



REPUBLIC OF SLOVENIA
MINISTRY OF INFRASTRUCTURE

Langusova ulica 4, 1535 Ljubljana

BULLETIN

YEAR 2019

MINERAL RESOURCES

in Slovenia

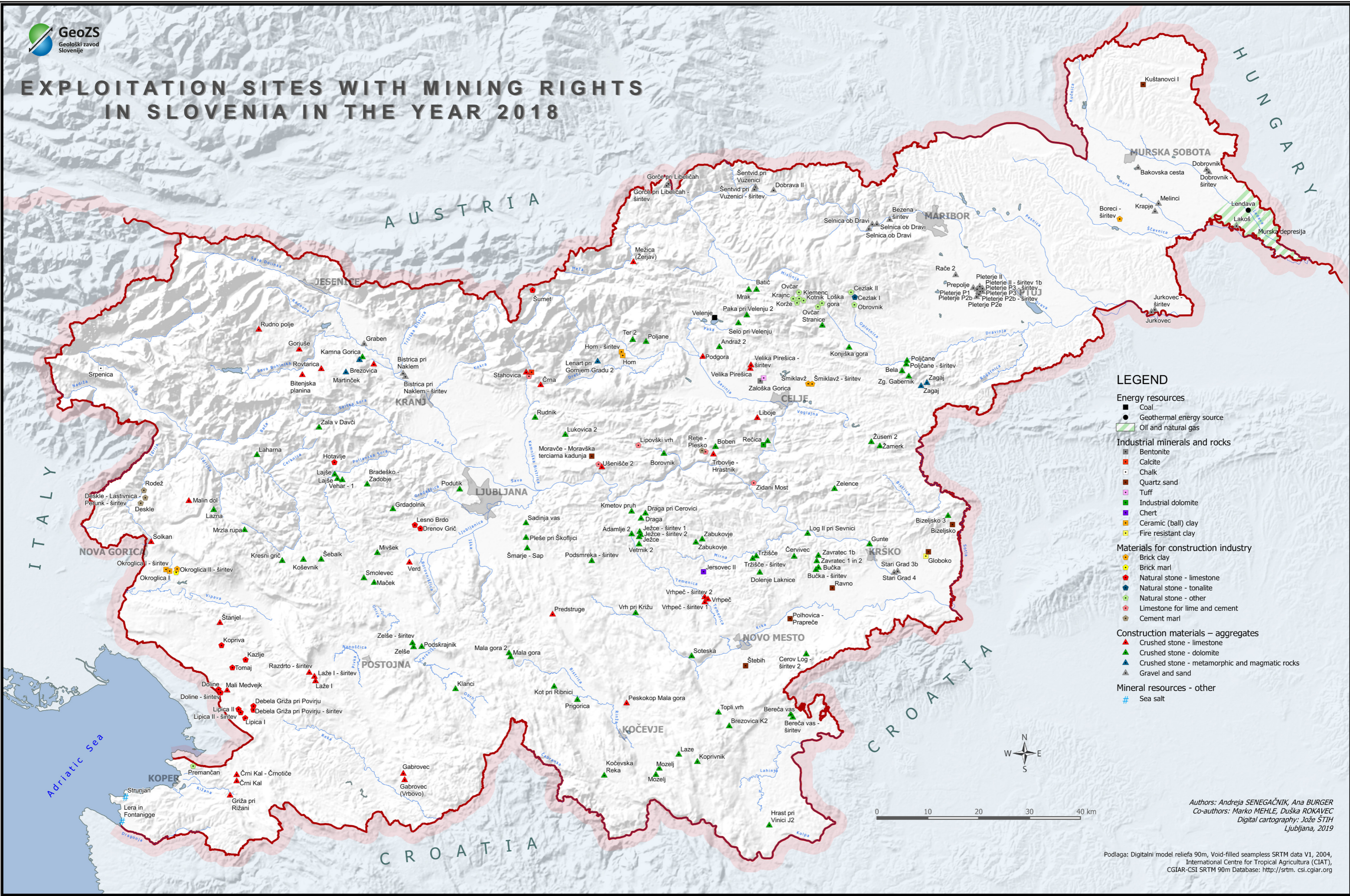
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GeoZS
Geološki zavod
Slovenije

EXPLOITATION SITES WITH MINING RIGHTS IN SLOVENIA IN THE YEAR 2018



LEGEND

Energy resources

- Coal
- Geothermal energy source
- Oil and natural gas

Industrial minerals and rocks

- Bentonite
- Calcite
- Chalk
- Quartz sand
- Tuff
- Industrial dolomite
- Chert
- Ceramic (ball) clay
- Fire resistant clay

Materials for construction industry

- Brick clay
- Brick marl
- Natural stone - limestone
- Natural stone - tonalite
- Natural stone - other
- Limestone for lime and cement
- Cement marl

Construction materials – aggregates

- ▲ Crushed stone - limestone
- ▲ Crushed stone - dolomite
- ▲ Crushed stone - metamorphic and magmatic rocks
- ▲ Gravel and sand

Mineral resources - other

- # Sea salt

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Ljubljana, 2019

Podlaga: Digitalni model reliefa 90m, Void-filled seamless SRTM data V1, 2004,
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FOREWORD



Dear readers, it is a great pleasure to present to you this year's Mineral Resources Bulletin, published by the Ministry of Infrastructure, which is responsible for mining and mineral resources in Slovenia.

The Ministry of Infrastructure regulates the field of mineral resources on a national level through a program, which is carried out by the Geological Survey of Slovenia, consisting of three main activities: expertise, informational infrastructure and mineral deposit research. According to the Mining Act the Geological Survey of Slovenia (as a public research institution) has been entrusted with the tasks of Public Mining Service and geological expert services. It is also engaged within EU research projects and coordinates policies and legislation on EU level.

Slovenia is also involved in projects within the GeoERA program, the purpose of which is to combine data and knowledge regarding mineral resources, geo-energy and water on EU level using a common information system. Slovenia is, with the web application 'Mining Registry Book', one of the leading European countries in this field and with it also transfers good practises to other West Balkan countries.

Slovenian mining is currently facing some critical challenges. Two of them are securing appropriate mineral supply network (taking into consideration the requirements set by the 'Regulation on the water management plan for the Danube river and the Adriatic Sea') and ensuring continual supply of mineral resources (keeping in mind that more than half of national mineral concessions end in the year 2021).

In order to ensure continual supply of mineral resources to the market beyond 2021, the ministry is encouraging concessionaries to meet all criteria for the extension of mining rights and concessions, or to obtain new concessions.

New amendments of Mining Act, which is in the process of preparation, will presumably also contain corrections and modification of acts concerning the collection of geo-information, updating records, integrating mineral areas into spatial acts, restricting illegal mining activities and remediation of illegal and abandoned mine works.

Through the introduction of the above-stated measures, our aim is to ensure that the EU policies and legislation are suitably implemented and national regulations appropriately adjusted for transferring the new acquired knowledge into practice.

We would like to invite you to keep participating in creating the Bulletin and we wish you a pleasant reading.

Ljubljana, October 2019

Roman Čerenak, M.Sc.
Secretary
Ministry of Infrastructure

MINERAL RESOURCES IN SLOVENIA

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WORK OF THE UNIT FOR ENERGY SUPPLY (WITHIN MINISTRY OF INFRASTRUCTURE)

National Unit for Energy Supply (relevant for mining and mineral resources), organized within Energy Directorate at the Ministry of Infrastructure, implements various administrative, expert, coordinative, supervisory, and other tasks in the field of mineral management regarding exploration and exploitation, including the remediation of degraded areas and in procedures of closing mines.

The main activities are:

- mining legislation development and administrative procedures according to Mining Act, National Mining / Mineral Strategy,
- issuing mineral exploration licenses and granting mining rights (concessions),

- preparing expertise for spatial documents and issuing approvals for local spatial plans,
- updating a register of persons authorized in mining,
- monitoring of coal mine operations and supervising closing works,
- monitoring the work of Inspectorate for energy and mining,
- performing tasks for “Commission for professional certification in mining”,
- coordination of administrative procedures and projects coordination.

REPUBLIC OF SLOVENIA
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About the Ministry

The Ministry of Infrastructure ensures continuous improvements to Slovenian transport and energy infrastructure. We maintain, plan, regulate, and improve the field of rail, road, air, cableway, and maritime transport as well as inland waterway transport.

We are also responsible for transport policies and infrastructure. We strive to achieve sustainable mobility and transport, which should be safer, more economical, and green. We ensure that energy supply is reliable and set the foundations for transitioning into a society which uses energy products more effectively and generates energy mainly from renewable sources.

