

## Introduction

The goal of deliverable 3.2 is to study how much critical raw material (CRM) deposits and projects, collectively referred to as occurrences, and protected areas (PA) overlap within the EU and nearby countries (=study area). The primary goal is the creation of geospatial maps that visualize the potential overlap. As data for PAs we use Natura 2000, Emerald Network and CDDA (European Environment Agency, 2023). As data for CRM occurrences we use European Geological Data Infrastructure dataset "Critical raw material occurrence points 2023" (GEUS, 2023). Based on availability of data, the study area consists of continental areas of Sweden, Spain, France, Austria, Norway, Finland, Portugal, Czech Republic, Switzerland, Belgium, Greece, Italy, Poland, Romania, Ukraine, Slovenia, Bosnia & Herzegovina, Ireland, Albania, Serbia, Slovakia, Hungary, Montenegro, Croatia and Luxembourg.

## Methods and Data

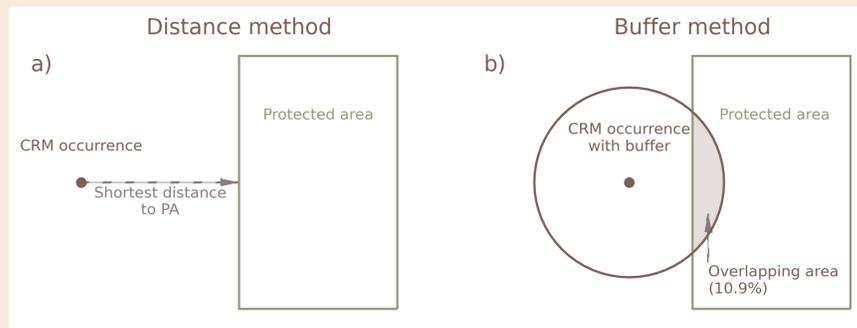
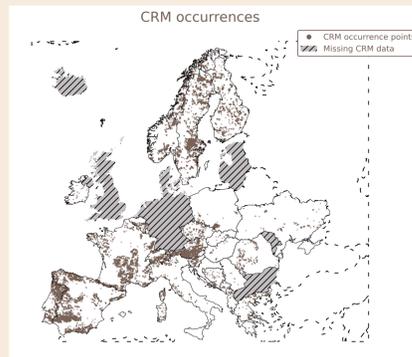
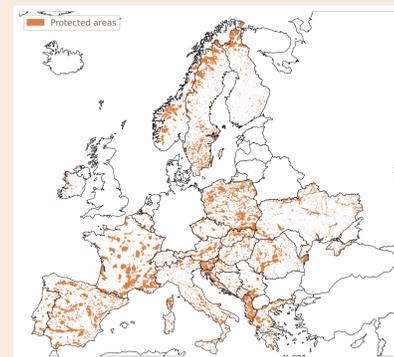


Illustration of the a) distance and b) buffer method for analyzing overlap of CRM occurrences with PAs. The proportion of CRM buffer area overlapping with the PA is 10.9 %.



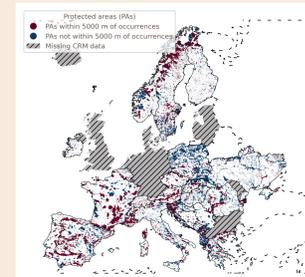
Map of CRM occurrence points in the used dataset.



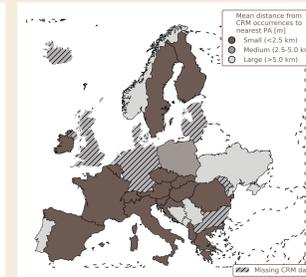
PAs merged into one layer and clipped to the countries under analysis where we have CRM data available.

## Results

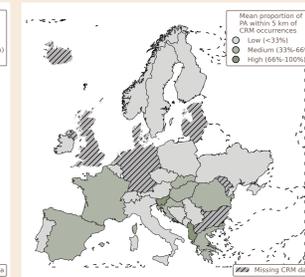
- PAs cover circa 24.4 % of the study area
- The number of CRM occurrences is 23779
- Approximately 85 % of the CRM occurrences are less than 5 km to the nearest PA
- There are 149 active mines with CRMs (in the dataset)
- Of the active mines, approximately 69 % are closer than 5 km to the nearest PA



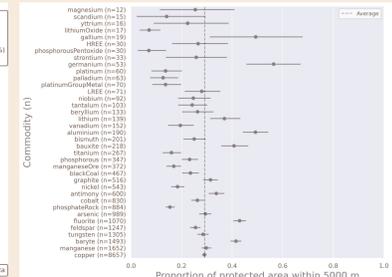
Map of the inverse distance analysis showing which PAs are within 5 km of the nearest CRM occurrence. Countries with missing CRM data are marked with the gray color.



Mean distance from nearest PA visualized on a map by country.



Proportion of PA within a 5 km buffer area visualized on a map by country.



Proportion of PA within the 5 km buffer area by commodity.

## Conclusions

- Critical raw material occurrences are often in (very) close proximity to protected areas (Natura 2000, Emerald Network or CDDA). This has a potential to generate environmental impacts and disputes.
- Based on overlap analysis, there are differences between countries and commodities within the study area in terms of how much overlap there is with protected areas.

**Corresponding authors;** Geological Survey of Finland (GTK), Vuorimiehentie 5, P.O. Box 96, FI-02151 Espoo, Finland

**E-mail addresses:** nikolas.ovaskainen@gtk.fi

**References:** GEUS. (2023). **Critical raw material occurrence points 2023** (EGDI/MIN4EU). Retrieved from <https://data.geus.dk/egdi> European Environment Agency. (2023). **Natura 2000, Emerald Network and CDDA**. Retrieved from <https://www.eea.europa.eu/en/datahub>

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