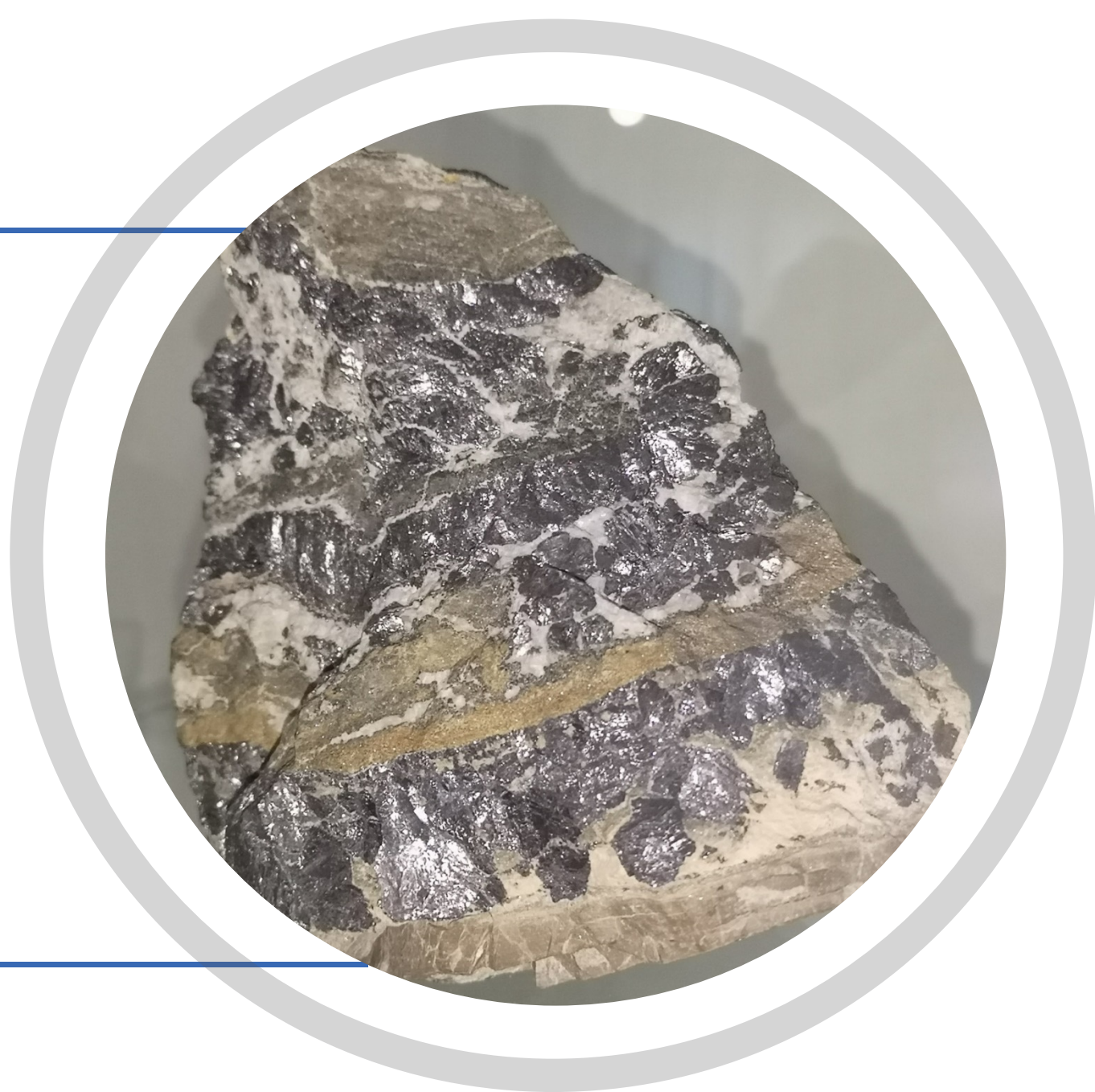


Mapping mineral data of SE Europe

Duska Rokavec, Jasna Sinogoj

Geological Survey of Slovenia

Geospatial World Forum 2023, Rotterdam; Geology and Mining,



EIT RM proj. RESEERVE

12
COUNTRIES



Albania
Bosnia and Herzegovina
Croatia
Montenegro
North Macedonia
Serbia

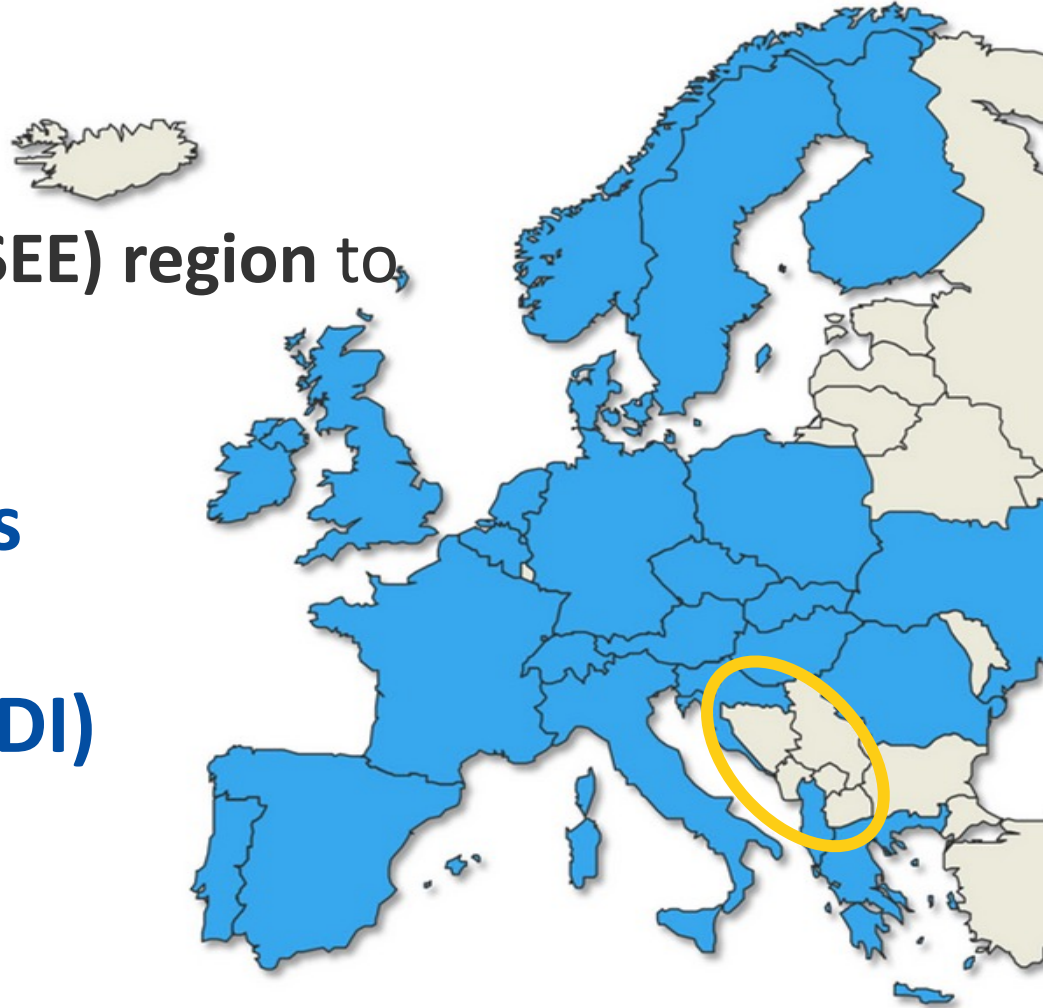
- Funding: **European Institute of Innovation and Technology (EIT)**
- Duration: **4/2018 - 6/2021**



Connecting West Balkan (SEE) region to,



**pan-European Minerals
Intelligence Network
INSPIRE aligned data (EGDI)**



* This designation is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Main Objectives

- Creating **West Balkan Mineral Register** (PRM & SRM) by mapping mineral resources from 6 countries
- Integrating **West Balkan** into **pan-European Minerals Intelligence Network**
- Creating **West Balkan mineral community** to determine available and further **needed information** about MR
- **Increasing capacity** of **West Balkan countries** for **MR management** on national level



West Balkan Mineral Register

- 473 mineral deposits (PRM data)
- 1461 mining and metalurgic waste sites (SRM data)

Impacts

- Making Southeast Europe's mineral potential visible to investors
- Bringing Southeast Europe to common EU mineral market
- Special emphasis put on CRMs (110 records on: Mg, Borates, Sn, Phosphates, Pt, Co, Li...)
- Knowledge transfer of RM data mapping to INSPIRE