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WORK PLAN OF GEOLOGICAL SURVEY OF SLOVENIA FOR MINISTRY OF INFRASTRUCTURE

According to Slovenian legislation, EU directives and needs of ministry responsible for mining (Ministry of Infrastructure - Energy Directorate - Unit for Energy Supply), basic starting points for annual GeoZS work program are defined.

For the needs of Unit for Energy Supply the work program performed by GeoZS is divided into the main sets of tasks:

- EXPERTISE
 - expertise for National Mining / Mineral Strategy and other implementing regulations,
 - expertise for spatial planning in supporting licensing procedures,
 - engaging in EU activities related to minerals.
- MINERAL INFORMATION INFRASTRUCTURE
 - development and maintenance of the web application “Mining registry book”,
 - Bulletin Mineral resources,
 - “Statement of mineral reserves and resources”,

- thematic maps,
- archive of closed mines documentation.
- RESEARCH WORKS
 - monitoring geological research and sample storage,
 - evaluating of exploitation sites,
 - geothermal resources studies,
 - geological evaluation of hydrocarbons and coal deposits in Slovenia, their energy valuation and exploitation feasibility,
 - impacts of closing mines on the surface.
- OTHER
 - Participation in the Commission for determining mineral reserves and resources. The Commission determines the relevance of the studies of the “Report of classification on reserves and resources”.
 - Thematic workshops and congresses are being organized annually. Results are published in scientific and professional publications.

PUBLIC MINING SERVICE IN SLOVENIA

In accordance with Article 18 of the Mining Act (*Official Gazette RS, No. 14/14 – official consolidated text and 61/17-GZ*), Geological Survey of Slovenia in a role of Public Mining Service supports ministry responsible for mining (Ministry of Infrastructure) in terms of sustainable mineral management and mineral policy.

Public Mining Service is authorized to monitor all mineral exploration works (eg. drillings).

Tasks performed by the Public Mining Service:

- Mining Register and Mining Cadastre on national level, including a chronology of mining rights granting (“Mining Registry Book” web application and database),
- professional expertise for the National Mining / Mineral Strategy,
- supervision of field research and sampling, material storage and archive of closed mines documentation.



“Mining Registry Book” web application for mineral deposits with concessions.

MINERAL DATA COLLECTING IN SLOVENIA

All Slovenian concessionaires are required to annual reporting on: production, degraded surface, reserves and resources in their mining areas (Reporting forms on mineral resources). Mineral data are collected by responsible ministry. Collected data are being further processed and evaluated for mineral statistics on national level.

Mineral resources in Slovenia are divided into:

- ENERGY
 - brown coal (production until 2012),
 - lignite,
 - oil and natural gas,
 - geothermal energy.
- METALS (no production in recent decades)

- NON-METALS
 - **industrial minerals and rocks** (chert, lake chalk (production until 2003), bentonite, quartz sand, calcite, tuff, industrial dolomite, ceramic / ball clay),
 - **materials for construction industry** (brick clay, natural stone (limestones, tonalite, other natural stones), raw materials for the lime and cement industry),
 - **construction materials – aggregates** (crushed stone (limestone, dolomite, magmatic and metamorphic rocks), gravel and sand).
- OTHERS
 - sea salt.

There was 1 exploration site and 206 exploitation sites with mining rights in Slovenia; referring to 25 different minerals and rocks, in the year 2018. These sites have been runing by 135 mining right holders.

Overview of Slovenia's mineral resources

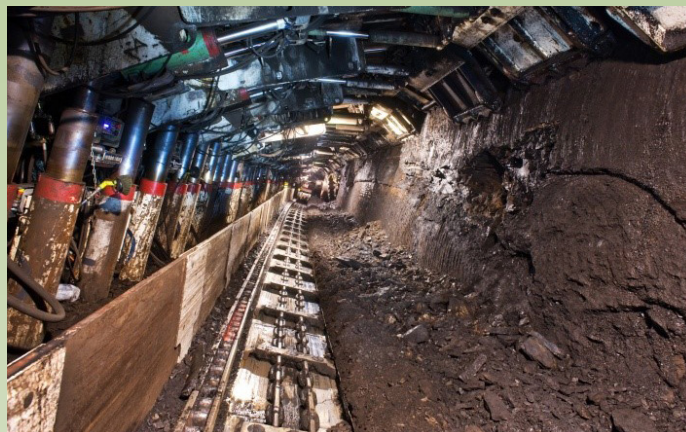
In Slovenia, situated between the Alps, Pannonian Basin, Dinarides and the Dinaric Foreland, energy, metallic and non-metallic resources occur in different geological formations. The energy resources include coal (lignite, subbituminous coal and bituminous coal), oil and natural (mostly tight) gas, radioactive mineral resources (uranium) and geothermal energy. Coal-bearing areas with the highest resources and proven reserves are the Velenje Basin (N Slovenia; Pliocene lignite), Sava Basin(s) (E Central Slovenia; Oligocene subbituminous ("hard brown") coal, and Pannonian Basin (E and NE Slovenia; Miocene lignite and "brown" coal). Uranium ore occurs mainly in the area of Žirovski Vrh, W of Ljubljana (Central Slovenia - W Sava Folds – Permian Val Gardena / Gröden Formation), and with lower potential also to the east (Central Slovenia - E Sava Folds). The most promising area for oil and gas generation and accumulation is the Pannonian Basin. In other areas, hydrocarbons could have been generated in different known source rocks (from Palaeozoic to Early Tertiary) but were lost (not trapped) during subsequent geological processes. A potential area could be offshore in the Adriatic Sea (as in the case of Italy, Croatia and southwards), but the Slovenian part of the sea is very limited, and no exploration has been carried out up to now. On the metallogenic map of Slovenia, more than 220 localities of metallic mineral deposits and occurrences are marked, a few dozens of which were mining sites (ore deposits), while the rest are ore occurrences only. No metal mines are currently active. Potential economic significance can be attributed primarily to sites of mercury (Idrija), lead and zinc (Mežica, Litija), uranium (Žirovski vrh) and to a lesser extent to copper (Sovodnj), molybdenum (Mežica), antimony (Trojane), manganese (Karavanke) and iron and bauxite.



Inactive historical mines in Slovenia need reevaluation based on potential presence of high-value trace elements in (primary) ore.

Non-metallic mineral resources of higher market value (industrial minerals and rocks) that could be exported occur only moderately non-metallic mineral resources of a lesser value prevail (mineral resources for the industry of building materials and construction), which are primarily used domestically or they are enriched and used in semi-manufacturing and manufacturing. Domestic non-metallic mineral resources are used in the construction, ceramic, brick, metallurgy and metalworking industries, for the environment and water purification, glass manufacturing, farming, food industry, etc.

Mining in Slovenia has a long tradition. In the past this was exploitation of a significant quantity of mercury in Idrija, whereas today it involves technologically modern underground extraction of lignite in Velenje. After 1990, several underground coal mines, mines of uranium, mercury and of lead and zinc were closed. Only open pit mines of non-metallic mineral resources and one underground lignite mine were still active in 2018. Lignite production is carried out by the Premogovnik Velenje (Velenje Lignite Mine), while the production of "hard brown coal" in the Trbovlje-Hrastnik Mine has been finished in 2012.



Underground long-wall (ca 100 m) lignite mining in Velenje

Coal mining in Slovenia began in the second half of the 18th century. Almost all coal mining sites known today were discovered in the 18th and 19th centuries and then thoroughly explored and increasingly exploited in the 20th century, especially for the railway and later for production of electricity in power plants. Among more than 100 coal-mining sites, a lot of them had only a local significance, but numerous were full-blown collieries, which produced tens to hundreds of thousands of tonnes of coal per year. Between 1950 and 1990, the annual coal production (mostly underground) increased from 2 to almost 7 million tonnes (Mt). In the period 1962–1976, run-of-mine calorific value of the total excavated coals (lignites and subbituminous coals) in Slovenia from 11 mines varied around 13 megajoules per kg (MJ/kg). Peak annual productions reached 6.75 Mt in the 1980s (3.35 t/cap.) from 7 coal mines. The run-of calorific value of total Slovenian coal was in the 1980s slightly below 10 MJ/kg, and coal was used almost entirely in power plants that produced ca. 37% of domestic electric energy (about the same as the hydro power plants). In this period, the maximal annual production in Trbovlje reached 1 Mt of subbituminous ("hard brown") coal, whereas 5 Mt of lignite was produced in Velenje. In the 1990s, coal production was finished in four coal mines (Laško, Zagorje, Senovo, and Kanižarica) and in 2012 also in Trbovlje-Hrastnik. In the last two decades, around 4 Mt of lignite with calorific value of 10.5 MJ/kg was produced yearly in Velenje, which has the potential to remain the only active coal mine (underground) until the 2050s.

