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ATTIVITA' FORMATIVE				Maps from S&P Global
HARD SKILLS	Hours	SOFT SKILLS	Hours	l'ég/
Drones for 3D multiscale modelling and planning of city and territory	I 15 N T E	 Communication Design Thinking, Processes and Methods Entrepreneurial Finance 	5 2 5	Put together the knowledge in terms of hard and soft skills acquired
Opere di protezione contro la caduta massi	15 R 15 N A L	 Navigating the hiring process: CV, tests, interview Project management 	2 5	during the first year, combined with the bibliographic research carried out Resize the area of investigation like the commodities considered
 RawMatCop Academy: Advanced Course on Remote Sensing for the RawMaterials Sector, Bologna 	30 E X	 Public speaking Research integrity Responsible research and innovation, the impact on social challenges 	5 5 5	Find case studies on which to perform an interdisciplinary study com- bining the geological and mining background Find a potential partner organisation/university in agreement with
 Short Course on Geodynamics, Metallogeny and Georesources, Milan 	т 23 е	 The new Internet Society: entering the black-box of digital innovations Thinking out of the box 	6 1	the research group where to carry out the period abroad Publish the obtained research results in journals of interest
	R	Time management	2	

• Conference: "Critical Raw Materials Summit 2023"

• III level course: "Introduction to statistical analysis by R-project: application to the Earth Sciences"

OTHER ACTIVITIES

Poster session contribute at the annual SIMP, SGI, SOGEI, AIV conference "The Geoscience paradigm - Resources, Risk and future perspectives", Potenza

Tot. hours soft skills: 43

Tot. hours hard skills: 107

FUTURE ACTIVITIES

• Short course - Geological Remote Sensing for Exploration & Mining Geologists, Istambul, due in November 2023 • Attendance at the CRMs week, Bruxelles, due in November 2023



To try to achieve the future goals related to the European and global challenge of critical and strategic raw materials, having a good coverage in terms of geological maps is essential. Data integration as well as cooperation of scientific and socioeconomic fields and beyond becomes a key point for this mat-

ter. The Copernicus program fits well into this scenario, offering the possibility of using satellite data to assist in this challenge. Satellite data in fact can offer tools for sustainable extraction and environmental menagement. Satellite data can be used for:

- identifying mineral deposits and support exploration;
- monitoring environmental impacts promoting responsible mining practices;
- monitoring and contribute to stop illegal mining activities;

- supporting ecosystem assessment and rehabilitation in mining.

2023 CRMs vs 2020 CRMs									
luminium/bauxite	copper	lithium	phosphate rock						







The supply of critical raw materials has become increasingly important to meet the global ambitions of carbon neutrality by 2050. In the case of the European economy, the heavy dependence on critical raw material imports is pushing towards new sources of supply, both domestically and from partner countries. This study builds on previous work on EU-Africa strategic corridors (Baranzelli et al., 2022a, b) and contributes to the discussion on how geological aspects interact with future access to critical raw materials deposits. The results confirm that the knowledge-base on a vast range of geological resources is still to be improved, including for rare metals, phosphates, cobalt, and other materials critical to decarbonisation and strategic sectors



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- mapping, planning and manage resources;



From "European Commission, Study on the Critical Raw Materials for the EU



From "European Commission, Critical materials for strategic technologies and sectors in the EU - a foresight study, 2020".

antimony	teldspar	LREE	scandium			
arsenic	fluorspar	magnesium	silicon metal			
baryte	gallium	manganese	strontium			
beryllium	germanium	natural graphite	tantalum			
bismuth	hafnium	natural rubber	titanium metal			
boron/borate	helium	nickel	tungsten			
cobalt	HREE	niobium	vanadium			
coking coal	indium	PGM				
Legend:						
Black	CRMs in 2020 and 2023					
Black/red	CRMs in 2023, non-CRMs in 2020 Non-CRMs in 2023, CRMs in 2020 Strategic Raw Materials					
Strike						
Red						

Modified from "European Commission, Study on the Critical Raw Materials for the EU 2023 - final report".







alkaline igneous unknown



REFERENCES

2023 - final report".

Baranzelli, C., Blengini, G.A., Josa, S.O., Lavalle, C., 2022a. EU–Africa Strategic Corridors and critical raw materials: two-way approach to regional development and security of supply. International Journal of Mining, Reclamation and Environment 36, 607–623. https://doi.org/10.1080/17480930.2022.2124786 Baranzelli, C., Kucas, A., Kavalov, B., Maistrali, A., Kompil, M., Oliete Josa, S., Parolin, M. and Lavalle, C., 2022b. Identification, characterisation and ranking of Strategic Corridors in Africa. EUR 31069 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-52430-4, doi: 10.2760/498757, JRC128942. European Commission, Study on the Critical Raw Materials for the EU 2023 - Final Report.

