RESILIENCE 01-06** - Innovation for responsible EU sourcing of primary raw materials, the foundation of the Green Deal (RIA)
- **1 June 2022 – 31 May 2025**
- **16 project partners**, led by University of Oulu (Finland)
- **Objective:** Enhancing exploration of orthomagmatic deposits (Ni, Cu, Co, PGE, Cr, Ti, V)
- React to expected sharp increase of demand with green energy transition



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HORIZON-CL4-2021-RESILIENCE-01-06



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What it is about?

- The aim is to increase prospectivity in Europe
- Exploration methods refining – „Mineral System Approach“
- Multi-expertise cooperation – economic geologists, geochemists, geophysicist, machine learning experts, biologists, social scientists, geoinformatics, etc.

Work packages:

- WP1** – Refining the ore deposit model for orthomagmatic deposit types (metal source, metal pathway, metal sink)
- WP2** – Regional-scale exploration, definition of proxies and prospectivity modelling applicable in exploration
- WP3** – Brownfield exploration – geochemistry, geophysics, litho-geochemical modelling and machine learning on 5 reference sites
- WP4** – Social awareness (stakeholder, community analysis, rising awareness, policy recommendation)
- WP5** – Mineral resources mapping, UNFC conversion
- WP6** – Dissemination, clustering, communication, exploitation

5 reference sites:

- Lapland (Finland)
- Suwalki (Poland)
- Sleza (Poland)
- Ransko (Czechia)
- Beja complex (Portugal)

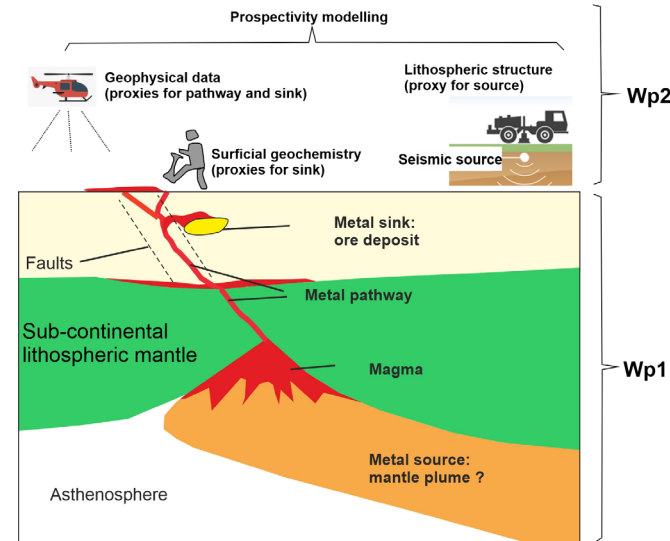


Figure 3: Translating Mineral Systems Approach to large regional scale exploration (SEMCRET Project GA No. 101057741)

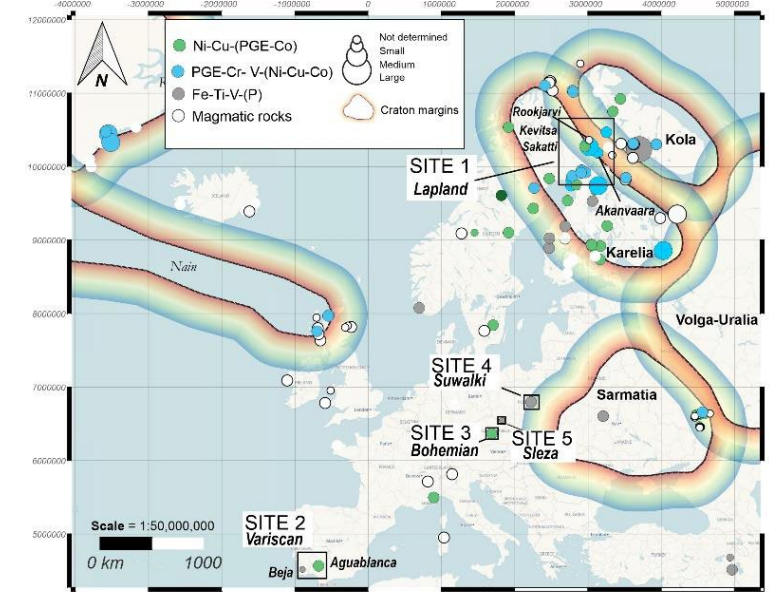


Figure 1: Distribution of different types of orthomagmatic ore deposits in EU (SEMCRET Project GA No. 101057741)