The uranium mine at Žirovski Vrh, which is the only underground mine in Slovenia that was opened after the Second World War, has been in the process of closure since 1991. The production of mercury ore in Idrija ended in 1991.

In Mežica the last tonnes of lead and zinc ore were mined in 1994. Otherwise, the mines in Idrija and Mežica have been in the process of closure since 1987 and 1988, respectively. The Litija Mine ceased and finished production of lead and zinc in the 1960s.

From the brief preceding description of the situation in Slovenia, the potential of mineral resources and the overall economic situation, a pronounced dynamics of changes can clearly be seen for the last 30 years. These are: closure of the centuries-old metal mines, of almost all coal mines except for the Velenje Lignite Mine, of the uranium mine, and on the other hand still keeping a significant emphasis on non-metallic mineral resources for the building and construction industries. In the view of current trends and programmes for economic development, primarily in the area of infrastructure construction (roads, railways, apartment buildings), we can predict future needs for individual non-metallic mineral resources, first of all in construction, with others also coming into play in the long term since 2018. Mineral resources for construction, which will be extracted by surface mining, will remain an important factor in the national economy and development in the future as well.

It is concluded that there was one exploration site and 206 exploitation sites with mining rights in Slovenia; with 25 different mineral resources in the year 2018. These sites were run by 135 mining right holders.



Natural stone - limestone in the Doline quarry

Geothermal energy use in Slovenia in 2018

About 18% of the country has better deep geothermal potential than most other parts. This northeastern part with high potential, belonging to the Pannonian Basin, has been intensively investigated in recent years within the European projects. Efforts have also been put in promotion of more sustainable exploitation by applying new reinjection wells in the future based on materials prepared during the project activities. Better insights are gained in characteristics of the geothermal field, hydrogeological conditions of eastern Slovenia and potentials for direct heat utilization. This northeastern area is characterized by thin crust and thick Cenozoic sedimentary layers (up to 5.5 km) with elevated surface heat-flow density (HFD), above 100 mW/m², with expected temperatures above 80 °C at 2 km depth east of the Maribor - Ptuj line. All production wells that are situated in this area exploit thermal water from Neogene aquifers with the exception of those in Maribor. About 20 inactive and some 11 new potential wells exhibit the wellhead temperatures between 20 and 72 °C and have a total maximum yield of 281 kg/s, resulting in the ideal thermal power of 23.9 MW_t. This geothermally most utilized area is filled by Neogene

marine and fresh-water sediments and at depths of more than 2500 m thermal fluids reach temperatures of 100 to 200 °C. Clays and marls predominate, with intercalations of porous sands and sandstones of the Upper Pannonian-Pontian Mura Fm, where mineral, thermal and thermo-mineral waters are found. These hydraulically connected sandy lenses are widely utilized by Hungary and Slovenia and are composed of 50 to 300 m thick sand-prone units that are found in depth interval of about 0.7 to 1.4 km in the interior parts of the SW part of the Pannonian basin, with temperatures from 50 to 70 °C.

In recent years particular attention has been given to the estimation of the shallow geothermal potential, particularly in the urban areas.

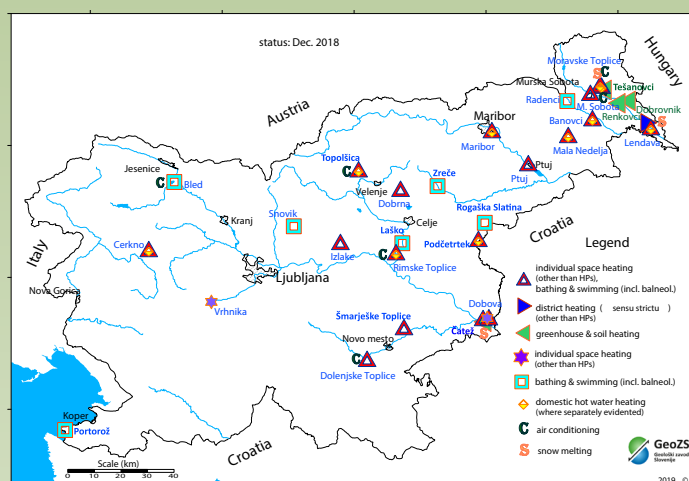


Figure 1: The main categories of direct heat use of geothermal energy from thermal water in Slovenia in 2018 at 31 locality.

Everywhere geothermal energy is successfully used in numerous spas, in agriculture and for individual space and district heating. Total utilization of geothermal energy, as of 2018, was 1516.79 TJ with the corresponding installed capacity of 247.47 MW_t. The direct use of geothermal energy takes place at 31 localities with thermal water (Figure 1), where installed capacity and used geothermal energy amounted to 62.43 MW_t and 578.57 TJ, respectively. The shallow geothermal energy, which is exploited by approximately 11,770 units of ground-source heat pumps, contributed 938.23 TJ of used geothermal energy from the installed capacity of 185.04 MW_t. Of these, the bigger GSHP units (with >20 kW of rated power), ca 588 in number, contributed some 254.98 TJ of used shallow geothermal energy.

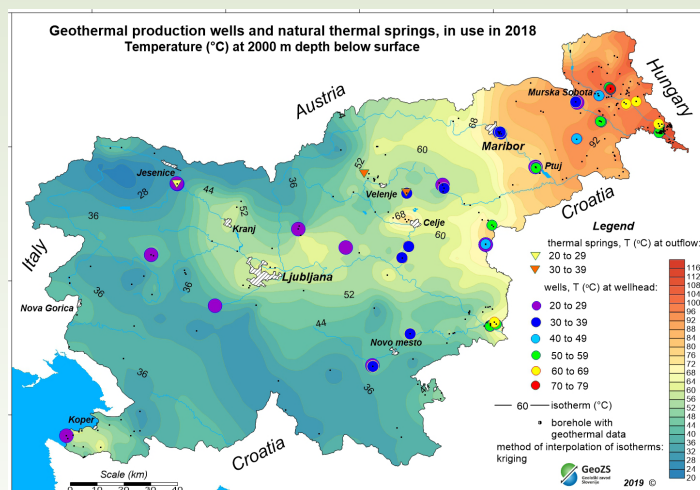
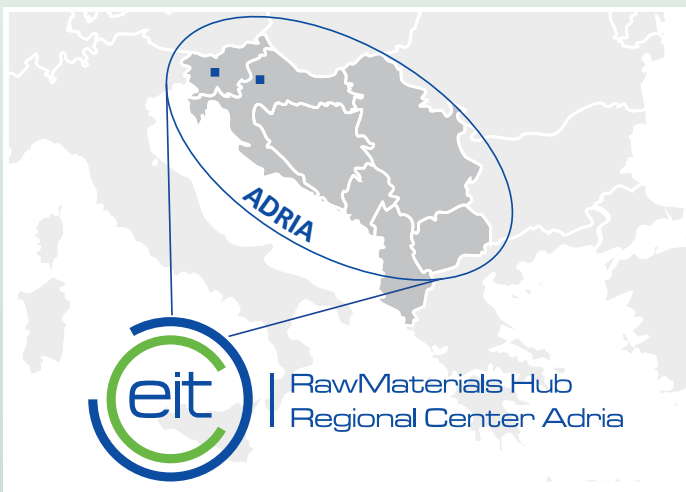


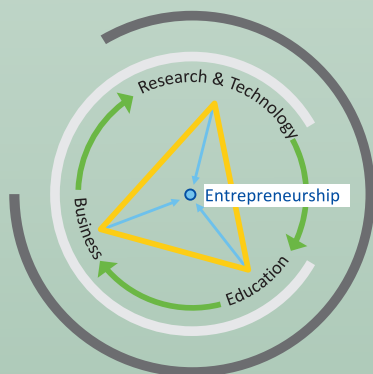
Figure 2: Production geothermal wells and natural thermal springs, in use in 2018 in Slovenia (status: Dec. 2018); Expected temperatures at 2000 m depth beneath the surface.

Andreja Senegačnik, Miloš Markič, Dušan Rajver

EIT RawMaterials Hub Regional Center Adria (RC Adria) has been established and started operating in spring 2018. The founding members of the hub are **Geological Survey of Slovenia, Slovenian National Building and Civil Engineering Institute and Faculty of Mining, Geology and Petroleum Engineering at the University of Zagreb**. It represents a **hub for mineral raw materials stakeholders primary focused on Slovenia and Croatia with the outreach to South-East European countries** (Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia). The presence of the EIT RawMaterials in the South-East Europe is essential due to the richness of primary and secondary raw materials in the region and is well aligned with the EU communication on enlargement perspective and enhanced EU engagement in the area.