West Balkan Mineral Endowment

✓ Primary MR – active and abandoned extraction sites

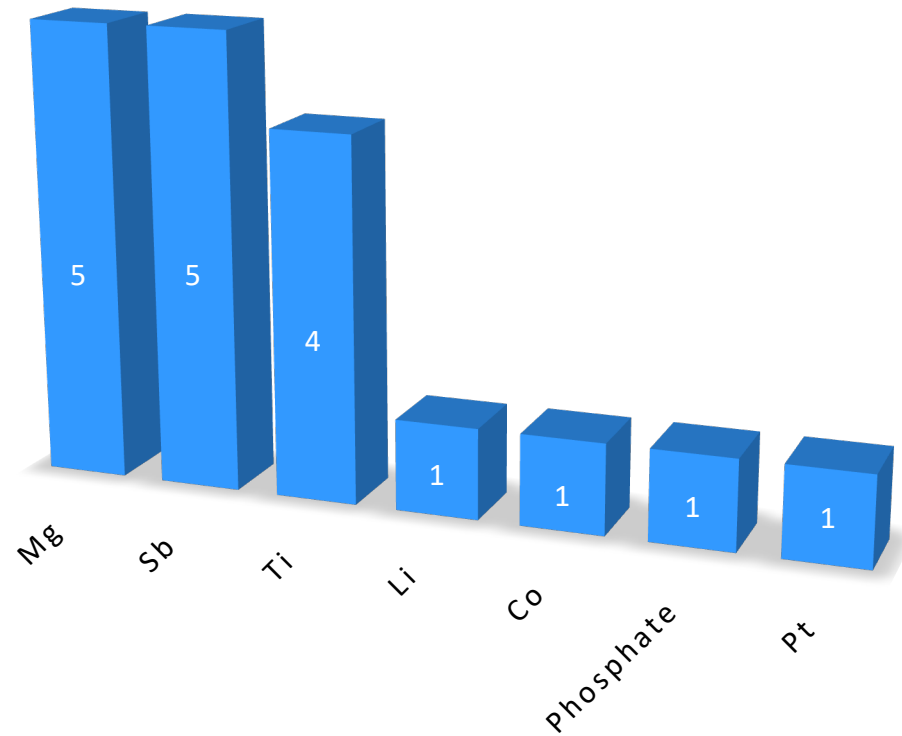
Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Period 1	1 H																	2 He
Period 2	3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
Period 3	11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
Period 4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
Period 5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
Period 6	55 Cs	56 Ba	57 La *	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
Period 7	87 Fr	88 Ra	89 Ac *	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Nh	114 Fl	115 Mc	116 Lv	117 Ts	118 Og
				* 58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu	
				* 90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr	

Secondary RM data

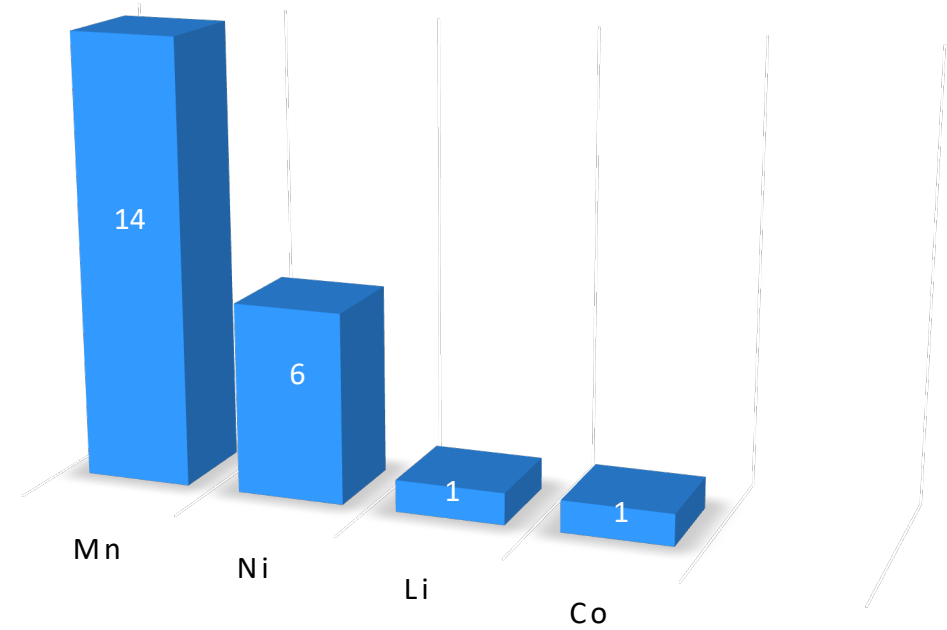
- ✓ hundreds of **polymetallic ore deposits & metallurgical heaps**;
 - ✓ in the **past extraction focussed on 1-2 metals from polymetallic deposits**;
 - ✓ **mine tailings & metallurgical heaps** are sources of secondary raw materials, including **CRM**.
- ✓ **Collection & validation** of **metal concentrations** data (e.g.: **Sb, Ga, In**)