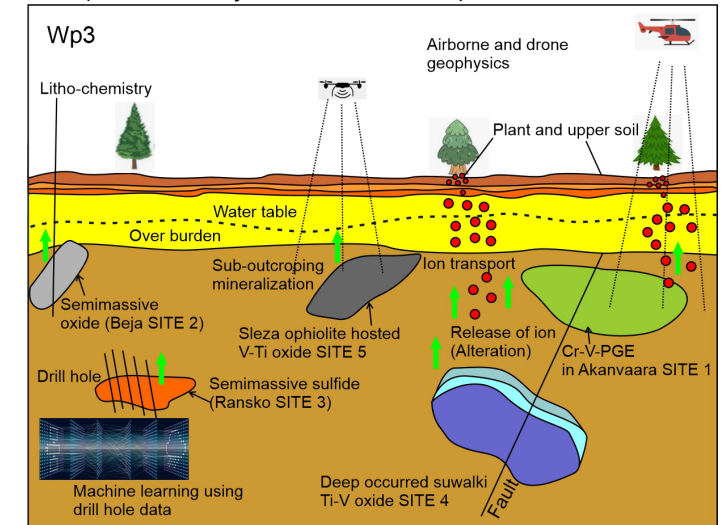


Figure 2: Multidisciplinary approach illustration (SEMCRET Project GA No. 101057741)

WP5 – Mineral resource mapping

- Resource mapping of orthomagmatic rocks related to exploration and exploitation potential of selected (critical) raw materials Ni, Cu, Co, PGE, Ti, V, Cr

Task 5.1

- Survey of primary and secondary mineral potential of exploration and production-related orthomagmatic mineral systems (deposits, prospects and occurrences)
- Main focus are European countries + Greenland
- Database development and feeding (sources: existing DTB, research papers, reports, etc.)
- GIS visualization will be produced