RC Adria is acting as an interface between local environments (knowledge triangle) and EIT RawMaterials, enabling access to information about EIT RawMaterials projects and activities. One of the main objectives of the RC Adria is to encourage networking, project ideas exchange and offering support to potential new partners of the EIT RawMaterials community. For all local stakeholders - **business, education institutions, research organisations and local authorities** it represents »one stop shop« for EIT RawMaterials knowledge transfer. At the same time, it connects local raw materials communities with their international EIT RawMaterials counterparts.



RC Adria represents an excellent opportunity for all stakeholders to know more about EIT RawMaterials and to become member of the world's largest raw materials community.

In **2019** RC ADRIA team is focusing the efforts into organization of two matchmaking & networking events – one in Croatia and one in Slovenia. The **Adria Innovation Day 2019** is going to be held on 23rd October in Portorož with a focus on **Innovation in primary and secondary raw materials sector in the South-East Europe**. At the **Croatia Waste Expo**, a special **Industry symbiosis workshop** is going to be held on 22nd October in Zagreb with a focus on recycling and waste industry under a topic “Utilisation of secondary raw materials - boosting transition to circular economy”.

Internship program for SEE Raw materials students is being implemented for the first time in 2019 with an aim to develop a successful internship programme for SEE students, allowing 20 final year MSc students to get practical experiences in companies and institutions from Slovenia and Croatia.

RawMaterials business idea development short course is going to be organized in autumn in Zagreb for idea holders in the raw materials sector with practical exercise on developing RawMaterials innovative ideas and idea pitches.

In **2020** RC Adria team plans to put even more emphasis to attract business partners, students and academic staff into EIT RawMaterials activities and to inform policy makers about these activities in order to increase their awareness and to get their support for RC Adria activities.

The **Adria Innovation Day 2020** is going to be organized in autumn with a focus on the transfer of knowledge and good practices between junior companies supported by EIT RawMaterials and idea holders from the ADRIA region. These idea holders will be identified through the **ADRIA Raw Materials Incubator** including scouting and promotion activities, organization of the short business course for idea holders, identification and mentorship for the most promising ideas with the ambition to enter already established EIT RawMaterials business creation and support programs (i.e. Jumpstarter, Booster).

Industry symbiosis workshop is going to be organized in Ljubljana in cooperation with the Chamber of Commerce and Industry of Slovenia.

Internship program for SEE Raw materials students is going to be continued in 2020.

Cooperation with **Junior Achievement Slovenia** programme for the promotion of youth entrepreneurship is going to be continued in 2020 to foster innovation-driven entrepreneurship in the raw materials sector in Slovenian high schools.

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Urša Šolc, Matej Draksler, Duška Rokavec

CRITICAL RAW MATERIALS (CRM) IN SLOVENIA

Raw materials play a crucial role in the transition of modern society towards decarbonization, clean mobility, renewable energies and enhanced communication technologies. State-of-the-art technological solutions unfortunately require a variety of chemical elements, which occur in mineral commodities that have limited reserves of primary deposits, unreliable supplies and poor recyclability. This is an important challenge for European Union, because demand of European economy for many mineral commodities significantly exceed domestic supply and must be covered with import.

In order to protect stability and to enable further growth of European economy, European Commission defined a list of "Critical Raw Materials" (CRM), incorporating 27 raw materials with significant economic importance and supply risk (CRMs are listed in the table). Furthermore, also an »European Battery Alliance" (EBA) has been launched, which considers commodities such as Co, Li, Ni and graphite ("battery elements"), necessary for next generation of car batteries.

Reassessment of European mineral deposits and occurrences, as well as detailed analyses of mining waste deposits regarding the CRM and EBA listed commodities, is needed to increase the autonomy of European economic value chain. Advances in mining technology and new insights in European metallogenetic provinces can convert currently uneconomic mineral deposits or already exploited historical mining sites, into a feasible exploration targets.

Slovenian territory, with more than 200 different ore deposits and occurrences, has the potential to provide such cases. Slovenian mines were an important suppliers of metal ores on European level (especially Hg, Pb and Zn) from 16th century until the end of 20th century, when extraction of metal ores in Slovenia ended.

Historical mining paid little or no attention to grades of trace elements accompanying the main ore minerals, which nowadays offer a big opportunity for exploration, since many of them became very valuable and are considered as CRMs. Current European need for specific raw materials already initiated more detailed evaluation of CRM in Slovenia.



Base metal minerals such as galena and sphalerite in vein on picture, can be carriers of several trace elements categorised as CRM (Ga, Ge and In for instance), which increase the value of the deposit.

Analysis of trace elements in Slovenian ores are scarce and need to be upgraded with up-to-date analytical methods. Pb and Zn are the most frequently explored commodities in Slovenia and pose potential for discoveries of Ga, Ge and In, being common trace elements in mineral lattice of Pb and Zn ore minerals. Zavrh Pb-Zn ore occurrence is the most perspective in this regard, since significant grades of Ga and In were already confirmed. However, the potential of many other Pb-Zn ore deposits, including Mežica, is not sufficiently examined.

Among the commodities included on CRM list, baryte and Sb generally show the highest potential for significant discoveries in Slovenia. Baryte forms substantial ore bodies, frequently associated with Pb-Zn ore deposits. It was exploited in Litija and Pleše mines, which both together, according to historical data, still contain approximately 0.5 Mt of baryte ore. Antimony forms small hydrothermal vein deposits or is incorporated in polymetallic ore deposits as a trace element. It was exploited at the beginning of 20th century at two localities (Trojane and Lepa Njiva) but geological information about its deposits are insufficient.

Metamorphic and magmatic complexes of N Slovenia show some potential for Li and graphite. Indications for presence of Li were found in some pegmatites around Ravne na Koroškem, while graphite occurs as smaller lenses within metamorphic rocks at Remšnik.

Exploration potential for CRM and EBA listed commodities

CRM	Exploration potential	CRM	Exploration potential
Antimony	High	Phosphate rock	Low
Baryte	High	Phosphorous	Low
Beryllium	Low	Scandium	Low
Bismuth	Moderate	Silicon metal	Low
Cobalt	Low	Tantalum	Low
Coking coal	Low	Tungsten	Low
Fluorspar	Low	Vanadium	Low
Gallium	Moderate	Platinum group elements	Low
Germanium	Low	Heavy Rare Earth Elements	Low
Hafnium	Low	Light Rare Earth Elements	Low
Helium	/		
Indium	Moderate	Battery elements	Exploration potential
Magnesium	Low	Lithium	Moderate
Natural graphite	Moderate	Nickel	Low
Natural rubber	/		
Niobium	Low		

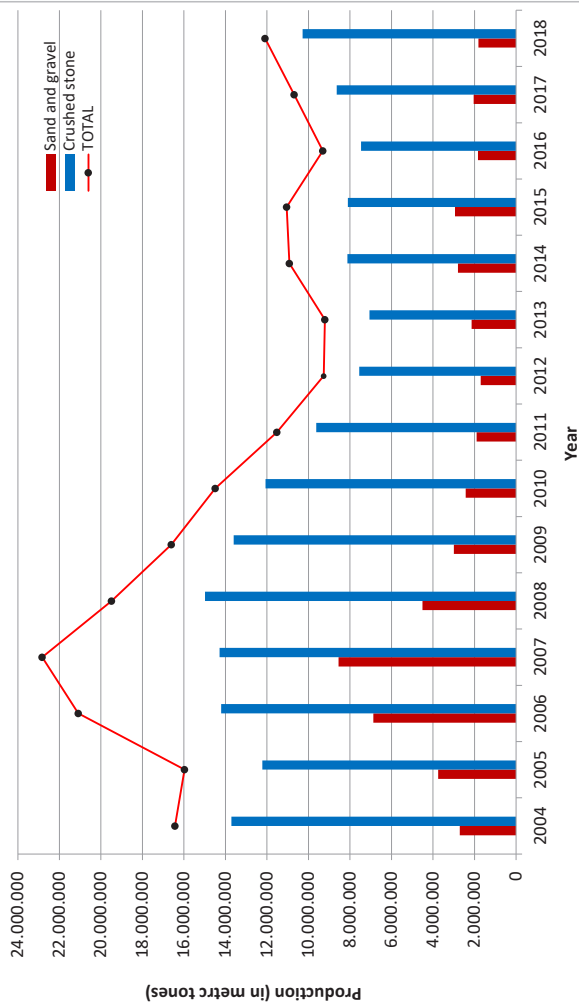
Occurrences of other elements from CRM and EBA list in Slovenia are either scarce or the geological conditions are unfavourable for their discoveries. However, exploration of deep subsurface in Slovenia might reveal additional ore deposits which have not yet been discovered. Exploration potential for each CRM and EBA commodity is listed in the table above.