Critical Raw Materials



Battery Minerals



(Numbers of deposits)

PRM Mineral Register

Browser navigation bar showing the URL: <https://reserve.eu/results/west-balkan-mineral-register-of-primary-raw-materials>. The address bar includes icons for back, forward, refresh, home, and search. Below the address bar, a series of folder icons represent different categories: Africa, Balkan, Darila, Dogodki, EIT, EU, EU razpisi, Geologija, GeoZS, IKT, Iskalniki, Izobraževanje, Klasifikacija rezerv, and Other favourites.



Mineral potential of the Eastern and South-Eastern Europe region

This activity has received funding from the European Institute of Innovation and Technology (EIT), a body of the European Union, under the Horizon 2020, the EU Framework Programme for Research and Innovation

[About](#) [Results](#) [Business opportunities](#) [Deliverables](#) [News](#) [Press](#) [Contact](#)



↕ Mines (INSPIRE)	↕ Greenfields (INSPIRE)	↕ Municipality	↓ Country (INSPIRE)	↕ Lat. WGS 84 (INSPIRE)	↕ Lon. WGS 84 (INSPIRE)
Qafë Bari		Fushë Arrëz	Albania	41.997188	20.075254
Munellë		Fushë Arrëz	Albania	41.973651	20.081507
Lak Roshi		Fushë Arrëz	Albania	42.05162	20.093309
Tuç		Fushë Arrëz	Albania	42.034358	20.096332
Spaç		Mirditë	Albania	41.900965	20.055434
Vlahën		Has	Albania	42.231955	20.47823

Mineral Register - PRM data

473 deposits (abandoned, active, historical) described by 24 attributes

Data types:

- Basic data
- Technical data
- Geological data
- Other

Mineral deposits:

- **241 metal,**
- **314 industrial minerals, construction materials**

- **Location** (Mineral Deposit Name, Municipality, Latitude & Longitude (WGS84), Country) – INSPIRE
- **Current Status** (operating, feasibility, closed etc) - INSPIRE
- **Mining Method** (open pit, underground, quarrying etc) - INSPIRE
- **Concessionaire** - INSPIRE
- **Reserves** (ore reserves in tonnes, m3) - INSPIRE
- **Reserves Type** (proved, probable etc.) - INSPIRE
- **Concentration of Useful Component in Ore**
 - Basic geological map
- **Type of Deposit** - INSPIRE
- **Size of Deposit** - INSPIRE
- **Age of Deposit** (geological age of deposit) - INSPIRE
- **Rock Type** (hosting rock type)
- **Major Minerals** - INSPIRE
- **Major Metals** (symbol) – INSPIRE
- **Minor Minerals**
- **Minor Metals** (symbol)
- **Trace Minerals**
- **Trace Metals** (symbol)
- **Final Product** (concentrate, dimension stone etc.) - INSPIRE
- **Comment** (additional comment)

Mineral Register - SRM data

Data types:

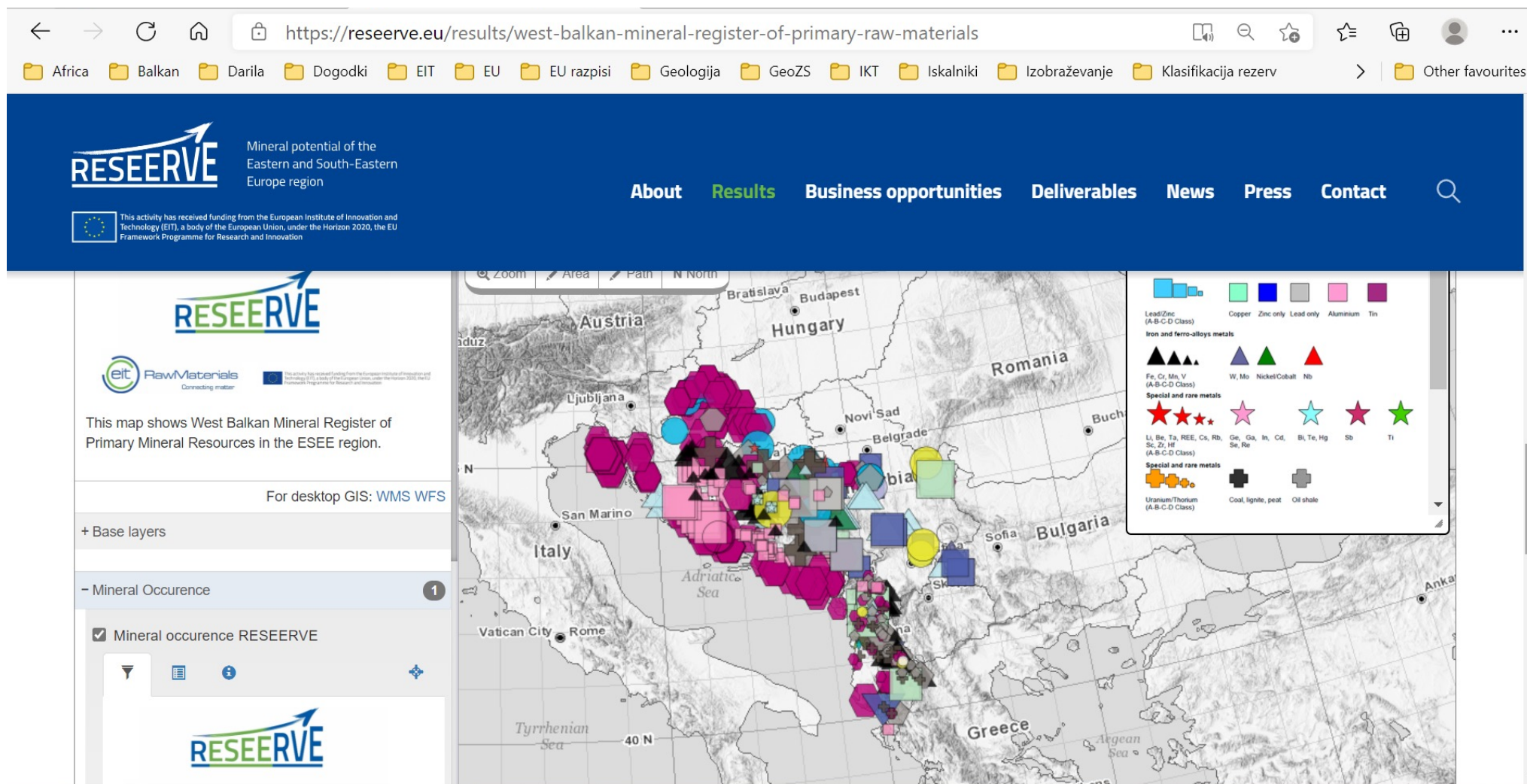
- Basic data
- Origin of waste, technical data
- Geological data
- Environmental information

Sites by origin (1461 locations/cca 7000 ha):

- ✓ **Mining waste**
 - Al, Cu, Pb-Zn
 - Cr-Ni, Fe-Mn, Sb
- ✓ **Processing Waste**
 - Flotation tailings, Red mud
- ✓ **Metallurgic waste**
 - Smelters, Ironworks