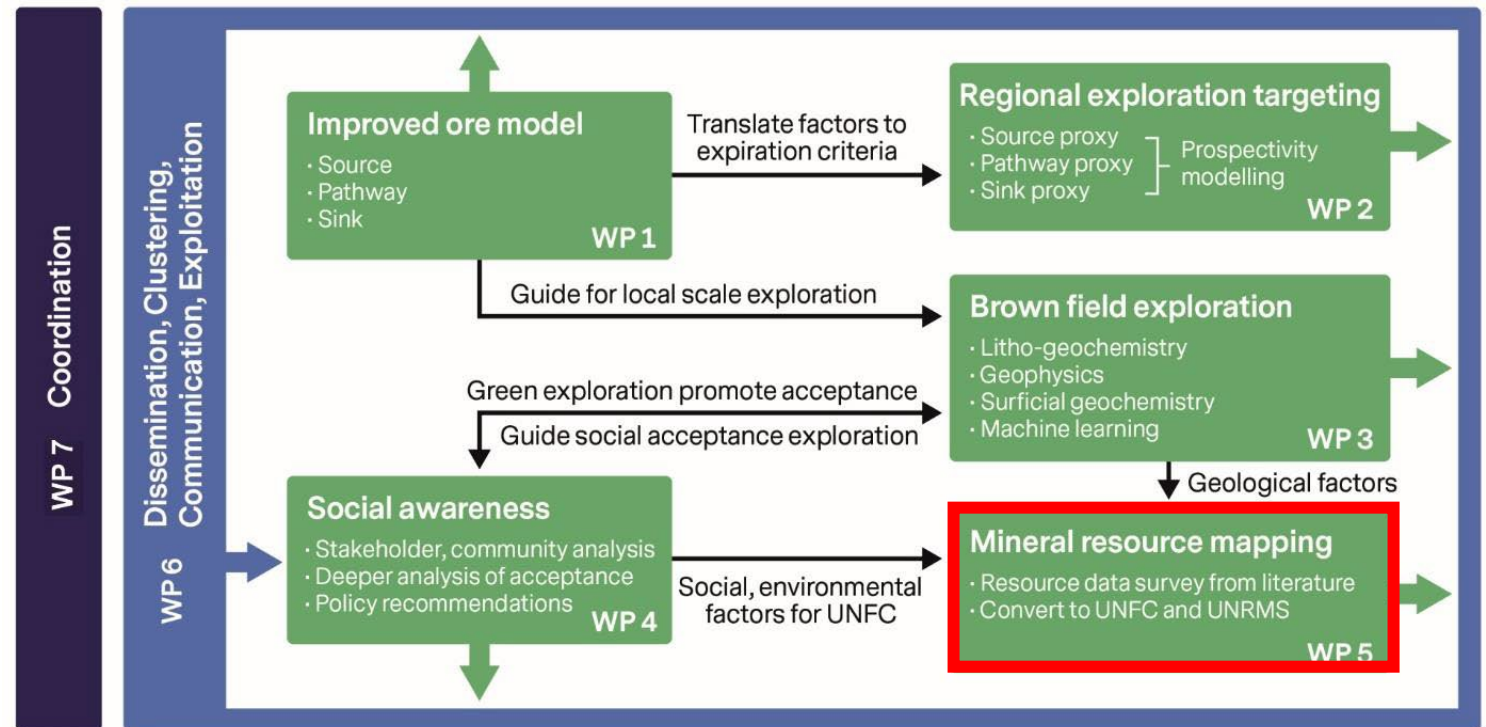


Figure 4: Graphical presentation of the SEMACRET project components and their interrelation (SEMACRET Project GA No. 101057741)

UNFC Task within the SEMACRET Project

Task 5.2 – conversion to UNFC based on the data collected within the task 5.1

- UNFC conversion in line with existing documents and guidances (UNFC update 2019, UNFC Guidance Europe 2022, CRIRSCO-UNFC Bridging Document – updated version), etc.
- Selected projects in different stages will be chosen as a „Case studies“ for a detailed conversion to UNFC – SEMACRET reference sites + few other exemplary cases,
- Single UNFC class per deposit/project („best UNFC class“) – testing for the objects within the database
- Work in progress - Report (Deliverable D5.2) will be provided by the end of 2024

SEMACRET_Ore_measurements_DTB

Project Num	Completed	Project Name	Occurrence ID	Occurrence type	Target commodities	Other materials of economic potential			
6	<input checked="" type="checkbox"/>	Isortoq	SEM-1GL019	Prospect	not-listed; Ti; V	Fe-Ti-V mineralization.			
7	<input checked="" type="checkbox"/>	Stendalen - Titanium 01	SEM-1GL022	Prospect	Co; Cu; PGE; Ti; V	low-grade Ni-Cu-Co mineralisation is present and widely distributed the intrusion. Moreover, it has PGE potential to be explored.			
Resources ID	Commodity	Ore measurement type	Ore amount	uomweight	Best UNFC	UNFC class	Commodity grade	Unit	Commodity amount
7 titanium			0 t				0 %		
(Nové)		Proven reserves	Pr-rv	111	If historical estimate, then 221		0 %		
8	<input checked="" type="checkbox"/>	Skaergaard	Probable reserves	Pb-rv	112	If historical estimate, then 222	GE (Au-Pd dominant) mineralization, including also Ag & PGE content calculated as average PdEq without Au = 155 ppm based on the MRE (2012); Ni43-101 (indicated 2,2,3): 81,6 Mt @ 42 g/t V, 13 g/t TiO2		
			Measured resources	Ms-rs	221				
			Indicated resources	Id-rs	222				
			Inferred resources	If-rs	223				
9	<input checked="" type="checkbox"/>	Ikertoq (Ni)	Exploration results	Ex-rt	334	Choose relevant UNFC class	ade of all mineralised samples is 2% Ni, 0.33% Cu and 0		
			Non-compliant resource	N-com		Total (geological) resources			
			Total endowment	T-edw		Choose relevant UNFC class(es)			
			Additional quantity	Ad-q					
10	<input checked="" type="checkbox"/>	Ryberg (Miki Fjord)	SEM-1GL023	Prospect	Co; Cu; Ni; not-listed; Pd; Pt; PGE	Gold mineral potential as well			

Figure 5: Illustration of preliminary version of SEMACRET database in MS Access (B. Wertichová 2024)

Thank You

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#SustainableExplorationEU

THE VIEWS EXPRESSED ARE THOSE OF THE AUTHORS AND DO NOT
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