Data and information concerning CRM and battery elements are compiled by several EU funded projects, such as SCREEN and GeoERA-FRAME. Collected data will enable continental scale interpretation of CRM metallogenetic provinces and assessment of CRM resources in Europe. Data for Slovenian ore deposits are compiled and distributed by GeoZS.

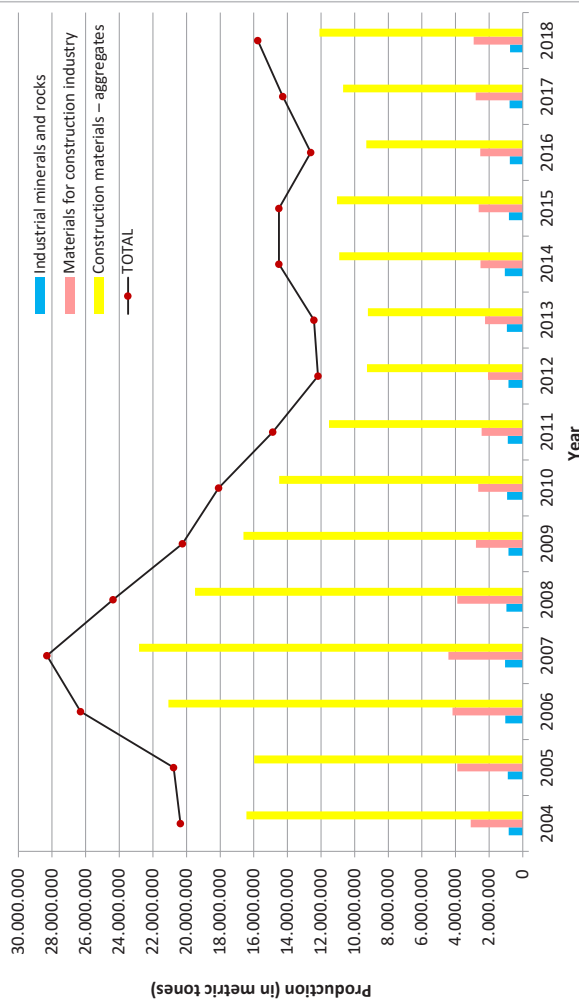
Table 3: PRODUCTION OF MINERAL COMMODITIES IN SLOVENIA
(in metric tons)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bentonite	141	140	130	130	160	104	135	168	98	143	199	232	182	147	113
Calcite	128.725	164.752	271.509	273.745	348.152	405.467	459.926	458.800	474.152	555.663	646.542	268.677	255.709	220.771	204.914
Chalk															
Quartz sand	264.349	254.195	278.041	295.667	289.529	215.065	253.866	230.908	219.481	224.387	207.381	343.455	338.080	359.476	343.683
Tuff	88.884	95.126	88.013	90.319	109.949	58.062	39.401	24.639	23.732	19.171	8.872	9.116	8.840	9.144	8.633
Industrial dolomite	260.367	279.555	294.645	299.177	177.715	146.214	156.179	154.721	119.317	136.516	177.338	172.697	150.545	172.656	129.821
Chert	20.325	19.445	15.445	16.745	21.648	16.695	16.114	18.907	9.960	11.530	15.340	21.041	20.272	15.525	20.436
Ceramic clay	69.560	78.683	86.443	78.221	32.200	9.478	12.279	10.103	5.295	3.479	7.461	7.574		5.478	42.052
Industrial minerals and rocks	832.351	891.896	1.034.226	1.054.004	979.353	851.085	937.900	898.246	852.035	950.889	1.063.133	822.792	773.628	783.197	749.652
Brick clay	508.232	730.670	638.329	706.866	420.360	235.348	296.118	374.020	159.746	180.748	154.944	194.852	202.540	167.898	159.615
Natural stone	21.538	102.635	52.459	47.983	71.260	73.156	55.045	25.109	21.006	21.158	79.005	99.541	101.991	107.630	91.231
limestone															
tonalite	21.867	36.488	56.587	65.715	67.400	39.787	36.855	45.930	23.374	41.016	23.749	26.995	26.746	28.544	41.793
other	23.940	29.741	24.392	27.124	21.959	21.573	19.724	11.896	11.526	8.332	9.917	9.790	7.690	6.151	3.615
Natural stone	67.345	168.864	133.438	140.822	160.619	134.516	111.624	82.935	55.906	70.506	112.671	136.326	136.427	142.325	136.639
Raw materials for lime	1.111.417	1.691.696	2.089.495	2.082.593	1.631.391	1.221.197	1.260.446	1.103.163	896.241	860.890	919.528	1.103.283	1.046.293	1.174.038	1.212.883
Raw materials for cement	1.409.780	1.306.889	1.324.803	1.489.625	1.684.258	1.188.493	982.653	883.573	952.758	1.138.560	1.325.907	1.190.807	1.149.065	1.318.832	1.405.518
Materials for construction industry	3.096.774	3.898.119	4.186.065	4.419.906	3.896.628	2.779.554	2.650.841	2.443.691	2.064.651	2.250.704	2.513.050	2.625.268	2.534.325	2.803.093	2.914.655
Crushed stone	5.939.214	5.926.378	7.242.777	7.134.305	7.541.043	6.284.804	5.773.480	4.034.597	3.264.404	2.813.266	3.060.104	3.486.409	3.164.109	3.824.938	4.757.905
dolomite	7.729.802	6.197.589	6.712.996	6.909.947	7.291.259	7.175.362	6.143.336	5.440.918	4.223.692	4.127.357	4.901.721	4.427.094	4.280.306	4.808.753	5.516.316
other	50.872	99.215	257.546	235.002	150.258	149.562	155.716	151.276	69.335	127.272	161.762	194.610	26.018	9.190	7.781
Crushed stone	13.719.888	12.223.182	14.213.319	14.279.254	14.982.560	13.609.728	12.072.532	9.626.791	7.557.431	7.067.895	8.123.587	8.108.113	7.470.433	8.642.881	10.282.002
Sand and gravel	2.712.174	3.750.707	6.871.519	8.549.960	4.506.076	3.001.291	2.422.771	1.899.770	1.707.455	2.143.013	2.799.006	2.943.870	1.833.732	2.047.403	1.810.666
Construction materials – aggregates	16.432.062	15.973.889	21.084.838	22.829.214	19.488.636	16.611.019	14.495.303	11.526.561	9.264.886	9.210.908	10.922.593	11.051.983	9.304.165	10.690.284	12.092.668
TOTAL	20.361.187	20.763.904	26.305.129	28.303.124	24.364.617	20.241.658	18.084.044	14.868.498	12.181.572	12.412.501	14.498.776	14.500.043	12.612.118	14.276.574	15.756.975
brown coal	611.349	594.456	587.912	483.417	488.828	510.769	419.466	435.800	314.262						
lignite	4.195.953	3.945.100	3.932.842	4.037.766	4.008.442	3.921.746	4.010.930	4.066.278	3.967.064	3.721.188	3.108.203	3.168.001	3.348.889	3.355.664	3.216.735
coal	4.807.302	4.539.556	4.520.754	4.521.183	4.497.270	4.432.515	4.430.396	4.502.078	4.281.326	3.721.188	3.108.203	3.168.001	3.348.889	3.355.664	3.216.735
oil	355	303	284	344	174	138	233	263	279	298	366	261	229	241	270
gas condensate	233	196	154	167	104	105	207	131	60	114	95	98	150	240	499
gas	4.931	4.913	3.751	3.078	2.348	2.317	6.006	2.095	1.454	2.698	2.463	3.109	4.331	7.554	14.423
oil and gas	5.519	5.412	4.189	3.589	2.626	2.560	6.446	2.489	1.793	3.110	2.924	3.468	4.710	8.035	15.192
sea salt	2.852	803	1.624	3.029	535	2.924	59	4.291	5.684	3.360	0	2.191	2.417	2.335	2.018