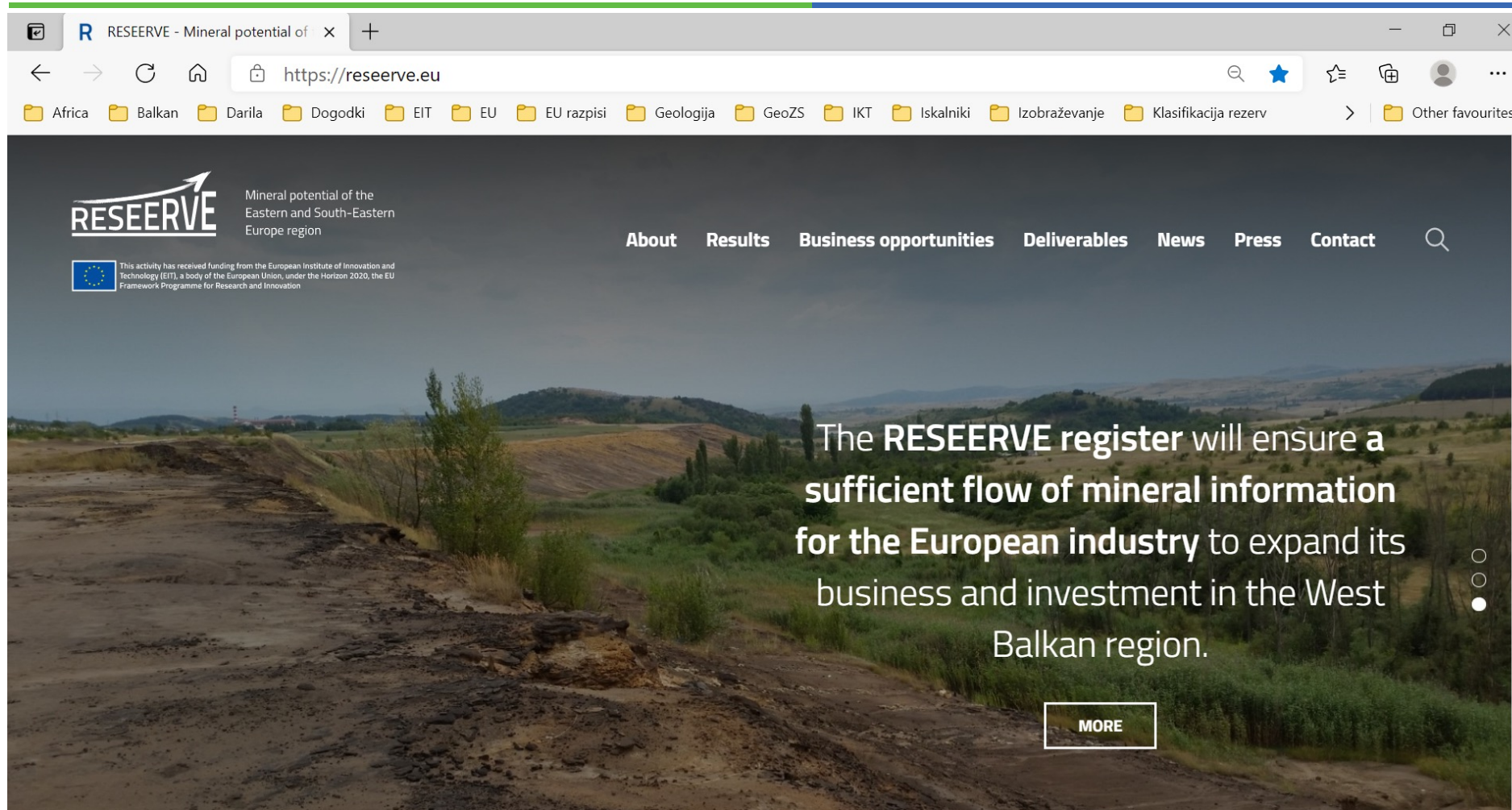
- **Location** (Municipality, Latitude & Longitude (WGS84), Country)
- **Last manager**
- **Depositing period**
- **Current deposit state**
- **Mine** (Name, Location) / Processing facility (Name, location)
- **Mine status/Processing facility status**
- Mining/Processing activity description
- **Deposit status (active/closed/abandoned)**
- Surface storage (Yes/No)
- **Surface (m2) & Volume (m3) & Amount/Weight (t)**
- Geological composition (lithology)
- **Deposit type**
- Type of raw material (mineral/ metal etc)
- **Main mineral/element**
- Chemical composition (% , mg/kg) of individual elements
- Restoration (Yes/No)
- Environmental impact (stability, erosion, element emission)


INSPIRE aligned data on EGD portal



„RESEERVE“

website <https://reseerve.eu>



An aerial photograph of a large-scale open-pit mine. The mine is characterized by multiple terraced levels of excavation, with various shades of brown, tan, and grey rock and soil. Several winding roads are visible, snaking through the different levels of the mine. In the foreground, a green grassy slope is visible on the left side. The background shows a range of green mountains under a blue sky with scattered white clouds.

Duška Rokavec
duska.rokavec@geo-zs.si

Thank you !