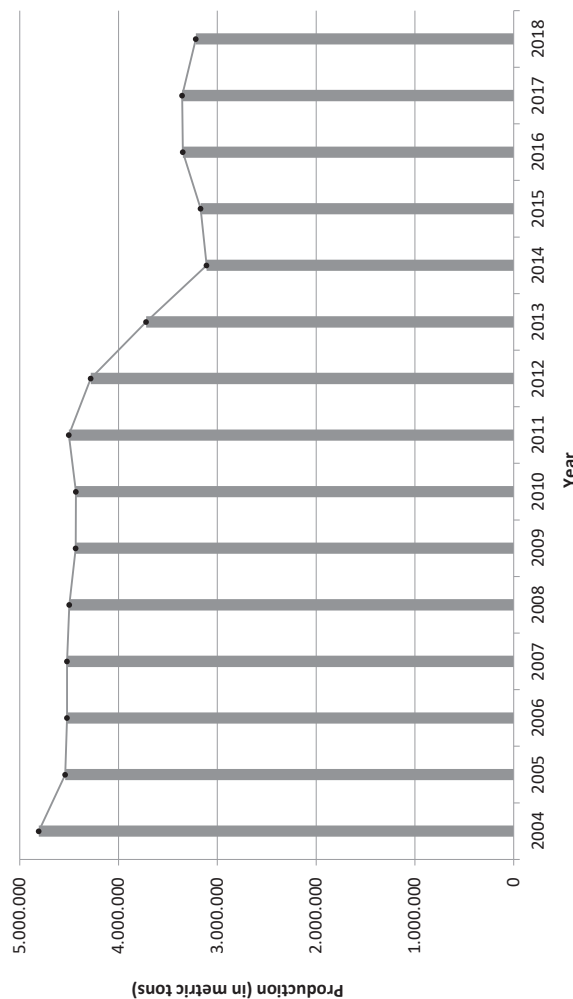
Production of construction materials - aggregates in Slovenia



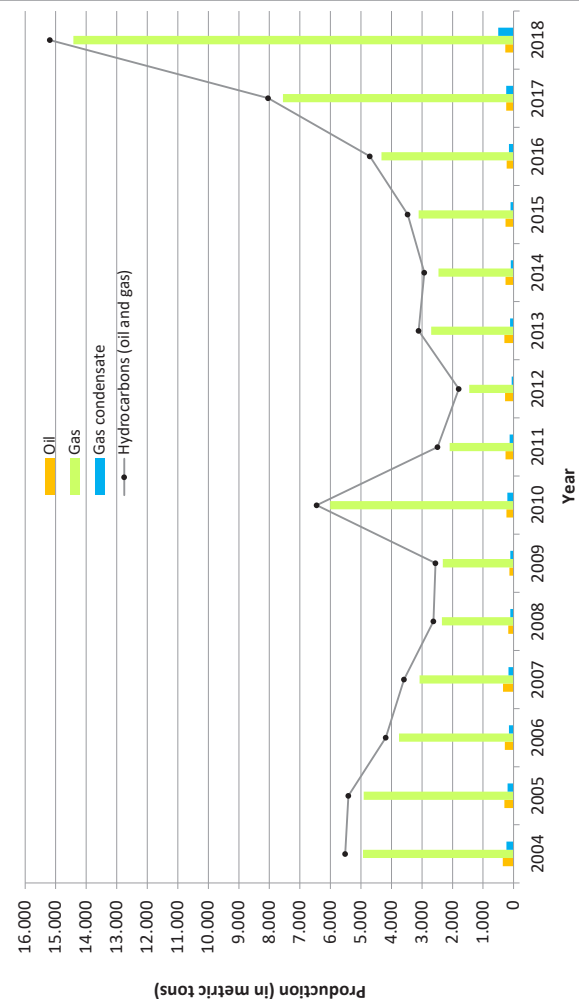
Production of mineral commodities in Slovenia (energy not included)



Production of coal in Slovenia



Production of hydrocarbons (oil and gas) in Slovenia



LIST OF SOME EU-FUNDED PROJECTS RELATED TO MINERAL RESOURCES

Programme	Project acronym	State	Project title	Start	End	Duration (months)	Lead partner	Project summary
Horizon 2020	UNEXMIN	on-going	Autonomous Underwater Explorer for Flooded Mines	Feb '16	Oct '19	45	University of Miskolc, Hungary	The project will develop a novel robotic system for the autonomous exploration and mapping of Europe's flooded mines. The Robotic Explorer (UX-1) will use non-invasive methods for autonomous 3D mine mapping for gathering valuable geological and mineralogical information. This will open new exploration scenarios so that strategic decisions on the re-opening of Europe's abandoned mines could be supported by actualised data that cannot be obtained by any other ways. The Multirobot Platform will represent a new technology line that is made possible by recent developments in autonomy research that allows the development of a completely new class of mine explorer service robots, capable of operating without remote control. Such robots do not exist nowadays; UX-1 will be the first of its kind. Research challenges are related to miniaturisation and adaptation of deep sea robotic technology to this new application environment and to the interpretation of geoscientific data.
COST	MINEA	on-going	Mining the European Anthroposphere	Mar '16	Mar '20	48	Institute for Water Quality, Resource and Waste Management (TU Vienna), Austria	Currently, acquiring an adequate overview of the future availability of secondary resources in Europe is not possible due to a lack of consolidated knowledge regarding the resource potential in the anthroposphere. To overcome this gap, this COST Action strives for a breakthrough in the field of waste and resource management and pursues the establishment of a universally acceptable and internationally applicable scheme for the classification and reporting of resource potentials. To this end, the COST Action works to form a pan-European network of high-quality researchers, engineers and scholars to coordinate nationally funded research activities.
KIC EIT RawMaterials	STINGS	on-going	Supervision of Tailings by an Integrated Novel Approach to combine Ground-based- and Spaceborne Sensordata	Apr '17	Sep '20	42	DMT GmbH & Co. KG, Germany	STINGS is an innovation project funded by EIT Raw Materials to establish a ground- and space-borne remote sensing and analysis system to effectively and cost-efficiently monitor critical ground infrastructure stability and content, primarily focusing on mining tailing dams. It is purpose is to increase the safety standards related to tailing operations and to deliver an extended monitoring and early warning system for identification of operational impact and environmental risks to the mining sector, government, citizens and all stakeholders affected by previous and current activities.
KIC EIT RawMaterials	RE-ACTIVATE	on-going	Developing superior technical infrastructure throughout EIT Raw-Materials community to foster technologies and methodol. for re-activation of former mine sites	Apr '17	Mar '20	36	DMT GmbH & Co. KG, Germany	The project objective is to establish a Network of Infrastructure (NoI) of experts throughout EIT RawMaterials community, developing superior technical infrastructure to create synergies to merge and further develop advanced technologies and methodologies for re-activation of former mine sites. The NoI will also be the single point of contact for any relevant expertise in the particular fields. The participating partners are covering the major regions with relevant potential for projects in Europe and the main target region for the proposed services is also Europe. It is believed that the NoI will be able to deliver a clear impact in securing raw materials supply within Europe.
Horizon 2020	ORAMA	on-going	Optimising quality of information in RAw MAterials data collection across Europe	Dec '17	Nov '19	24	Geological Survey of Finland (GTK)	With the aim to optimise collection of primary and secondary raw materials information within EU member states, assessment of information data sources, collection practices and reporting systems across EU will be performed within the project framework. A clear strategy for improving the quality of collected data, harmonisation of statistical data and transparent sharing of information at different levels (national and EU) will be developed with the intention to expand the mineral resources knowledge base, which would in long-term cover all European countries. To such a degree the future European Community will have access to harmonised, high quality and easily shareable information on raw materials that will support strategic policy decisions and sustainable investments in the field of raw materials.
KIC EIT RawMaterials	RIS-RECOVER	on-going	Regional innovation scheme for zero waste extraction of critical raw materials	Feb '18	Jan '21	36	Slovenian Nacional Building and Civil Engineering Institute (ZAG)	The main objective of RIS-RECOVER is to build a roadmap for zero waste extraction of critical raw materials (CRM) and metals from mining tailings and metallurgical heaps in SEE. Beside development of an innovative zero waste approach the project is building capacity of T-shaped entrepreneurs and actors along the value chains. In this way RIS-RECOVER has a high impact potential for the KIC community and in developing a more sustainable mining industry in Europe.
KIC EIT RawMaterials	RM@Schools 3.0	on-going	Raw Matters Ambassadors at Schools 3.0	Jan '18	Dec '20	36	Consiglio Nazionale delle Ricerche (CNR), Italy	The RM@School 3.0 project is an innovative program focused towards making science education and careers in raw materials (RM) more attractive for the younger generations. RM Ambassadors (experts in some RM-related issues and trained teachers) will engage students in an active way of learning. They will be involved in experiments with RM-related hands-on educational toolkits, excursions to companies, and in science dissemination activities. The students can become Young RM Ambassadors by creating dissemination products focused on issues related to RM (i.e. videos, cards, comics, etc.) in their native languages (ages 10 to 13 years) or in their native and English languages (ages 14 to 19 years). Local award competitions for the best communication products, as well as an annual European Conference will be organized. Selected groups of students will be taught about digital competences, like video making and other suitable activities to be proposed during Public Events in order to work together with RM Ambassadors.
KIC EIT RawMaterials	RESEERVE	on-going	Mineral potential of the ESEE region	Apr '18	Jun '21	39	Geological Survey of Slovenia (GeoZS)	Primary and secondary mineral resources are of strategic importance for the EU. Most EU countries are already part of the pan-European Minerals Intelligence Network which provides consistent and organised data information on primary and secondary mineral resources on the European level. The West Balkan region represents a gap in this network. Project's objectives: (1) to set up a West Balkan Mineral Register for primary and secondary mineral resources by mapping mineral resources of the West Balkan countries: Croatia, Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia and Albania, which are currently not included in the existing data platforms, (2) to establish a ESEE mineral community to determine available and further needed information on primary and secondary mineral resources data in West Balkan countries, (3) to increase management capacity of mineral resources on national levels in West Balkan countries and (4) to ensure a sufficient flow of mineral information for Europe's industry with the intention to expand their business and investments in the West Balkan region. RESEERVE project will transfer knowledge to the West Balkan region with the purpose to facilitate development of new markets for modern technologies, to create opportunities for start-ups and SMEs, contribute to new jobs opportunities and to generate economic added value in the mineral sector.
GeoERA	Mintell4EU	on-going	Mineral Intelligence for Europe	Jul '18	Jun '21	36	Geological Survey of Denmark and Greenland (GEUS)	The EU has identified the security of supply, improvement in environmental management and resource efficiency as key challenges for the raw materials sector. Data on locations and spatial distribution of primary and secondary raw materials, with respect to exploration, exploitation, production and trade activities, underpin decision making in government and industry. The aims of this project are: to improve the European Knowledge Base on raw materials by updating the e-MYB produced in the Minerals4EU project and to extend the spatial coverage and quality of data currently in the Minerals Inventory; to increase the degree of harmonization, communication and interaction between the existing data platforms, such as the Raw Materials Information System of the EU; to disseminate data through European Geological Data Infrastructure in a uniform way; to test the applicability of the UNFC classification system for obtaining more accurate Pan-European mineral inventories.
GeoERA	FRAME	on-going	Forecasting and Assessing Europe's Strategic Raw Materials Needs	Jul '18	Jun '21	36	Laboratório Nacional de Energia e Geologia, I. P. (Portugal)	Europe is experiencing growth in consumption of mineral commodities, where supply does not meet the market demand. However, even with the important contribution from recycling of mining and industrial waste, exploitation of primary mineral deposits will always be needed to cover the ever-growing demand for critical minerals and metals. Currently the main focus is on applying new technologies in the field of deep exploration and mining, turning low-grade ores to exploitable resources and reducing huge amounts of mining waste and large tailings by converting them to exploitable resources. Project FRAME is designed to research the critical and strategic raw materials in Europe, in scenarios as described above, by employing sound strategies and a partner base spread across countries that have some of these raw materials. A group of experts will provide innovative contribution towards increasing the knowledge concerning potential primary deposits, identifying new target areas/deposits and recognising the potential in secondary deposits. FRAME will collect, extract and disseminate data about strategic and critical minerals in Europe.
GeoERA	EuroLithos	on-going	European Ornamental stone resources	Jul '18	Jun '21	36	Geological Survey of Norway (NGU)	Although ornamental stone is today an important raw material that is being produced all over Europe, its use is locally and regionally decreasing in many parts of Europe, along with related knowledge, traditions and skills. EuroLithos has been founded with the intention to increase knowledge of geology, quality and history of use of natural stone in Europe that has the potential to stimulate both more sustainable use of stone resources in Europe for the benefit of SME's, enrich our cultural heritage and to establish a sound land use management for the safeguarding of ornamental stone deposits. The project addresses several aspects of the scope: identification and mapping of different types and quality of construction materials and to provide tools and protocols for the assessments and comparison between deposits. It also addresses cultural heritage and building preservation aspects, since the maintenance of European heritage and living stone industry are mutually dependent. EuroLithos will set up an ornamental stone knowledge base under the umbrella of EGD, covering harmonised spatial data on European stone resources, atlas of resources and use, a directory of ornamental stone properties and guidelines for valorization of ornamental stone heritage. The project work runs in close collaboration with the GeoEra Information Platform.
KIC EIT RawMaterials	RIS-ALICE	on-going	Al-rich industrial residues for low-CO2 Cement clinkers	Mar '19	Dec '21	34	Slovenian Nacional Building and Civil Engineering Institute (ZAG)	Aluminium is one of the key components in production of Al-rich mineral binders. To decrease consumption of valuable primary Al-mineral deposits (mainly bauxite), alternative materials can be used in production of Al-rich mineral binders. Huge amounts of various Al-rich residues (steel slags, red mud, ashes, landfills of bauxite mines) with low recycling rate in RIS countries present high secondary mineral resource potential. RIS-ALICE plans to define possible ways for replacement of bauxite with Al-rich industrial and mine residues. Moreover, this approach will represent an innovative recycling case study for the ESEE region. The main outcomes of the project are to establish a long-term active network between the producers and the end-users of Al-rich industrial residues; valorisation of Al-rich residues by producing environmentally friendly high-Al mineral binders utilising data from Slovenia, Hungary and BiH, knowledge transfer from Slovenia, Hungary and BiH to the whole ESEE region, and a contribution to the implementation of circular economy and zero-waste management for Al-rich industrial waste in ESEE regions.
KIC EIT RawMaterials	RIS-CuRE	on-going	Zero waste recovery of copper tailings in the ESEE region	Jan '19	Dec '21	36	Slovenian Nacional Building and Civil Engineering Institute (ZAG)	The activities of the RIS-CuRE project are based on an innovation model merging all relevant stakeholders within the knowledge triangle in the field of industry, research, and education to increase regional competitiveness based on a regional scale, considering the latest know-how of the RIS-CuRE consortium. The final output of the project will be a strong sustainable regional network, based on validated and fact-based data, including a study of the potential economic, technological, organisational (legislative), environmental and social impacts of applying the innovative methodology of the zero-waste extraction of valuable materials in Serbia and the North Macedonia. Once this is developed it will be easy to transfer a validated approach to other parts of the ESEE region with similar geological, social, and economic backgrounds, as well as to other parts of Europe, which will create a ripple effect in the further development of more sustainable mining and processing of primary and secondary raw materials in Europe and worldwide.
Horizon 2020	ROBOMINERS	on-going	Resilient Bio-inspired Modular Robotic Miner	Jun '19	May '23	48	Universidad Politecnica de Madrid, Spain	The project aims at developing a bio-inspired, modular and reconfigurable robot-miner for small and difficult to access deposits. The robot will be able to mine underwater, underground or above water and due to its unique modular design, it will be able to reach the deposit via a large diameter borehole. The use of the robot miner will especially be relevant for mineral deposits that are small or difficult to access. This covers both abandoned, nowadays flooded mines, that are not accessible anymore for conventional mining techniques, or places that have formerly been explored but whose exploitation was considered as uneconomic due to the small size of the deposits or the difficulty to access them.
KIC EIT RawMaterials	MineService	finished	Mining/Mineral Support Services	Apr '16	Mar '19	36	Geological Survey of Slovenia (GeoZS)	The main objectives of the MineService project are to create a network and a compendium of good practices of Mining/Mineral Support Services (MSS), to improve technical tools for raw materials management and transfer the methodology of mineral resources management to the test site country (North Macedonia). MSS is a public mineral intelligence system intended to support authorities (on national, regional or local level) at the decision-making process and to facilitate industry to enter into new markets. The network of partners in this project would increase the institutional capacity in executing technical and administrative tasks for mining and spatial planning in all involved partner countries. The good practices and knowledge of the methodology will be transferred and supplied to North Macedonia during the projects life-time, but could be transferred to other EU candidate countries in a follow-up project in order to improve the relationship between the EU and the candidate countries and potentially widen the European RM supply area. This should effect and reduce mineral supply shortage and consequently diminish vulnerability of EU mineral sector. Effective MSS is therefore needed for EU to remain competitive in mineral market and to provide MR to meet its society needs.

HARMONISING NATIONAL MINERAL RESERVES CLASSIFICATION INTO UNFC-2009 – SLOVENIA CASE

The important goal of proj. ORAMA (Optimising quality of information in RAW Materials data collection across Europe), is to identify best practices in the collection and reporting of information on primary and secondary raw materials (batteries- BAT, waste electrical and electronic equipment- WEEE, end-of life vehicles-ELV and mining waste-MIN). It creates training materials to serve wider uses of these practices.

Slovenian case study on harmonisation of mineral reserves/resources data from national classification to UNFC-2009 was presented. Slovenian mineral data have been transformed from the national classification into the UNFC-2009 classification (Figure 1) in order to be incorporated into the EU Minerals Yearbook (created by Minerals4EU project).

fundamental characterization	economic efficiency	categories (national classification)	UNFC E axis	UNFC F axis	UNFC G axis
economic	proved reserves	A, B, C ₁ , C ₂	1	1	1, 2, 3
potentially economic		A, B, C ₁ , C ₂	2	2	1, 2, 3
non-economic	measured resources	A, B, C ₁ , C ₂	3	2	1, 2, 3

Figure 1: Simplified transformation of Slovenian national classification into UNFC-9 as a “bridging document” case

The Slovenian mineral classification system is derived from the Russian mineral classification. Reserves and resources are divided into 3 classes: 1- economic, 2- potentially economic and 3- non-economic. Each of these classes is further sub-divided into the following categories: A, B, C₁ (so called “reserves”) and C₂ (so called “resources”).

The same reporting system is used for all types of mineral commodities including aggregates, because all minerals are in state ownership, managed by the government. Only reserve and resources within mining areas and exploration areas (where mining rights and/or exploration permits are granted) are classified. These reserves and resources are stated in the “Report of classification on reserves and resources” and determined by the national commission (Commission for determining mineral reserves).

The United Nations Framework Classification (UNFC) for Fossil Mineral and Energy Resources is a global classification system in which quantities are classified on the basis of the three fundamental criteria: economic and social viability (E), feasibility (F) and geological knowledge (G), using a numerical and language independent coding scheme. Combinations of these criteria creates a three-dimensional system. UNFC–2009 classification can either be applied directly or used as a harmonizing tool.

Total Commodity Initially in Place	Extracted	Sales Production			
		Non-Sales Production ^a			
		Class	Categories		
			E	F	G ^b
	Future recovery by commercial development projects or mining operations	Commercial Projects ^c	1	1	1, 2, 3
	Potential future recovery by contingent development projects or mining operations	Potentially Commercial Projects ^d	2 ^e	2	1, 2, 3
		Non- Commercial Projects ^f	3	2	1, 2, 3
	Additional quantities in place associated with known deposits ^g		3	4	1, 2, 3
	Potential future recovery by successful exploration activities	Exploration Projects	3	3	4
	Additional quantities in place associated with potential deposits ^g		3	4	4

Figure 2: UNFC categories used for “bridging”

Since reserve/resource data for individual deposit are not public, summarised data have been reported to Minerals4EU for each type of mineral commodity on a national level (e.g. reserves of crushed stone – limestone in the country).

However, only designated UNFC-2009 categories (marked yellow in Figure 2) could be used for national reporting, transformed from the existing national mineral classification. For the rest of the categories, the balancing of mineral reserve data should be generated separately.

Duška Rokavec, Špela Bavec

TESTING OF AUTONOMOUS UNDERWATER EXPLORER FOR FLOODED MINES

The aim of project UNEXMIN is to develop a novel robotic system, primarily for autonomous exploration and mapping of Europe's flooded mines. The Robotic Explorer platform, made by three robots – UX-1a, UX-1b and UX-1c, is using non-invasive methods for autonomous 3D mine mapping for gathering valuable geological, mineralogical and spatial information. For the purpose of testing the robot in real mine environment, five different testing sites have been selected in Europe, with gradual increase of harshness of the conditions (i.e. accessibility, the extent of tunnel network system, potential for robot recovery in the case of malfunction etc.): The trials were carried out in a pegmatite mine in Kaatiala (Finland), historical mercury mine in Idrija (Slovenia), uranium mine in Urgeiriça (Portugal), historical copper mine in Ecton (UK) and an underwater cave Molnár János in Budapest (Hungary).

Idrija Mercury Heritage Management Centre in cooperation with Geological Survey of Slovenia were the local organisers of a 10-day trial at the old mercury mine in Idrija, in September 2018. The objective of the Idrija trial was to test the operation of the prototype in a much more challenging

real-life environment compared to the first test site in Kaatiala mine in Finland. Idrija mine is an underground mine with limited visibility and narrow passages. The part of the flooded shaft Borba, where the robot was tested, also contained lots of debris and old structural beams and cables which had to be avoided by the robot during the dives not to damage the equipment nor the mine itself. During the trials a total of eleven dives were made within the span of two weeks. The robot successfully reached the deepest part of the mine shaft, at approximately 27 meters, with exceptional accuracy and gathered data for 3D mapping for offline post processing. The most challenging test was done at the last dive, where full UX-1 autonomy was tested for the first time in real mines. By setting up navigation waypoints the robot needed to dive on its own. The mission was successful, and the robot returned safely back to the surface, marking a major accomplishment in the project's development. The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 690008.

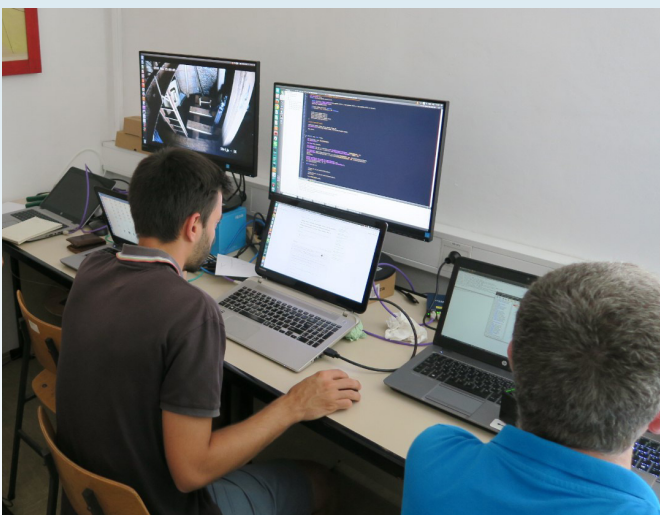
Emil Pučko



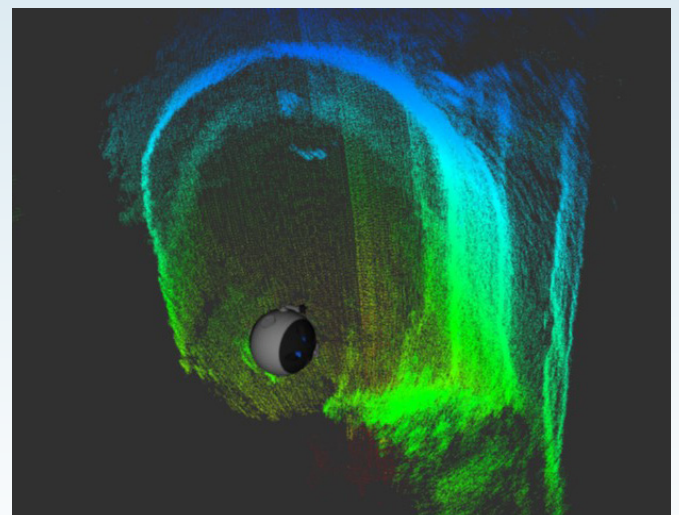
UX-1a diving at Idrija Hg mine



Preparing UX-1a for a dive at Idrija Hg mine



Control room at Idrija Hg mine



UX-1a scanning the shaft in Idrija and producing a 3D map

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Društvo tehničnih vodij
površinsko odkopavanje

SURFACE MINING ASSOCIATION (“DTV PO”)

Surface mining association has been operating continuously for 24 years. It brings together more than 90% of all Slovenian mining companies - holders of mining rights, experts from public institutions responsible for mineral resources management and planning, researchers and private sector.

The Association organizes professional training courses and capacity building of expertise in the field of geology, mining, environmental protection, economic exploitation of natural resources, safety practices and other solutions, it also actively participates as a stakeholder in the implementation of national mining legislation.

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SLOVENIAN MINING ASSOCIATION OF ENGINEERS AND TECHNICIANS (“SRDIT”)

The Slovenian Mining Society of Engineers and Engineers (SRDIT) is a non-governmental non-profit organization of miners and geotechnologists. The mission of SRDIT is the implementation of the mining and geotechnical profession in Slovenia and beyond. SRDIT assumes the role of an arbitrator in assessing the professionalism of its members, organizes international networking, raises the expert knowledge of membership and organizes the social events. The Slovenian mining association of engineers and technicians, at the time of its establishment in 1991, counted 53 members, at the end of 2018 it has 170 members. The SRDIT is the organizer and co-organizer of educational seminars, expert meetings and consultations (meeting “Jump over the leather skin” and “St. Barbara” meeting, technical meetings and workshops of miners and expert consultants and conferences with the international participation “Waste Management - GzO” and “Urban mining”).

President of SRDIT: Assist. Prof. Jože KORTNIK, Ph.D. Mining

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